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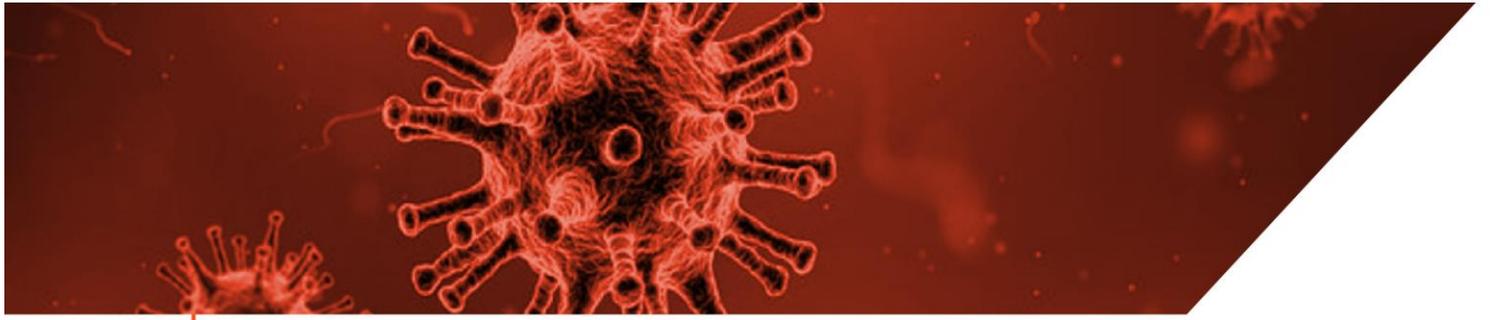
WTO CHAIRS  
PROGRAMME

# Conference Proceedings

MSMEs and COVID-19: Impacts, Challenges and Opportunities

*Special Theme: COVID-19 and the Sustainability  
of Blue Entrepreneurship*

8-9 December 2021



WTO OMC



UNIVERSITY OF  
MAURITIUS

## **'Micro, Small and Medium Enterprises (MSMES) and COVID-19: Impacts, Challenges and Opportunities'**

Special Theme:

COVID-19 and the Sustainability of Blue Entrepreneurship

# Conference Proceedings

8-9 December 2021

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## Foreword

A Virtual International Conference on *‘Micro, Small and Medium Enterprises (MSMES) and COVID-19: Impacts, Challenges and Opportunities’*, with the *Special Theme: COVID-19 and the Sustainability of Blue Entrepreneurship* was organised by the World Trade Organisation (WTO) Chairs programmes (WCP) at the University of Mauritius (UoM) on 8-9<sup>th</sup> December 2021. This Virtual Conference was part of a wider project funded by the WTO Chair Programme on ‘Harnessing digital trade to curb COVID-19 impacts on MSMES: A gender and sector discourse’, which includes an Outreach component, a Capacity Building Component geared towards providing training to MSMES in various areas and a Research Component related to analysing the effects of COVID-19 on Mauritian MSMES including women and blue entrepreneurs.

We received 42 extended abstracts/papers focusing on the impacts of the pandemic on MSMES across different countries of the world. The Conference proceedings cover a wide range of topics on MSMES, including the impact of COVID-19, challenges, opportunities and recovery measures put in place by small and micro enterprises, COVID-19 and digitalisation, sustaining blue entrepreneurship in the COVID-19 era, the regulatory responses to COVID-19 and women entrepreneurs in the midst of the pandemic. The Conference provided a forum to academics, policy makers, civil societies, business partners and experts working on issues related to the impact of COVID-19 on MSMES.

In addition to the contributed papers, the formal opening of the Conference was made by The Hon Soomilduth Bholah, Minister of Industrial Development, SMEs and Cooperatives. Ambassador H E Mr Xiangchen ZHANG, Deputy Director-General, WTO and Dr Yuvan BEEJADHUR, Senior Adviser to the Director General, WTO delivered the keynote speech. These were followed by a panel discussion on COVID-19 and blue entrepreneurship with colleagues from the United Nations Economic Commission for Africa (UNECA); WTO; Economic Development Board, Mauritius and International Economics, Mauritius. The panel discussion was moderated by Ambassador U Dwarka Canabady (Permanent Mission of Mauritius to the WTO).

The preparation of this proceedings would not have been possible without the review process of many of the scientific committee. We would like to thank them for agreeing to review the extended abstracts and the full papers. We would also like to thank many colleagues who have assisted us in finalising the document namely Ms Angela Ramsoondur for proofreading the document, Ms Asheeta Seetohul, Mr Jyaish Taucoory and Mr Mohammad Salmaan Sk Joomally for compiling the extended abstracts and papers received.

These proceedings will furnish academics, policy makers and students with an excellent reference book. We thank all authors and participants for their contributions.

Boopen Seetanaah

Varsha Mooneeram-Chadee

Verena Tandrayen-Ragoobur

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# **COVID-19 and MSMEs: Impacts, Challenges, Opportunities and Recovery Measures**

## COVID-19 and MSMEs in Mutare, Zimbabwe: Impacts, Challenges, Opportunities and Recovery Measures

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### **Abstract**

The research investigated the Covid-19 impact, challenges and opportunities and recovery strategies of MSMEs in Mutare, Zimbabwe. All the MSMEs shutdown businesses and incurred high financial losses due to Covid-19. After the third Covid-19 lockdown, all affected MSMEs sought for financial support in order to reopen their businesses. Zimbabwe should formulate strategies for supporting the revival programme of MSMEs after experiencing economic disruptions.

**Keywords:** *Covid-19, MSMEs, ESAP, Challenges, Opportunities*

### **Introduction**

The economy of Zimbabwe took a downturn after the adoption of ESAP in 1990. The neo-liberal market-driven policy measures created a conducive environment for starting Micro, Small and Medium Enterprises (MSMEs). The argument is supported by Bomani, Fields and Derera (2015). The MSMEs contributed \$8.58 billion to Zimbabwe's GDP in 2016 (Financial Tribune, 2018). However, the MSMEs have struggled to grow due to many challenges. The emerging of Covid-19 in China (Murairwa, 2021) affected immensely, the global MSMEs through lockdowns and restrictions. Zimbabwe announced the First (30-March-2020), Second (2-January-2021) and Third (14-June-2021) level 4 lockdowns and restrictions and directed all MSMEs to close their businesses. The question is "What are the MSMEs' opportunities and recovery-strategies on the Covid-19 impacts and challenges?"

## Literature

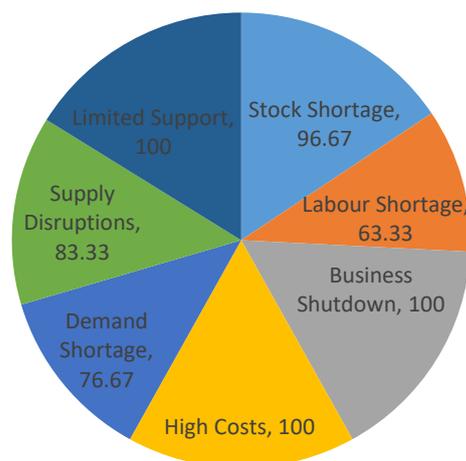
The transition of MSMEs to corporates measures the performance of the country’s economy (Financial Tribune, 2018). The Government should formulate policies that support the growth of MSMEs (Musabayana & Mutambara, 2020). Dai, *et al.* (2020) investigated the impact of Covid-19 on MSMEs in China. Therefore, there is need for similar researches on MSMEs in Zimbabwe.

## Methodology

The research collected data from Mutare MSMEs in Zimbabwe through SurveyMonkey. An electronic questionnaire was designed and the internet-link was distributed to Mutare MSMEs through a WhatsApp group. The Voluntary sampling design (Murairwa, 2015) was used to select the respondents. The first 60 completed questionnaires were considered as a sample for this research.

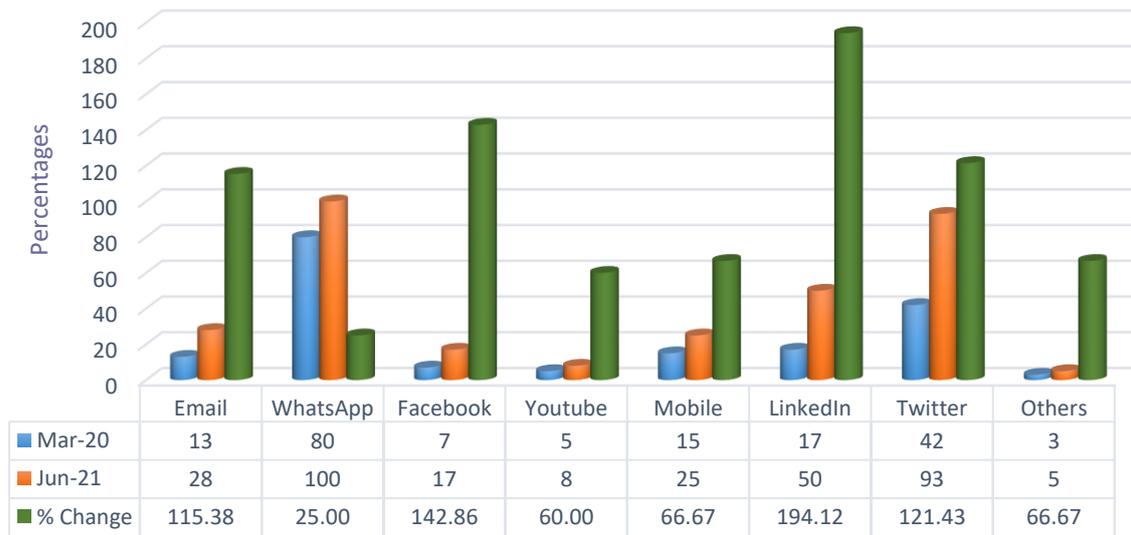
## Findings

The research discovered that all Mutare MSMEs closed businesses during the Covid-19 level 4 lockdowns and restrictions. Zimbabwe implemented three level 4 lockdowns (30-March-2020; 2-January-2021; 14-June-2021) that greatly affected the MSMEs’ operations. All the MSMEs provided evidence of financial losses due to Covid-19 lockdowns. Figure 1 shows the challenges that MSMEs faced during the Covid-19 lockdowns.



**Figure 1:** Covid-19 Challenges faced by Mutare MSMEs

Figure 1 shows that at least 60% of the MSMEs were affected by the seven major Covid-19 induced business challenges. The Covid-19 lockdowns caused high-costs-100%, limited-support-100%, stock-shortages-96.67%, labour-shortage-63.33%, supply-chain-disruptions-83.33% and demand-shortage-76.67% for MSMEs. Figure 2 presents the MSMEs’ recovery-strategies from the Covid-19 effects.



**Figure 2:** SMEs Recovery-Strategies During Covid-19

Figure 2 shows that during the first lockdown (30-March-2020), there were no significant physical operations of MSMEs except through WhatsApp - 80% - and Twitter - 42%. The percentage change in Figure 2 shows the adoption of electronic business transactions by MSMEs.

The Mutare MSMEs sought financial-support-99%, merged-22%, borrowed-funds-89% and reduce-capacity-96%, in order to revive the business operations. The Covid-19 lockdowns popularised the electronic MSMEs businesses in Zimbabwe.

**Conclusion and Recommendations**

Most participants stated that the introduction of lockdowns forced them to devise ways of continuing operating their businesses remotely through internet and social media services. The electronic business became the order of the day during Covid-19 lockdowns. Zimbabwe should continue with the relief programme to Covid-19 affected MSMEs and formulate future supporting strategies and policies.

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**Embracing online Financial and Digital Education to ensure Business continuity of MSMEs in the Covid-19 Era**

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**Extended Abstract:**

MSMEs are the most hit during any form of economic downturn and calamities including a pandemic given that they are referred to as ‘resource poverty’. But yet they are the ones that provide livelihood jobs and are more responsive to sudden change in demand for new products and services. MSMEs have a wider geographical presence. They are the source of employment, competition, economic dynamism and innovation. They stimulate the entrepreneurial spirit and the dissemination of skills (Panitchpakdi, 2006)

MSMEs are a large employment provider, GDP driver and source of livelihood for millions of households in many countries and more so in a small island developing country like Mauritius. The SME Master Plan 2030 set the pace for bold measures to better assist this vulnerable sector to ensure the sustainability of their economic development. One such measure is technology adoption and this is more felt than ever with the current Covid-19 pandemic. Many MSMEs are seen to go bankrupt, falling prey to many financial challenges which forced them to close down in their early years of existence. This situation has been exacerbated during the pandemic period in terms of the structural financing difficulties faced by them (OECD, 2021). The barriers to the business continuity of MSMEs include the lack of financial knowledge and

accounting skills and the adoption of appropriate digital and e-banking tools for managing the financial operations and survival during crisis periods.

The purpose of this study is to uncover the need for MSMEs to embrace online financial and digital education as a means to ensure business continuity in the wave of the Covid-19 pandemic or any such future calamities that may disrupt the business operations. To achieve the study objectives, a dual approach was used to uncover the needs for financial and digital education. In the first instance, focus groups were organised among key stakeholders which support MSMEs in their operational activities. A second focus group was conducted with a sample of owner manager of MSMEs. The insights from the various focus groups were instrumental in developing the survey which led to a response of 497 usable questionnaires.

The research findings have highlighted the relatively low financial knowledge especially for SME owners with basic academic education and the lack of awareness about basic financial planning tools useful for their business. The study also confirmed the inability of many SME owners to understand accounting concepts and systems thus preventing them from making informed judgements and to take effective decisions regarding the use and management of money. Furthermore, the research has pointed to the low usage of and reluctance to adopt the more recent e-banking tools but showed willingness to undergo training in digital tools which would improve their banking and financial skills. Nevertheless, MSMEs are found to have time and resource constraint which makes the traditional face to face training programmes not easily accessible and too generic to meet the “hands on” needs of the owner managers.

The outcome of the study is the development of an integrated e-learning platform to impart financial education as well as digital skills for the adoption of e-banking tools. The proposed solution of developing an IT platform to impart the basic financial education of the owner manager comprises of an informative website with a need-based entrepreneur learning corner. Short video of tutorials on specific themes including sources of finance, salary, the difference between cash and profit have been developed in the prototype version. The entrepreneur learning corner comprises of other features such as easy Accounting templates to encourage entrepreneurs in adopting more structured accounting systems. A sample e-dictionary is also available in the prototype version with definitions of basic accounting terms. Furthermore, Digital education of e-banking tools is based on a simulative environment with courses on

ATM, Point of Sales, Internet Banking and Mobile Banking. Additionally, online contents with animated graphics, multimedia support tools such video clips have been integrated. The videos and courses are in the Mauritian creole language with possibilities of adapting to other languages. The learning shall be at various stages of the learning cycle and adapted to the pace and the availability of the entrepreneur.

**Key words:** Financial Education, Digital Education, e-platform, MSMEs, Covid 19, e-banking tools, Business continuity.

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## COVID 19 Pandemic and Micro, Small and Medium Enterprises (MSMEs): Impacts and Recovery Measures

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### Abstract

The outburst of COVID-19 has not only distressed the economic and social activities of the Indian economy but also the world economy as a whole. Out of different economic activities, the Micro, Small, and Medium Enterprises (MSMEs) and their workers were greatly affected in terms of sales and employment. The MSME base in India includes almost 6.33 crores enterprises, with nearly 6.30 crores (99%) being micro-enterprises, 3.31 lakh (0.52%) small enterprises, 0.05 lakh (0.01%) medium enterprises, (Annual Report 2020-21, MSME) and employing 110 million individuals. This paper attempts to measure the contribution of MSMEs towards the Indian economy and the impact of the pandemic on MSMEs, especially their employment, sales revenue, and cash flow during COVID 19. This paper also examines the government support that MSMEs have received and the extent to which it has satisfied their support needs. Both Primary data and secondary data are used in the paper. The primary data are collected through in-depth interviews in Odisha, India with the owners of MSMEs and other stakeholders to assess the impact of COVID 19 and government measures to address the challenges they faced. The data collection also included a desk review, quantitative and qualitative data collection. The paper is based on three sections. The first part provides an overview, characteristics, and role of MSMEs in the Indian economy. The second part

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describes the impact of the COVID-19 pandemic on MSMEs through a field survey in Odisha. And the last part is based on identified policy measures.

**Keywords:** Odisha, MSMEs, Revenue, Employment.

## **Introduction**

MSMEs are the backbone of the Indian economy, playing a significant role in the overall economic growth. It is the major contributor towards Gross Domestic Product (GDP), employment, and export which is sustainable in the Indian Economy (Behera & Sahoo, 2015). The world economy in general and the Indian economy as in particular face the worst situation due to the pandemic of COVID. When it was started in India, the policymakers faced the threatening task of containing public health from COVID and planning to recover the weakest sections from the adverse economic effect and committed to help all the sectors and Micro, Small, and Medium Enterprises (MSMEs). MSMEs are one of the most important sectors to assist the impact of the crisis for the entrepreneurs, their employees, and India's economy as a whole (Chaurey, et al., Apr 03, 2020). The subsequent lockdown and shut down are severely hit the economic activities of MSMEs by non-availability of raw materials, reduction in production and supply of final products, problem in transport and non-availability of labour in the production process (Behera, Mishra et al., 2021). These MSMEs spread across in rural and industrially underdeveloped areas and contribute over more than 6000 quality products to the overall economy. They generate employment opportunities of 11.10 crore jobs through 6.34 crore MSME units (Ministry of MSMEs, 2018-19). This sector is the second largest after agriculture in employment. In current years, the MSMEs have been rising significance for their rolling contribution on employment and income growth with export earnings and ability to be responsive to change in the market innovative practices in local or global spheres (World Bank Group, 2018). So, it is created a big challenge for the policy maker to maintain the growth process and stimulate this sector as soon as possible.

Odisha is full of natural resources. Despite of having abundant natural and human resources, the growth of MSMEs in Odisha was not at par with the national and international standards. The new wave of industrialization being witnessed in Odisha that, especially in the metal, power, cement, petro-chemical, IT, tourism sector and the current growth in the services sector provide enormous opportunity for the growth of Small-Scale Industries in the State. So, to

overcome the hurdles in the development of Small Scale Industries in Odisha, the Government of Odisha has declared a number of policies for the development of the same.

### Defining MSMEs in India

In defining small and medium enterprises, every economy follows its separate principle. Most countries do not differentiate in micro and small enterprises considering the same; the only difference is among small, medium, and large enterprises. Those who differentiate have been following decisive factors like the number of employees, annual sales, turnover, or investment in plant and machinery. In India, MSMEs were defined by the MSMEs Development Act, 2006. To combat the Covid-19 pandemic, a revision in the definition of MSMEs has been approved by the Cabinet Committee on 1st June 2020. With this in India, both investment and turnover will be used as standardised norm for MSMEs classification.

**Table 1: Comparison of criteria used for defining MSMEs**

<b>DEFINITION OF MSMEs</b>			
<b>MSMEs Classification, 2006</b>			
Criteria: Investment in Plant & Machinery Equipment			
<b>Classification</b>	<b>Micro</b>	<b>Small</b>	<b>Medium</b>
Manufacturing Enterprise	Investment < Rs.25 lakh	Investment < Rs.5 crore	Investment < Rs.10 crore
Service Enterprise	Investment < Rs.10 lakh	Investment < Rs.2 crore	Investment < Rs.5 crore
<b>Revised MSMEs Classification, 2020</b>			
Composite Criteria: Investment & Annual Turnover			
<b>Classification</b>	<b>Micro</b>	<b>Small</b>	<b>Medium</b>
Manufacturing & Service	Investment < Rs.1 crore & Turnover < Rs.5 crore	Investment < Rs.10 crore & Turnover < Rs.50 crore	Investment < Rs.20 crore & Turnover < Rs.100 crore

*Source: MSMEs Development 2006 Act, PIB updated on cabinet approval; PRS.*

The revised definition may attract new entrepreneurs to the field resulting in more investment, output, and employment in the Economy (Vaishnav & Surya, 2020).

## Review of Literature

From the days of the National Planning Committee, it had been emphasized that the MSMEs would play a crucial role; hence, they need to be promoted on a sustainable basis and their vital issues to be addressed (Das, 2008). The growth of the MSMEs sector is a precondition for the growth of a developing economy like India as it comprises more than 50% of the manufacturing output of the Economy (Ali & Husain, 2014; Eniola & Entebang, 2015). In recent years the MSMEs sector has been growing at a higher growth rate compared to the industrial sector. The foremost advantage of the sector is its employment prospective at low resource base. The MSMEs sector provides the maximum employment opportunities in terms of both self-employment and jobs after the prime Agricultural sector (Kumar & Sardar, 2011). MSMEs sector had an important contribution towards employment generation and rural industrialization, encouragement to entrepreneurial instinct, and truncating regional disparities (Bhuyan, 2016). Communications bottlenecks are not yet completely resolved, so it's the responsibility of the ministry of MSMEs to support the state governments for promoting the growth and development of MSMEs to make them able to compete in the changed global scenario (Kumar & Sardar, 2011; Ali & Husain, 2014).

This sector has immense potential in investment with generating infrastructure base, making more employment, developing innovative skills and proficiency, ensuring a fair regional development, developing backward areas, making the economy self-contained through import substitution and making possible the nation's development process. At the same time, the MSMEs sector is the most vulnerable one in the era of the covid-19 pandemic because of its size, the scale of business, limited financial executive resources and notably they do not have the capacity to compact with something so unexpected (Sipahi, 2020). Covid-19 has enormous depressing impacts on the MSMEs sector through disruption in demand chain problems of the production process and raw material and labor availability, which resulted in shrinking revenue generation (Singh, 2020). This unfamiliar incident forced the enterprises to either cut down their business activities due to lack of financial strength, lack raw material availability, labour shortage, etc, or to switch according to the need from non-essential to essential commodities like mask, PPE kits, sanitizers, etc., (Tripathy, 2020). A survey conducted on MSMEs by the All India Manufacturers Organisation confirmed that the self-employed MSMEs units, predominantly 35 % of MSMEs sector, have no chance of recovery for their businesses as they have already initiated the shutting down procedure (Tripathy & Bisoyi, 2021). The apparel

manufacturing units of the export sector were under the business loss of over Rs 150 crores from March 2020 to May 2020 due to the pandemic aftermath situation (Roy, 2020).

The export loss to India's leather industries is estimated to be \$1.5 billion due to the slowdown of the global market. The MSMEs sector is struggling for its payment to workers, payment for fixed variables like electricity, rent and interest, reduced cash flow in the economy, labour force migration, controlled material supply, etc., (Tripathy & Bisoyi, 2021).

In order to stir the economy forward, countries have to reinforce their enterprises in the MSMEs sector (Sipahi, 2020). The government has primarily introduced urgent stimulus and precautionary measures to safeguard the MSMEs, such as liquidity support to address cash flow issues, preserving jobs through varied schemes and ensuring business continuity, as well as measures to expand trade opportunities by building their capacities (WTO, 2020; Chauhan, 2020). There are problems in inculcating the relief measures as India's real challenge will be in spotting the 63.4 million informal MSMEs, where the majority are micro-enterprises (Prasad & Mondal, 2020). It is also identified that most of the policy instruments announced by the government are not directly targeting the MSMEs units rather, there lies the need for a more comprehensive policy measure to restructure the backbone (Reddy, Sasidharan, & Raj, 2020). The relief measures taken by the central government will not be sufficient enough to revive the collapsed MSMEs sector (Raney, 2020). Therefore, the government has to make sure through sufficient procedures and tracking mechanisms to reach every stakeholder in the MSMEs sector (Ghosh, 2020).

It is substantial from the above analysis that although there exists surplus of studies on MSMEs sector and its significance for the development of Indian economy but the outbreak of this crisis has negatively crashed the MSMEs units in terms of production, distribution, investment, employment, revenue generation, social integration, monetary needs, etc., and studies related to impact analysis of Covid-19 on MSMEs sector is partial in all Indian context. Also, evaluation relating to policy response by Government and revival strategies is strangely limited. Through this paper, a clear assessment will be prepared on finding a statistically significant relationship among the key variables of MSMEs sector like the volume of MSMEs, Investment, Production and Employment and the long-run relationship between variables will be recognised. The study will have its own significance in the field of assimilating the experimental Covid-19 situation with the MSMEs sector.

## **Objectives**

The objectives of the paper are:

- To measure the contribution of MSMEs towards the Indian economy;
- To examine the impact of pandemic on MSMEs, especially their employment, sales revenue, and cash flow during COVID 19;
- To examines the government support that MSMEs have received and the extent to which it has satisfied their support needs.

## **Data and Methodology**

The study is an analytical one. The data are collected from primary as well as secondary sources. The primary data are collected through in-depth interviews from the owners of MSMEs and other stakeholders to assess the impact of COVID-19 and government measures to address the challenges they faced. Primary data collected from 90 MSMEs of Odisha in a simple random sampling. And secondary data are from published sources like the Annual report of Ministry of MSMEs, Ministry of Statistics & Programme Implementation, Directorate of Industries, Cuttack, Odisha, Central Statistics Office, RBI & Press Information Bureau (PIB) /Directorate General of Commercial Intelligence and Statistics (DGCIS), CIBIL, Report of Regional development Bank, the press release of the various news agency, etc.

The variables for deducing the proposed linkage are Number of MSMEs, Employment, Investment has been assembled for the period 1991-92 to 2018-19. The study has made use of descriptive statistics, correlation. Correlation has used to know the degree of association between variables. Data analysed by using different descriptive statistics like average, percentage etc.

## **Contribution of MSMEs Sector**

MSMEs, predominantly in developing countries, occupy an imperative and strategic place. From the beginning of the planned economy in 1951, MSMEs' role was earmarked in the Indian economy and followed (Vashisht, Chaudhary & Priyanka, 2016). There are over 6000 goods from traditional to technologically advanced items, which the MSMEs in India are manufacturing. In the recent time period, the MSMEs sector has shown a higher growth rate compared to India's overall industrial sector. The growth rate of the MSMEs Sector was

registered 13% on average. The MSMEs sector employed nearly 114 million people(Sipahi, 2020).

In employment, MSMEs is the second largest sector after agriculture(Kishore, 2017; Vaishnav & Surya,2020; Raney, 2020).Some important indicators may trace the MSMEs sector's successful developments underlined in table 2.

<b>Table 2: Growth of MSME Units in Odisha</b>			
Year	No. of MSME	Investment (Rs. In lakh)	Employment
1991-92	2233	5203.38	15545
1992-93	2117	5499.96	13344
1993-94	2311	5620.64	13807
1994-95	2327	6808.15	13096
1995-96	2507	7481.9	13019
1996-97	3098	10452.52	15629
1997-98	3186	13408.7	16716
1998-99	3184	19006.26	16776
1999-00	3473	16293.82	18608
2000-01	3676	15317.7	18115
2001-02	3919	16522.32	16582
2002-03	4008	15514.19	16302
2003-04	4431	17013.12	20547
2004-05	4511	24558.95	21898
2005-06	4786	27044.34	25142
2006-07	4556	27113.5	20839
2007-08	4710	29551.18	23301
2008-09	4806	22792.21	20996
2009-10	4907	29233.69	23195
2010-11	5016	39502.13	24451
2011-12	5505	50073.01	30387
2012-13	5931	43290.75	27104
2013-14	7009	66941	32136

2014-15	29866	226724	107011
2015-16	53920	267964	166731
2016-17	57783	303463	175221
2017-18	50158	232445.6	147252
2018-19	69673	319656.46	194770
<sup>4</sup> CAGR(%)	13.59	16.48	9.82

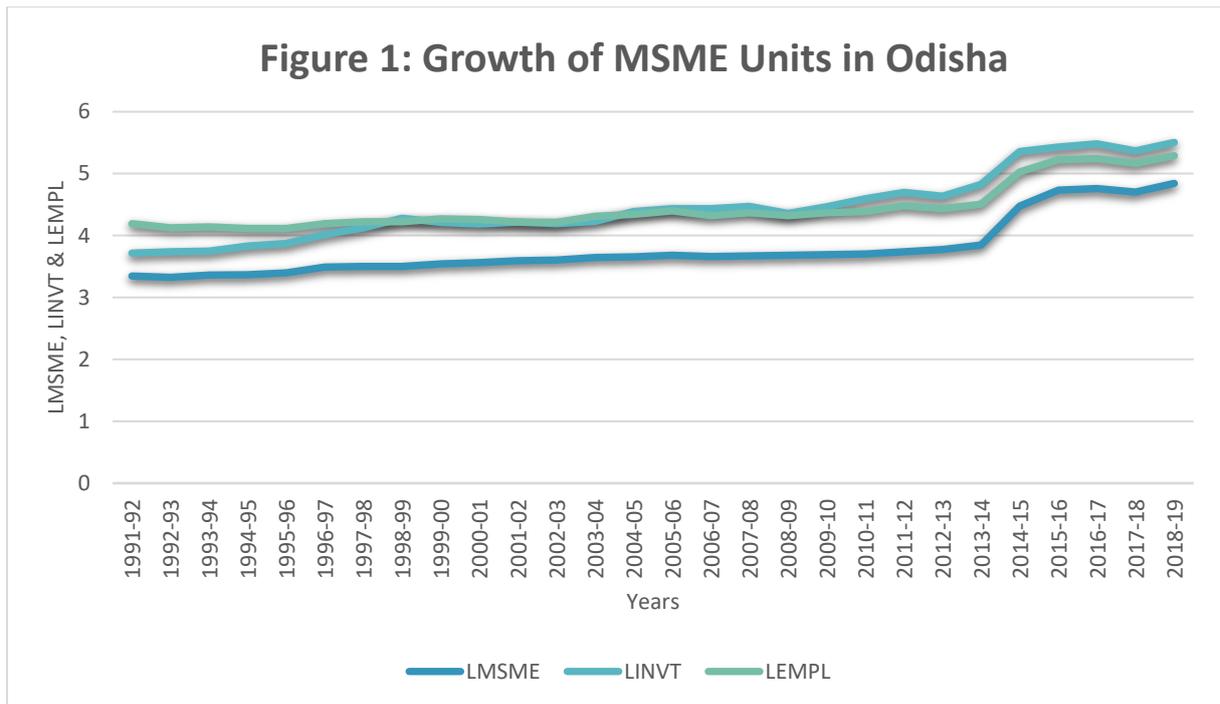
**Source:** Directorate of Industries, Cuttack, Odisha

From the table it is clear that MSMEs have shown an increasing trend. The total number of MSMEs have increased from 2233 in 1991-92 to 69673 in 2018-19 at the compound annual growth rate (CAGR) of 13.59 per cent. The investment value in this sector has also increased in a significant manner from Rs. 5203.38 lakh in 1991-92 to Rs. 319656.46 lakh in 2018-19 with a significant CAGR of 16.48 percent. Further, in case of employment in MSMEs sector also increased from 15545 in 1991-92 to 194770 in 2018-19 with a sizeable increase in CAGR of 9.82.

This line diagram shows as MSME increases investment as well as employment also increase. As per no. of MSME, the investment and employment are more and if we compare, employment grows faster than investment up to 1997-98. After that investment and employment grow at a similar manner up to 2008-09. That means there is negligible difference between investment and employment. Then after investment exceeds employment as MSME increases.

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<sup>4</sup> Author's Calculation



Export increases year by year in a rapid manner from 21984.31 to 52677.09 in the year 2015-16 to 2017-18 respectively. But in 2018-19, it was slightly decreases to 48117.6. Then it again increased in 2019-20.

**Table 3: Export Performance of Odisha during last five years**

Year	Export
2015-16	21984.31
2016-17	44124.58
2017-18	52677.09
2018-19	48117.6
2019-20	51742.3

Source: Directorate of Industries, Cuttack, Odisha

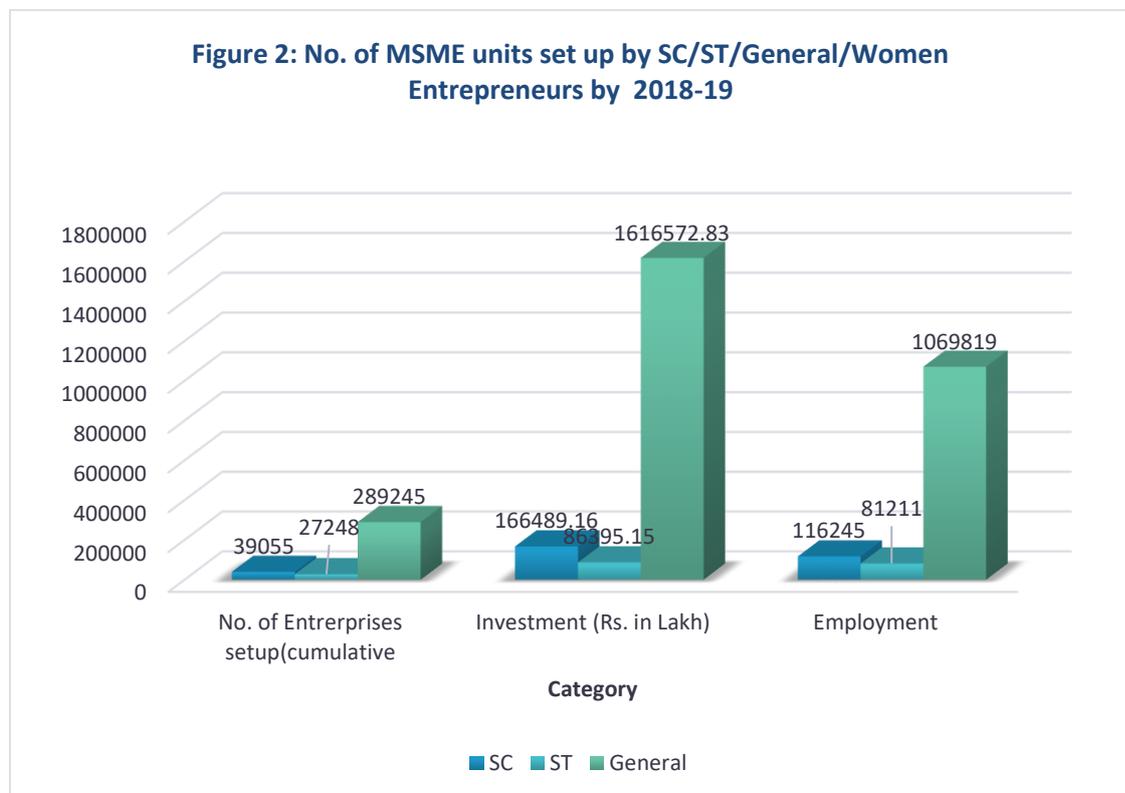
In MSME, the number of enterprises is more in the general category, i.e., 81.35%, followed by SC (10.98%) and ST (7.66%). In case of investment and employment, it is also same as enterprises. 86.47% are invested by general category followed by SC (8.90%) and ST (4.62%) respectively. General people are more employed in MSME (84.42%) than SC (9.17%) and ST

(6.41%). Out of total, 16.18% entrepreneurs are women, and in investment and employment, it is 11.02% and 16.30%, respectively.

**Table 4: No. of MSME units set up by SC/ST/General/Women Entrepreneurs by 2018-19**

Category	No. of Enterprises set up(cumulative)(%)	Investment(Rs. in Lakh)(%)	Employment (%)
SC	39055 (10.98)	166489.16 (8.90)	116245 (9.17)
ST	27248 (7.66)	86395.15 (4.62)	81211 (6.41)
General	289245 (81.35)	1616572.83 (86.47)	1069819 (84.42)
TOTAL	355548 (100)	1869457.14 (100)	1267275 (100)
Women	57528 (16.18)	206082.75 (11.02)	206575 (16.30)

Source: Directorate of Industries, Cuttack, Orissa

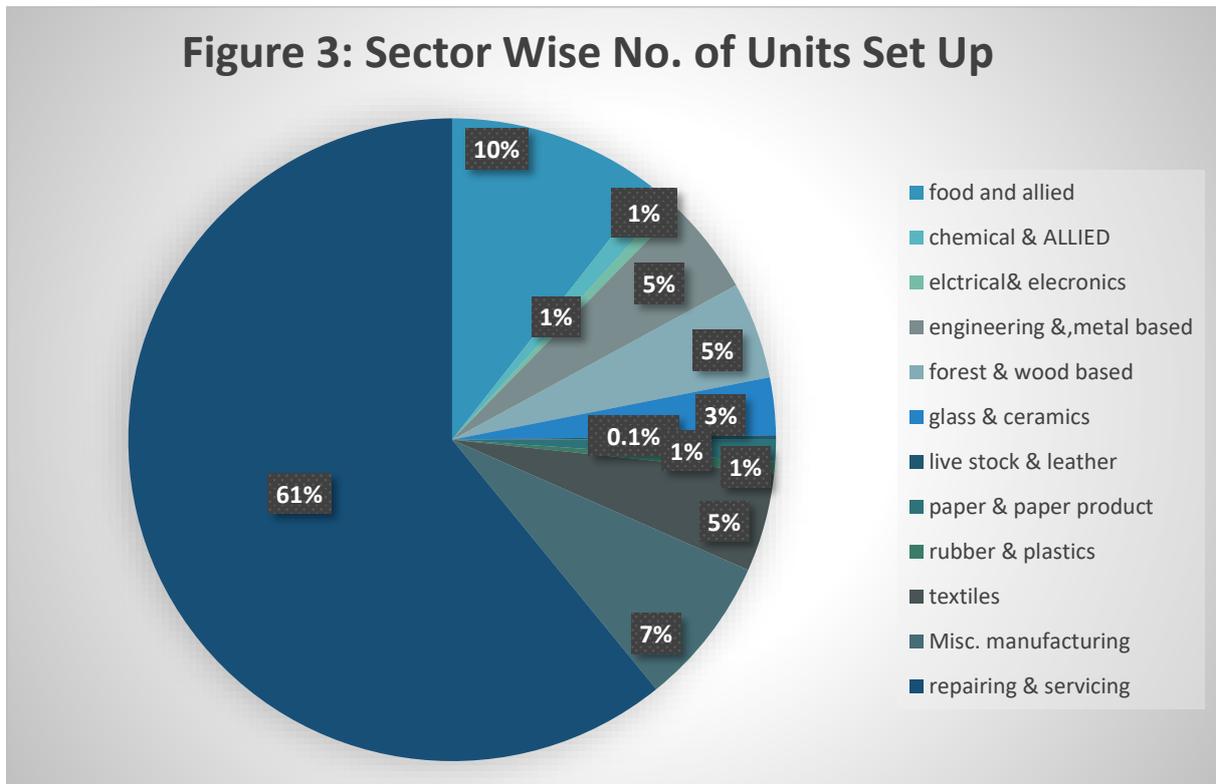


The table shows that repairing and servicing sector performance is far better in units, investment and employment than other sectors. Out of total, there is 60.86% units set up in repairing and servicing followed by food and allied (10.54%) and misc. manufacturing.

Repairing and servicing sector's investment is more i.e., 61.02% compared to others like engineering and metal-based 9.68% and glass & ceramics is 4.11% and in employment repairing and servicing performance is good i.e., 46.38% followed by food and allied (13.17%) and engineering &,metal based (7.82%).

Category Name	no. of units set up (%)	investment (Rs. In lakh) (%)	Employment (%)
Food and Allied	41284 (10.54)	41274 (2.16)	201359 (13.17)
Chemical & Allied	4480 (1.14)	4480 (0.23)	29291 (1.92)
Electrical & Electronics	2393 (0.61)	2393 (0.13)	11292 (0.74)
Engineering & Metal based	18513 (4.73)	185198.92 (9.68)	119544 (7.82)
Forest & Wood based	19047 (4.86)	29201.91 (1.53)	75954 (4.97)
Glass & Ceramics	11333 (2.89)	78690.27 (4.11)	15113 (0.99)
Live Stock & Leather	736 (0.19)	1745.84 (0.09)	3348 (0.22)
Paper & paper product	4425 (1.13)	19807.57 (1.03)	21505 (1.41)
rubber & plastics	2235 (0.57)	31008.6 (1,.70)	13183 (0.86)
textiles	19520 (4.98)	43523.05 (2.27)	84822 (5.55)
Misc. manufacturing	29360 (7.50)	124839.81 (6.52)	108389 (7.09)
repairing & servicing	238375 (60.86)	1168018.79 (61.02)	709363 (46.38)
Total	391701 (100)	1914181.73 (100)	1529463 (100)

Source: Directorate of Industries, Cuttack, Odisha



**Table 6: Comparative Statemen to Growth of MSMEs Districtwise in Odisha**

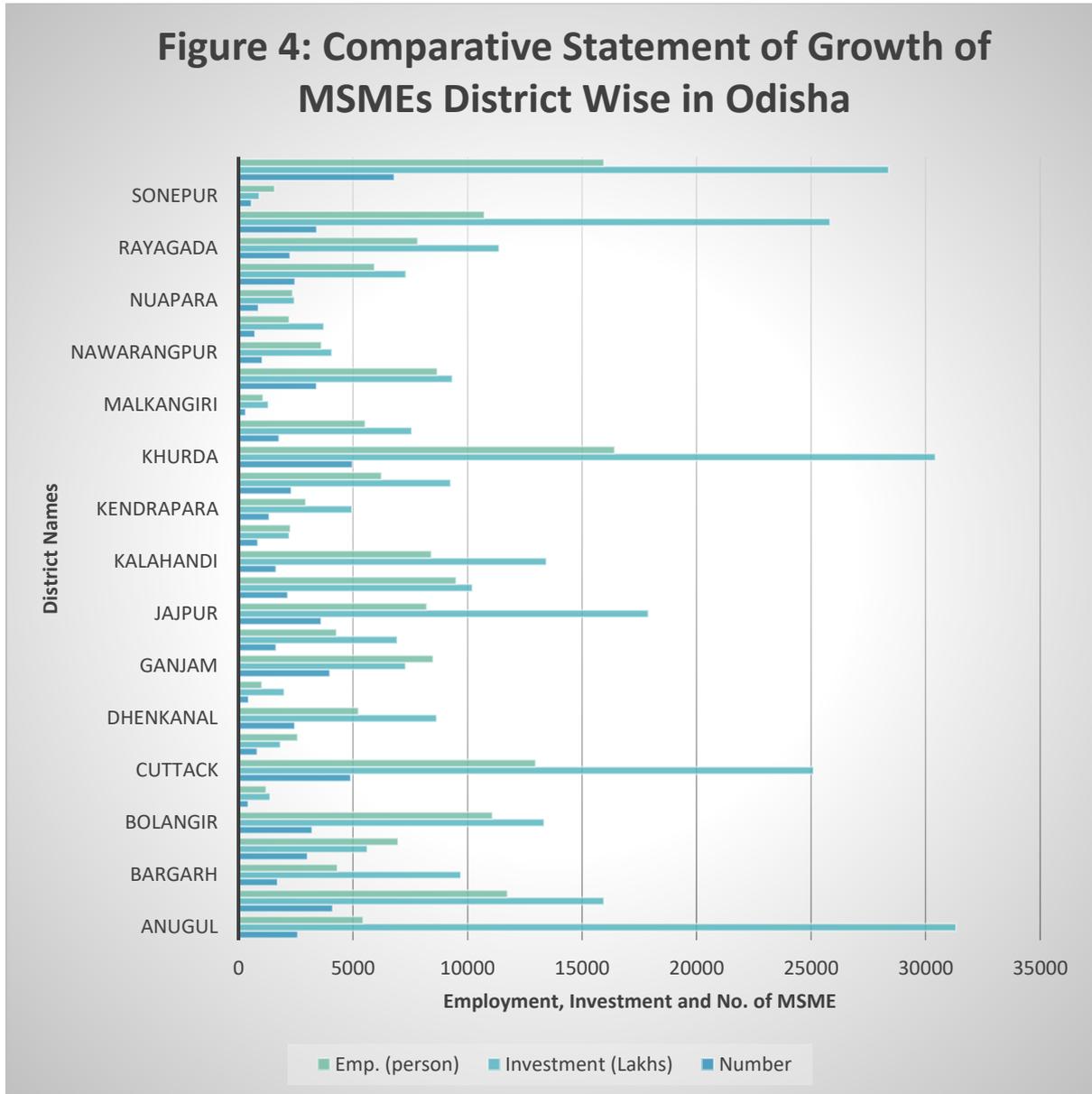
DistrictName	During2018-19		
	No.	Investment(Lakhs)	Emp.(person)
Anugul	2595	31327.17	5448
Balasore	4108	15945.75	11737
Bargarh	1702	9706.07	4308
Bhadrak	3010	5616.92	6960
Bolangir	3205	13335.85	11078
Boudh	421	1367.90	1211
Cuttack	4901	25103.35	12966
Deograh	810	1825.54	2576
Dhenkanal	2453	8645.19	5244
Gajapati	436	1992.92	1023
Ganjam	3978	7297.63	8499
Jagatsinghpur	1641	6919.02	4274

Jajpur	3602	17895.04	8220
Jharsuguda	2151	10203.80	9503
Kalahandi	1639	13440.55	8416
Kandhamal	846	2212.31	2261
Kendrapara	1335	4951.35	2937
Keonjhar	2302	9253.88	6239
Khurda	4970	30421.94	16415
Koraput	1760	7555.30	5525
Malkangiri	303	1302.00	1064
Mayurbhanj	3400	9329.21	8674
Nawarangpur	1031	4075.60	3619
Nayagrah	715	3715.03	2207
Nuapara	865	2434.79	2358
Puri	2461	7301.28	5934
Rayagada	2253	11369.33	7824
Sambalpur	3418	25820.27	10727
Sonepur	566	902.73	1571
Sundargarh	6796	28388.78	15952
Total	69673	319656.5	194770

**Source: Directorate of Industries, Odisha**

In Sundargarh the number of MSME (9.75%) is more followed by Khurda (7.13%) and Cuttack (7.03%) respectively but in Malkangiri (0.43%), the number of MSME is in least position followed by Boudh (0.60%) and Gajapati (0.63%) respectively. In case of investment, Anugul is invested most in MSME i.e., 9.80% afterward Khurda (9.52%) and Sundargarh (8.88%), respectively but the worst investing districts are Sonepur (0.28%), Malkangiri (0.41%) and Boudh (0.43%) respectively. But in employment, Khurda (8.43%) left Sundargarh (8.19%) behind followed by Cuttack (6.66%) and Gajapati, Malkangiri and Boudh are poor in employment, respectively.

**Figure 4: Comparative Statement of Growth of MSMEs District Wise in Odisha**



**Correlation Analysis**

Generally, correlation is used to enumerate the degree of directional relation between the nominated variables. All the data series are in logarithmic form due to huge differences in units of MSMEs in respect to investment and employment. To linearise the extremity in variable variance, log transformation is necessary. The equations of correlation among the variables are in below;

$$LMSME_t = \alpha_0 + \alpha_1 LINVT_t + \alpha_2 LEMPL_t + u_{1t} \dots \dots \dots (1)$$

$$LINVT_t = \beta_0 + \beta_1 LMSME_t + \beta_2 LEMPL_t + u_{2t} \dots \dots \dots (2)$$

$$LEMP_t = \delta_0 + \delta_1 LMSME_t + \delta_2 LINVT_t + u_{3t} \dots \dots \dots (4)$$

Where,  $\alpha_0$ ,  $\beta_0$ , and  $\delta_0$  are intercept parameters,

$\alpha_1, \alpha_2, \beta_1, \beta_2, \delta_1$  and  $\delta_2$  are slope coefficients,

LMSMEs= Log of MSMEs units,

LINVT= Log of Investment and

LEMPL= Employment

$u_{1t}, u_{2t}$  and  $u_{3t}$  are Error Terms in Equations 1, 2 and 3.

**Table 7: No. of MSMEs, Employment & Investment - Correlation Statistic 1991-2019**

Correlation	<i>LMSME</i>	<i>LINVT</i>	<i>LEMPL</i>
<b>LMSME</b>	1.00		
<b>LINVT</b>	0.96	1.00	
<b>LEMPL</b>	0.99	0.95	1.00

*Source: Authors' compilation*

There has a high correlation among the MSMEs units, employment and investment as represented in the table-4. The relation between LMSME with LINVT and LEMPL is 0.96 and 0.99 respectively are highly correlated, which shows increasing MSME leads to highly increase in investment and employment. And correlation between LINVT and LEMPL is 0.95 which is also positively high degree.

### **Impact of COVID 19 on MSMEs**

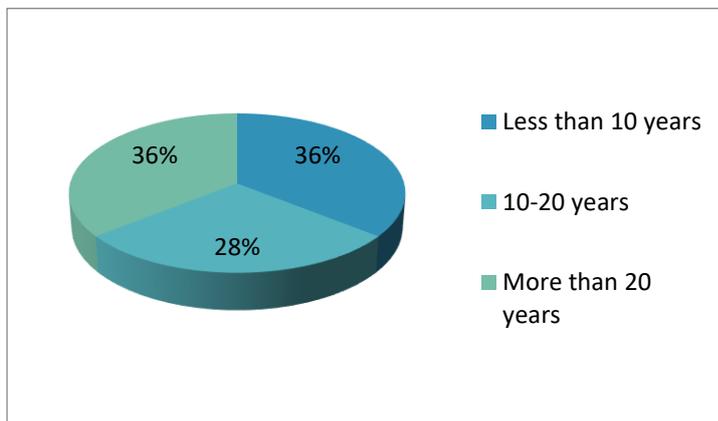
The MSMEs sector plays a substantial role in stimulating the growth of the Indian economy. Prior to the covid-19 turmoil, this sector is experiencing sluggish growth due to multitude of challenges like lack of financial support, absence of proper infrastructural facility, non-availability of advanced technology, etc. But the problems have been provoked more by the process of demonetisation (2016) and Goods & Services Tax (2017). As most of the MSMEs have a rural unskilled labour base, smaller problems have a larger influence on these units, and such a health crisis put their potentiality and sustainability to further distress.

Covid-19 has changed the operational environment for MSMEs. The strictest lockdown to decontaminate the spread of the Covid-19 crisis resulted in the biggest shock for the MSMEs sector, particularly for the smallest firms. The sudden announcement to pursue all protocols of covid-19 emergency in the process of production give rise to supply chain problems like raw

material import for cross-state and cross country boarder, panic migration of labour force to their native places, procurement of perishable products, monetary crunch, etc., generate unemployment, consumer fear element, the demand side problems, price rise, malfunctioning, reduced profit, etc.

COVID 19 affected almost all the sectors of the world economy as a whole and MSMEs in particular in a great extent in different dimensions in Odisha. As one of the major contributor to employment sector in the economy, MSMEs play a very pivotal role for the development of the economy in Odisha. There are number of impacts on MSME some of which are given below.

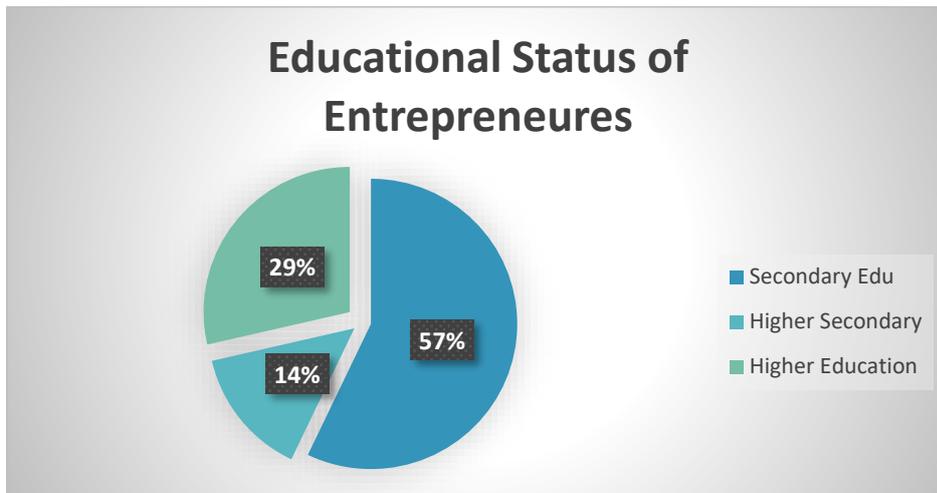
**Figure 5: Years of business establishment**



Source: Primary data

Above figure shows that 36 percentages of entrepreneurs had established their business more than 20 years ago. These business establishments are functioning from long days ago. Likewise 28 percentages of enterprise units are functioning from last 10-20 years. And also there are 36 percentages of units which has established less than 10 years. These units are considered as new business units. The years of functioning of firm has impact on with different aspects like managerial efficiency, product selling opportunity, raw material availability knowledge and relationship with public and factor markets.

Figure 6: Educational status of entrepreneurs



Source: Primary data

The above figure depicts that 57 percentages of sampled entrepreneurs are educated at secondary level. Likewise 14 percentages of entrepreneurs have attended higher secondary levels of education. Higher level of education is attained by 29 percentages of entrepreneurs. This indicates larger group of entrepreneurs are in secondary and higher secondary level of education group.

**Table 8: Type of Enterprises**

Sl. No	Type of Enterprises	% of MSMEs
01	Repairing and Servicing	24
02	Chemical and allied	15
03	Engineering and metal based	12
04	Electrical and Electronics	32
05	Textiles	17
Total		100

Source: Primary Data

The study has considered 5 types of enterprise units, in which 24 percentages of units are from repairing and servicing type. Likewise, 15 and 12 percentages of enterprises fare from chemical and allied, and engineering and metal based sector respectively. The study covered 32 percentage of enterprises from electrical and electronics field and 17 percentages from the

textile sector. So, there are inclusions of enterprises from diversified field, which will bring a picture of larger group of business units.

**Table 9: Impact of COVID 19 on Employment and Employees Enterprise**

Sl. No	Problems	% of MSMEs
01	Voluntarily Left the Job	22
02	Forced to Left the Job due to non-payment of wages\salary	42
03	Partially Employed	28
04	Work Without Pay	08
Total		100
Impact of COVID 19 on Revenue \ Cash Flow of the Enterprise		
05	Revenue Reduced by 100 percentage \ No Income	05
06	Revenue Reduced by 75 percentage \ No Income	29
07	Revenue Reduced by 50 percentage \ No Income	39
08	Revenue Reduced by 25 percentage \ No Income	23
09	Revenue Reduced by less than 25 percentage \ No Income	04
Total		100

Source: Primary Data

Out of the total MSMEs or owners revealed that 22 per centage of entrepreneurs agree that the workers left the work voluntarily in search of alternative source of their livelihood but about 42 per centage of workers forced to left their job due to non-payment of their wages or salary and started different alternatives like vegetable vender.

Further it is found that few workers remain with their existing works as loyal worker even without and payment or partially payment. COVID 19 not only affected the employment status MSMEs but also greatly reduced the cash flows to the entrepreneurs of the country. Some of the entrepreneurs are shutdown their business due to zero revenue.

**Table 10: Different Problems faced by the micro small and medium Enterprises during COVID 19 in Odisha**

Sl.No	Problems	% of MSMEs
01	Inadequate Raw material	60
02	Price rise of raw materials	19
03	Scarcity of Labourers	27
04	High wage rate	44
05	Decline in production	67
06	Marketing g problems	73
07	Waste of rawmaterials	38
08	Transportation problem	67
09	Problem of storage	26
10	Non repayment of loans	53
11	Problem of working capital	41

Source: Primary Data

There are number of problems the MSMEs are facing during COVID period. The problems arised during COVID period not only affected the volume of business but also the situation forced some enterpreniurs to shut down the unit. Enterprises are not a position to revive themselves after reopening the economy. COVID 19 affected the performance of the enterprises in all fields like collection of raw materials, production process, availability and prices of labourers, marketing and financing issues etc. maximum units told that they faced transportation issues due to COVID protocols like shut down, lock down, contentment etc. that transportation issues, shutdown of the market was the cause of low selling of output in the market. There are more other problems was also what affected the growth of MSMEs during COVID 19.

**Table 11: Effectiveness of Government policies**

Sl. No	Response of the Enterprises	% of MSMEs
01	No effective of policies	43
02	Partially Effective	22
03	Need of more subsidies	65
04	Interest subvention	29

05	No interest in COVID period	57
06	Need better policies on marketing	77

Source: Primary Data

In respect to response of the govt policies by the enterpreniurs no firm is fully satisfied with the policies of the government. MSMEs are seeking to get more subsidies from the government regarding the purchase of different inputs like capital equipments, raw materials, etc. enterprenures also demanding interest subventions, interest free new loans, etc.

### **Government Responses to Support MSMEs**

The government of India has taken serious measures to revive the MSMEs during the Covid-19 pandemic. The government has announced the Emergency Credit Line Guarantee Scheme, which is the biggest fiscal component of the Rs 20-lakh crore Aatmanirbhar Bharat Abhiyan package, in May. The main purpose of the package is to enhance businesses with a major focus on the MSMEs sector. The initiatives are:

- MSMEs have been redefined based on both investment limits and turnover size. Enlarged investment limit for Micro units in the manufacturing sector from Rs 25 lakh and in Service sector Rs 10 lakh, which is now One crore, for small units in the manufacturing sector from Rs 25 lakh to Rs 5 crore and in Service sector Rs 10 lakh to Rs 2 crore but it is now ten crores, and for medium units in the manufacturing sector from Rs 5 crore to Rs 10 crore and in Service sector Rs 2 crore to Rs 5 crore and now it is 50 crore of both manufacturing and services sectors. Introduced additional criteria of turnover for Micro, it is 5 crore, for Small 50 crore, and for Medium it is 100 crore for both manufacturing and services in investment and turnover.
- RBI also took some initiatives like decrease the repo rate; as a result, the bank can lend at a cheaper rate, giving some help to the MSMEs sector. In Mumbai, the State Bank of India has targeted to allocate 700 crores to MSMEs.
- The government announced a collateral-free automatic loan worth Rs 3 lakh crore and did not repay for 12 months to support the struggling MSMEs sector. This will help 45 lakh MSMEs units across the country in restarting business activity and safeguarding jobs. For the strained MSMEs, the government will provide Rs 20,000 crore subordinated debt. A fund is created for the MSMEs sector that will be injecting Rs 50,000 crore equity.

- To compete and supply in government tenders, the global tenders will be banned for government procurement up to Rs 200 crore that will support Make in India and going towards Self-reliant India. The government of India and CPSEs will honour all dues to MSMEs within 45 days.
- As a replacement for trade fairs and exhibitions, there has been started e-market linkage for MSMEs. Fintech will enhance transaction-based lending using the data generated by the e-market for the MSMEs that were currently facing the problem of marketing and liquidity due to Covid-19.
- The government has decided to provide PF, EPF support for both businesses and workers by providing a liquidity relief of Rs 6750 crores to reduce the business's financial stress. The PF contribution of employer and employee reduced from 12% to 10% for all official establishments under EPFO to increase the liquidity in the hands of the consumers as well as producers, but in the case of CPSEs and state PSUs, it will continue 12% as an employer contribution. Under this support of the government, around 6.5 lakh employers and 4.3 crore employees get benefited. Under PM GaribKalyan Package, this benefit also applies to workers who are not eligible for 24% EPF support.
- Further, to increase more liquidity in the hands of the taxpayer government announced cutting the TDS rate by 25 % for SMEs, NBFCs, and TCS. Under direct tax measures government decided that the income-tax return for FY 2019-20 will be extended from 31<sup>st</sup>July 2020 and 31<sup>st</sup>October 2020 to 30<sup>th</sup>November 2020 and Tax audit from 30<sup>th</sup>September 2020 to 31<sup>st</sup>October 2020. The government also announced that all pending refunds to charitable trusts and non-corporate businesses and professions include proprietorship, partnership, LLP and Co-operatives, shall be issued immediately.
  - During the emergency of COVID-19 the Govt. of Odisha has declared a interest subvention scheme of Rs. 108 cr. From which 5% subvention declared for women owned MSME whereas for male owed entrepreneur it is 2% to reduce the interest burden on an additional loan under the Emergency credit line guarantee scheme (ECLGS) for in the year 2020-21.
  - To facilitate speedy implementation of projects related to industries the government of Odisha has initiated a single Window Clearance mechanism with three tier system in different level.

- The department of MSME under the government of Odisha has exposed a dedicated policy for food processing industries in the year 2013 aims to increase the flow of investment from farm to market across the supply chain and value addition and waste reduction at farm level with also income and employment generation opportunities.
- For achieving the export turnover target the government of Odisha has taken a proactive step namely Odisha export policy 2014.
- With the special emphasis upon the mandatory procurement preference to widen the marketing path for Micro and Small Enterprises of Odisha the state government introduce Odisha Procurement Preference Policy,2015.
- For the overall development of all potential sector under MSMEs of the State the government announced Odisha MSME Development Policy in 2016.
- To develop a World class “ Startup Hub” in the state and enabling environment supporting eco-system and reimbursement of marketing assistance the state government setup Odisha Startup Policy, 2016.
- By the end of 2019-20 the state government of Odisha has invested INR 21801.51 Crore which has generated a total of 16.92 lakh persons employed by creating 449352 numbers of MSMEs.
- To develop an entrepreneurship culture across the state the government of Odidha has initiated Entrepreneurship Development Programmes (EDP) organised by Regional Industries Centres in two weeks duration.
- To provide land with development infrastructure the state government recently approved nine MSME Multi-Product Parks and new Food Parks in Bolangir, Bargarh , Ganjam , Kalahandi and Nabarangpur through IDCO.

### **Revival Strategies in post epidemic Situation for policymakers**

We have proposed a variety of policy initiatives to assist MSMEs in alleviating their hardships. There is a need for MSMEs to access their financial status and security. Given that most firms are experiencing financial difficulties, the government should consider granting loans to these businesses to help them in the current crisis. Low-interest loans with long-term repayments can be offered. Additionally, the credit limit for MSMEs must be increased. Loan repayments might also be deferred to reduce the burden. Entrepreneurs should expect consistent good cash flows from the government. MSMEs payment delay to be addressed. The budgets, projected

inflows of money, expected risks and obligations, etc., should be taken into account with the finance department to create a fresh 3/6-month action plan. Reliable and accurate information about government financial relief package and support provided by trade organisations are necessary before preparing and executing a financial strategy. MSMEs have to rethink their strategy for goods, differentiators, distribution models, quality of products, etc. MSMEs should perform an inspection of their operations in order to develop a strategy for post-Covid-19 operations. While consumers' discretionary spending is evident, there is also a pronounced shift in consumer tastes that can be leveraged. There is a need to create a strong digital ecosystem. New innovations are transforming business. New technologies are connecting buyers and suppliers across more locations and activities, opening opportunities for MSMEs. The government's e-Marketplace (GeM) has been set up to raise MSMEs' share in government procurement in goods and services. Beyond online purchases, a strong and constructive engagement in the social media will prove an advantage for the involvement of consumers and stakeholders. A digitally activated internal environment should also be built, which enables remote work or homework without hampering data protection or employee productivity. There is a need to incorporate new-age technological advances in MSME. Technology adoption can help MSMEs improve process efficiency, reduce cost, information visibility, and enhance worker safety. MSMEs may also foster product and process developments by collaborating with technology leaders, *i.e.*, research institutions, tech start-ups and students. Partnerships may be another avenue for MSMEs. It may collaborate with existing foreign players to penetrate the Indian market or develop a low-cost production base. Work in three shifts and ensure social distancing at workplace to restart an industry that suffered after the COVID-19 pandemic.

The ILO proposed that governmental efforts should address worker health and safety, economic stimulus, and income and employment support (ILO, 2020). Online banking enables MSMEs to conduct business transactions without the need for physical contact. This enables organisations to reduce transaction expenses while also speeding up the transaction process. Learning from the current crises, it is important to chalk up an appropriate crisis management strategy that can address both immediate and long-term consequences.

## **Conclusion**

India's main focus is being "from local to global" for MSMEs. A larger chunk of Indian MSMEs is in rural areas which are going to play a significant role in making Self Reliant India.

The effect of the modification in the definition of MSMEs on their economic performance has not been examined yet and remains a subject for future research. The revised definition will definitely add to the volume of MSMEs units so also an affirmative rise in the output, employment, product diversification, investment and export. Empirically analysing the decisive elements of the MSMEs sector, it is evident that there is a high degree of significant positive correlation among the variables (MSMEs units, production, employment, and investment). Johansen's co-integration analysis with Trace test and Maximum Eigenvalue test connotes in null hypothesis rejections, which means the said variables have a long-run cointegrating relationship. Field data shows that during COVID, MSMEs in Odisha face numerous challenges such as salaries, power bills, rent, property and water taxes, telephone and internet charges, and bank loans. The COVID issues not only hampered business but also led several entrepreneurs to close their doors. After reopening the economy, businesses cannot revive. COVID 19 influenced the performance of the firms in all areas such as raw material collection, production, labour availability and prices, marketing and finance. Most units reported transportation challenges due to COVID protocols like shut down, lock down, contentment, etc., causing low market sales. Majority of MSMEs are facing the problem of access to finance and marketing their products during Covid 19. Hence their fundamental issues like registration issues, credit constraints, marketing problems, adopting technology, inadequate infrastructural facilities, etc., need to be tackled on a sustainable basis. Given the extensive Covid-19 chaos, the government needs to establish an on-going monitoring system and declare urgent relief steps to improve the MSMEs sector's confidence. Make in India and Digital India will be encouraging more. E-market linkage for MSMEs should be promoted, and fiscal stimulus should increase for this sector. The Government of India should take various measures to improve Indian MSMEs and achieve the vision of Self-reliant India.

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## **Developing competitiveness of SMEs to build resilience to COVID-19 Evidence from Pakistan**

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**Abstract**

While the COVID-19 pandemic has brought new challenges and exacerbated old ones, it has also highlighted one clear message – competitiveness of firms is necessary to combat negative shocks. This study empirically establishes the relationship between firms' level of competitiveness and their ability to combat the challenges posed by the pandemic, focusing on Pakistan's SMEs. It aims to contribute to the limited SME literature on combating COVID-19 effects by providing businesses, SME support institutions, and governments data-driven information to understand better the economic effects ahead, and to design the most effective and aligned roadmap for recovery and growth. It also links to the findings of International Trade Centre's SME Competitiveness Outlook 2020, which identified that the four characteristics of the "new normal" would be resilience, digitalization, inclusiveness, and sustainability. 689 Pakistani firms from manufacturing and agriculture sectors were surveyed in the beginning of 2021. It was found that competitive firms were able to not only navigate the negative effects, but some were also able to capitalize on the pandemic situation and become better. For example, 11% of respondents reported that they were exporting more than normal. Dynamic firms were also able to expand their portfolio. For example, in the textile sector many such firms started production of personal protective equipment. It is concluded that companies' chances of survival can be increased through boosting their level of competitiveness, for example through building financial buffers, strengthening linkages with support institutions and value chain actors, diversifying and digitalization. This will enable them to adopt agile and resilient strategies. Additionally, for a holistic recovery from negative shocks, a strong policy response is needed.

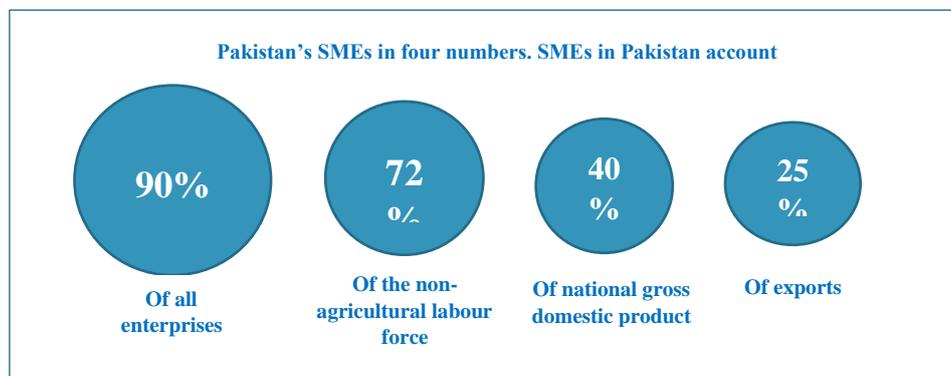
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## SME competitiveness in Pakistan

Small and medium-sized enterprises (SMEs)<sup>5</sup> are central to the economic and social development of Pakistan. They constitute nearly 90% of all enterprises in Pakistan and employ 72% of the non-agricultural labour force,<sup>6</sup> while contributing 40% to gross domestic product<sup>7</sup> and 25% to exports.<sup>8</sup> Major exporting sectors such as textiles, surgical goods, sporting goods, leather, footwear, information technology and fruits mostly comprise SMEs. SMEs also contribute significantly to the domestic economy through the wholesale and retail, construction, tourism and hospitality sectors.<sup>9</sup>

Evidently then, growth in the SME sector could contribute directly and substantially to overall economic growth. Yet SMEs in Pakistan continue to face several challenges that hinder their development. These firms have minimal access to formal financial and marketing resources and services. The labour available to SMEs is, on average, unskilled. Access to technology and capacity for in-house research and product or service development is limited. Links between SMEs and technical universities and vocational training institutions are ineffective. Consequently, most SMEs in services and manufacturing are stuck at the low end of the value chain and supply primarily to the local market.<sup>10</sup>



<sup>5</sup> This paper defines SMEs as firms with fewer than 100 employees. The term 'SME' thus includes micro-enterprises. Although the focus is on SMEs, some large companies are included so that the competitiveness of SMEs and large firms can be compared. Pakistan currently does not have a uniform definition of SMEs.

<sup>6</sup> Pakistan Bureau of Statistics (2018). Labour Force Survey 2017–18. Available from <https://www.pbs.gov.pk/content/labour-force-survey-2017-18-annual-report>.

<sup>7</sup> Pakistan, Finance Division (2011). Pakistan Economic Survey 2010–11. Available from [https://www.finance.gov.pk/Survey\\_1011.html](https://www.finance.gov.pk/Survey_1011.html).

<sup>8</sup> Pakistan, Finance Division (2010). Pakistan Economic Survey 2009–10. Available from [https://www.finance.gov.pk/survey\\_0910.html](https://www.finance.gov.pk/survey_0910.html).

<sup>9</sup> Government of Pakistan (2020). Draft National SME Policy.

<sup>10</sup> *Ibid.*

### Gathering data to inform transformative change

Data was collected under the REMIT project<sup>11</sup> in Pakistan in January 2021 on 689 exporting agribusinesses and manufacturing firms across Pakistan to identify their competitiveness constraints and needs, particularly with respect to the COVID-19 pandemic. The sample was spread homogenously across the 17 export sectors prioritized by the Ministry of Commerce for development.<sup>12</sup> The survey questionnaire was built upon ITC SME Competitiveness Survey and ITC Global COVID-19 Business Impact survey, and was tailored to meet the needs of the analysis.

### SAMPLE CHARACTERISTICS

66% manufacturing, 34% agribusinesses	72% SMEs, 28% large companies	97% export firms, 3% non-exporting firms
All four provinces of Pakistan covered	7% women-led firms	93% registered firms, 7% unregistered

Table A: Interviewed firms by sector and province

Sector	Sindh	Balochistan	Punjab	Khyber Pakhtunkhwa	TOTAL
Textiles and apparel	48	0	56	1	105
Fruits and vegetables	35	2	37	2	76
Rice	20	1	37	3	61
Surgical instruments	3	1	56	0	60
Leather	20	0	30	1	51
Sports goods	0	3	45	0	48
Processed foods and beverages	12	1	26	0	39
Pharmaceuticals	6	2	22	1	31
Cutlery	0	0	29	0	29
Engineering goods	0	1	27	0	28
Meat and poultry	5	0	23	0	28
Seafood	22	3	1	2	28
Chemicals	2	1	23	0	26

<sup>11</sup> Revenue Mobilisation, Investment and Trade project funded by the Government of the United Kingdom of Great Britain and Northern Ireland, and implemented by ITC.

<sup>12</sup> Strategic Trade Policy Framework (2021). Ministry of Commerce Pakistan

Carpets	0	0	20	2	22
Auto parts	0	0	22	0	22
Footwear	0	0	21	0	21
Gems and jewellery	0	0	8	0	8
Other	1	0	4	0	5
Marble and granite	1	0	0	0	1
<b>Total</b>	<b>175</b>	<b>15</b>	<b>487</b>	<b>12</b>	<b>689</b>

### Analysing SME competitiveness

SME competitiveness has been analysed using International Trade Centre (ITC)'s SME Competitiveness Grid.<sup>13</sup> The first pillar of the grid focuses on the capacity to compete by meeting current market requirements. The second pillar centres on the capacity to connect to buyers, suppliers and institutions to obtain information and knowledge. The third pillar zooms in on an SME's capacity to make changes in response to, or in anticipation of, dynamic market forces, including through investments in skills, financial capital and innovation. Finally, the ability of companies to sustain competitiveness through gender inclusiveness and environment sustainability is analysed.

The survey in Pakistan gathered data at the firm and business ecosystem levels on the parameters of capacity to compete, connect, change and sustain competitiveness. More importantly, it focused on the effects of the COVID-19 pandemic on the interviewed firms. This paper uses the collected data to study the relationship between firms' level of competitiveness and their ability to combat the challenges posed by the pandemic.

A national environment-level assessment, including challenges and opportunities for trade reforms and policy instruments at the national level, has been carried out in the Strategic Trade Policy Framework (STPF) by Pakistan's Ministry of Commerce, and is thus has been addressed in this paper only with respect to the COVID-19 policy response.

### Key Competitiveness Issues and Opportunities – Highlights

The following section summarizes the challenges and opportunities found by the survey across the competitiveness pillars.

#### Capacity to Compete

<sup>13</sup> For more information on ITC's SME Competitiveness Grid please refer to <https://www.intracen.org/SMECompetitiveness/2015/>

**Logistics:** The quality of logistics services was reported to be high by 49% of respondents but their cost remained a constraint, with 53% of respondents saying that costs are high. Similarly, 21% complained of the low quality of transport infrastructure, while one out of five respondents reported limited transportation systems – e.g. poor roads and railways – to be the top threat to their competitiveness. Even so, eight out of ten respondents were able to deliver an average of 81% of their goods on time. This indicates an evolution of firms’ internal logistics operations such as efficient inventory management and preparation for delivery well in advance to overcome external constraints. However, this does not exonerate the inefficient business ecosystem in terms of transport. Fixing external factors such as making the costs of logistics services more competitive and investing in better transport infrastructure can take some pressure off firms, who can then put their resources to better use and increase their competitiveness.

**Certification and Standards:** High costs and administrative hurdles related to conformity assessment mean it is tougher to prove compliance with regulations than to comply.<sup>14</sup> Thus, it is no surprise that larger firms – that are likely to have more resources – are certified twice as much as SMEs. Additionally, most agricultural exporters experience more stringent regulations pertaining to human health – such as sanitary and phytosanitary regulations – and the environment. In fact, agricultural exporters (60%) face more problems with quality-related regulations than companies that export manufactured goods (47%).<sup>15</sup> As a result, a higher proportion of agroprocessing firms are certified compared with their manufacturing sector counterparts.

The pattern of certification also varies across regions. Firms situated in provinces with a higher urban tendency, such as Sindh and Punjab, were more likely to hold certificates than those located in provinces less exposed to international trade, such as Khyber Pakhtunkhwa and Balochistan. This could reflect important differences in the availability of information and the minimal compliance requirements faced by exporters in these two regions, who mainly engage with close neighbouring countries with less stringent regulations, or informal trade.

However, the availability of information on standards is a countrywide issue. Six out of ten firms reported low to medium availability of such information, and more than half of them said

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<sup>14</sup> *Ibid.*

<sup>15</sup> *Ibid.*

that the quality of services offered by authorities dealing with product testing and certification is low to average.

### **Capacity to Connect**

**Connection with buyers:** Large firms have more resources than SMEs to obtain access to buyer-seller meetings such as trade fairs and exhibitions, and thus better access to information on potential buyers. More than half of interviewed large firms reported having access to buyer-seller meetings, compared with 40% of SMEs. Moreover, the usefulness of these meetings varies greatly between a large firm (46%) and micro and small firms (27%). Small exporting enterprises reported greater difficulties accessing information on potential buyers than their larger counterparts (92% versus 60%). Having said that, out of the firms that do get information on potential buyers, nearly half of them reported that the completeness and quality of the information was high.

This indicates that while information on potential buyers may be available, its accessibility remains an issue. Thus, there is a need to bridge the gap in accessing available information to boost firms' capacity to create relationships with potential buyers and expand their customer base.

Additionally, internet access, while a clear necessity, is often lacking: 56% of the surveyed firms reported that they do not have a high-quality Internet connection, while 25% had no business website.

**Connecting with suppliers:** Firms with limited information on potential suppliers can face difficulties connecting with alternate suppliers, and often end up relying heavily on their largest supplier. In the event of supply chain disruptions, increases in costs or decreases in quality of inputs, this can translate into a disaster for firm competitiveness. Unfortunately, most interviewed firms seem to fit this description – 42% reported a strong reliance on their biggest supplier and 35% reported that the inputs they receive are not according to their specifications, which in turn affects the output. This challenge is exacerbated by lack of cooperation between similar firms. Nearly half of the firms reported that they have limited cooperation with other similar firms to exchange information pertaining to their sector, and those that do get some information reported the overall quality of the information on potential suppliers to be poor.

## Capacity to Change

**Inadequate institutional support:** While 94% of the firms engage with at least one type of support institution, only 18% said that they are represented fully in formulation of policy pertaining to their sector. Additionally, out of those included, only 28% were small businesses. This suggests that public–private dialogue needs to be strengthened in Pakistan, especially with respect to small business representation.

The overall quality of the services provided by the institutions was reported to be below average. When speaking specifically about trade promotion, only 17% of respondents have been in contact with the country’s trade promotion organization. Out of those that have engaged, 29% of firms reported that they currently do not use the trade promotion organization’s services because either it does not match their needs or they lack information about the services offered. This highlights the need to spread awareness of the services offered and engage exporting firms when designing services.

**Access to Finance:** With respect to their own capabilities, 70% of respondent firms reported being well-informed about preparing a business plan. With respect to having full knowledge on the processes involved in obtaining finance, 66% of large businesses and 50% of small businesses said they were fully aware. Some 95% of respondents also reported having a bank account.

With respect to challenges, one in three respondents cited unfavourable interest rates. Other reasons included complex application procedures, high collateral requirements and reliance on informal means such as family borrowing. Additionally, more than half of micro and small firms reported that they face severe obstacles accessing financial institutions. This inaccessibility to adequate financial services disables small firms from developing their operations according to market forces. Overall, 31% of all respondents reported lack of access to finance as a severe obstacle to their business operations.

**Access to Skilled Workers:** 59% of the surveyed firms reported that there was low to average availability of skilled workers to hire. However, when asked about the currently employed workforce, 71% of firms reported that their workers’ skills matched the company’s needs. This indicates that while external factors can affect firms negatively, positive internal actions such as training employees to overcome lack of skills or upgrade current skills can help firms obtain a competent labour force. In fact, 91% of the surveyed firms reported that they provide specific

skills trainings to their employees to match company needs. However, smaller firms can often be at a disadvantage in this regard because they often do not have enough resources to train their employees. While 56% of large firms train their workforce outside of the company in vocational training schools, only 17% of smaller firms can do the same. Thus, the labour force needs to be provided with a comprehensive set of applicable, job-relevant skills and technical knowledge so labour can be readily absorbed by smaller firms.

### **Sustaining Competitiveness (Environment and Gender)**

**Environmental Sustainability:** Pakistan's economy depends significantly on agriculture, directly or indirectly. Pakistan is also among the top 10 countries at risk for negative effects of climate change. These facts are underscored by the survey, which shows that 90% of interviewed companies said that environmental risks were significant for their business. Rising temperatures were the top concern, followed by water scarcity and severe and frequent storms. Although most surveyed businesses saw looming environmental risks, few acted to tackle those risks. Those investing to mitigate the risks of environmental issues for their businesses took up different tools, from water purification systems to air pollution controls and soil management practices.

This indicates an urgent need for awareness-raising and targeted assistance for SMEs to become part of the solution to the climate crisis. Global demand for environmentally sustainable products is increasing among global consumers concerned about issues like climate change and biodiversity. Countries are also taking measures to encourage companies to reduce their emissions by installing environmental NTMs. An example is the European Union Carbon Border Tax to tax imports and hold international companies as accountable as its domestic companies in the fight against climate change. This provides firms with an incentive to turn green. Firms in Pakistan can also access these market opportunities through sustainability certifications. This implies further reducing environmental harm by adopting environmentally friendly technologies and improving quality compliance with new production regulations.

Evidence shows that when appropriate incentives and financing are in place, SMEs readily adopt green technologies that reduce their greenhouse gas emissions, boost their productivity

and reduce costs. However, supportive business and environmental policies, as well as targeted assistance, are needed to catalyse such win-win opportunities.<sup>16</sup>

**Gender Inclusiveness:** According to the Global Entrepreneurship Monitor 2019/2020 Global Report,<sup>17</sup> Pakistan has one of the lowest levels of female entrepreneurship, with more than two male entrepreneurs for every female entrepreneur. Analysis from the SME survey data also reveals that only 7% of the surveyed firms are women-led and highlights several important differences between women- and men-run businesses. Measured by number of employees, companies that are headed by women are smaller than those headed by men. Furthermore, the data indicate that women-led firms tend to hire a higher proportion of full-time female employees compared with firms headed by men. Some 44% of women-led firms hired full-time female employees, compared with only 35% of men-led companies.

Survey data suggest that women-led firms have lower access to finance compared to men-led enterprises. This is reflected by the gaps in holding bank accounts, having a business plan, or facing obstacles to get finance. Moreover, only one in five women-led firms have knowledge of the processes involved in getting finance with domestic financial institutions, compared with two thirds of men-led firms.

### **Competitiveness is important for resilience to negative shocks<sup>18</sup>**

#### **The COVID-19 pandemic has struck Pakistani exporting SMEs hard**

**The competitiveness issues analysed previously have been worsened by the COVID-19 pandemic.** Nearly all the interviewed firms (92%) said that their business operations have been affected by the pandemic, with seven out of ten reporting being moderately to strongly affected (Figure 1). Firms also reported that due to the pandemic they have been facing difficulties with respect to client payments, reduced logistics services and employee absences. More than 60% of firms also said that they are facing temporary shutdown because of the pandemic. However, more than half of the firms interviewed reported that they do not envisage the permanent closure of their business.

**The pandemic has caused firm revenues to decrease greatly.** Buyers abroad are demanding greater details on inputs, production processes, safety and hygiene.<sup>19</sup> This has led to additional

<sup>16</sup> Koirala, Shashwat (2019). SMEs: Key Drivers of Green and Inclusive Growth. OECD Green Growth Papers, 2019-03, March: OECD Publishing, Paris. Available from <https://www.oecd-ilibrary.org/docserver/8a51fc0c-en.pdf?expires=1623561714&id=id&accname=guest&checksum=FCBBD8C5D6279029CB3EF980F0B36062>.

<sup>17</sup> Global Entrepreneurship Monitor (2020). 2019/2020 Global Report. Available from <https://gemconsortium.org/report/gem-2019-2020-global-report>.

<sup>18</sup> Source for all graphs is author's calculation based on the SME Competitiveness Survey in Pakistan.

<sup>19</sup> Sustainable Development Policy Institute (2021). Supporting export competitiveness amid COVID-19 in Pakistan. Available from <https://sdpi.org/projects/covitrade-and-mid-size-enterprises/>.

requirements, leading to an effect on sales. About 72% of the respondents reported that their revenues have decreased due to the pandemic. Out of these, four out five firms stated a decrease in revenues of between 20% and more than 50%.

**Firms are finding it harder to export.** The COVID-19 crisis has also increased some barriers with respect to trade-related processes, with countries stopping transit and applying stricter border control measures to contain the pandemic. Compliance with standard operating procedures, new standards in transportation and stringent sanitary and phytosanitary measures have also posed additional costs, including sunk costs related to information and learning.<sup>20</sup> Increases in charges, taxes and price control measures was the top trade-related process that firms reported as becoming more cumbersome because of containment efforts. Respondents also reported that export documentary requirements have become stricter, and freedom of transit has significantly decreased.

**As a result, 52% of the interviewed firms reported that they have been exporting less than normal, while 7% of them have permanently stopped exporting.** More than half of the firms that have temporarily stopped exporting envisage that they will restart in 1–3 months.

#### **Resilience and agility combat disruptions**

*While the pandemic brought new challenges and exacerbated old ones, competitive exporting firms were able to navigate the negative effects. The results of the survey facilitated study of the relationship between firms' level of competitiveness and their ability to combat the challenges posed by the pandemic.*

*The survey findings showed that some exporting companies were even able to capitalize on the pandemic situation and become better. For example, 11% of respondents reported that they were exporting more than normal. Large dynamic firms were able to expand their portfolio. For example, in the textile sector many such firms started production of personal protective equipment.<sup>21</sup> The following four sections capture how exporting companies increased their chances of survival through the adoption of different strategies and their competitiveness level.*

- 1. Different strategies adopted by firms to combat the pandemic can produce different consequences for firms in the long term – the concept of 'Retreat, Resilience and Agility'.*

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<sup>20</sup> *Ibid.*

<sup>21</sup> *Ibid.*

**Three out of four firms adopted at least one strategy to deal with the crisis** (Figure 2). The most common responses were to temporarily reduce employment, lay off employees, increase marketing efforts and move to online sales. Although these techniques may appear equal in merit, they entail very different effects on the long-term health of an enterprise. Some strategies are relatively better and can ensure that a business can weather the storm and be in as good shape as before, or even improve. According to ITC's SME Competitiveness Outlook 2020, the strategies can be categorized as follows:

- i. **Retreat (fall back):** *Strategies falling under this category can create a setback for companies that could be hard to recover from. Companies that retreated did so by permanently laying off employees, filing for bankruptcy or doing nothing. However, this type of responses only formed 28% of the total strategies adopted.*
- ii. **Resilience (stay stable):** *Strategies falling under this category tend to allow companies to get through the pandemic with their basic form intact and stay stable during it. In response to lockdowns and other containment efforts, resilient companies adopted strategies such as increasing marketing, sourcing from new suppliers or learning to telework. **Around 61% of interviewees took a resilient approach.***
- iii. **Agility (adapt and take advantage):** *Agile strategies can help firms take advantage of and transform in response to the circumstances created by the pandemic. Agile firms did so by creating new goods and services or customizing their old ones to meet changing demand. When lockdowns prevented some of them from opening, they lent their employees to other businesses in essential industries. Although adopting agile responses can be risky as a product or service lucrative during the crisis might not be sustainable, in tumultuous times they can yield high returns. **Some 11% of interviewed firms adopted this approach to deal with the pandemic.***

*Figure 1: Most firms have been affected by the pandemic. More than half of respondents were exporting less than normal*

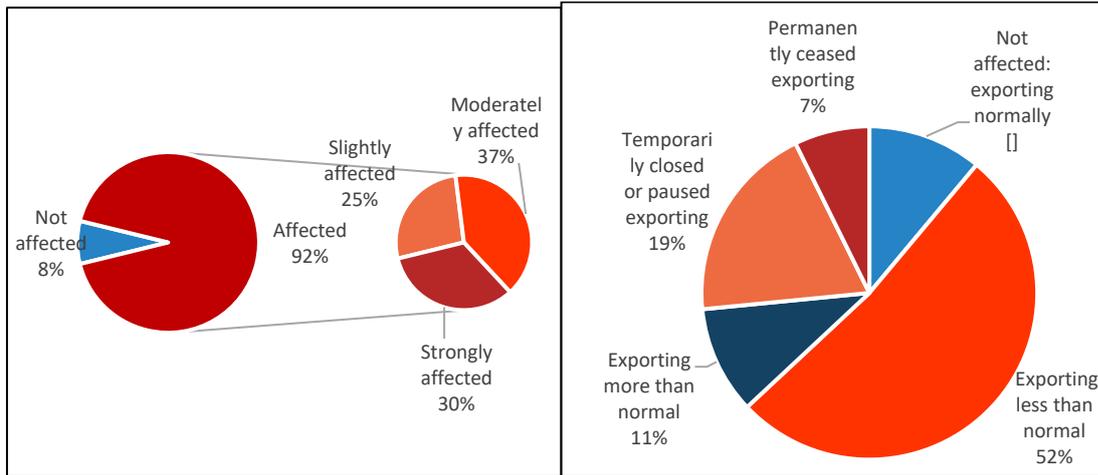
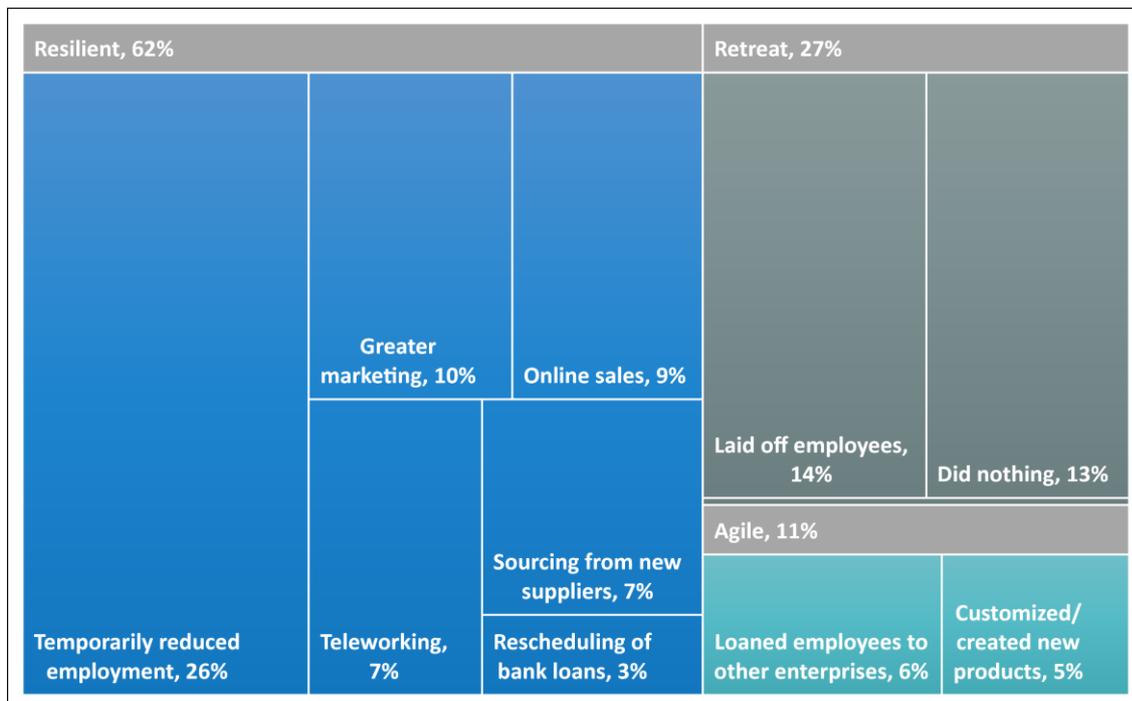


Figure 2: Three out of five Pakistani firms adopted a ‘resilience’ strategy to face the pandemic



*Note:* The survey asked: ‘Have you adopted any of the following strategies to cope with the crisis?’.

**2. Certifications and sustainable transport operations can mitigate the severity of the pandemic effects.**

Based on the competitiveness survey responses, ‘Capacity to Compete’ score was computed for each firm. Those with **higher competitiveness score were less likely to be strongly affected by the pandemic** (Figure 3).

**Firms that manage their logistics operations better are in a favourable position to weather negative shocks** (Figure 4). This can be attributed to the fact that highly efficient logistical management can allow firms to continue accessing needed inputs and deliver to customers on time, thus allowing them to operate normally. The survey results show that firms that reported high quality of transport infrastructure and logistics services were less strongly affected than firms that reported low quality of the same.

**Certified firms fared better than uncertified firms in terms of exporting.** Certifications can give firms the ability to overcome the containment measures aimed at limiting the spread of COVID-19 across countries, since they are already aware of the information and procedures required to obtain new certifications. Certified firms (12%) exported more than normal compared with uncertified firms (6%). Additionally, only 3% of certified firms permanently ceased exporting, compared with 17% of uncertified firms.

### *3. Increased connectivity can help firms keep current with changes in market trends due to COVID-19*

Firms that scored higher on capacity to connect were much less affected by the pandemic (Figure 3).

**Firms that have strong business links are better at dealing with negative shocks than those that do not** (Figure 5). Cooperation allows firms to share information and techniques to combat similar yet new challenges, thus increasing their reaction time and saving them from potential losses. Firms that showed low levels of cooperation were more strongly affected by challenges related to COVID-19 than those that cooperated more with other companies in their sector.

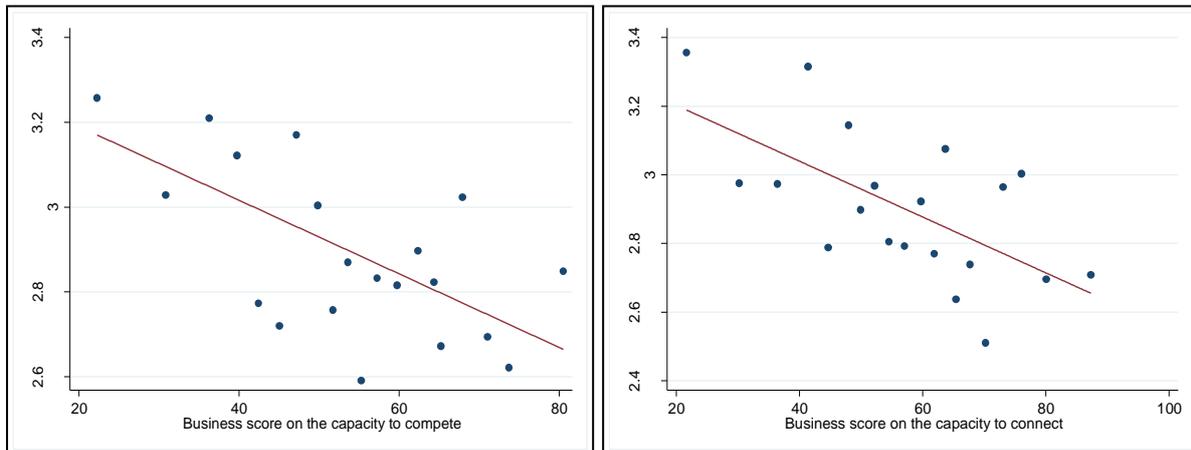
**Firms' online presence can lessen the risk of losing sales by allowing a swift transition to e-commerce** (Figure 6). As countries rushed to impose lockdowns as part of containment efforts, consumers could no longer access brick-and-mortar versions of many businesses. In such a scenario, online buying-selling platforms represent a risk mitigation path for firms. However, the adoption of digital systems is highly dependent on connectivity infrastructure, which is lacking in some provinces.<sup>22</sup> The survey results found that more firms already connected to their customers through a business website were more able to adapt to the lockdowns imposed by other countries and adopt an online sales strategy than those that did not have a business website. In fact, 96% of the firms that adopted an online sales strategy

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<sup>22</sup> *Ibid.*

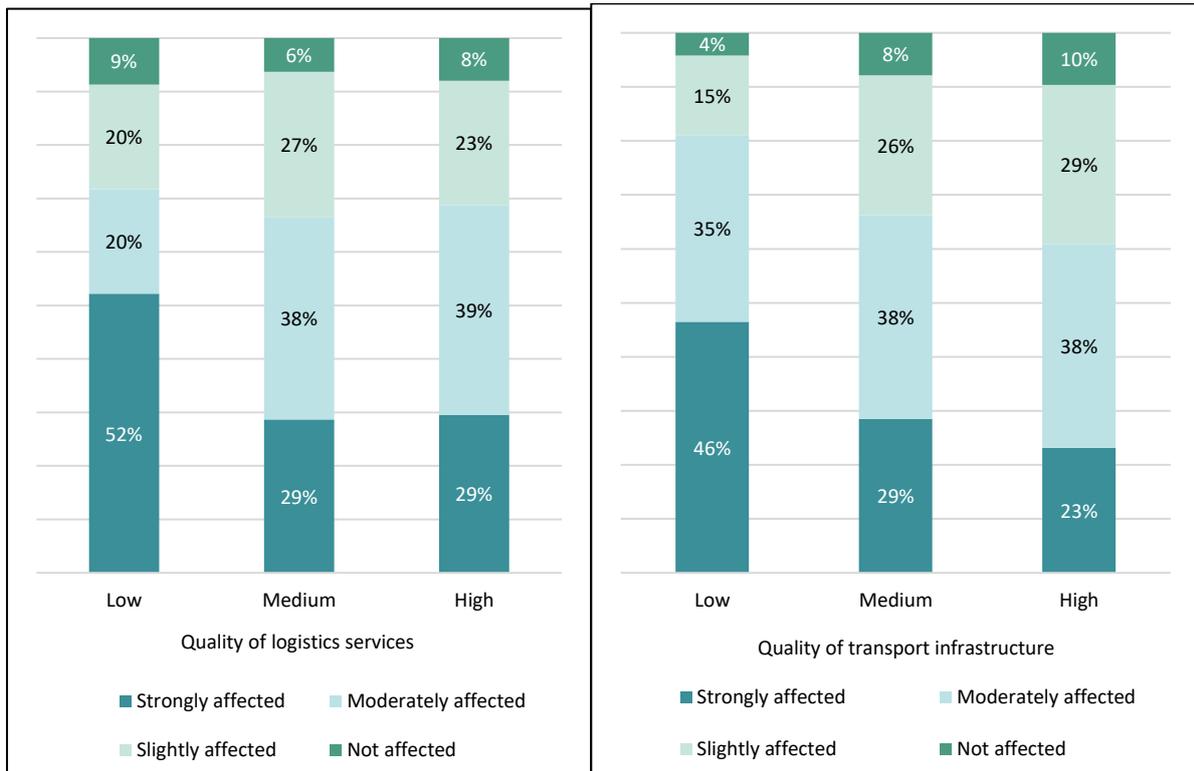
already had a business website, compared with only 4% who did not initially have an online presence.

*Figure 3: Increased capacity to compete and connect decreases the severity of pandemic effects*



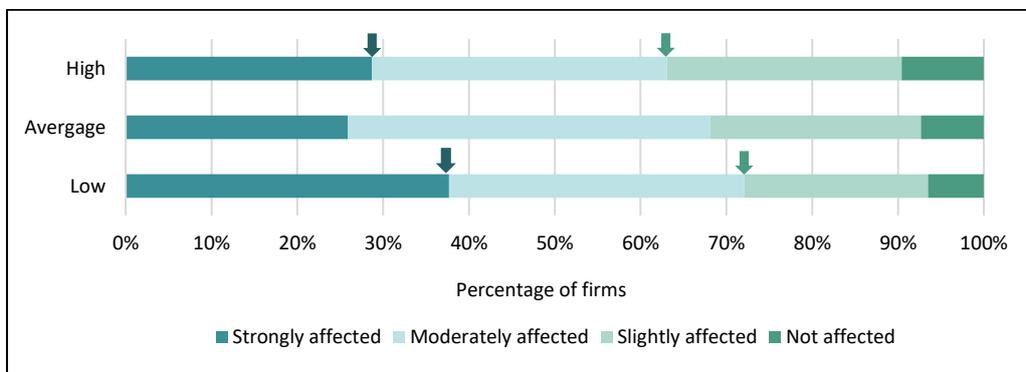
**Note:** The relationship between the two variables is the result of a binned scatterplot. The survey asked: ‘How have your business operations been affected by the coronavirus (COVID-19) pandemic?’. Answers ranged from 1 (not affected) to 2 (slightly affected), 3 (moderately affected) and 4 (strongly affected). The answers to questions pertaining to time and quality requirements under the ‘Capacity to Compete’ and ‘Capacity to Connect’ pillars of the ITC Competitiveness grid were used to score firms on their capacity to compete and connect. This method is based on ITC’s SME Competitiveness Outlook 2021

Figure 4 High quality of logistics services and transport infrastructure lowers the negative effects of the crisis



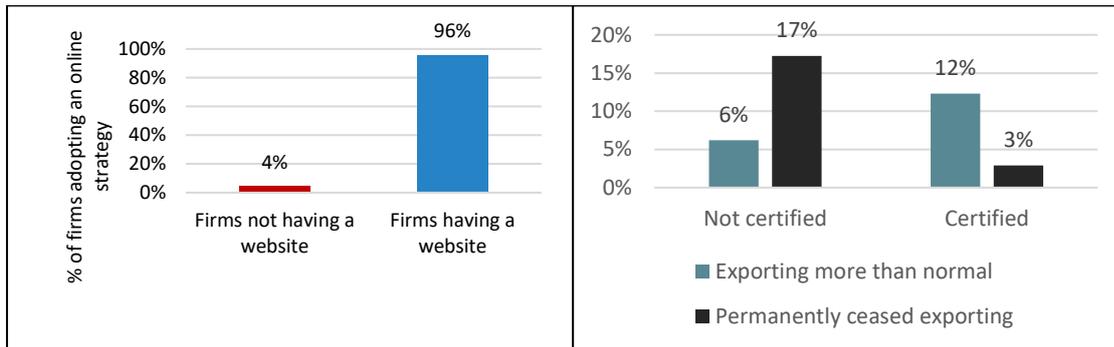
**Note:** The survey asked: ‘Please rate the quality of the services offered by the logistics services companies this company uses’; ‘Please rate the quality of the transport infrastructure in your location’ (rating between low, medium and high); and ‘How have your business operations been affected by the coronavirus (COVID-19) pandemic?’ (not affected, strongly affected, moderately affected or slightly affected).

Figure 5 Firms with low cooperation levels were more strongly affected by the COVID-19 crisis



**Note:** The survey asked: ‘To what extent do companies in your sector cooperate to solve common problems which may be beneficial to the sector as a whole?’ and ‘How have your business operations been affected by the coronavirus (COVID-19) pandemic?’

Figure 6 An online presence is important to stay connected to buyers. Companies meeting quality and standards requirements can overcome barriers to trade pertaining to quality.



#### 4. Availability of skilled workers can underpin firms' resilience to the crisis

A company's ability to change using three factors – skills, financing and innovation – underscores its ability to adapt to shifts in market trends. This adaptive capacity is essential to building resilience to crises such as the COVID-19 pandemic. This is because enterprises that already have the tools and the habit of changing often have the skills, creativity and funds on hand to survive.

**Out of all three factors, availability of skilled workers is the most important in dealing with crises** (Figure 7). Workers with the right skill set are better equipped to find solutions to new problems. Indeed, 66% of the firms reporting low availability of skilled workers also reported being strongly affected by the pandemic, compared with 34% of those that reported high availability of skilled workers for hire. Furthermore, firms that had less trouble hiring skilled workers were more likely to adopt resilient strategies to cope with the pandemic challenges than their counterparts.

**The evidence did not show a huge difference between innovative and non-innovative firms in terms of the severity of the effects of the pandemic.** However, innovation is still important to adjust quickly to changes brought by COVID-19, and its positive effects might not be immediate. Innovation requires patience and a long-term managerial perspective because it involves investing in something that will pay off later. It also requires the ability to cope with uncertainty. Thus, innovation can allow firms to mitigate negative effects in the long term. Innovative firms were also more likely to be resilient and agile.

**Access to financial institutions did not greatly contribute to preventing firms from feeling the negative effects of the pandemic.** Adaptability to changes in financial situation requires up-to-date information – which comes from strong links – especially with respect to relief packages that financial institutions create. However, evidence showed a small (two percentage

point) difference between firms that experienced greater obstacles in their business operations due to poor links than those who reported having good links with those institutions. This could very well be attributed to the overall poor uptake of the financial relief packages designed and rolled out for firms, 66% of which remain unutilized.<sup>23</sup>

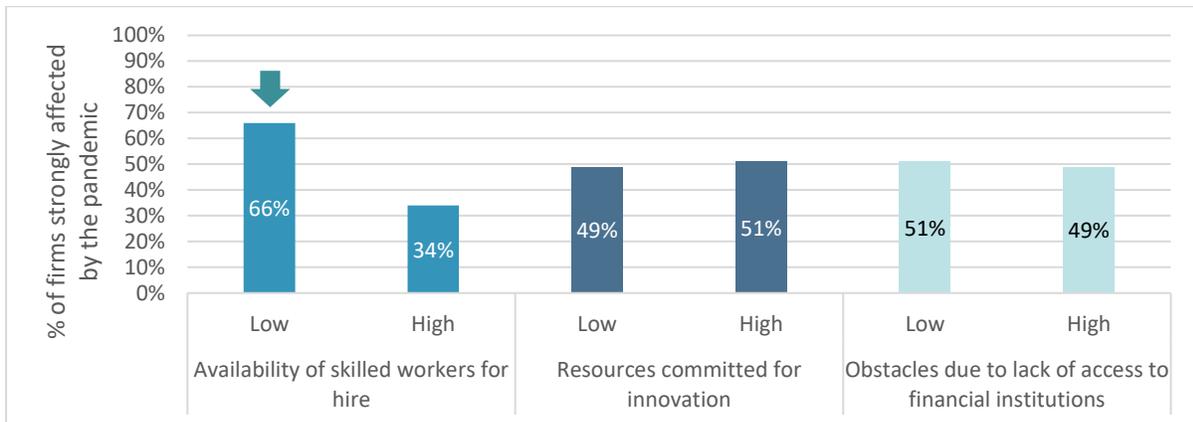
### ***5. Agile firms are better at responding to pandemic challenges***

Firms that employ strategies that are good for their long-term health are positioned favourably to respond to negative shocks (Figure 8). More firms that adopted agile (81%) and resilient (72%) strategies were able to at least keep exporting compared with firms that retreated (70%) in response to the pandemic. On the other hand, 30% of the firms that retreated reported having either temporarily or permanently stopped exporting, compared with 28% and 19% of the those that were resilient and agile, respectively.

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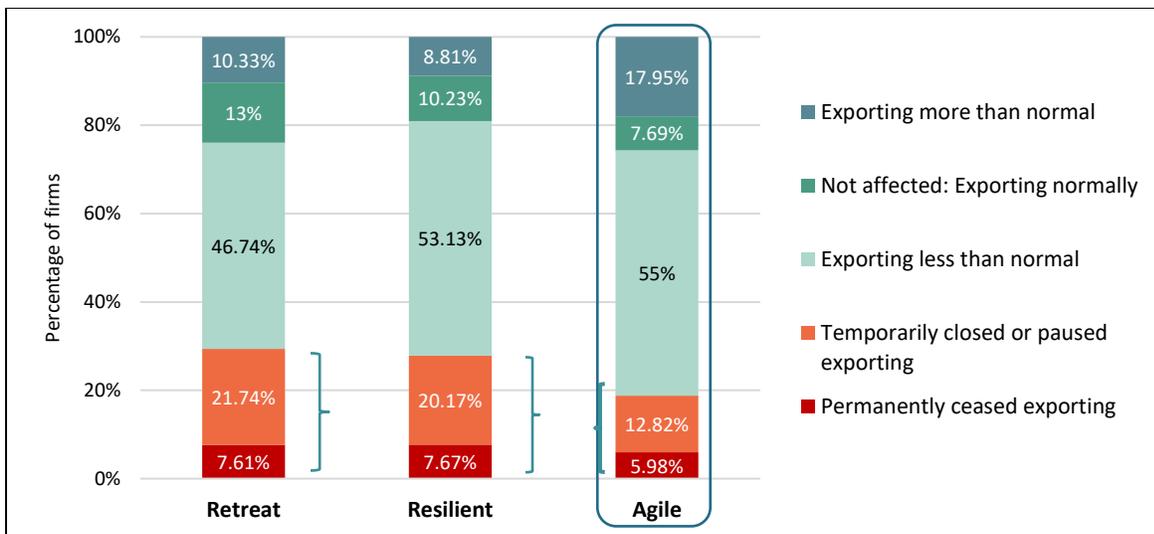
<sup>23</sup> Shahbaz Rana (2021). 66% of Covid-19 relief package remains unutilised. *Express Tribune*, 17 January. Available from <https://tribune.com.pk/story/2280277/66-of-covid-19-relief-package-remains-unutilised>.

Figure 7: Firms that did not perform well with respect to their capacity to change were more affected by the pandemic



**Note:** The survey asked: ‘To what degree is access to financial institutions an obstacle to current operations?’; ‘Please rate the availability of skilled workers for hire’; ‘Please estimate the level of resources your company commits to research and development’; and ‘How have your business operations been affected by the coronavirus (COVID-19) pandemic?’.

Figure 8: Agile firms performed better in terms of exports



*Continuous support and targeted actions to help firms combat COVID-19 challenges*

**Beyond sanitary measures, the federal and provincial governments of Pakistan have implemented fiscal, monetary and trade-related responses to the COVID-19 crisis. These have included a fiscal stimulus package of PKR 1.2 trillion and a Supplementary Grant of PKR**

100 billion for the ‘Residual/Emergency Relief Fund’ consisting of funds to mitigate the effect of COVID-19 on the impacted population. Monetary and macro financial policies have comprised stimulating investment in new manufacturing plants and machinery by refinancing facilities, and temporary regulatory measures to maintain the banking system, among others.

**Most trade-related measures have focused on tariff reductions.** Pakistani authorities implemented temporary export prohibitions on health products such as anti-malaria drugs, sanitizers and gloves, and food products to ensure domestic food supply. These measures have now been terminated. Tariff reductions on medical goods such as oxygen gas and specific pharmaceutical products (anti-COVID-19) have sought to liberalize the entry of medical products to fight the pandemic.

**Measures taken by the federal government have not been rolled out to their full extent.** In view of the challenges faced by firms, the Government of Pakistan developed a relief-cum-economic support package of PKR 1.2 trillion in March 2020, which included PKR 100 billion support to SMEs and the agriculture sector in the form of power bill deferment and bank lending, as well as subsidies and tax incentives. However, 66% of the relief package remains unutilized. Specifically, in terms of SME support, PKR 39 billion out of PKR 100 billion (39%) is unspent so far.<sup>24</sup> Unsurprisingly, the success of these measures was perceived as low, as shown by the survey results (see appendix IV).

Large firms exhibited greater clarity on the various types of government facilitation available and how to access them timely and with low transaction costs.<sup>25</sup> Mid-sized and large firms dominate the associations of exporters and may not let information trickle down to smaller members. This may imply that the process of internal consultations in the associations may not be inclusive.<sup>26</sup>

**For firms of both sizes, the top three measures that were most helpful to cope with COVID-19 were relief in electricity bill payment (45%), relief to daily wage workers (22%) and accelerated tax refunds for exporters (19%).** Although the overall success of these measures seems low, given that COVID-19 presents unprecedented challenges for everyone, including the

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<sup>24</sup> *Ibid.*

<sup>25</sup> Sustainable Development Policy Institute (2021). Supporting export competitiveness amid COVID-19 in Pakistan. Available from <https://sdpi.org/projects/covitrade-and-mid-size-enterprises/>.

<sup>26</sup> *Ibid.*

Government, this must be taken in stride. In this context, a range of possible improvements could increase the success rate of the measures.

*Targeted support based on the needs of firms has the potential to address the challenges faced by exporting firms in Pakistan. It is also more likely to yield successful results. The type of requested support is analysed below, with a distinction between requested changes in regulations on trade-related measures and technical assistance.*

***1. Trade-related provisions with potential higher positive impact requested to combat the COVID-19 crisis***

Among trade-related provisions, the most requested one was reduction of charges and taxes such as licence fees, as well as employment of price control measures to counteract price fluctuations in domestic and foreign markets (Figure 9). While taking these measures could be beneficial in the short term, they do not contribute to the long-term competitiveness of a firm. A deeper understanding is necessary to assess the magnitude of costs that have increased during the pandemic. This could be made possible through frequent structured public–private dialogues.<sup>27</sup> Regular reviews of tariff policy could keep a check on anti-export bias and distortions in a competitive business environment. Fast tracking the Pakistan Regulatory Modernization Initiative could help reduce the regulatory burden on exporting enterprises.<sup>28</sup>

The second most popular trade-related provision was to increase the ease of access to trade-related information. This relays an important message – firms need to be informed to adapt to the changes brought about by the pandemic. It is equally important for the Government to source information that reveals the uptake of the benefits offered to firms so that remedial measures can be put in place in case of weak uptake.<sup>29</sup> Technology could help significantly in this regard; for example, through a portal that could allow firms to upload any supply chain disruptions for necessary action by the Ministry of Commerce. On par with this need is a request to ease export documentary requirements. In efforts to contain the pandemic, countries have issued new notifications that have made it tougher for firms to export internationally. Unsurprisingly, firms thus require help – either in fulfilling the necessary documentation or reducing these requirements. Regular orientation for officials on changing trade protocols could help.<sup>30</sup>

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<sup>27</sup> *Ibid.*

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*

<sup>30</sup> *Ibid.*

Following these three provisions is the need for increased freedom of transit, which could have a positive impact if implemented in the current context of the pandemic. There is a need for deeper coordination between Pakistani missions abroad and the business community on information regarding client- and location-specific transportation and cargo restrictions.<sup>31</sup>

Figure 9 also shows a high number of responses in the ‘Other’ category. Under this, two trade-related provisions were mentioned. Firstly, firms pointed out that equal importance should be given to sectors to boost exports, without favouring one sector over another – this was connected to the relaxation given to the textile sector. Firms also said that digitization in and across all export-related activities is necessary to have a positive impact on the current scenario. Firms also said that good governance and elimination of illegitimate bureaucratic practices is vital, now more than ever.

## ***2. Trade-related technical support requested to help with export challenges***

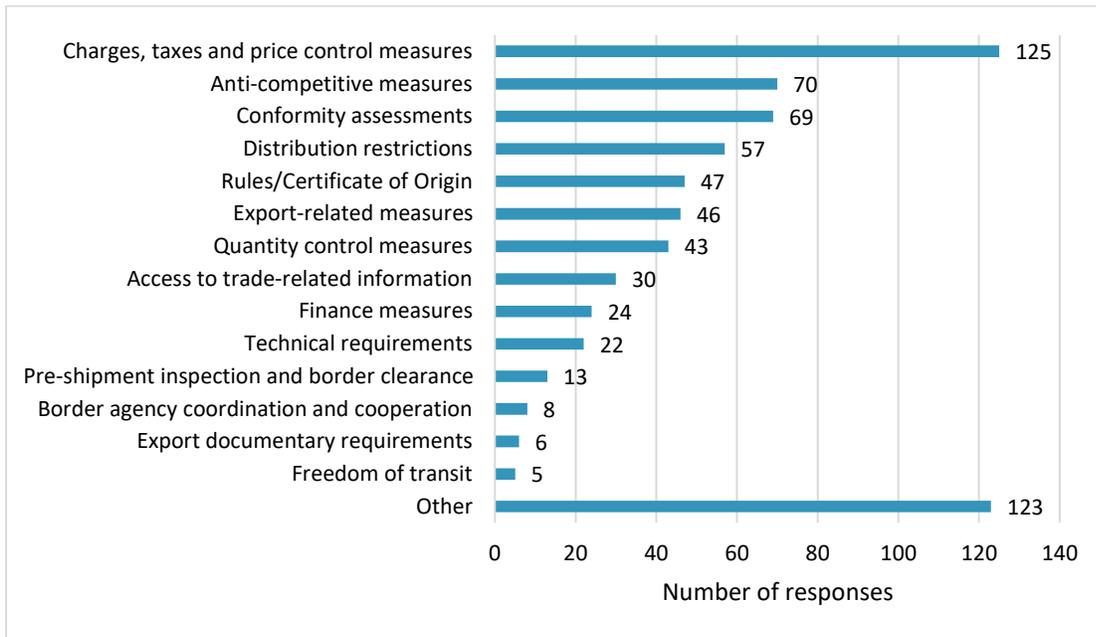
Figure 10 show the technical support requested by the surveyed firms. The top three support options were financial support (22%), finding new markets (21%), and finding new overseas contacts or customers (13%). Tripartite dialogue can certainly help, where the Ministry of Commerce, trade attachés and local private sector could navigate solutions through which partner countries could be engaged.<sup>32</sup> These were followed by support options pertaining to Customs or tariffs, understanding market demand issues, and logistics.

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<sup>31</sup> *Ibid.*

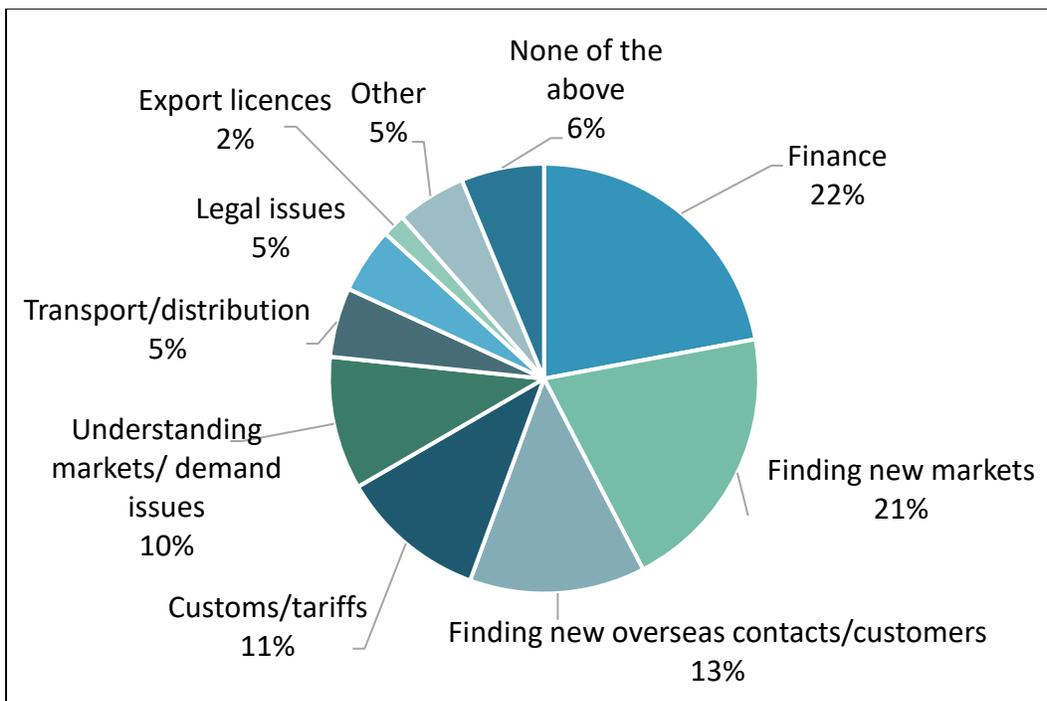
<sup>32</sup> *Ibid.*

Figure 9 Trade-related provisions with the most expected positive impact



**Note:** The survey asked: ‘Which of the following trade-related provisions would have the most positive impact if implemented in the current context?’.

Figure 10 Percentage of responses highlighting the support options needed to combat export challenges



**Note:** The survey asked: ‘Which of the following support options would help your business the most with export challenges?’.

**Conclusion**

Survey findings indicate that *firms' ability to combat the challenges posed by the pandemic is strongly dependent on their level of competitiveness. Firms that have strong quality management and logistics systems, are well-connected with markets and institutions, and have a strong access to finance and skilled workers are able to overcome and adapt to sudden negative shocks. Therefore, At a firm level, enterprises can diversify as a valuable risk management strategy, whether it is done at a production, purchasing or sales side. Additionally, saving profits can provide a buffer for difficult periods. It can also generate financial resources for investments in technologies and skills needed to adapt. Furthermore, SMEs can connect to industry associations, business support organizations (BSOs), and other actors to bolster their ability to cope. And lastly, firms can increase their access to and ability to operate on digital platforms.*

*At a business ecosystem level, BSOs can ensure that information is correct and increase outreach. They should also invest in building digital ecosystem esp. in rural areas where outreach might be low.*

*Additionally, for a holistic recovery from such shocks, a strong policy response is needed that addresses the negative impacts of the pandemic on Pakistan's export competitiveness, in the short, medium and long terms. While an immediate response is necessary, medium- to long-term measures are needed to strengthen the country's resilience and agility and reduce the risks of economic downfall in the future. It is essential to design sector-specific recommendations, identify product and market diversification opportunities, and equip Pakistan's exporters to adapt to changing international market conditions. Therefore, at a macro level, governments can ensure facilitation of trade and movement of essential products. They can also expand and facilitate access to finance for SMEs. They can also improve border management to ensure access to essential products. Lastly, they can increase digitalization of trade documents and procedures in collaboration with the private sector. Public policies can also encourage partnerships, cooperatives, and research that foster development of agile new strategies.*

## COVID-19 Production and Employment Effects on Business Enterprises in Ethiopia: Insights from Rapid Phone Survey

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### Abstract

Beyond the human life tragedy, the COVID-19 outbreak has substantially disrupted the economic production of firms in every corner of the world. Like many other countries in the world, Ethiopia saw its first case in the capital city on March 16, 2020. Soon after this, the Government ordered a lockdown of every economic sector without mentioning when it would be eased. This study thus attempted to assess the impact of the pandemic on business enterprises within the first three months of the outbreak, by interviewing 200 firm managers using Rapid Phone Survey. The surveyed enterprises are of different size. Micro and small business establishment accounts for about a half (51.31%). The results indicated that about two-third (64.35 %) of the surveyed firms had temporarily and/or permanently stopped operation when the government first ordered complete shutdown. Of which 7.8% of them permanently closed with very little hope to reopen business as it was very difficult to determine when things get back to normalcy. This means only one-third (35.6%) of the business firms were partially or fully able to operate in the first three months of the outbreak. In terms of firm size, micro and small firms tend to be affected the most by the pandemic: 29.17% of the micro and 9.46% of the small firms permanently stopped operation and they had little hope returning to business in the near future, while about 45.83% of micro and 33.78% of the small scale enterprises had temporarily stopped.

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In terms of revenue generation, firms operating in the service sector (71.21%) were affected the most by the pandemics, compared to firms operating in the industry (60%). Also, one-third of the firms were not unable to predict the expected time for their business recovery as the situation was/is still getting worse. Other 33.42% of them estimated that it would take them more than a year to recover from the first three months impact of the pandemic, while only few others predicted that it would take them less than three months. Government business support, particularly, for the micro and small scale enterprises would be able to help sustain business and recover from the adverse effect on operation, sales and employment of the business enterprises.

## **1. Introduction**

Within six months of its outbreaks in December 2019, the COVID-19 Coronavirus Pandemic has infected more than 10 million persons from 204 countries in the world, with more than half a million fatalities (WHO, 2020). Beyond the human life tragedy, the pandemic causes a drastic economic effect on firms through several channels such as slowdown of investment, business closures, delaying travel, banning tourism, lockdown, public panic, among others (Apedo-Amah et.al,2020). There are global estimates that the pandemic has already trimmed global economic growth by at least 0.5% to 1.5% (World Bank, 2020). Also, according to the IMF global economic Outlook, the world economy was projected to contract by 3% in 2020, much worse than during the 2008–09 financial crisis (IMF, 2020). Likewise, the International Labor Organization (ILO, 2020) estimated that global unemployment might increase by almost 25 million as the result of the pandemic. The impact could particularly be much severer in sub-Saharan Africa as vulnerable employment in the region stands at 73 per cent (ILO, 2019). This might be because of the fact that tourism and remittance are strongly being impacted as the pandemic continues to spread globally, resulting in a decline in FDI flows; capital flight; domestic financial market tightening; and a slow-down in investments and hence finally job losses. This is also supported by the findings that 4 out of 5 business firms in Africa are significantly affected by the COVID-19 crisis, rating the effect as highly severe or severe (UNECA, 2020). It is also projected that Africa may lose half of its GDP growth estimates with growth falling from 3.2% to about 2 % due to a number of reasons which include the disruption of global supply chains. What makes even the scenario worst is that the full economic impact has not been identified yet given that the spread of the virus is not flatten and rather the uncertainty on its duration and depth of the health crisis-related economic effects is massively aggregating fears and frustrations among several economic actors.

Upon registering its first case of COVID-19 on March 13, 2020, the Government of Ethiopia came up with a number of containment measures to curb the spread of the virus in the country, such as school closures, business closings, restrictions on internal and international travels, wearing of protective kit, use of hand sanitizer and lockdown. Although the number of confirmed cases in Ethiopia remained very low in comparison to other African countries in the first few months of the pandemic (see Figure 1), such containments affected business operations in Ethiopia quite in unprecedented ways.

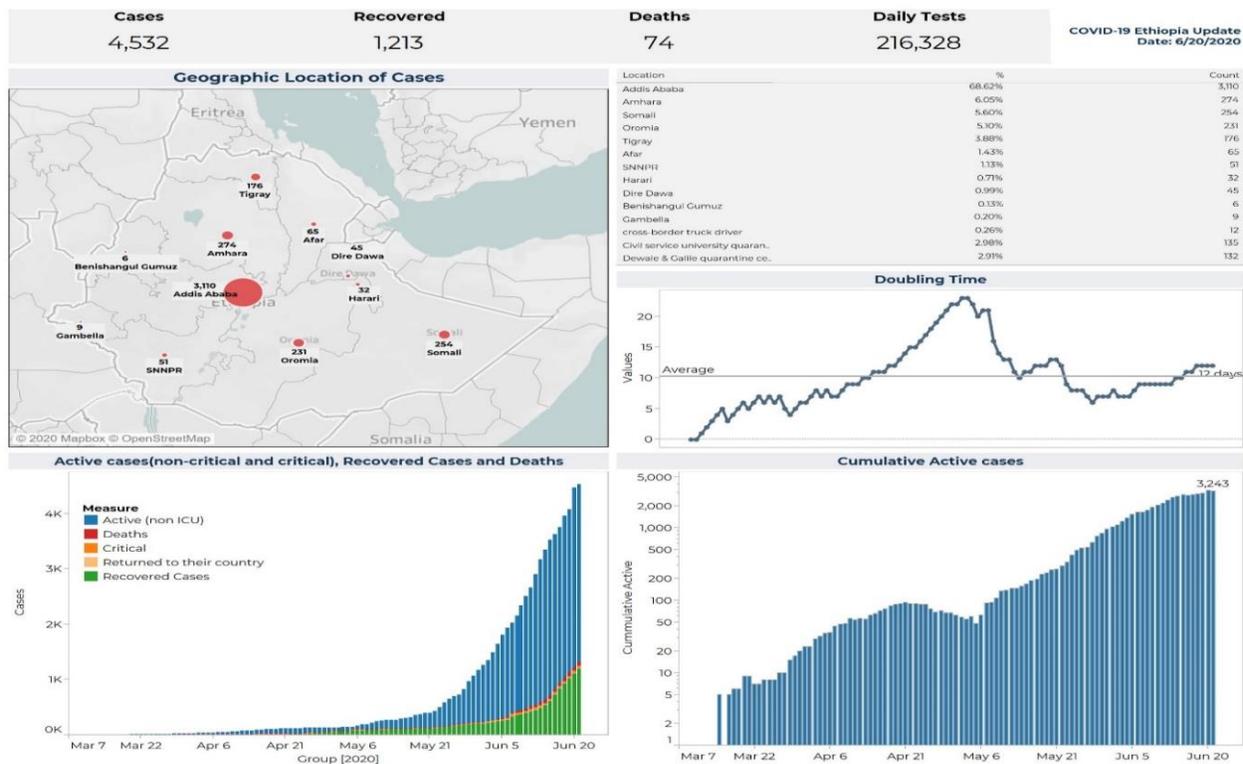
What made the Ethiopian case exceptional is that a five month state of emergency was also declared on the 8<sup>th</sup> of April, 2020, which made the situation quite complicated as this allowed the government to take more strict measures such as prohibit public gatherings, transportation capacity limit, wearing masks in public areas, suspending the trade licenses for those hoarding goods and price controls. As the result of those multiple pressures, major economic actors of the Ethiopian economy hit the hardest. Few examples of these actors are the Ethiopian Airlines, the tourism sector, and flower exports and remittance flow, which have been major source of foreign exchanges for the country for years. As of March 23, 2020, it was revealed that the Ethiopian Airlines has already lost about \$190 million with in the first two months of the outbreak (The Reporter, 2020). This is a huge economic lost for Ethiopia which has non-oil based economy, where the travel and tourism industry had been one of the main source of hard currency, accounting for 7% of the country's GDP in 2019 and supporting more than 2.0 million active jobs (Tourism Economics, 2021). Besides the tourism industry, local workers in several industrial parks are also staying out of workplace due to the lockdown policy to deter the spread of the pandemic. Weeks after the outbreak of the pandemic, for example, 14,000 workers at Hawassa Industrial Park were given paid leave as manufacturers assess how to protect workers from infection and adjust to reduced orders (MJOC, May 2020]. Likewise, flower exporter and floriculture companies have already started to operate less than a third of their capacity with significant reduction of local workers. All these containment measures are believed to give rise to high unemployment among young people and food insecurity among household families.

Indeed, besides youth joblessness and family food insecurity, food price escalation is another critical risk that greatly affects the economic wellbeing of lock downed society. Ethiopia has

already been experiencing high food price inflation, with more than 20% in 2019, mainly due to locust invasion during harvest time of the year (CSA, 2020). Coupled with this, the pandemic is expected to lead business people to hoard and create public panic on fair distribution of food items that might ended-up with high food price escalation amidst the pandemics.

Given that the Ethiopian is a subsistent economy, business closure and high unemployment of young people are more likely to struggle with life and even may defy COVID-19 preventive measures. This shows that mechanisms of protecting businesses from breakdown have to be carefully identified and urgently designed. In this way, identifying how business are being impacted and what mechanisms are needed to lessen these adverse impacts is worth investigating. This study aims to address this urgent gap using a rapid firm survey in Ethiopia.

**Figure 1: Situational report of COVID-19 Ethiopia, June 2020**



Source: Ethiopian Ministry of Health (MOH, June 2020)

### 1. Objective

The general objective of provide a quick evidence on the potential adverse effect of the COVID-19 pandemic on business enterprises grouped under Micro, Small and Medium Scale Enterprises and large enterprises using real time survey data. Key indicators for assessing the business impact

are revenues (sales), production, employment, finance and future expectations in the event the crisis persists for 6 months. In particular, the specific objective consists of:

- I. Examine the effects of the COVID-19 pandemic on firm's revenues (sales), production, employment and finance of business enterprises
- II. Assess the future expectations of the businesses in the event of the crisis persists for 6 month or more
- III. Estimate the recovery period and offer policy options to revive businesses in the post-COVID-19 period.

Before going to the methodology and result sections, it is however vital to provide an insight on the existing similar studies across African countries so that it would be easy to make comparisons with the outcomes of this study.

### **Empirical Literature Review**

Firms in Africa are generally small-scale in size and particularly characterized by substantial credit constraints and limited cash flows that make them vulnerable to even small shocks, let alone to the current unprecedented systemic COVID-19 shock (Aga & Maemir, 2021). Due to the economic-wide disruptions and systemic nature of the shock, firms have been hit by multiple channels (Adam, Henstridge & Lee, 2020). Disruptions to demand and supply has been one of the channels that frequently reported in many recent firm surveys (Apedo-Amah et.al, 2020; Dai et al., 2020a; Balleer et al., 2020; Aga & Maemir, 2021). Since the outbreak of the pandemic, several empirical studies have also been emerging on business enterprises' adverse effects of the disruption (Aga & Maemir, 202; Lakuma.et.al, 2020; Pape et al,2021; World Bank, 2021; Namatovu & Larsen, 2021). Using a rapid electronic survey on 147 business establishments, Lakuma.et.al (2020) examined the effect of the risk posed by the pandemic on Uganda's firms, mainly focusing on business operation, finance and employment. Their assessment indicated that small and medium businesses had experienced the largest effects of the risk associated with the pandemic compared to large scale businesses. Likewise, the World Bank (2021) conducted a rapid response phone survey on Kenyan business firms to provide insights on the socioeconomic impacts of the pandemic. The study revealed that more than 90% of the surveyed firms experienced a decline of sales compared to the same year before the COVID-19. The study further shows that sales, demand, cash flow, and available finance all declined by more than 50% on average by

August 2020 compared a year ago of the survey. Specifically, small and female-owned businesses enterprises were disproportionately hit by the pandemic. Apedo-Amah et.al (2020) also undertook a comprehensive assessment of the short-term impact of pandemic on businesses worldwide with a special focus on developing countries. They underlined that the COVID-19 shock has been severe and widespread across firms, with persistent negative impact on sales, employment and finance availability that strongly disrupted them to undertake proper production, with considerable uncertainty on their future operation.

With retrospective data generated from the World Bank Enterprise Survey (WBES), Golubeva (2021) also estimated the impact of the pandemic on firms' performance across 13 countries including African countries such as Chad, Niger, Togo, Zambia and Zimbabwe. The result shows that there has been considerable impact of the outbreak on business operation, employment and sales performance of the firms in each country, though with noticeable degree of variation among the study countries. In Chad, about two-third (65.8%) of the firms closed permanently or temporarily soon after the outbreak of the pandemic, while this was about a quarter (25.5%) for Zambian firms, about 11.9% for Niger firms, 13.6% for Togo and 11.9% for Zimbabwe enterprises. Compared to a year ago, by December 2020, significant monthly sales changes were observed across the African case studies, with the highest in Niger (56%), Guinea (55.5%) and Zimbabwe (53.9%), followed by Togo (44.7%) and Zambia (43%). Another similar study that used rapid business survey conducted by the Enterprise Analysis Unit of the World Bank Group indicates that about 60% of firms in Africa reported suspending operations at some point since the outbreak of the pandemic, equivalent to revenue losses for almost two months (Aga & Maemir, 2021). Further analysis of this empirical study revealed that sales of the African firms contracted on average by about 45% and employment declined by 22% compared to the pre-COVID level, and over 87% of firms reported experiencing liquidity/cashflow shortages, compared to same month in 2019 (Ibid).

## Data and Methods

### Data

This study makes use of primary data of business establishments collected using a rapid survey questionnaires designed according to the Business Climate Index (BCI) Methodology (Sauer & Wohlrabe, 2018). Two hundred (200) firms were randomly selected from a pool of business firm lists obtained from the databases of the Ethiopia-UNDP Entrepreneurship Development Center (EDC) and Policy Research Institute (PSI) that both had database on business establishments of different size in Ethiopia. The survey was conducted via telephone interviews by highly experienced enumerators in similar tasks. Given the prevalence of the pandemic, the advantage of this method entails being relatively light and inexpensive and, above all, it is in line with the measures outlined by the Government to prevent the spread of COVID-19. The questionnaires were designed in a way suitable to measure the business impact of the pandemics on different size of firms: micro business; small scale business; medium enterprises and large manufacturing companies.

During data collection, managing directors and business owners were asked to provide real time data on the adverse impact of the COVID-19 pandemics since its outbreak and their expectation on business continuity/survival in the next 6 months of COVID-19 era. Response rate was quite high to the extent of 95.5%. Only 4.5% of the phone surveys were not successful due to managers' refusal to participate, poor telecommunication network and unable to recover failed calls due to frequent interruptions. Data was collected from June 10 to June 20, 2020.

### Sample

Table 1 reports the characteristics and nature of the surveyed business establishments. It appears that firms have stayed in business operation for on average, for 22.6 years. In terms of size, as measured by the number of employees and capital in 2019, micro business establishment accounts for 12.57% of the surveyed firms; while small scale firms represent for 38.74%. Medium sized firms and large scale also account for 25.65% and 23.04%, respectively. Sector wise, 65.45% of the firms are from the industry sector (textile, garment, leather or footwear; mechanical and electrical engineering; forestry, wood, pulp and paper; food, drink tobacco; metalworking; construction; oil and gas and dairy farming); while the remaining one-third (34.5%) are from the service sector (that includes hotels, tourism, catering; financial services; education; media, culture & graphics, health services and commerce). About 80% of the firms are located around Addis

Ababa area and within its vicinity, while the other one-fifth (20.42%) of them are from outside Addis Ababa across other regions of the country. Likewise, one-fifth (20%) of the surveyed firms are exporting firms such as flower and shoe products to international markets.

Table 1: Descriptive Statistics of Surveyed Business Establishment

Firm characteristics	n	mean (% or #)
Firm is located in Addis Ababa	191	80%
exporting firms	191	21%
Average years of establishment (ages)	190	22.66
Firm Size		
Micro scale	24	12.57
Small scale	74	38.74
medium scale	49	25.65
large scale	44	23.04
Ownership		
Private-Male-owned	133	69.63
Private-Female -owned	33	17.28
Foreign owned	9	4.71
Share-owned	9	4.71
Publicly owned	7	3.66
Sector		
Industry	125	65.45
Service	66	34.55

## Measurement and Analysis

To easily capture the adverse impact of the pandemic, we summarized various business indicators into measurement scales. This includes the construction of business category indicators and other measures of descriptive statistics. Sever business change and performance indicators are analyzed mainly using descriptive statistics. Firms' senior managers and sales personal were asked as to roughly estimate what could be the impact of Covid-19 on their business until June 2020 in terms of percentage of reduction in revenue, production and employment compared to the usual business

operation before the COVID-19 pandemic. Business impacts are approximated by “No Change”, if the response on the level of business activity, as measured by sales (revenue), production and employment are the same in both before and after the pandemic. “Modernly Reduced” if the impacts on these business measurements are between 1 to 49% reductions, “Severely Reduced” if the impacts are between 50%-100% or “Increase” if there is a rise in any of the business indicators after the outbreak of the pandemics. For more clarity, the measurement scales for business activity are described as follows:

Table 2: Measurement scale of the effect

	Scale	Business status
1	Percentage change is zero	No change
2	1% to 49% reduction	Modernly Reduced
3	50-100% reduction	Severely Reduced
4	Percentage change is positive	Increase

To better understand the factors behind the severe or adverse impact of the pandemic on the selected business activities, we further run three logit models.

The general logit model is formulated as:

$$Y_i = \mu + \beta X_i + e_i$$

where  $Y_i$  refers for severely impacted business indicators and assumes 1 if there is a reduction of between 50-100% in revenue generation; employment and production since the outbreak of the pandemic and assumes 0 if the reduction in these business indicators is less than 50%; or has seen “no change” or if there is a “positive increase” in these business indicators. Likewise,  $X_i$  stands for explanatory variables that account for the variation in severely impacted and that account for the heterogeneity in business impact on the business establishments. The predictors include whether the firm has cash flow to maintain operation for 6 months or more; sector of the firm belongs to (service or industry); gender of the firm owner; location (located in Addis Ababa city or outside of Addis Ababa); firm size, ages of firms in years and exporting firms.

## Findings

This section presents the findings on the adverse impact of the COVID-19 pandemic on business activities of firms in Ethiopia just within the first three months of the pandemic detected in Ethiopia. The impact is measured in terms of business operation closures (temporary or permanent), suspension of employment, revenue reduction, and finance instability, along with policy responses, expectations, and related issues.

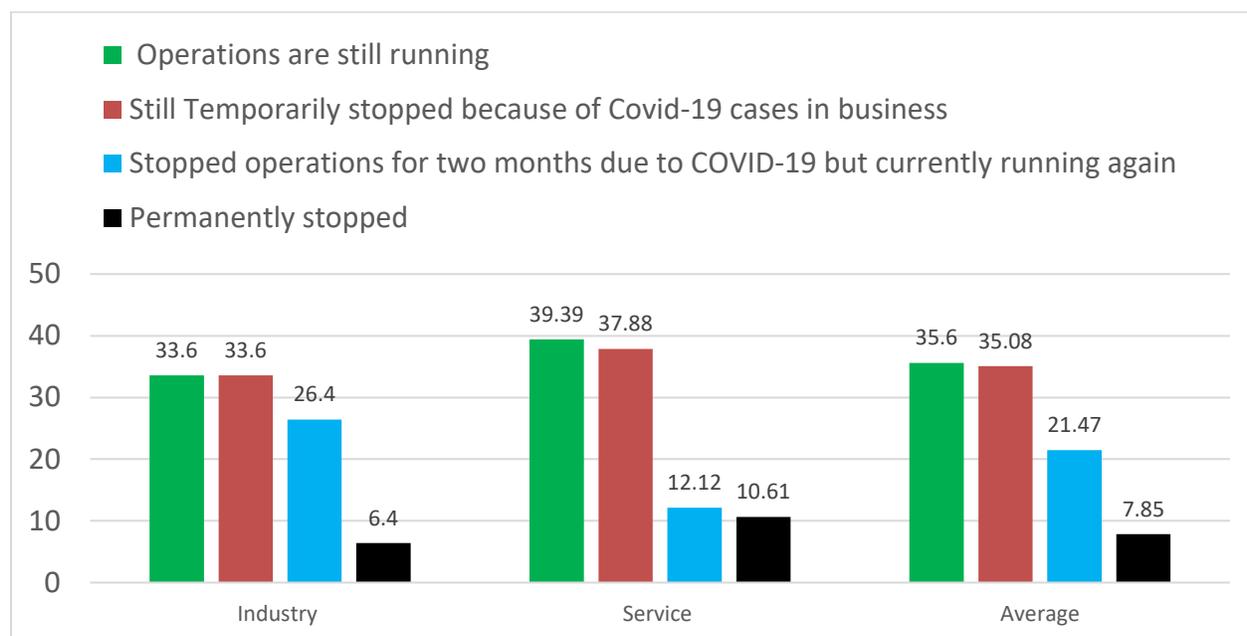
### **Impact on Business Operation or Closures**

Figure 2 reports the overall impact of the COVID-19 pandemic on business operation. It appears that of the surveyed business enterprises two-third (64.4%) of them temporarily or permanently stopped business operation within three months of the outbreak of the pandemic. This implies that only one-third (35.6%) of the business enterprises have fully been operating by June 2020. Asked further on their current status and future business operation of the firms that stopped operation, the business managers provided mixed responses. About one-third (35.08%) them pointed out that they temporarily stopped because of COVID-19 cases in their business, but have a plan to resume business whenever there is easing on the restrictions on place to contain the pandemic. Another 7.8% of them responded that they permanently closed their business because of the impact on their business and due to the fact that there was little hope for them to come back to business or things get back to normalcy. Only One-fifth (21.47%) of the business enterprises stopped operation when the government first order complete shutdown on March 13, 2020, but resumed business by June 2020.

Sector wise, it seems that both the service sector and industry (manufacturing) hit the hardest by the pandemics. In both the service and industry sectors, about half of the firms have either temporarily or permanently stopped operation.

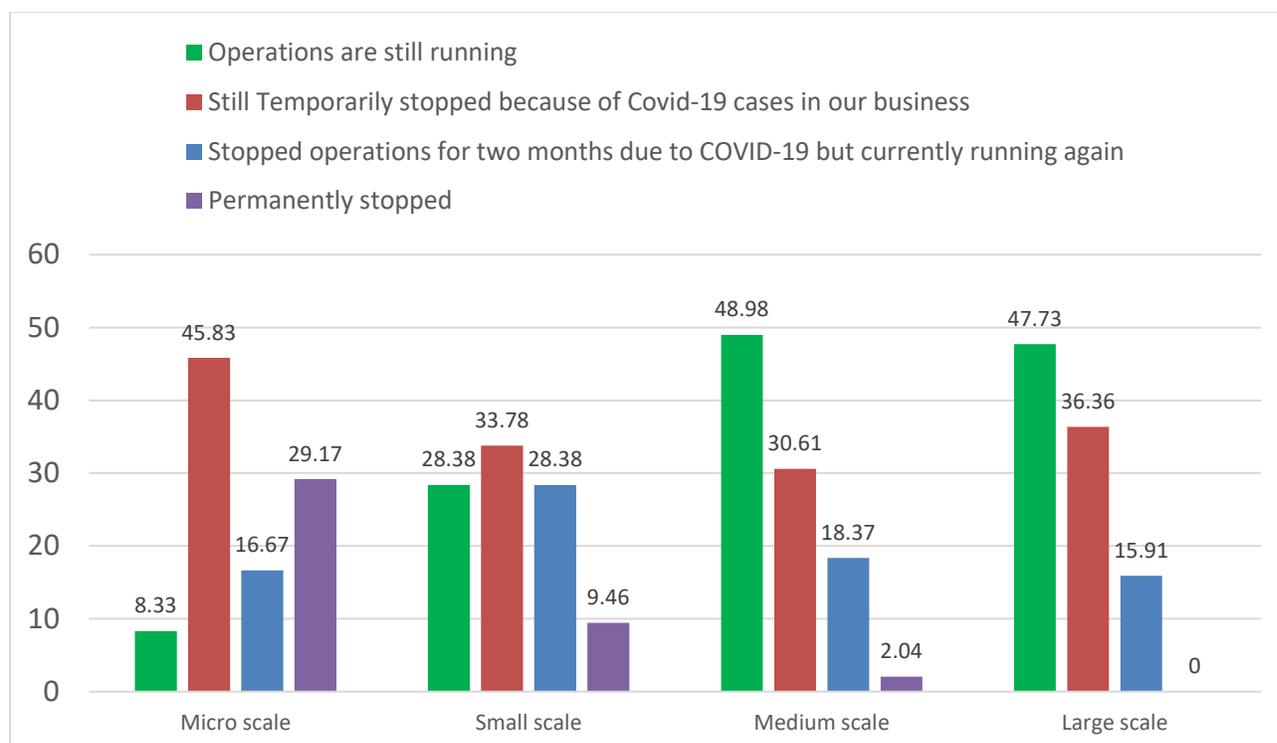
There was however a good come back for the industry sector in which about 26% of the firms of the sector reopened their business after three months of shutdown, while this was only 12.2% for the service sector.

Figure 2. Impact of COVID-19 on business closure, by sector (%)



In terms of firm size, micro and small firms found to be affected the most by the pandemic. By way of example, 29.17% of the micro and 9.46% of the small firms permanently stopped operation and they had little hope returning to business in the near future, while about 45.83% of Micro and 33.78% of the Small scale enterprises had temporarily stopped because of COVID-19 crisis in their businesses. On the flip side, about half of the Medium scale (48.98%) and Large Scale (47.73%) continued operations regardless the pandemics although nearly one-third of them temporarily stopped. In terms of permanent business closure it seems that the impact was much severe on micro and small enterprises as evidenced by the fact that 30% of Micro and nearly 10% of Small permanently closed their businesses, while this was estimate to be only 2% for Medium scale and no large firm has permanently closed its business. This implies Micro and Small firm could not stand the crisis because of their limited economic of scale in their business operation.

Table 3: Impact of COVID-19 on business closure, by firm size (%)



### Impact on Revenue (Sales) of firms

Table 3 reports the impact of COVID-19 on firms’ sales business grouped by sector. Firms operating in the service sector (71.21%) were the most affected by the pandemics, compared to firms operating in the industry (60%). Only 2.09% of the firms mainly operating in the manufacturing sector have shown a slight increase in their sales business after the pandemic. The sever shocks in the service sector stemmed from the fact that the sector was facing an almost complete loss of customers as evidenced by near-empty hotels, restaurants, bars, barbers/salons; of taxis barely finding riders; and of tourist sites experiencing major cancellations.

Table 3: Impact of COVID-19 on business sales, revenue, by sector (%)

	No change	Moderately reduced	Severely reduced	Increase
Industry	6.4	30.4	60	3.2
Service	13.64	15.15	71.21	0
Total	8.9	25.13	63.87	2.09

Pearson chi2 (3)= 9.4997; Pr=0.023

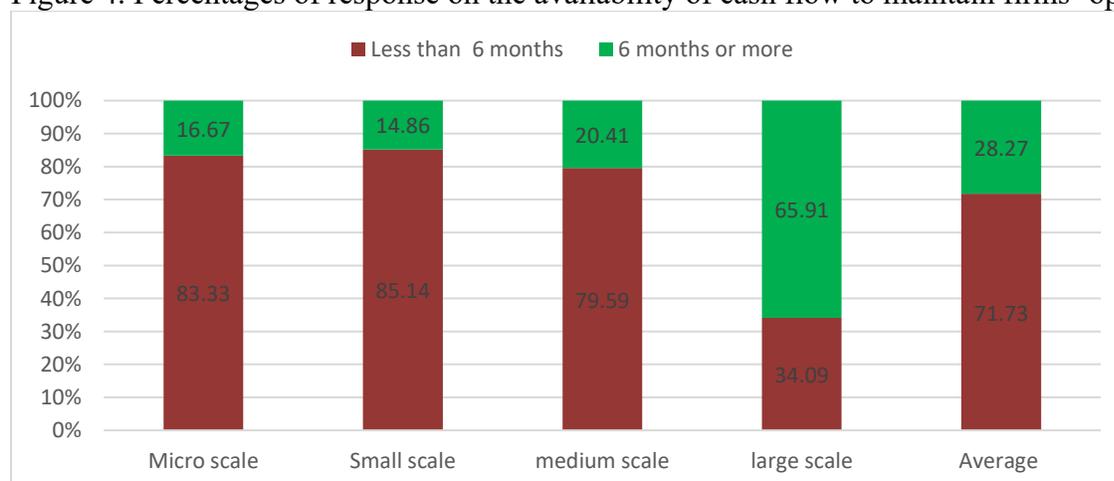
In terms of firm size, micro (70.83%), small (62.16%) and medium (67.35%) sized firms experienced severe reduction on sales business compared to large enterprises. Only about 9% of the firms have seen no change in revenue generation.

Table 4: Impact of COVID-19 on firms’ revenue (sales), by firm size (%)

	No change	Moderately reduced	Severely reduced	Increase
Micro scale	20.83	8.33	70.83	0
Small scale	8.11	25.68	62.16	4.05
medium scale	2.04	28.57	67.35	2.04
large scale	11.36	29.55	59.09	0
Total	8.9	25.13	63.87	2.09

Given the fact that business revenues were short cut due to the pandemics, we further asked them how long their firm’s current cash flow could maintain their business operations. Percentages of response are reported in Figure 4. Only about 28.27% of the surveyed firms had cash flow to maintain operation for more than 6 months, while more than one-third (38.74%) of them had only for less than 3 months deposit. Indeed, another 17.28% of the firm even claimed that they had cash flow only for less than a month. The remaining 15.7% of the firms had cash flow to cover 4-5 months’ business operations. As a means to deal with the cash flow shortage firms were struggling to get loans from commercial bank, microfinance companies or private individuals and reduction of operating costs (e.g. layoffs and salary reductions).

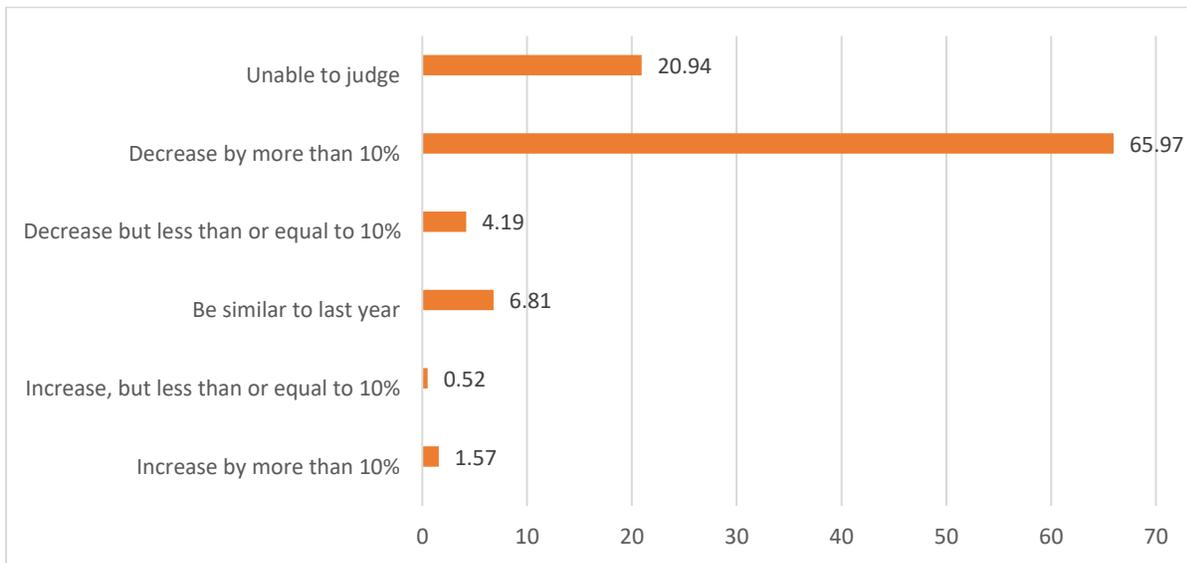
Figure 4. Percentages of response on the availability of cash flow to maintain firms’ operation



Pearson  $\chi^2(3)=40.3828$  Pr=0.000

Compared to 2019 of the same time of survey (June, 2020), about two-third (65.97%) of the firm also predicted that their revenues would be reduced by more than 10% in 2020, while about 21% of the firm managers were unable to predict on the current economic condition of their firms due to lack of information on the nature the pandemic. More than half of the firms also agreed that the revenue expectation would be more or less similar across the industries, with a pessimistic expectation on revenue generation over the course of 2020.

Figure 5: Percentage of Revenue expectation in 2020 compared to 2019 (%)



### Impact on production

Like in the revenue generation reduction, similar impact was also observed on production, where about 59.16% of the surveyed firms were severely affected, with 26.18% moderately reduced and 1.05% increase in production. Only 13.61% of them responded that there was “no change” in their level of production as they had not stopped their business operation. There was heterogeneity by firm size, however. Micro scale firms are hit the hardest with 70.83% of them experienced severe shock on production. The same was with the sectoral effect, where the service sector was somewhat severely impacted than the industry.

Table 5: impact on production, by firm size and sector-wise (%)

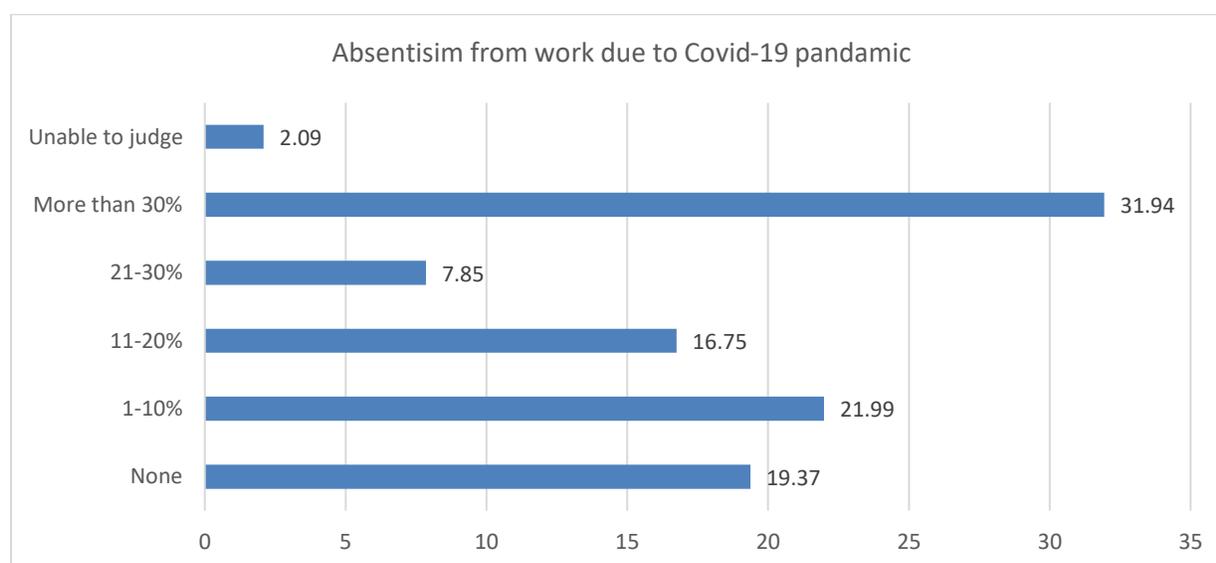
Firm size	No change	Moderately reduced	Severely reduced	Increase
Micro scale	20.83	8.33	70.83	0
Small scale	10.81	27.03	59.46	2.7
medium scale	6.12	32.65	61.22	0
large scale	22.73	27.27	50	0
Average	13.61	26.18	59.16	1.05
Sector-wise				
Industry	6.4	33.6	58.4	1.6
Service	27.27	12.12	60.61	0
Average	13.61	26.18	59.16	1.05

Pearson  $\chi^2(3) = 22.5278, Pr = 0.000$

### Impact on employment

Overall, about 65.97% of the firms reported that about 1% to 30% of the workers were unable to come to work at present, while other one-third reported that more than 30% of the workers did not appear to work. Only less than 20% of the workers were doing with full workforce, mainly firms engaged in manufacturing and textile industry. The impact was more pronounced in small scale firms or the service sector. The reduction employment can be also demonstrated by the fact that 31% of the firms confirmed that more than 30% of their workers are not coming to workplace over the last two months. Only 19% of them firms responded that none of their workers are absent from the workplaces since the outbreak of the pandemic.

Figure 6: Percentage of Absenteeism from work due to Covid-19 pandemic (%)



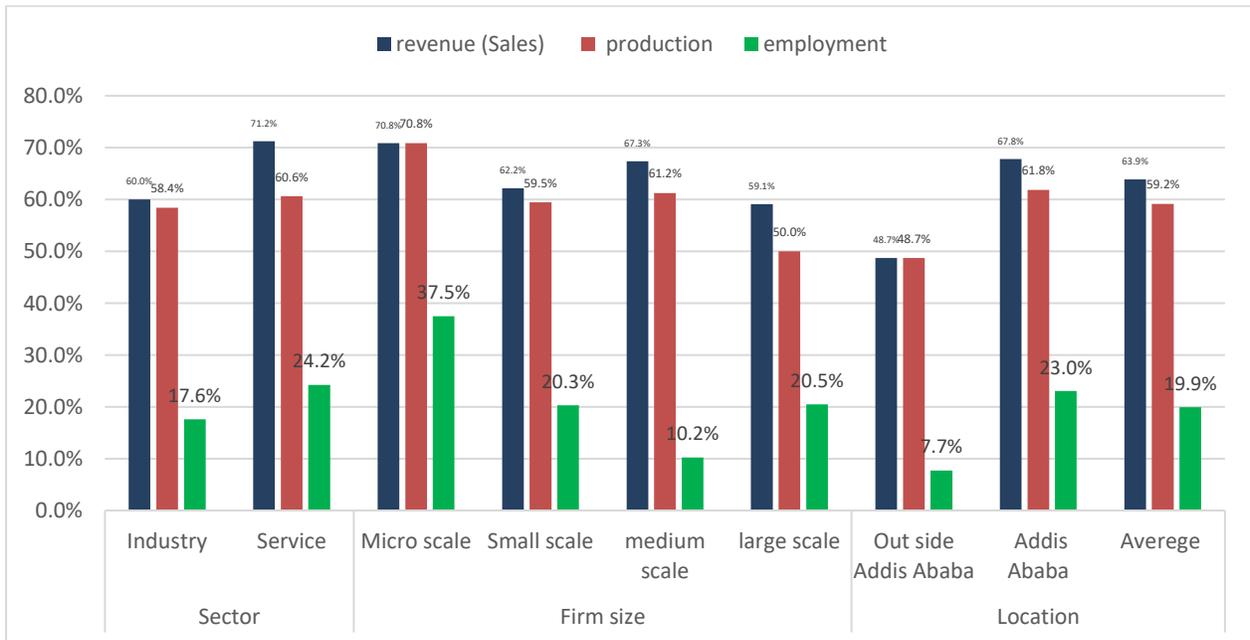
The adverse impacts on employment by firm size and sector was somehow similar to the other business indicators discussed above ( Table 5), where micro scale firms ( 37.5%) were severely affected by the pandemic compared to the other firm sizes.

Table 5: The impact of COVID-19 on employment, by firm size and sector-wise (%)

Firm size	No change	Moderately reduced	Severely reduced	Increase
Micro scale	29.17	33.33	37.5	0
Small scale	32.43	45.95	20.27	1.35
medium scale	38.78	51.02	10.2	0
large scale	50	29.55	20.45	0
Average	37.7	41.88	19.9	0.52
Sector-wise				
Industry	37.6	44.8	17.6	0
Service	37.88	36.36	24.24	1.52
Average	37.7	41.88	19.9	0.52

For those severely impacted firms and for better references, Figure 7 summarizes all the business impacts for the three indicators. One additional point here is that firms in Addis Ababa and its vicinity were severely affected than those outside Addis Ababa. This, in fact, makes sense as the measures in place to contain the pandemic were more stringent in the city and around than in other parts of the country, where mobility was not significantly reduced as it had happened in Addis Ababa and surroundings.

Figure 7: Percentage of severely reduced business activity



## Model estimations

### Employment impact

Marginal effect from logit model shows that a firm that has cash flow to maintain operation for 6 months or more are 13.7% less likely to be severely affected than a firm that doesn't have cash flow to mention 6 months' business operation. Sector wise, employment in the service sector is 11.9% more likely to be severely affected than employment in the industry sector. Many hotels have started giving workers mandatory leave (some paid, some unpaid) on the expectation that this will be temporary, but if conditions persist for many months a large share of those staff may be laid off (potentially affecting tens of thousands of workers).

It also appear that micro enterprise are 17.5% more likely to be severely impacted by employment reduction then SME and large firms. The probability to be severely affected in terms of employment for a firm in Addis Ababa city is also 13.2% more likely than a firm outside the city. Exporting firms are found to be more resilient than non-exporting firms. One interesting findings is that firms owned by female entrepreneurs are less likely to be several impacted (13.9%) than firms owned by male entrepreneurs.

### Production and revenue impact

The last two columns of Table 8 show that the impact of the crisis on revenue generation and production is similar. In both models firms with availability of cash flow for six months or so are found to be more resilient to stand the crisis by continuing business operation and revenue generation, respectively, 21.5% and 25.2% less likely to be severely affected than firms with limited cash flow (of less than 6 months). Firms operating in the service sector are also 19.1% more likely to be severely affected in revenue generation than counterpart firms operating in the industry sector. Age of firms, which is a proxy for market power, is also found to be with less likely effected in both revenue and production. Like in the employment model, firms owned by female entrepreneurs are found to be less to be severely affected by the crisis than firms owned by male entrepreneurs.

Table 8: estimations of Logit models on the predictors of severe shock in business activities as measured by employment, revenue and production

VARIABLES	(1) Employment is severely reduced: Logit (mfx)	(2) Revenue is severely reduced: Logit (mfx)	(3) Production is severely reduced: Logit (mfx)
Firm has cash flow to maintain operation for 6 months or more (=1)	-0.137*** (0.046)	-0.252*** (0.087)	-0.215** (0.085)
Service sector (=1)	0.119* (0.065)	0.191** (0.074)	0.088 (0.081)
Female firm Owner (=1)	-0.139*** (0.043)	-0.302*** (0.106)	-0.232** (0.102)
Firm is in Addis Ababa (=1)	0.132*** (0.047)	0.174* (0.096)	0.130 (0.095)
Firm is micro scale(=1)	0.175* (0.104)	0.068 (0.106)	0.102 (0.110)
Age of firms in years	-0.002 (0.002)	-0.006** (0.002)	-0.006*** (0.002)
Exporting firm(=1)	-0.093* (0.052)	0.145* (0.083)	0.102 (0.091)
Observations	190	190	190

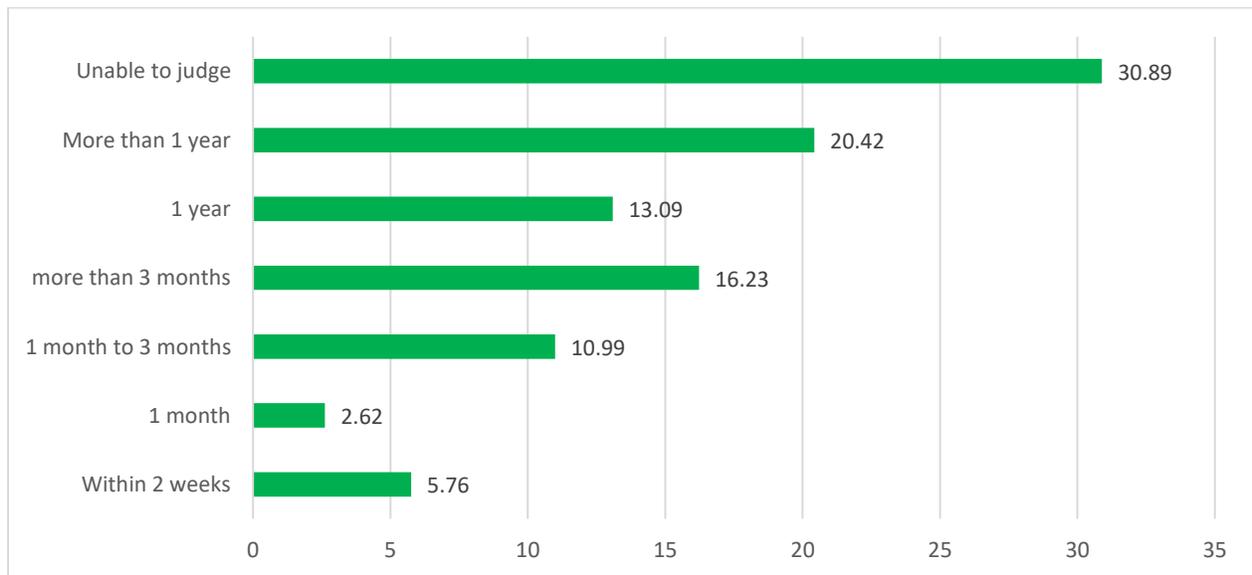
Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Recovery Period

Firms were also asked to estimate their business recovery period. A one-third of the firms are not unable to predict the expected time for their business recovery as the situation is still getting worse and there is limited light at the end of the tunnel. Other 33.42% of them estimated that it will take them a year or more to recover from the impact resulted in. Only few others will take them less than three months.

Figure 8. Expected time for business recovery



## Occupational safety and health challenge

The findings shows that two senior managers of the business companies confirmed that they have the information two of their workers have contracted the virus. In this way, many of the firms are taking actions to protect workers from being infected. Many of the actions include

- Informing workers on Covid-19 transmission and prevention measures
- Encourage workers to stay home when they feel sick
- Physical distancing between workers
- Implemented shift work
- Teleworking
- Temperature checks
- Providing personal protection equipment like masks
- Expanded paid sick leave

- Business development support

As presented in the table below, higher proportion of the firms have prioritize several business development and government supports so as to recover and mentina their business operations. The following are a few among these prioritized by the firms

- More information on transmission and spread of the virus
- More clarity on official measures to contain the crisis
- Supplies of personal protection equipment like masks, thermometers, sanitizers, etc.
- A legal advice on application of labour laws and regulations during crisis
- Access to cash / short-term finance
- Price controls of critical goods
- Deferring payments of utilities
- Extension of social protection for workers

Table 6. Business development services firms prioritize to recover from the pandemic’s impact

	1st priority	2nd priority	3rd priority	Lower priority
Advice on how to prevent infections while maintaining business operations	53.4	8.9	26.7	10.99
Advice with business continuity planning	24.08	37.17	21.47	17.28
Business advice on diversification of products and sales channels	81.15	1.05	13.09	4.71
Advice on export and logistics restrictions and requirements	78.53	5.76	10.99	4.71
Online business management training	93.19	2.09	2.09	2.62
Online worker training	76.96	5.76	8.9	8.38
Legal advice on application of labour regulations during crisis	97.91	1.05	0.52	0.52

## Conclusion

This study aims at providing very quick insights on the adverse impact of the COVID-19 pandemic on firms’ business activities with in the first three months of its outbreak in Ethiopia. Survey was conducted by interviewing senior managers and sales personals of the firms with respect to the impact on business activities: production, revenues and employment, difficulty in access to

finance, and future expectations in the event the crisis persists for 6 months. Results show that of the surveyed business enterprises, two-third (64.4%) of them temporarily or permanently stopped business operation within three months of the outbreak of the pandemic. In terms of revenue impact, 63.87% of them were severely affected as their sales volumes were reduced by more than 50% since the outbreak of the pandemic, while other 25% of them were moderately affected in which their sales volumes were reduced by below 50%. Only 2% of the surveyed firms have seen a rise in revenue since the outbreak. Sector wise, the service sector was found to be the most vulnerable as business was affected the most. Likewise, micro and small scale firms hit the most, where considerable percentage of these firms were unable to resume operation after the lockdown. Only 20% of the firms were found to be unaffected by the pandemic and have never stop their business operation. The employment impacts across the sectors and firms size were also sizable, but relatively lower than the impacts on revenue and production. This might related to the fact that the government's policy that orders firms to pay workers regardless their appearance to the workplace for some time during the crisis. Also, a one-third of the firms were not unable to predict the expected time for their business recovery as the situation was/is still getting worse. Other 33.42% of them estimated that it takes them year or more to recover, while only few others predict that it takes them less than three months.

### **Policy implication**

Given the sever impact of the pandemic on business activities of the firms, there is a need for the Ethiopian Government to introduce an appropriate packages to support business enterprises, particularly for those micro and small scale firms as they are affected the most by the pandemic. The government support especially needs to be geared to create financial access so that those affected the most will resume business their by keeping workers and taking appropriate protection for the measures put in place by the Government.

In addition to the support packages, there is a need for establishing a system so that it will be easy to monitor and evaluate whether introduced support package work or respond to the adverse impacts on business enterprises.

It has become evident that not only do the business enterprises report that they have experienced complete shutdown of business operation, but they also have very limited information as to what would happen over the coming months as there were high uncertainties over the prevalence of the pandemic. In response to this business uncertainly, it would be imperative if the government can

come up with clear roadmap as to how to respond the pandemic in such a way the business enterprises will continue operations with minimum risks of adverse impacts.

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**Can networking help in facilitating the internationalisation of SMEs in the aftermath of COVID-19? - A survey among Mauritian export-oriented SMEs on the perceived benefits of networking to their internationalization**

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**Abstract**

**Purpose.** Considering the wide array of market opportunities offered by globalisation, many firms across the world have tried to extend their activities beyond their national borders. While some have been successful in their international ventures, others have failed miserably for several reasons. International failures among SMEs are quite common and have disastrous consequences on their survival and growth. Extant literature demonstrates that networking can significantly support and accelerate firms' internationalisation process. Against this backdrop, the objective of this study is twofold: firstly, it identifies the main export barriers faced by SMEs and secondly it investigates the perceived benefits of networking to SMEs' internationalisation. The findings of this study can assist policy makers to make informed policy decisions aimed at supporting the internationalisation of SMEs which are key contributors to the socio-economic development of the Mauritian economy.

**Design/Methodology/Approach.** To achieve the objectives of this study, data were collected from 101 SMEs in Mauritius using the survey method. A questionnaire was developed based on a thorough review of the literature review on SMEs' internationalisation barriers and the benefits of networking. Data collected were analysed using the IBM SPSS Statistics V20.0 software. Exploratory factor analysis was conducted to identify the major underlying export barriers to the

internationalisation of SMEs and descriptive analysis was used to examine the perceived benefits of networking to SMEs' internationalisation.

**Findings.** Findings of the study revealed that respondents widely acknowledge the importance of networking to the internationalization of SMEs. They consider that network relationships help in sharing information, improving financial performance and enhancing the brand image internationally. Moreover, government agencies were identified as the most important source of networking. Furthermore, among the six underlying export barriers identified in the study (i.e. Environmental, Informational, Functional, Procedural, Logistical and Politico-economic), respondents considered that informational and political-economic barriers significantly influence their internationalisation.

**Practical Implications.** The findings of the survey call for a change in the current policies to promote the internationalisation of SMEs, more specifically in the context of the COVID-19 where restrictions are being imposed on the movement of people and goods globally. It is proposed that SMEs owners co-operate with multiple stakeholders and put considerable efforts into networking with institutions, business organisation and international authorities. Entrepreneurs should also consider new forms of networking based on ICT to increase their social capital such as virtual meetings, virtual participation in trade fairs/exhibitions as well as online seminars and conferences. It is further recommended that policy makers continue to support financially SMEs that intend to internationalise their activities in the current context where entrepreneurs are facing economic problems due to the COVID-19 pandemic.

**Originality/Value.** This study has demonstrated the importance of networking to the internationalisation of Mauritian export-oriented SMEs. It has also identified the main barriers that can hinder the motivation and ability SMEs to tap into the international market opportunities.

**Key Words:** Networking, Internationalisation, SMEs, Internationalisation Barriers

## **Introduction**

The SME sector plays a noteworthy role in the socio-economic of most economies around the world, in particular in developing and emerging nations. According to Gherghina, Botezatu Hosszu and Simionescu (2020:1), SMEs exert a significant role in reducing poverty, creating employment, promoting foreign trade promotion and fostering innovation in an economy. In Mauritius, the

government depends heavily on the contribution of small firms to drive economic growth and the democratization of the economy. Presently, the SME sector is considered as an important contributor to the economic prosperity of the country by contributing to around 40% to the GDP and 60% to employment. The SME sector produce some 120 billion Mauritian rupees worth of output annually and employs around 200,000 employees in different sectors of the economy. However, over the years, the competitive pressures created by economic globalisation has been threatening the survival of the local SMEs. Recently, the global COVID-19 pandemic has worsened the economic situation of these businesses which are more vulnerable to the external shocks compared to their larger counter parts. Although the government has been continuously supporting them during this tough time, a few of them has closed down their operations.

Internationalisation which is defined by Eriksson (2016:27) as “*the cumulative process in which the enterprise gradually increases its international involvement through the continuous establishment and development of relationship*” represents a serious option for the growth of SMEs which are confronted with the limited size of the local market. The smallness of the local market indeed prevents them to benefit from the economies of scale. Realising the SMEs’ potential to grow internationally and their size related constraints, the government of Mauritius has set up various schemes to support their development and internationalisation. While a few SMEs have achieved international success, many of them have failed miserably in their international venture. It has also been observed that a limited number of SMEs made an attempt to internationalize their business. Hence, the first objective of this study is to investigate the factors that limit SMEs’ internationalisation scope and speed.

Existing literature widely recognizes the importance of networking to the internationalisation of firms, in particular SMEs. Pioneer studies (Johansson & Mattson, 1988) on the role and importance of networking to the internationalisation of firms can be traced back to the 1980’s. For example, Johansson and Mattson (1988) explained that (i) firms form part of network of businesses and (ii) the relationships between the network facilitate their internationalisation process. The importance of networking to the internationalisation of SMEs has also been acknowledged by Eriksson *et al.* (2000) who consider that network exposes SMEs to international markets through an accumulation of institutional, business and internationalisation knowledge which provide intelligence to support the internationalisation process. In similar vein, Senik, Scott-Ladd, Entekin and Adham,

(2011:261) note that networks help businesses to gain knowledge about foreign institutions dealing with current rules and regulations. According to Senik *et al.* (2011:261), networking helps in:

1. Initiating awareness of internationalisation
2. Triggering the need for internationalisation and
3. Accomplishing, strengthening and sustaining internationalisation.

As international business environment continues to evolve during and in the aftermath of the global COVID-19 pandemic, SMEs are likely to face new internationalisation challenges in the new normal era. The question, thus, is “Can networking with business associates, institutions and personal relations facilitate the internationalisation of SMEs?” To answer this question, we investigated the benefits of networking as perceived by the SMEs.

Although the internationalisation challenges faced by SMEs and the benefits of networking to SMEs’ internationalisation is well documented in existing literature, most of these studies have been conducted in developed countries. It is apparent from the literature that there is a limited number of studies which has investigated these internationalisation aspects in developing countries while no such studies have been carried out in a small island developing state. This situation provides an important gap within the existing literature that can be addressed by undertaking more research on the internationalisation of SMEs from SIDS. Hence, this study is an attempt to bridge this gap.

Research surrounding the internationalisation of firms has been ongoing since the 1950’s. These studies have investigated several aspects underpinning firm’s internationalisation namely the reasons/motives for internationalisation, the factors favouring/constraining internationalisation and the modes of entry into foreign markets amongst others. On top of contributing to the literature on International Business (IB), these studies have been used by firms and policy makers to enhance the internationalisation of businesses.

As the SME sector is key to the economic prosperity of the Mauritian economy, the government should support them to overcome their size related constraints. Hence, an understanding of key issues surrounding their growth and internationalisation is essential for effective policy making. The fresh insights gained from this study will assist policy makers in implementing strategies to

strengthen and sustain the network linkages that can facilitate SMEs' internationalisation. The increased internationalisation of the Mauritian SMEs will thus contribute to an increase in exports earnings and viability of the economy.

## **Literature Review**

### **Definition of Internationalisation**

Although many definitions of the term internationalisation exist in the literature, Lopez-Morales (2020:97) note that the term is understood in many ways due to a lack of a concise definition of internationalisation. According to Li Sun (2009:135), internationalisation “*refers to the degree in which a firm’s sales revenue or operations are conducted outside its home country*”. To Boddewyn (1997), internationalization is “*typically characterized by some form of international involvement or engagement in cross-border activity, such as foreign trade and/or investment*”.

Recently, Sannegadu *et al.* (2021:3) reviewed 22 definitions of internationalization and concluded that the term internationalisation constitutes of three main elements namely (i) an incremental process, (ii) cross border transactions as part of the firm’s growth strategy and (iii) the importance of knowledge and access to international network as key considerations to foreign expansion. Combining these three attributes, Sannegadu *et al.* (2021:3) define internationalization as “*a growth strategy that firms implement when they follow a process to expand their operations across country borders*”.

### **Internationalisation Theories**

Existing literature classifies internationalisation theories into three streams namely the (i) economic approach, (ii) behavioural approach and (iii) network approach. These approaches aim at explaining the how and why businesses engage in international market. Emerged in the 1950’s, the economic approach to internationalisation assumes that businesses constantly focus on minimising transaction costs, which can be achieved through organisational structures across national borders (Groth, 2013:9). Hence, the decision to engage in international markets is primarily driven by the cost, benefits, and constraints. On the other hand, the behavioural approach emerged in the 1960s as a new school of thought on foreign operations. The behavioral approach of internationalisation focuses on the overall behavior and performance of the organization including its goals and objectives, managers, employees, directors, workers, customers, suppliers

and the external environment. Finally, the network approach posits that knowledge obtained from the exchange of relationships with other businesses and stakeholders tremendously impact on the international growth and expansion of businesses.

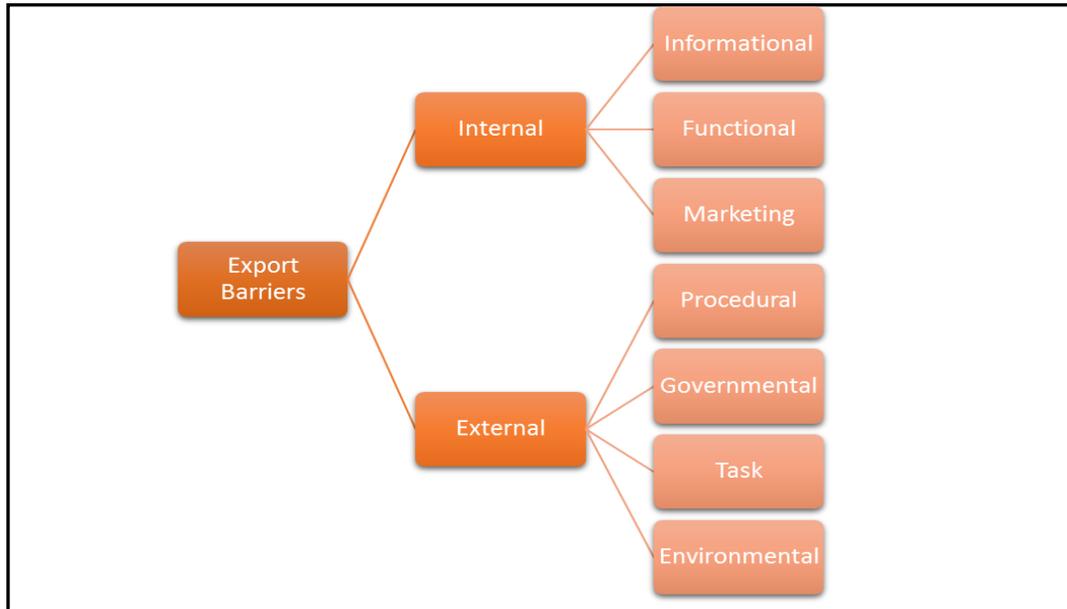
### **Mode of Entry**

Mode of entry refers to the decisions on how firms enter foreign markets (Ferreira, Eiriz & Soares, 2013:275). According to Pehrsson (2008:132), the mode of entry (*How to enter foreign markets?*) is yet another important consideration in executing the decision to enter foreign markets. In this respect, several factors should be considered in the selection of the mode of entry including the risks, costs associated with the respective mode of entry, the size of the foreign market and the knowledge of the foreign market amongst others (Zeqiri & Angelova, 2011). Modes of entry has been classified into three namely the export mode, the equity mode and the investment mode. Firm can use any one or a combination of these modes in exploring foreign markets (Laufs & Schwens, 2014). SMEs are more prone to use export as mode of entry into foreign markets due to resource constraints and a lack of knowledge and experience of the foreign markets (Ruzzier, Ruzzier & Hisrich, 2013:58). Moreover, exporting does not require large capital investments, and carries less commercial and financial risk compared to other equity mode of entry. Since, export is the most frequently used method to enter foreign markets by SMEs, the study focuses on the export barriers constraining their internationalisation.

### **Exports Barriers**

An export barrier can be any factor that dissuade a firm from exporting or hinder its actual export activity (Suarez-Ortega, 2003:403). The exports barriers impeding SMEs' internationalisation have attracted the attention of many researcher, academics and policy makers. These studies have revealed several barriers that SMEs are faced at different levels of their internationalisation including export knowledge, internal resource constraints, procedural barriers and exogenous variables. According to Jalali (2012:55), the Leonidou's work (2004) is one of the most cited papers that develop a conceptual framework to explain and classify export barriers. Leonidou (2004) classifies export barriers into two namely internal and external barriers as presented in Figure 1. A brief description of the exports barriers is presented at Table 1.

Figure 1: Internal and External Export Barriers



Source: Leonidou (2004)

Table 1: Internal and External export barriers

<b>Internal Barriers</b>	<i>Informational</i>	Lack of information on export activities restrict SMEs' internationalisation.
	<i>Functional</i>	Issues related to finance, human resources, and production.
	<i>Marketing</i>	Relate mainly to businesses' products, pricing, distribution, logistics and promotional activities across borders.
<b>External Barriers</b>	<i>Procedural</i>	Relate to unfamiliar exporting procedures/paperwork, poor communication with overseas customers, delay in payments from abroad.
	<i>Governmental</i>	Pertains to a lack of government assistance/incentives, and unfavorable government-imposed rules and regulations.
	<i>Task</i>	Relates to the differences in foreign customers' habits/attitudes and fierce competition in the overseas markets.
	<i>Environmental</i>	Pertains to changes in the economic, political-legal and sociocultural environments of the markets where businesses are exporting their products.

Source: Leonidou (2004:283)

### Networking and Internationalisation

Based on Johanson and Vahlne's (1977) process model of internationalisation, the network model developed by Johanson and Mattsson (1988) is one of the first model to demonstrate the importance of network to the internationalisation of firms. This model posits that the firm's specific position in focal networks gives it access to assets and resources that other companies own

and control. According to Zain and Ng (2006), the knowledge that the firm obtains from third parties including customers, suppliers, distributors, competitors, private and public support agencies, banks, families, friends and relatives, government and other institutions facilitate the internationalisation process. The knowledge obtained through networking is key at different levels of a firm’s internationalisation (Johanson & Mattsson, 1988).

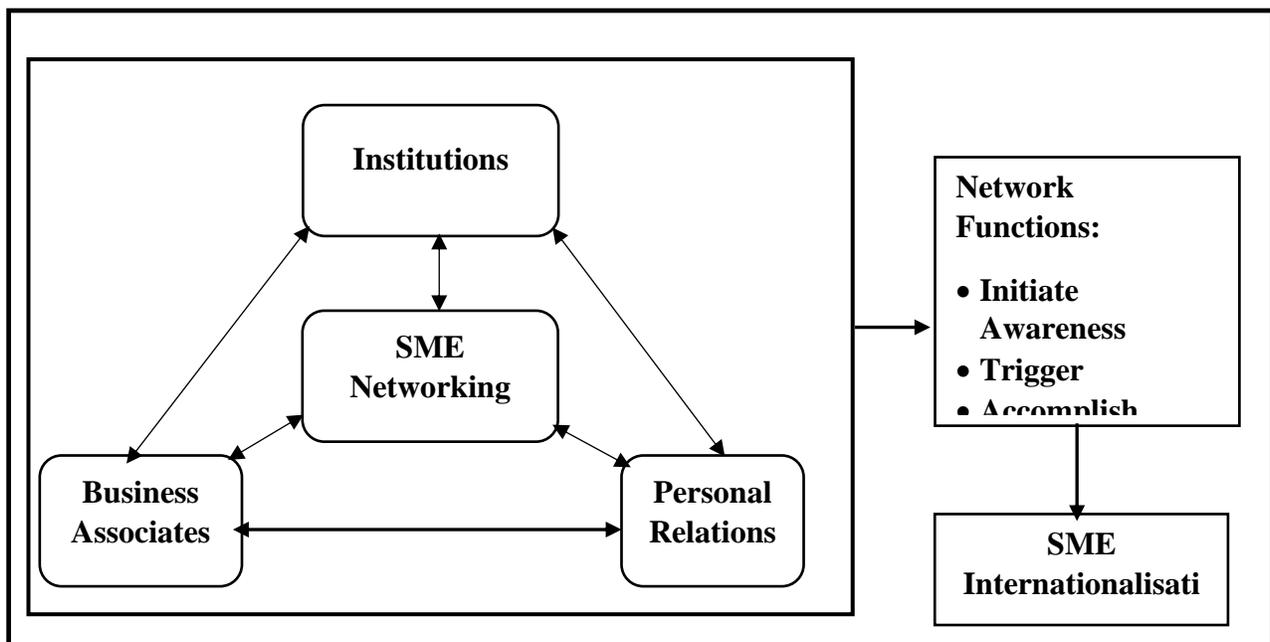
**Sources of networking in SMEs internationalisation**

Networks can be classified into two namely formal network (i.e. business related) and informal network (family, friends and acquaintances). Senik *et al.* (2011) categorise the sources of networking which trigger a rapid internationalisation among SMEs into three namely (Figure 2):

- i. business associates (SMEs owners, directors, or managers of other companies either locally or foreign based),
- ii. personal relationship (family, friends, and relatives) and
- iii. institutions (supporting government agencies and financial institutions).

These networks strengthen and accelerate the internationalisation process of SMEs by providing (i) relevant training, (ii) financial and technical assistance, (iii) support to facilitate their participation in international trade fairs and (iv) knowledge on important aspects of internationalisation.

Figure 2: Sources of networking linkages



Source: Senik *et al.* (2011:261)

According to existing literature, SMEs can interact within the networks in two different ways namely the active way (i.e. SMEs' initiatives to build network relationships) and passive way (network relationship is kick-started by initiatives from the buyers' side) (Ojala, 2009).

### **Importance of networking to SMEs' Internationalisation**

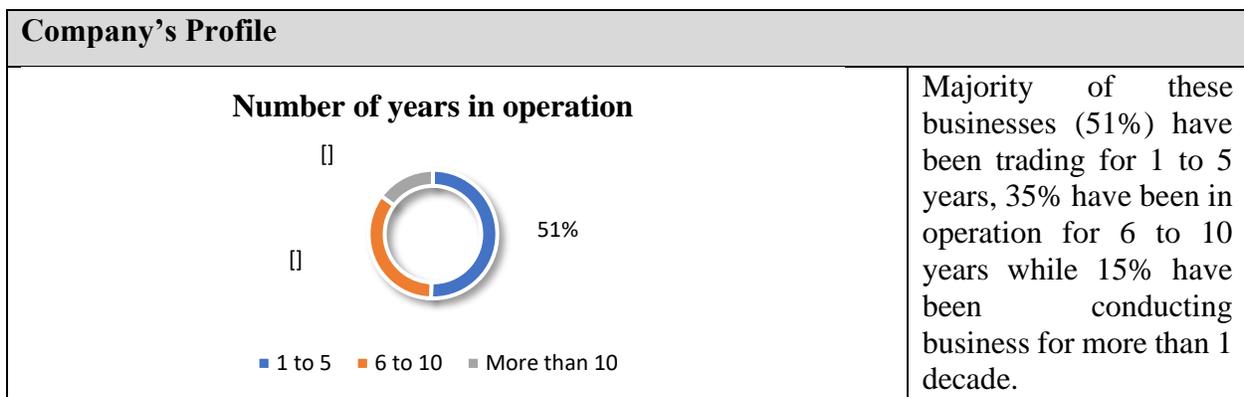
The importance of network to the international growth and performance of firms is widely recognized in IB literature. Several studies have concluded that networking has a high impact in triggering and activating SMEs' intention to engage in international markets. For example, Revindo, Indrawati and Hambali (2019:425) advance three reasons of why network relationships play a crucial role in a firm's internationalization process. Firstly, network relationships help SMEs to overcome internal resource limitation that prevent them from expanding beyond the domestic market. Secondly, the network relationships enable SMEs to leapfrog to distant markets instead of starting their internationalisation process in nearby markets. Thirdly, the relationships with the network help SMEs to accelerate their internationalisation process by skipping some of the steps proposed in the incremental model of internationalisation. Moreover, the collaborative and joint actions reduce adversity among actors of the network which in turn boost the confidence and motivation of SMEs to seriously consider international market as an alternate growth strategy (Chetty & Patterson, 2002). Moreover, network provides a wide pool of information on international market opportunities which the SMEs could not access on their own (Andersen & Buvik, 2002). To Mejri and Katsuhiko (2010), the intelligence derived from the network prompts SMEs' internationalisation decisions while Sannegadu *et al.* (2021) consider that information provided by networking on international opportunities trigger non-internationalised SMEs to initiate international moves. Furthermore, networking allows SMEs to make strategic decision on market-selection and entry-mode (Bell, 1995). The fact that the actors of the network feedback important information to the SMEs, the latter is more prepared to face the internationalisation challenges (Chen, 2003). Moreover, inter-firms' relationships (i.e. through alliances or cooperative arrangements with foreign partners) facilitate the access to international distribution channel.

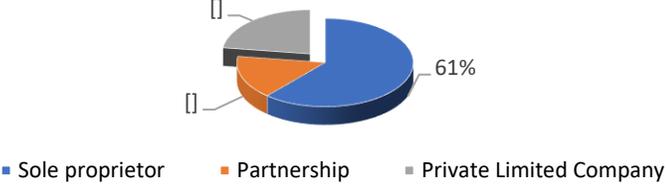
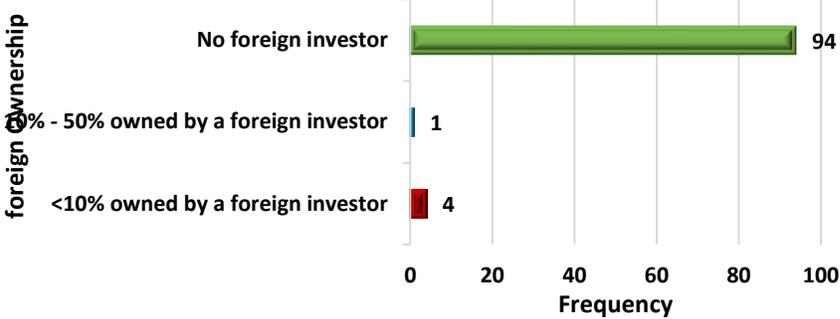
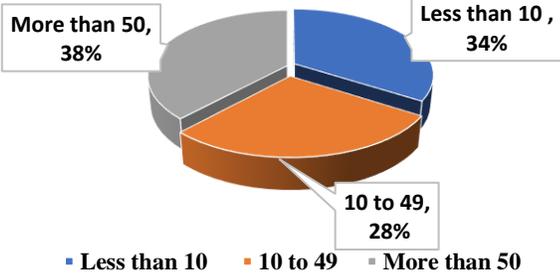
In the Mauritian context, although there is ongoing research on various aspects surrounding the growth and sustainability SMEs, no study has focused on the internationalisation of these businesses. Hence, this study aims to shed light on the internationalisation barriers faced by SMEs and the importance of networking to their internationalisation.

### Methodology Of The Study

In this study, a quantitative research design using a survey method was applied. Data were collected from 101 SMEs owners who were randomly method. The sample was drawn from the population of Mauritian SMEs that are involved in the international markets. Information on these businesses were obtained from SME Mauritius. The sample includes SMEs operating in various sectors of the economy. In line with the objectives of the study and after a comprehensive review of the literature on the internationalisation barriers and the importance of networking to the internationalisation of SMEs, the research instrument in the form of a questionnaire was designed. The survey instrument was pilot tested among a small group of respondents to test its face validity. Item scales measuring the obstacles faced by the SMEs in their internationalisation were measured on a 5-point Likert Scale ranging from 1 to 5 (1 being minor obstacle; 5 being major obstacle). The sources of networking were measured on 10 points Likert Scale ranging from 0 to 10 (0 being “least important” and 10 being “most important”). The benefits of networking were measured on a 5-point scales (1 being to a small extent and 5 being Very great extent). The questionnaires were administered at the firm’s premises across the island. The collected data were thereafter verified, coded and recorded in Statistical Package for Social Sciences (SPSS) Version 21 for analysis. An Exploratory Factor Analysis (EFA) was conducted with the aim of identifying the major underlying export barriers affecting the internationalisation of Mauritian SMEs. The benefits of networking were analysed using the descriptive statistics (mean). These analyses help us to derive the main conclusions on the study.

### Descriptive Analysis



<p style="text-align: center;"><b>Ownership Status</b></p>  <p>■ Sole proprietor   ■ Partnership   ■ Private Limited Company</p>	<p>61 % have a sole proprietorship status, 16% were in partnership while 23% were operating as a private limited company.</p>
<p style="text-align: center;"><b>Extent of foreign shareholding</b></p> <p>foreign ownership</p>  <p style="text-align: center;">Frequency</p>	<p>In very few cases, foreigners have stake in these businesses. Majority of these businesses (95%) are solely owned by Mauritians.</p>
<p style="text-align: center;"><b>Number of employees</b></p>  <p>■ Less than 10   ■ 10 to 49   ■ More than 50</p>	<p>34% of businesses employed less than 10 employees, 28% employed 10-49 employees and 38% had more than 50 employees in service.</p>

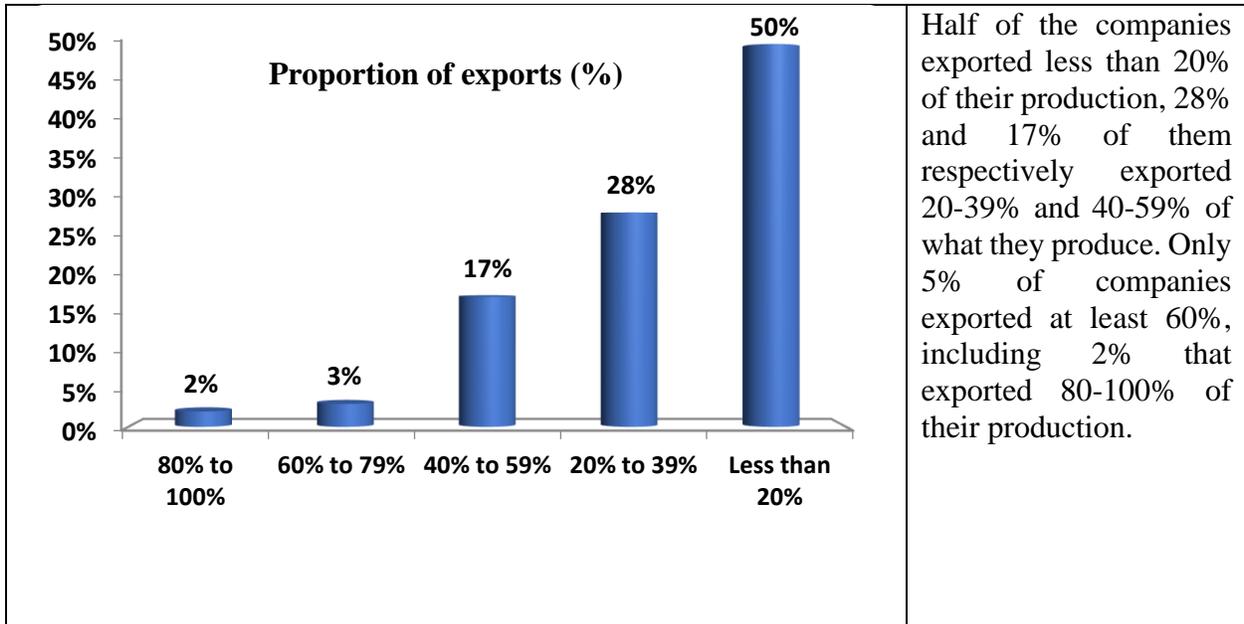


Table 2: Obstacles faced by SMEs in the international markets

	N		Mean	Std. Deviation
	Valid	Missing		
Cash flow to finance exports	101	0	4.51	0.687
Knowledge of foreign markets	101	0	4.42	0.725
Availability of local skilled workforce	101	0	4.24	0.918
Information on foreign markets	101	0	4.38	0.760
Knowledge on export procedures/documentation	101	0	4.32	0.706
Managerial time to deal with exports	101	0	4.26	0.808
Trained personnel to deal with exports	101	0	4.22	0.782
Timely supply of raw materials	101	0	4.03	1.014
Quality of products	101	0	3.89	1.076
Meeting foreign market standards	101	0	3.92	1.093
Use of updated technology	101	0	3.80	1.132
Access to distribution channel in foreign markets	101	0	3.93	1.079
Contacting prospective clients	101	0	3.87	1.083
Handling of export documents	101	0	4.05	0.931
Rules and regulations in the foreign country	101	0	3.82	1.117
Competition from low cost manufacturing countries	101	0	3.82	1.117
Financial assistance from Government	101	0	4.17	1.020
Exchange rate fluctuations	101	0	3.78	1.045
Economic conditions in the foreign market	101	0	3.67	1.132
Tariff and non-tariff barriers	101	0	3.72	1.132
Languages barriers	101	0	3.28	1.401
Cultural barriers	101	0	3.30	1.360
Transportation costs	101	0	3.93	1.003
Shipping arrangements	101	0	4.04	0.999
Government restriction in the foreign markets	101	0	3.95	1.014

Measured on a scale of 1 to 5 (1 being to minor obstacle and 5 being major obstacle)

### **Inferential Analysis- Exploratory Factor Analysis – (Internationalisation Barriers)**

Exploratory factor analysis was conducted with the aim of identifying the major underlying export barriers to the internationalisation of SMEs. Prior to conducting the analysis, the factorability of the 25 items representing the barriers was tested by means of some well-established criteria, as listed below:

- Every item had a minimum correlation of 0.3 with at least another item
- The Kaiser-Meyer-Olkin statistic for sampling adequacy was 0.849, lying above the recommended value of 0.5 (Field, 2005)
- Bartlett's test of sphericity was significant ( $\chi^2(300) = 2078.978, p < .01$ )
- The diagonals of the anti-image correlation matrix were all over 0.7, meaning that each item could be included in the factor analysis
- The communalities were all above 0.6, further confirming that each item shared some common variance with other items.

Since the above indicators met the criteria, it was considered appropriate to conduct factor analysis with all 25 items. Principal components analysis, with orthogonal (Varimax) rotation, was used to extract underlying factors that were as distinct as possible. Using the Kaiser method, six factors were extracted, with the first three initially explaining 41.552%, 10.726% and 6.902% of the variance. The total variance explained was 74.820%, which was excellent for the purpose of analysis.

The six-factor solution was confirmed by the corresponding scree plot, which showed a clear-cut levelling-off of eigenvalues after six factors. Moreover, orthogonal rotation was justified, given that the magnitudes of several component correlations did not exceed the threshold value of .32 (Tabachnick & Fidell, 2007:646).

Based on the grouping of factor loadings in the rotated component matrix, the underlying barriers were labelled as *Environmental*, *Informational*, *Functional*, *Procedural*, *Logistical* and *Politico-economic*. The internal consistency of each factor was examined using Cronbach's alpha, and it was found that the alphas were relatively high, except for the sixth factor: .896 for *Environmental* (5 items), .899 for *Informational* (4 items), .876 for *Functional* (6 items), .890 for *Procedural* (5 items), .834 for *Logistical* (3 items) and .529 for *Politico-economic* (2 items).

***KMO and Bartlett's test***

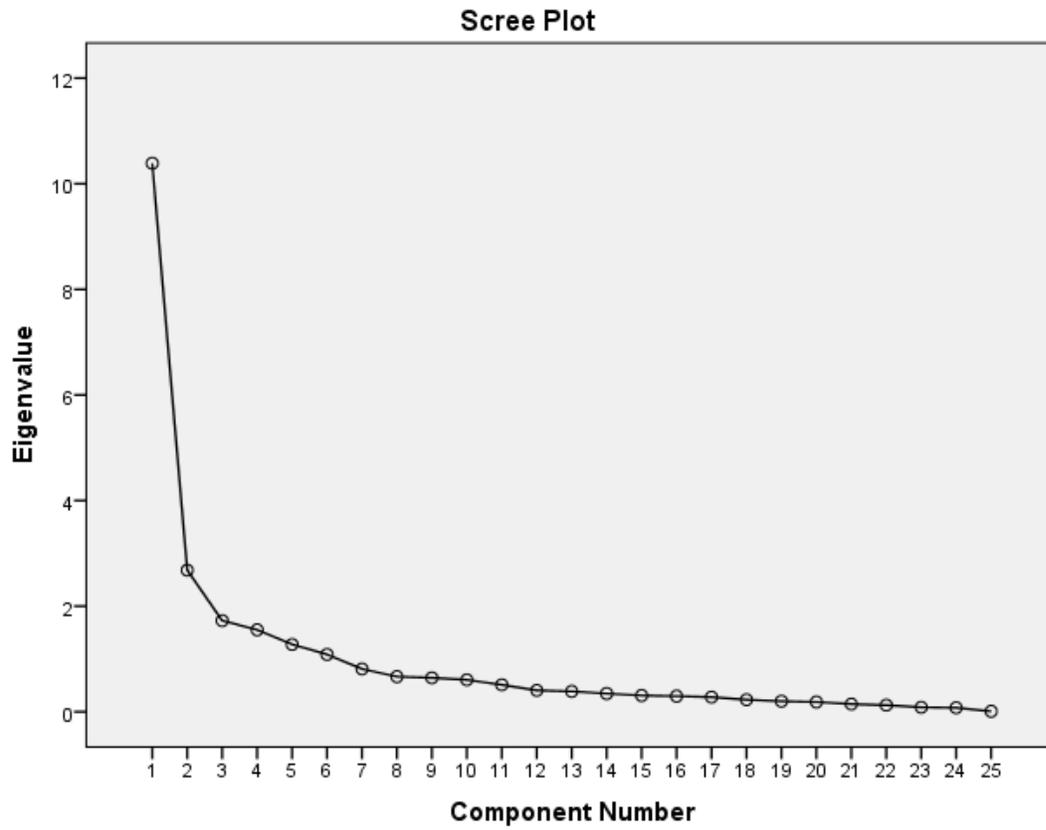
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		<b>.849</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	2078.978
	df	300
	Sig.	<b>.000</b>

***Total variance explained***

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	<b>10.388</b>	41.552	41.552
2	<b>2.682</b>	10.726	52.278
3	<b>1.725</b>	6.902	59.179
4	<b>1.551</b>	6.203	65.383
5	<b>1.275</b>	5.098	70.481
6	<b>1.085</b>	4.339	<b>74.820</b>
7	.811	3.243	78.063
8	.665	2.658	80.721
9	.642	2.568	83.288
10	.604	2.416	85.704
11	.510	2.039	87.743
12	.405	1.619	89.361
13	.386	1.542	90.903
14	.345	1.379	92.283
15	.308	1.232	93.514
16	.296	1.183	94.697
17	.278	1.111	95.809
18	.228	.912	96.720
19	.199	.798	97.518
20	.185	.738	98.256
21	.145	.578	98.835
22	.125	.498	99.333
23	.083	.332	99.665
24	.076	.303	99.968
25	.008	.032	100.000

Extraction Method: Principal Component Analysis.

### Scree Plot



**Table 3: Exploratory factor analysis (Barriers to SMEs Internationalisation)**

<i>Rotated factors (% variance explained; eigenvalue)</i>	<i>Barriers to SME' Internationalisation</i>	<i>Factor loading</i>	<i><math>\alpha</math></i>
<b>Environmental</b> (15.554%; 10.388)	Cultural barriers	.793	0.896
	Languages barriers	.780	
	Economic conditions in the foreign market	.779	
	Exchange rate fluctuations	.772	
	Tariff and non-tariff barriers	.610	
<b>Informational</b> (15.091%; 2.682)	Information on foreign markets	.871	0.899
	Knowledge of foreign markets	.861	
	Knowledge on export procedures/documentation	.822	
	Managerial time to deal with exports	.713	
<b>Functional</b> (14.814%; 1.725)	Quality of products	.753	0.876
	Meeting foreign market standards	.667	
	Use of updated technology	.644	
	Availability of local skilled workforce	.616	
	Timely supply of raw materials	.606	
	Trained personnel to deal with exports	.575	
<b>Procedural</b> (12.363%; 1.551)	Handling of export documents	.765	0.890
	Rules and regulations in the foreign country	.749	
	Competition from low cost manufacturing countries	.749	
	Access to distribution channel in foreign markets	.574	
	Contacting prospective clients	.554	
<b>Logistical</b> (9.818%; 1.275)	Shipping arrangements	.833	0.834
	Transportation costs	.816	
	Government restriction in the foreign markets	.719	
<b>Political-economic</b> (7.179%; 1.085)	Cash flow to finance exports	.752	0.529
	Financial assistance from Government	.736	

### **Environmental Barrier**

The first barrier affecting the internationalisation of Mauritian SMEs has been labelled as “*Environmental Barrier*” and include, cultural barriers, languages barriers, tariff and non-tariff barriers. These findings are similar to the conclusions drawn from studies conducted by the Organisation for Economic Co-operation and Development (OECD). For example, OECD (2008) found that restrictions on exporting country by government in foreign markets have an adverse impact of SMEs’ exports. Similarly, Huber, Nerudová, and Rozmahel (2015:106) found that cultural and language barriers impede SMEs’ Internationalisation. The actual environment in

which international business is operating has worsened over the last two years due to the global COVID-19 pandemic.

For example, due the global economic recession, international orders have been on the decline over the last year. Moreover, the fluctuations in the exchange rates (i.e. a depreciation of the MRU against the USD) have led to a decreased volume of imports. Similarly, sanitary restrictions imposed on international exchange of goods and services have negatively impact of SMEs exports.

### **Informational Barrier**

The second barrier affecting the internationalisation of SMEs has been labelled as “*Informational barriers*”. Existing literature widely acknowledges the importance of information to the internationalisation of firms, in particular the SMEs (OECD, 2008). For example, Franz, Kaletka, Pelka and Sarcina (2018) consider that the successful internationalisation of SMEs depends to a large extent on the access to tailored, up-to-date and reliable information. Such information includes information on the markets conditions, international regulations and competition. In this respect, Johnson and Turner (2000:138) recommend that SMEs’ internationalisation policies should aim at increasing the awareness of international opportunities as well as to help these businesses exploit foreign markets. Moreover, information on government policies and programmes to support SMEs’ growth and internationalisation should be communicated to SMEs so that they are motivated to consider internationalisation as part of their growth strategy (Hashim, 2010:77). As the situation at the international level is changing at an unprecedented pace due to the COVID-19 pandemic, SMEs should be informed on these changes so that they are better prepared to face new challenges and to build resiliency.

### **Functional Barrier**

The third barrier affecting SMEs’ internationalisation has been categorized as “*functional barrier*”. As identified by Leonidou (2004), these barriers are internal to the firms and include the quality of products, the skilled labour force, the use of updated technology as well as trained personnel to deal with exports. These findings are consistent with the results obtained from similar studies. For example, Dominguez and Mayrhofer (2018:236) found that the quality of the product gives the firm a competitive advantage in the foreign market. Nevertheless, Huber, Nerudová, and Rozmahel (2015:106) concluded that inability to produce high quality products by SMEs (due to size

constraint factors) restrict their internationalisation scope. Furthermore, OECD (2008) note that SMEs face a shortage of skilled labour as they are not able to attract them due to their inability to reward them in the way larger firms do.

Thus, the lack of skilled labour force impede on the quality of product. Moreover, OECD (2008) note that use of updated technology is key for the successful internationalisation of SMEs. Nevertheless, being resource constraints (Finance), SMEs are not able to invest on updated technologies. In a similar vein, Dominguez and Mayrhofer (2018:237) note that a firm's ability to overcome export barriers depends a lot on the personnel having the right skills and expertise to deal with exports. Thus, a lack of qualified personnel to deal with exports can represent an obstacle to initiate export activities. As the SMEs economic situation is worsening due to the COVID-19 situation, the government should assist SMEs to overcome these internal barriers limiting their scope to expand internationally. For example, as the digitalization of the business allows SMEs to transcend the national frontiers, government may assist them financially to purchase up to date equipment.

### **Procedural Barrier**

The fourth underlying barrier affecting SMEs' internationalisation in Mauritius has been named as "*procedural barrier*". This barrier pertains to the SME's (i) inability to hand export documents, (ii) difficulty to access to distribution channel in foreign markets and (iii) problems of establishing contact with prospective clients amongst others. Doole and Lowe (2008:182; Garcia, 2015) consider that manufacturing SME exporters from developing countries struggle to compete with companies from emerging markets because of their lower labour costs. Moreover, difficulty to access distribution channel in the foreign countries is also perceived by Dominguez and Mayrhofer (2018:238) as a serious impediment to SMEs internationalisation as it may lead to delays and an increase in the cost of marketing the product. Furthermore, according to OECD (2008), inability to contact potential overseas customers may result in limited information to locate and analyze foreign markets opportunities. As countries are imposing strict sanitary rules and regulations to limit the spread of the COVID-19 virus, SMEs should be made aware of these changes to ensure that they comply with the new legal framework.

### **Logistical Barrier**

The fifth barrier affecting the internationalisation of SMEs internationalisation has been labelled as “*logistics barrier*” which include the difficulty in shipping arrangements and the transportation costs. These findings are consistent with the findings OECD (2008); Etemad (2013). However, logistics barriers are reduced to a large extent when trading partners are bonded by trade agreements (Garcia, 2015). As Mauritius is a member of different regional trading blocs such as South African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA) and recently the African Continental Free Trade Area (ACFTA), SMEs can tap into the market opportunities arising in the regional markets. The coronavirus disease (COVID-19) pandemic is having profound negative impact on the logistics cost due to a sharp rise in the shipping cost, restrictive border control and well as the difficulty in freight forwarding arrangements.

### **Political-economic Barrier**

Another internationalisation barrier identified in this study is the political-economic barrier. This finding is in conformity with the study conducted by OECD (2007); Dana and Wright (2008) and Dominguez and Mayrhofer (2018) which identified shortage of capital as one of the top main internationalisation barriers. According to OECD (2008); SMEs facing a lot of problems in obtaining finance which limit their scope to expand internationally. Moreover, findings of the study identify “Lack of government support” as a major internationalisation barrier for exports by SMEs. This finding is in line with that of OECD (2008) with suggests that Government support is essential in enhancing SMEs’ internationalisation. These support can take the form of loans, grants, tax incentives, equity financing.

Composite scores were computed for the six factors, based on the mean of the items which had their primary loadings on each factor, with higher scores indicating greater barriers. Firstly, all the factors had negatively skewed distributions, implying that most respondents considered them to be significant obstacles to the internationalisation of SMEs.

The highest means were recorded for *Informational* ( $M = 4.341$ ,  $SD = 0.657$ ) and *Political-economic* ( $M = 4.341$ ,  $SD = 0.717$ ), which were considered as the two major barriers to the internationalisation of SME, both with negatively skewed distributions and positive kurtosis ( $\gamma_1 = -1.711$ ,  $\beta_2 = 5.771$  for *FAC2*) and ( $\gamma_1 = -1.227$ ,  $\beta_2 = 1.631$  for *FAC6*).

To a slightly lesser extent, *Functional* ( $M = 4.017, SD = 0.794, \gamma_1 = -0.432, \beta_2 = -0.618$ ), *Logistical* ( $M = 3.970, SD = 0.869, \gamma_1 = -0.532, \beta_2 = -0.494$ ) and *Procedural* ( $M = 3.889, SD = 0.885, \gamma_1 = -0.695, \beta_2 = 0.175$ ), in that order, also constituted relatively important barriers to the internationalisation of SMEs' internationalisation. *Environmental* ( $M = 3.551, SD = 1.027, \gamma_1 = -0.303, \beta_2 = -0.868$ ) was considered to be a minor barrier by respondents. The non-normality of each factor was confirmed via the Shapiro-Wilk test in SPSS, whereby all six  $p$ -values less than 0.01.

### Source of Networking

Table 4: Sources of Networking

Sources of Networking	Mean
Government Agencies	8.27
Banks	7.79
Business Associates	7.51
Suppliers	7.24
Participation in buyers and sellers meeting	7.03
Families and Relatives	7.01
Competitors	6.85
Affiliation with foreign institutions	6.84
Employees	6.82
Foreign Partners	6.63
Existing Clients	6.63
Acquaintances	6.56
Foreign Agents	6.50
Friends	6.38
Local Partners	6.38
Social Media Networks	6.32

Measured on a scale of 1 to 10 (1 being least important and 5 being most important)

The sources of networking were each measured on a 10-point semantic differential scale (1 = “Least important” to 10 = “Most important”). The mean score for each source of networking was computed prior to classifying them in terms of importance to sampled companies. Findings of the study (Table 4) revealed that Government agencies ( $M = 8.27$ ) was the most important source of networking. The respondents consider that banks ( $M = 7.79$ ), business associates ( $M = 7.51$ ) and suppliers ( $M = 7.24$ ) also provided them with a sound amount of networking, while participation in buyers/sellers meetings ( $M = 7.03$ ), as well as family and relatives ( $M = 7.01$ ), had an important role to play in networking opportunities. These stakeholders are key in strengthening the process of internationalisation through their own forms such as provision of training and

consultancy, financial assistance, international trade fairs, and exchanges of resources and knowledge amongst others (Senik *et al.*, 2011).

### Benefits of Networking to the Internationalisation of SMEs

Table 5: Benefits of Networking

	N		Mean	Std. Deviation
	Valid	Missing		
Increase in market share (BN 1)	101	0	4.37	0.659
Improved financial performance (BN 2)	101	0	4.27	0.646
Increasing the firm's sales turnover (BN 3)	101	0	4.27	0.677
Sharing of information (BN 4)	101	0	4.13	0.821
Reduction in risks, cost and time in placing new products in the market (BN 5)	101	0	4.07	0.875
Economies of scale (BN 6)	101	0	3.99	1.063
Improved competitiveness (BN 7)	101	0	4.03	0.888
Sharing of business and other related skills (BN 8)	101	0	3.86	0.949
Access to cheaper resources (BN 9)	101	0	3.81	1.065
Identifying new foreign markets opportunities (BN 10)	101	0	3.83	1.059
Access to new foreign contacts (BN 11)	101	0	3.80	1.086
Improved business image (BN 12)	101	0	3.83	1.068
Increase in the productivity of the business (BN 13)	101	0	3.76	1.150
Participation in innovative projects (BN 14)	101	0	3.63	1.172
Developing sustainable competitive advantage (BN 15)	101	0	3.61	1.149
Access to new technologies advancement (BN 16)	101	0	3.53	1.246
Increase in bargaining power with suppliers (BN 17)	101	0	3.55	1.179
Protection against rivals (BN 18)	101	0	3.61	1.280
Seizing opportunities faster than competitors (BN 19)	101	0	3.52	1.301
Gathering information about the target markets (BN 20)	101	0	3.54	1.261
Improving supply chain of the business (BN 21)	101	0	3.71	1.186
Building strategic partnerships (BN 22)	101	0	3.52	1.254
Reduce the institutional distance (BN 23)	101	0	3.56	1.187

Measured on a scale of 1 to 5 (1 being to a small extent and 5 being Very great extent)

Based on the findings of the survey (Table 5), it is apparent that SMEs perceived networking as being important to their internationalisation. It can be deduced that networks can considerably the SMEs' performance by helping them to increase their market share (BN 1,  $M = 4.37$ ), improve their financial performance (BN 2,  $M = 4.27$ ) and generate additional revenue (BN 3,  $M = 4.27$ ). Moreover, the respondent agree that networking contribute to the reduction of transaction cost (BN 5,  $M = 4.07$ ). It can thus be concluded that network relationship can assist in overcoming the internal function barrier and the economic barriers as identified in the Exploratory Factor Analysis (EFA).

Another benefit of the networking perceived by the respondents relates the availability and accessibility of information. For example, they consider that network with the different actors allows for the sharing of information (BN 4,  $M = 4.13$ ) on target markets (BN 20,  $M=3.54$ ). As informational barrier has been identified as one of the barriers to SMEs internationalisation in the present study, networking has an important role cater for the scarcity of information about various issues surrounding the internationalisation of these businesses.

It can further be deduced that logistics barriers can be overcome through networking relationships “*Networking improves supply chain of the business*” (BN 21,  $M=3.71$ ).

### **Practical Implications**

This study has shed light on the internationalisation barriers (environmental, informational, functional, procedural, logistical and political-economic) faced by Mauritian SMEs and perceived benefits of networking to their internationalisation. The research findings are very useful to promote the internationalisation of SMEs as the international environment keeps on evolving due to the COVID-19 global pandemic. The findings are relevant to several stakeholders including entrepreneurs, government, parastatal bodies and banks amongst others. These stakeholders can capitalise on these rich findings to devise appropriate internationalisation strategies to overcome the internationalisation challenges in order to ensure the entrepreneurial sustainability of SMEs in Mauritius.

Since networking can contribute to the internationalisation of SMEs, SMEs owners should be encouraged to co-operate with multiple stakeholders and to put considerable efforts into networking with institutions, business organisation and international authorities. Moreover,

entrepreneurs should devote much time and efforts in the building and formation of partnerships. Such relationship will facilitate their internationalisation by providing information on international market opportunities and access to resources. Entrepreneurs can also explore other sources of institutional networking such as linkages with Universities, research centres and business associates that can provide pertinent information to better strategise international expansion.

Moreover, entrepreneurs should not ignore low cost networking, such as “Personal Relations” (connections with relatives, families, friends and colleagues) to explore international opportunities. Moreover, as the COVID-19 pandemic will result in a reconfiguration of international trading, entrepreneurs should also consider new forms of networking based on ICT to increase their social capital. These forms include virtual meetings, virtual participation in trade fairs/exhibitions as well as online seminars and conferences. Furthermore, membership to national and internationally recognized institutions as well as subscription to relevant magazine (online) can also prove to be a good source of information on international opportunities.

On the other hand, the study has interesting practical insights to strategic policymakers comprising of government and parastatal bodies such as SMEs Mauritius to widen the horizon of networking among SMEs owners. It is recommended that policy makers continue to lend support to SMEs that intend to internationalise their activities in the current context where entrepreneurs are facing economic problems due to the COVID-19 pandemic. These policies aimed at promoting the internationalisation of SMEs through national and international network can take the form of industrial linkage programs such as providing institutional and technical support as well as assisting SME owners to participate in international fairs which is considered as an important source of international networking.

Furthermore, specific policies should be devised to facilitate the connection between the local entrepreneurs and potential foreign partners. Similarly, policy makers at different levels should optimise on the benefits of networking through fairs, virtual networking, and online networking sessions to promote the internationalisation of Mauritian SMEs. At a broader level, bilateral relationship between the Mauritian government and other countries of the African region can be reinforced to cultivate the entrepreneurial mind-set of SMEs of the region to network. This form of networking will undoubtedly enhance strategic advantage of SMEs in terms of increased

bargaining power and better market opportunities through trade facilitation agreements. Policy makers can also tap on the networking opportunities provided under the different Regional Trading Blocs (such as Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA) and recently the African Continental Free Trade Area (ACFTA) to which Mauritius is a member. To overcome the movement restrictions imposed by countries due to the COVID-19 pandemic, government agencies responsible for the promotion of SMEs internationalisation can also organise virtual conferences between Mauritian SME owners and their counterparts in the African markets to educate them on the benefits of networking such as the possibilities of deriving economies of scale and better access to the regional markets. Moreover, the Ministry of Foreign Affairs and Regional Integration can also set up an information desk to provide relevant information on the market opportunities and to assist SMEs in overcoming specific barriers in respective foreign markets. Similarly, the Ministry of Industrial Development, SMEs and Cooperatives which is responsible to promote SMEs development and growth in Mauritius can pull together local SMEs owners through virtual workshops to educate them on the benefits of networking.

The Ministry of Finance, Planning and Economic Development should provide sound financial assistance schemes to support SMEs during the current pandemic situation since this sector contributes significantly to the socio-economic development of the country by creating jobs and contributing to the Gross Domestic Product (GDP). Similarly, regular consultations should be organised between the policy makers (Ministry of Finance, Planning and Economic Development and the Ministry of Industrial Development, SMEs and Cooperatives) and the SMEs owners to better understand and evaluate the constraints faced by these businesses. Moreover, commercial banks should continue to provide financial assistance SMEs.

## **Conclusion**

This study aimed at determining whether networking can assist SMEs in their internationalisation in the aftermath of COVID-19. The findings of the study have demonstrated that networking can significantly help in overcoming the internationalisation challenges in a context which is characterised by high level of uncertainties and newly defined cross border rules and regulations. The findings of the study are consistent with existing literature. Based on findings of the study, recommendations have been proposed to the firms and policy makers accordingly. Being the first study to explore the importance of networking to SMEs' internationalisation in a Small Island

Developing State (SIDS) context, this study has contributed to the ongoing debates on the networking and internationalisation of firms.

### **Limitations of the study and scope for future research**

This study contributes to the existing research in the field of international entrepreneurship and to the ongoing debates on the internationalisation barriers and the importance of networking to SMEs' internationalisation. However, as with all studies, this study also has its own limitations which can limit the scope of the conclusions. The first limitation pertains to the context in which the study has been carried out. Since the study has been conducted in one of the SIDS where the eco system in which SMEs evolve is unique, the scope of generalising the findings to other SIDS economies is limited. Therefore, future studies exploring the influence of networking on SMEs' internationalisation in other SIDS will most likely strengthen and validate the findings of this study. The second limitation of the study pertains to the limited number of respondents who took part in the survey. This relatively small sample size inevitably questions the generalization of the findings. It is, therefore, recommended that future studies use a larger sample size so that firm conclusions can be drawn.

Moreover, generalization of the findings may also be questioned since the sampled SMEs operate in different sectors of the economy. Therefore, to ensure that the right strategies are adopted to address internationalisation issues that are specific to a particular industry, it is recommended that future studies consider specific industries as they are classified by the relevant authorities. Furthermore, since there are size related considerations that affect the internationalisation of businesses, it is recommended that future research investigate separately the internationalisation barriers faced by different categories of firms such as micro enterprise, small firms and medium enterprises. This approach will allow policy makers to devise tailored made internationalisation strategies for each category of firms

The authors also consider that other personal characteristics of the entrepreneurs such as attitude to risk, age and gender may also impact on the intention to use networks in internationalising their activities. Since these personal characteristics have not been considered in this study, it is recommended that future research contemplate these factors in assessing entrepreneurs' intention to take advantage of networking while conducting cross border transactions. An understanding of

these factors will allow for the formulation of tailor-made strategies to meet the needs and expectations of different categories of entrepreneurs.

Another limitation of the study lies in the methodological approach used to achieve the aim of the research. In this study, the researchers used a quantitative approach in which Likert Scales have been developed from literature to measure different issues underpinning the study. Nevertheless, we recognize that other contextual factors could have been omitted as respondents were required to respond to close ended questions as presented to them in the questionnaire. It is, therefore, recommended that future studies employ a mixed mode approach (QUAL/QUAN) to capture contextual issues that the present study has not been able to gauge.

Nevertheless, it is hoped that this study has shed light on the importance of networking in overcoming the internationalisation barriers faced by SMEs and that it has laid the foundation for future studies to promote the internationalisation of SMEs which is key to the socio-economic development of a country

### **Acknowledgements**

The authors acknowledge the financial contribution of the Mauritius Research and Innovation Council (MRIC) to this study.

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## Internationalisation barriers faced by Small and Medium Enterprises (SMEs) in Small Island Developing States (SIDS): A Mauritian study

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### Abstract

**Purpose:** As globalization offers a wide range of internationalisation opportunities, an increasing number of businesses, irrespective of their sizes, have extended their activities in international markets. However, many of these businesses are faced with internationalisation barriers that significantly affect the rate at which they can internationalise. Compared to SMEs from developed countries, SMEs from island states like Mauritius, are more vulnerable to the internationalisation barriers. In Mauritius, despite the internationalisation opportunities presented to the SMEs, their involvement in the foreign markets is relatively low. What barriers explain their insignificant presence in the international markets? Against this backdrop, this study aims to reveal the major barriers that Mauritian SMEs encounter in internationalising their activities. An understanding of the internationalisation barriers will help policy makers to effectively strategise the internationalisation of SMEs which contribute significantly to the socio economic development of the country.

**Design/methodology/approach.** A quantitative survey-based approach was used to achieve the aim of the study. Based on existing literature, we developed hypothesis related to financial barriers, technology barriers, human resource barriers and internationalisation of SMEs. Additionally, we investigated the influence of (i) government support and (ii) COVID-19 pandemic on the internationalisation Mauritian SMEs. The questionnaire was administered among 100 SMEs in Mauritius using a random sampling method. The IBM SPSS Statistics V20.0 software was used to

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analyse the quantitative data and multiple regression analysis was used to test the hypothesis formulated in this study.

**Findings:** Results show that financial barriers and technology barriers significantly affect the internationalisation of SMEs in Mauritius. Findings also demonstrate that government support strongly and significantly back the internationalisation of these businesses. On the other hand, respondents did not consider human resource barriers and the COVID-19 pandemic as influential factors to their internationalisation.

**Practical implications:** The results of the study call for a rejuvenation of the existing policies to assist and promote Mauritian SMEs in their internationalization. In this respect, the Ministry of Finance, Economic Planning and Development together with the Ministry of Industrial Development, SMEs and Cooperatives, Ministry of Information Technology, Communication and Innovation and other stakeholders should allocate sufficient resources and provide adequate structures to overcome these internationalization barriers. Policies aimed at increasing SMEs visibility and competitiveness in the international markets include among others (i) financing the participation of the SMEs in international fairs, (ii) providing financial and technical assistance to integrate technology throughout the different stages of the supply chain, (iii) easing the process related to the application of funds and (iv) guaranteeing the loans contracted by the SMEs who have secured firm orders from international clients.

**Originality/value:** As studies on SMEs internationalization in the small island states are relatively scarce, this research has deepened our knowledge on the challenges and obstacles faced by Mauritian SMEs in internationalizing their activities. The study also helps policy makers in crafting and implementing effective policies to promote the internationalisation of Mauritian based SMEs. This study is also timely due to the uncertain international market situation caused by the COVID-19 pandemic.

**Key words:** SMEs, Internationalisation barriers, Small Island Developing State, SIDS, International Entrepreneurship

## **Introduction**

As globalization creates international business opportunities, governments of both the developed and developing economies have set in place various schemes and policies to facilitate the internationalisation of national firms. Internationalisation of businesses brings a lot of benefits to

the firm as well as to the economy such as increase in profitability, improvement in trade balances and reduction in poverty and unemployment (Karadeniz & Gocer, 2007). SMEs are increasingly capitalizing on the international opportunities that are presented to them. For example, Wild (2020:35) notes that SMEs have dramatically increased their involvement in international business activities in recent years. Although there are various ways through which businesses can service international markets including exports, licensing/franchising, joint venture and wholly owned subsidiary, export is recognized as the most widely used mode of entry by SMEs (Organisation for Economic Co-operation & Development (OECD), 2009). However, despite the various facilities offered by the government, it is observed that SMEs from developing countries are not or do not intend to engage to international markets (Lages & Montgomery, 2004).

The firm's internationalisation phenomenon has received increasing attention of many researchers, academicians and policy makers since the last six decades. Several issues surrounding the internationalisation of firms (such as the motives for internationalisation, the modes of internationalisation as well as the factors supporting internationalisation) have been investigated in different contexts. However, a comprehensive review of the extant literature reveals that most of the existing studies on firm's internationalisation has been conducted in developed countries such as America and Europe and more recently in Asia. Moreover, Al-Hyari, Al-Weshah and Alnsour (2012:189) note that research on internationalisation barriers faced by SMEs has been disappointingly scarce. Moreover, from a geographical perspective, it is found that limited research has investigated the internationalisation barriers faced by SMEs from the Sub Saharan African countries. It is, therefore, apparent that there is a lack of research investigating the SMEs' internationalisation in the Sub Saharan African region. This situation provides an important gap within the existing literature that can be addressed by undertaking more research on the internationalisation of SMEs from SIDS located in the Sub Saharan African region. Moreover, since SIDS face unique economic and development challenges, it is pertinent to understand the unique context specific factors that can impact on SMEs' internationalisation. Hence, this study is an attempt to bridge this gap.

Realising the contribution of the SME sector to the Mauritian economy, successive governments have over the years, provided adequate facilities to support the survival, growth and internationalisation of SMEs. For example, in 2017, the government launched the SME master plan to promote and support local SMEs. Additionally, the national export strategy provides a road map to accompany SMEs in their international venture. Moreover, during the two COVID-19

lockdowns, the government has supported the SMEs financially through the Wage Assistance Scheme (WAS). As the SME sector is considered as the engine of growth for the Mauritian economy, an understanding of the internationalisation barriers and the measures to overcome these challenges may stimulate both the internationalised and the non internationalised SMEs to consider international market as serious option for their survival and growth. The insights gained from the study can also be used by policy makers to provide for the right ecosystem in enhancing internationalisation of SMEs. SMEs owners can also use the findings to effectively plan their internationalisation.

### Research Background

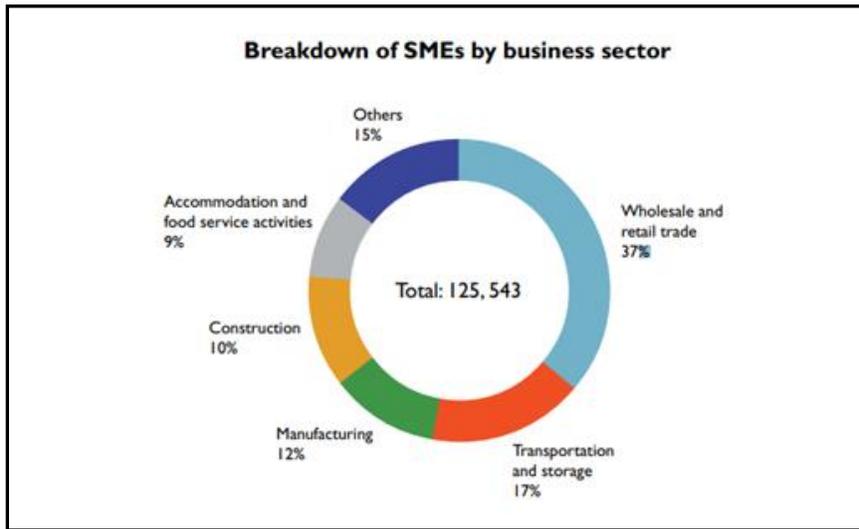
The state of Mauritius depends heavily on the contribution of small firms in driving economic growth and the democratization of the economy. The SME sector is considered as the key element backing economic stability, contributing around 40% to the GDP while representing around 60% of employment in Mauritius (Roopchand, 2020). In Mauritius, small sized enterprises and medium sized enterprises are defined separately as shown in Table 1.

Table 1: Definition of Small and Medium Enterprises

<i>Small Enterprises</i>	They are considered to be at a development stage in their level of operation and have an annual turnover not exceeding 10 million MUR.
<i>Medium Enterprise</i>	They are more sophisticated than small firms in terms of their operations as well as technology advancement and have an annual turnover in the range of 10 million MUR to 50 million MUR.

These businesses operate in diverse sectors of the Mauritian economy as illustrated at Figure 1 with a majority of 37% operating in the wholesale and retail sector.

**Figure 11: Breakdown of SMEs in Mauritius by Business Sectors**



*Source: SME Masterplan (2017)*

The Government offers several incentives to facilitate the survival and growth of small businesses since the country rely deeply on its benefits. Being a heterogeneous sector, the government presented a SME support framework with the vision to position Mauritius as a high-income economy. Yet, despite the support provided by the state, 70% of small firms shut down. Notwithstanding the institutional support and incentives provided by the government, local SMEs face a lot of challenges when expanding, either locally or internationally. The ongoing COVID-19 pandemic has severely impacted the business environment globally since last year, which has heightened the constraints faced by SMEs in the international markets. The internationalization of SMEs is now more challenging, especially with a stricter border control and trade restrictions (WTO, 2021). Moreover, the WTO reported a 32% decline in the global merchandise trade in 2020 (OECD, 2020) which demonstrates that SMEs operating internationally has been affected.

The fact that the majority of SMEs have a preference to operate locally rather than exploring international markets triggered the attention of many academics, researchers and policy makers globally. Studies addressing the internationalisation of SMEs have acknowledged various challenges that these firms encounter while expanding globally. Despite the numerous studies investigating the internationalisation barriers faced by SMEs, there is a paucity of research on the internationalisation challenges faced by SMEs in a Small Island Developing States (SIDS) like Mauritius. Moreover, as the business environment evolves continuously (Muddaha *et al*, 2018),

relying on existing research can be inefficient and inapt in the perspective of a developing economy (Chandra *et al*, 2020). Therefore, against this backdrop, this study aims at gaining insights on the challenges that Mauritian SMEs face while internationalizing in the global pandemic context.

As the Mauritian economy depends immensely on the success of the SME sector to boost the economic development and to reduce the unemployment rate, an expansion of this sector is key in building resilience to the COVID-19 global pandemic. Moreover, the international expansion of these businesses would bring several benefits including innovation and technological advancements, thus benefitting the economy as a whole. Secondly, the present COVID-19 pandemic has disrupted business operations throughout the world, which has made the SME sector more vulnerable, especially in developing countries. Thus, this study will help SMEs from developing economies, which has deeply been affected by this pandemic, to overcome these constraints. Besides, owners of small firms would better position themselves in this context, by adopting more effective strategies to compete in the global platform, resulting to a higher chance of success.

## **Literature Review**

### **Internationalization of SMEs**

According to Altnaa and Neszmélyi (2021), internationalisation encompasses several activities such as export, international trade activities, cross-border clusters, cross-border partnership, creating subsidiary, branches, and joint ventures phases by which firms increase their business operations and trade. Due to the liberalized trading system driven by globalization, small and medium firms are experiencing increased competition from all over the globe, as well as increased difficulties in sustaining and enhancing company's performance (Antonacci, 2019). The volatility and complexity of the environment have also been accentuated due to the global COVID-19 pandemic. Furthermore, the acceleration of globalization, propelled primarily by the reduction in trade barriers and improvements in Information and Communication Technology (ICT), has led to an increasing number of small and medium enterprises attempting to capitalize on international market opportunities (Daszkiewicz & Wach, 2012). According to extant literature, SMEs widely use export in their international venture as it is relatively quick and the investment commitment is low. Moreover, export allows the business to become acquainted with the targeted foreign market before making substantial investments. It also avoids the complications of producing abroad

(Falahat *et al.*, 2020). Internationalization brings various advantages to SMEs such as the opportunity to reduce cost and access resources that are not available locally (Jakobsson, 2015). At the national level, internationalization of SMEs can help to develop a competitive export-driven economy, which will eventually boost growth and productivity (OECD, 2020). However, the internationalisation process carries its loads of challenges.

### **Internationalisation barriers faced by SMEs**

SMEs are subject to numerous limitations which influence their ability to compete with larger organizations and to adapt to moving market condition, technical variations as well as capacity restraints. Consistent with existing literature, we considered the financial barrier, technological barrier, human resource barrier and government support as the main obstacles faced by SMEs in their pursuit for internationalisation. Additionally, we assessed the impact of the unprecedented challenges posed by the COVID-19 pandemic (such as disrupted supply chains, delays and inventory management) on the internationalisation of SMEs.

### **Financial Barrier**

Existing literature consistently demonstrates that finance is a major problem which determines the survival and growth of SMEs both at the local and international level. Difficulty in accessing short term loans and export credit facilities are seen as serious challenges constraining their internationalisation. According to Yoshino and Taghizadeh-Hesar (2016), SMEs find it challenging to raise capital from either banks or the capital markets compared to larger firms. Moreover, they are also offered limited amount of credit by the bank as (i) they are often seen to have higher risks and (ii) due to the lack of collateral held by small businesses for loans. For example, Masiak, Moritz and Lang (2017) note that the loan rejection rate for SMEs and large firms is 2% and 1% respectively. A study by Osano and Languitane. (2016) identifies information asymmetries and ineffective business plans as the major causes for the rejection of the credit facilities made by the SMEs. Mauritian SMEs are also faced with hands-on challenges such as financial access which alter their development both at the local and international levels. Due to their limited size, banks are unwilling to approve their loans and credits as they are easy preys of bankruptcy. In addition, small firms can easily collapse as they have limited buyers on whom they count to generate revenue and profits. The COVID-19 pandemic has further worsened the economic situation of Mauritian SMEs. Therefore, we hypothesize that financial barriers affect the internationalization among the SMEs in Mauritius.

H0: Financial Barriers do not affect SMEs' Internationalization.

H1: Financial Barriers negatively affect SMEs' Internationalization.

### **Technological Barrier**

According to OECD (2018), the use of new technologies increases a firm's competitiveness, makes it possible to access and compete in international markets. Over the last two decades, the rapid evolution of technology has opened up international market opportunities for both small and big firms. However, by virtue of the size, SMEs are found to lag behind in the use of appropriate technology and information in their operations. Due to limited financial resources, SMEs usually lease or share ownership with other enterprises in order access to advanced technologies (Ocloo *et al.*, 2014). Difficulty to access to new technologies is more apparent among start up SMEs compared to larger firms that are financially better poised to use latest technology (Chan *et al.*, 2018). Besides resource and information deficiency, the lack of technical knowledge within the SMEs make them ignorant of the latest technology that can help them in their international pursuit (Rahman, 2019). Other factors affecting the use of technology among SMEs include a lack of (i) entrepreneurial expertise and education, (ii) trained personnel and (iii) technical assistance (Al Buraiki & Rahman Khan, 2018). In the Mauritian context, a study by Gobin *et al.* (2017) revealed that local SMEs are not keen to use technology in their operations despite the initiative and incentives provided by the government. Technology adoption seems to be the most effective way to survive in the highly competitive and uncertain environment caused by globalization and the COVID-19 pandemic. For example, as the pandemic calls for a transition to a cashless and contactless society, SMEs should be encouraged to use alternative ways to reach out local and foreign consumers including ecommerce and e-business. Extensive use of technology can also assist to increase the competitiveness of SMEs at international level. Hence, the second hypothesis formulated in this study aims at determining whether technological barriers can potentially affect SMEs internationalisation.

H0: Technological barriers do not affect SMEs internationalization.

H1: Technological barriers negatively influence SMEs internationalization.

### **Human Resource Barrier**

Maximizing the benefits of globalization is a real challenge for SMEs, as specific capabilities and skills are required to manage the business on a global level (Alyafie & Al-Mubarak, 2016). Skills

are described as the ability or capacity to do something and are considered as key for the success of companies, notably SMEs. Several studies have demonstrated that the international success of SMEs is determined by the extent to which the labour force is equipped with the right attitude, skills and know how. For example, Riana *et al.* (2020) found that efficient human resource management led to the improvement in organizational performance along with innovation enhancement. Nevertheless, Gray (2017) notes that the human resource development in SMEs is constrained due to inadequate resources and limited expertise. Moreover, SMEs from developing economies have inadequate training infrastructure and educational facilities to promote skilled labor and global competitive advantage as compared to developed economies (Mendy & Rahman, 2019). In their study, Ahmeti and Marmullaku (2015) reported that that Human Resource Development (HRD) is essential for SMEs in emerging countries such as Kosovo since the knowledgeable labour force acts as an engine for their growth. Based on the above description, the following hypothesis is formulated.

H0: Human Resource Barriers do not influence SMEs internationalization.

H1: Human Resource Barrier negatively influence SMEs internationalization.

### **Government Support**

It is widely accepted that government support is crucial for the growth and sustainability of firms, in particular SMEs. Government can indeed shield small and medium sized businesses from competition as well as other external shocks. However, although the state provides numerous institutional, technical and financial incentives to promote the growth of the SME sector in Mauritius, Kisto (2014) notes that many small firms are reluctant to take advantage of such schemes as they are faced with various constraints such as bureaucratic processes and regulatory measures. These constraints also limit their propensity to flourish internationally. A study by Ghose (2020) identifies a series of governmental related internationalization obstacles faced by Indian SMEs including uncertainty in government policy, low government export development programs, lower export incentives, and a high cost of capital in funding exports.

In addition, Wijayarathne and Perera (2018) note that the lack of government incentives deters Sri Lankan SMEs to start or to pursue their internationalisation venture. Based on the above description, the following hypothesis is articulated.

H0: Government support does not promote SMEs internationalization.

H1: Government support positively promote SMEs internationalization.

## **COVID-19**

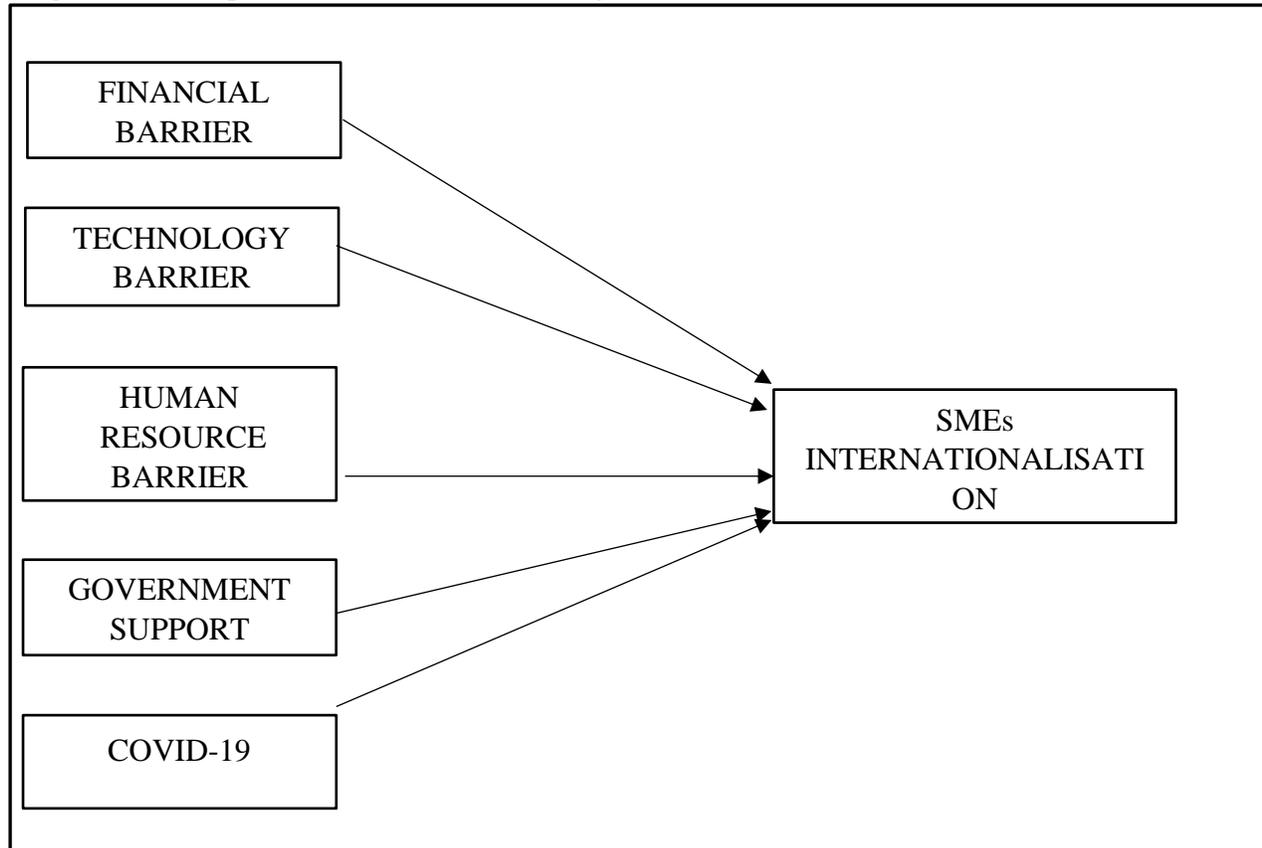
Since its appearance in Wuhan, China in December 2019, the Coronavirus disease has been propagating worldwide, resulting in a global pandemic (WHO, 2020). This global pandemic has threatened the survival of many firms, irrespective of their size. According to Fairlie (2020), many small enterprises and entrepreneurial projects have closed down due to social distancing regulations and health and economic driven demand changes from COVID- 19. Moreover, the pandemic has also disrupted international trade and supply chains, which have a considerable impact on economies across the world (Lu *et al*, 2020). SMEs were also the most vulnerable during the pandemic, especially the ones engaging in international activities. SMEs faced issues such as disrupted supply chains, delays, inventory management, cash flow management and risk management issues which affected their exports (Fielder *et al*, 2021).

The worldwide COVID-19 pandemic will have a greater impact on SMEs in small island states like Mauritius, as these enterprises rely heavily on international suppliers of raw materials as well as overseas markets for exports (Sannegadu, 2021). The two key challenges that Mauritian SMEs faced amid this pandemic was the fall in demand of good and services and the lack of cash flow. A survey from Business Mauritius and Statistics Mauritius (2020) showed that approximately 65% of the respondents' exports has fallen since the beginning of the pandemic. Moreover, Mauritian SMEs were also affected by a loss in revenue. This unprecedented situation significantly impacted on their internationalization as they rely a lot on their financial resources. Based on the above explanation, the following hypothesis has been formulated:

H0- COVID-19 pandemic does not affect SMEs internationalization.

H1- COVID-19 negatively affect SMEs internationalization.

Figure 2: Conceptual Framework of this study



### Methodology of the Study

In this study, we employed a quantitative research design using a survey method. One hundred questionnaires were administered among SMEs using the random sampling method. The sample was drawn from the population of Mauritian SMEs that are involved in international markets. Information on these businesses were obtained from SME Mauritius. The sample include SMEs operating in various sectors of the economy including textile and clothing, manufacturing, food and pickle, agriculture, services, handicraft and artistry and retail. To test the face validity of the designed questions, the survey instrument was pilot tested among a small of respondents. Cronbach alpha (Table 2) was used to determine the reliability of the measurement scales. The values of the Cronbach's alpha were in the range of 0.780 and 0.936 which indicate that the scales had an acceptable level of internal reliability. The IBM SPSS Statistics V20.0 software was used to analyse the quantitative data obtained from the survey. Multiple regression analysis was applied to construct the research model. The multiple regression analysis was carried out with the

dependent variable that measured the Internationalisation of the SMEs and the 5 independent variables (21 items) that measured the internationalisation barriers.

Table 2: Cronbach’s Alpha

<b>Construct</b>	<b>No of Items</b>	<b>Cronbach's Alpha</b>
Financial Barrier	5	0.911
Technological Barrier	6	0.899
Human Resource Barrier	4	0.723
Government Support	1	0.936
COVID-19	5	0.759
Internationalisation	4	0.780

### **Analysis and Discussion**

Table 3 provides a summary of the characteristics of the sampled firms.

Table 3: Profile of sample firms

	<b>N</b>	<b>Percentage (%)</b>
<b>Sector</b>		
Textile and Clothing	27	27
Manufacturing (Spare Parts and Jewelry)	16	16
Food & Pickle	13	13
Others	12	12
Agriculture, Forestry & Fishing	11	11
Services	9	9
Handicraft and Artistry	6	6
Retail	6	6
<b>Total</b>	<b>100</b>	<b>100</b>

	N	Percentage (%)
<b>Years in Operation</b>		
Less than one year	7	7
1-5 years	27	27
6-10 years	32	32
More than 10 years	34	34
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Years of Exporting</b>		
Less than one year	15	15
1 to 5 years	38	38
6 to 10 years	24	24
More than 10 years	23	23
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Number of Employees</b>		
0	4	4
1 to 20	26	26
21 to 40	43	43
41 to 60	15	15
More than 60	12	12
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Last Year Turnover (Rs)</b>		
Less than 1 Million	18	18
1 to < 5 Million	25	25
5 to <10 Million	18	18
10 to <25 Million	21	21
25 to <40 Million	12	12
40 to < 50 Million	6	6
<b>Total</b>	<b>100</b>	<b>100</b>

As shown in Table 3, SMEs from diverse sectors of the Mauritian economy participated in the survey. The majority of the businesses (27%) operate in the textile and clothing manufacturing industry which contributes around 35% of the total exports in Mauritius. 16% of the businesses manufactures spare part and jewelry while 13% produce food and pickle and 11% were from the Agricultural, Forestry and Fishing Industry. The 12% categorized as “others” consisted primarily of SMEs producing paper, metals and wood products. 9% of the respondents have business operations in the services sector while an equal number of the SMEs (6%) operated in the retail and handicraft and artistry sector.

With regards to the number of years in operation of the sampled SMEs, 34% of them have been operating for over 10 years and 32% have been in existence for 6-10 years. 27 % of the SMEs

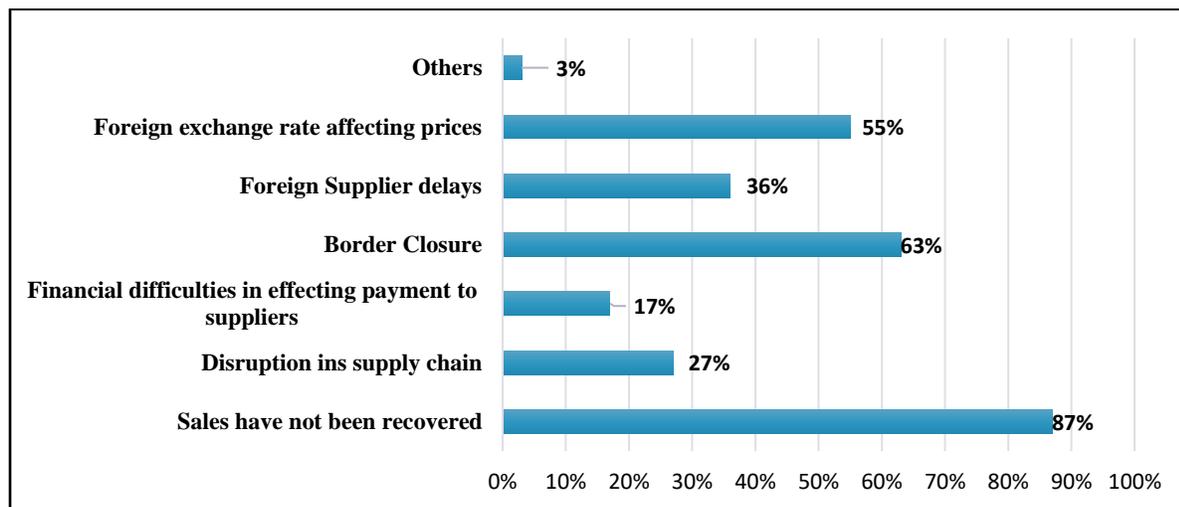
operated for 1 to 5 years while the newly established businesses, which has been in operation for less than 1 year, account for 7% of the sampled SMEs.

Concerning the international experience of the businesses, 38% have been exporting for 1-5 years while a minority of 15% are at an early stage of their internationalisation having less than less than 1 year of international exposure. 24% and 2% of the surveyed SMEs have been exporting for 6-10 years and more than 10 years respectively. Compared to firms who have been exporting for a longer period of time, businesses who have less international exposure are deemed to be more vulnerable to the challenges brought by COVID-19 pandemic.

The number of staffs employed by these businesses varies according to their volume of transactions. A majority of 43% employed 21 to 40 employees while the percentage of the firms employing more than 40 staffs stood at 27%. Regarding the turnover, 25% of the SMEs derived a turnover in the range of 1 to < 5 million rupee, 18 % earned between 5 to < 10 million rupees and 38% recorded a turnover of more than 10 million rupees and not exceeding 50 million rupees.

### COVID-19 challenges faced by SMEs

Figure 3: COVID-19 challenges



The COVID 19 pandemic has brought important and multiple challenges to the Mauritian based SMEs. Findings of this study revealed that most of the SMEs (87%) have not recovered from lost sales during the lockdowns. Moreover, 55% of these businesses has been affected by the fluctuations in exchange rate. The depreciation of the local currency against the USD and the EURO has inflated the price of imported inputs. 63% of the respondents consider that closure of the border has severely affected their export capabilities. Other challenges faced by the SMEs

during the COVID 19 include foreign supplier delays (36%), disruption in the supply chain (27%), financial difficulties making it difficult to pay suppliers (17%).

### Multiple Linear Regression

A multiple regression examination was run to test the 5 projected hypothesis and to evaluate the statistical implication of the relationship.

Table 4: Model Summary

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.880 <sup>a</sup>	0.774	0.762	0.33291	0.774	64.547	5	94	0.00

a. Predictors: (Constant), Covid- 19, Government Support, Financial Barrier, Technology Barrier, Human Resource Barrier

Findings of the study reveal that 76.2% (adjusted R square=0.762) of variance in SMEs internationalization is described by the independent variables (financial barrier, technology barrier, human resource barrier, government support and COVID-19 barriers, refer to Table 4). 23.8% (100%-76.2%) of variance represents other variables which have not been encompassed in this model. The p value of 0.000, demonstrates that the regression model is statistically significant and the likelihood of gaining this result due to sampling error is < 0.05.

Table 5: ANOVA

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.769	5	7.154	67.547	.000 <sup>b</sup>
	Residual	10.418	94	0.111		
	Total	46.187	99			

a. Dependent Variable: Internationalisation

1. Predictors: (Constant), Covid- 19, Government Support, Financial Barrier, Technology barrier, Human Resource Barrier

Table 6: Coefficients

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	0.384	0.220		1.751	0.830	-0.052	0.820
	Financial Barrier	0.224	0.085	0.225	2.648	0.010	0.056	0.392
	Technology Barrier	0.410	0.076	0.458	5.386	0.000	0.259	0.562
	Human Resource Barrier	0.074	0.086	0.075	0.867	0.388	-0.096	0.245
	Government Support	0.137	0.057	0.160	2.416	0.018	0.024	0.249
	COVID-19	0.080	0.101	0.077	0.786	0.434	-0.122	0.281

a. Dependent Variable: Internationalisation

The coefficients of the multi-linear regression analysis at Table 6. As expected, the findings reveal a statistically significant influence of financial barriers on the internationalization of SMEs ( $p=0.010, < 0.05$ ). This result is consistent with the findings of Sanyal *et al.* (2020) study which concluded that difficulty in accessing finance remains the main barrier for SMEs' internationalization in many countries around the world, in particular developing economies. In the Mauritian context, many SMEs claim that they face hand-on challenges to access finance as banks and other institutions are unwilling to provide them with loans and credits facilities. Inability to provide collaterals and high risk associated with their newness are the main reasons explaining banks' reluctance to finance SMEs' internationalisation. It is evident that access to finance is likely to be more challenging in the present context where there is a high level of risks and uncertainty prevailing in the international markets due to the COVID-19 pandemic.

Results of the multi-linear regression also show that the relationship between Technology and the internationalization of SMEs is statistically significant ( $p=0.000, <0.05$ ). This result leads us to conclude that the ability to overcome technological barriers is likely to increase SMEs' international performance. Similar result was obtained in a study by Bagheri *et al.*, (2019) which found that the implementation of innovative technology in SMEs' business activities effectively promoted the firm's competitiveness in foreign markets. However, due to the financial constraints, SMEs are not in a position to access up to date technology which limit their chance to tap international opportunities.

It has also been found that the relationship between government support and the internationalization of SMEs is statistically significant ( $p=0.018, <0.05$ ). This implies that the government support has a positive impact on the internationalization of Mauritian SMEs. This result is consistent with existing literature which posits that inadequate incentives provided by the government represent a major barrier to the internationalization of SMEs (Wijayarathne & Perera, 2018). In Mauritius, the government has set up various schemes to assist SMEs in overcoming the technical and economic hurdles inherent to these businesses. The need for such support (such as loan schemes, wage support schemes, technology and innovation scheme and international promotion scheme) is more felt among SMEs in the current risky environment which is changing at an unprecedented pace. Moreover, networking with the government agencies represents an important source of information on international market opportunities that SMEs can explore.

Additionally, findings of the study demonstrate that human resource barriers do not influence significantly the internationalisation of SMEs ( $p=0.388, > 0.05$ ). This finding is consistent with existing studies which disclosed that human capital may not significantly predict SMEs propensity to export (Omri & Becuwe, 2014).

Finally, contrary to our expectation, findings reveal that COVID-19 barriers are considered insignificant to the internationalisation of SMEs ( $p=0.434, > 0.05$ ). According to Fielder *et al*, (2021), due to the COVID 19 pandemic, SMEs face internationalisation issues such as disruption in supply chains, delays, cash flow problems and inventory management which acts as a barrier to the internationalization of SMEs.

### **Practical Implications**

This study has identified several factors that can affect the internationalisation of Mauritian SMEs. These insights have implications for several stakeholders that are directly or indirectly involved in the promotion and internationalisation of SMEs in Mauritius including SME owners, policy makers, banks and parastatal bodies. To address the economic difficulties faced by SMEs in internationalizing their activities, relevant measures should be taken to democratize access to finance.

For example, the government can work in partnership with private banks to facilitate access to finance for SMEs internationalisation. Where appropriate and feasible, the government can guarantee the loans taken by SMEs to finance their internationalisation. An SME Internationalisation Grant Scheme should also be provided to stimulate internationalisation of these businesses. Moreover, commercial banks should expand lending to internationalised SMEs and simplify the provision of loan guarantees. For example, commercial banks may accept under certain circumstances future revenue as guarantee to secure credit facilities such as loans, overdraft and letter of credit amongst others by the SMEs. Furthermore, SMEs owners should strive to maintain trust and a good working relationship with lending institutions (for e.g. banks) so as to facilitate access to credit. To relieve SMEs from the financial distress caused by the COVID-19 pandemic, banks can consider in specific cases an extension of the existing loans at a reduced interest rate and to waive any penalty for late payment. From a Resource Based View (RBV), technology is deemed to have significant effect on the firm's (i) performance, (ii) speed of internationalisation and (iii) competitive advantage. Findings of the study revealed that technology significantly influence the internationalisation of Mauritian SMEs. Respondents consider the high

initial and subsequent maintenance costs of technology and the high risks of failure as the main reasons which prevent SMEs owners to innovate their business operations. Therefore, to stimulate innovation among the Mauritian SMEs, it is recommended that government set in place an Innovation Grant Scheme to finance SMEs innovative projects. Moreover, to inculcate an innovative culture among small businesses in Mauritius, the most innovative and creative entrepreneurs can be rewarded financially at the national level. Furthermore, the government in partnership with the private sector and Higher Education Institutions (HEI) (national/international) should set up business incubators to help entrepreneurs test the feasibility of their ideas and improve the existing processes. These initiatives will help SMEs to increase their competitive advantage at international level. Finally, to support the internationalisation of the Mauritian SMEs, government should set up an information desk to provide these businesses information on international market opportunities and to assist them in complying with the foreign countries' rules and regulations (especially in the COVID-19 when new restrictive measures are being imposed).

### **Conclusion and Limitations**

This study has provided insights on the factors influencing the internationalisation of SMEs in Mauritian a SIDS from the sub Saharan African region. The empirical findings have been discussed and recommendations have been proposed to facilitate the internationalisation process of Mauritian based SMEs. This study has laid the foundation for researchers to replicate the research in other similar contexts i.e. SIDS/developing economies. Moreover, it sets the direction for future research to enhance the internationalisation of SMEs in Mauritius.

As with all the studies, this study also suffers from some limitations which may narrow down the interpretation of the findings and conclusions. The first limitation of the study pertains to the limited number of respondents who took part in the survey. This relatively small sample size inevitably questions the generalization of the findings. It is, therefore, recommended that future studies use a larger sample size so that firm conclusions can be drawn. Generalization of the findings may also be questioned since the sampled SMEs operate in different sectors of the economy. Therefore, to ensure that the right strategies are adopted to address internationalisation issues that are specific to a particular industry, it is recommended that future studies consider specific industries as they are classified by the relevant authorities. Moreover, since there are size related considerations that affect the internationalisation of businesses, it is recommended that future research investigate separately the internationalisation barriers faced by different categories

of firms such as micro enterprise, small firms and medium enterprises. This approach will allow policy makers to devise tailored made internationalisation strategies for each category of firms. Since the study adopted a deductive approach and that the hypothesis formulated are derived from existing literature, the authors recognize that certain issues inherent to the local context might not have been considered in the conceptual framework. Hence, from a methodological point of view, it recommended that future studies adopt a mixed method approach (qual-quant) to capture the local factors influencing the internationalisation of SMEs. Moreover, future studies can consider investigating the mediating factors (demographic profile of the entrepreneur) that can potentially influence the internationalisation speed and scope. Finally, to validate the findings of this study, similar studies can be carried out in other countries that are comparable to the Mauritian context.

Nevertheless, it is hoped that this study has shed light on the internationalisation barriers faced by SMEs and that it has laid the foundation for future studies to promote the internationalisation of SMEs which is key to the socio-economic development of a country.

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## COVID-19 PANDEMIC: IMPACTS ON HOUSEHOLD AND SMALL BUSINESS IN NIGERIA

By

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### **Abstract:**

The advent of COVID-19 virus can not only be seen as a global pandemic and public health crisis, it has seriously affected the world economy and financial markets. On March 11, 2020, the World Health Organization (WHO) characterized COVID-19 as a pandemic, posting to over 3 million cases and 207,973 deaths in 213 countries and territories. The impacts have severely affected individual economy and business firms. Cost and unemployment have increased, reduction in profit and income, dilapidation in manufacturing industries and disruptions in the transportation service. It is against this backdrop, this paper presents a critical review of negative impacts of the pandemic on household and small businesses in the context of Nigeria and proffers solutions on how it can be leveraged to steer towards a better and more resilient economy. The paper diagnosed the danger of relying on lockdowns and movement restrictions. And it also outlines recommendations for economy growth and development in a resilient post- COVID-19 world. It is very obvious that most governments and administrators in the world underestimated the risk of spread of COVID-19 virus, outbreaks are not likely to disappear in the near future, proactive international actions are required to not only save lives but also protect economic prosperity. Governments will have to strike a balance between health, economic and social policy interventions to mitigate the negative impact of the COVID-19 pandemic measures to prevent the spread of the virus have dampened prospects for economic growth due to the prolonged impact of lockdowns and restrictions on travel and movement of goods and lastly African countries should boost trade by looking at negotiating a free trade area with China.

**Key words:** COVID-19, Economy, Lockdown, Pandemic, SMEs.

## Introduction

Covid-19 pandemic is an unprecedented global crisis, affecting human health and economic welfare across the globe. It is first and foremost a health crisis, with government around the world taking measure to prevent the spread of the virus. Yet the pandemic has also resulted in a planet-wide economic slowdown affecting trade, investment growth and employment. A UN frame work for the immediate social-economic response to covid-19 warns the impact of covid-19 far out weights the health crisis, it affects all societies and economics at their core and therefore will most likely increase poverty inequalities at global scale (UN, 2020).

Africa, being a highly vulnerable continent, as at the time of writing this paper, the total confirmed cases of covid-19 in African stand at 5,820,211 cases; with about 26494 recoveries and 12,108 deaths recorded(WHO, 2021). These represent a 48.3 %recovery rate and about 3.6 % fatality rate, respectively. However, there have been a lot of debates on the reasons for the low cases of covid-19recorded In Africa (World bank, 2020; 2020; OECD, 2020; Diop and Asongu, 2020) it was rather argued that the low number of confirmed cases of covid-19 recorded in Africa was due to low tasting capacity and not necessarily because of location or the effectiveness of containment policies.

Nigeria recorded its first case of covid-19 on 27<sup>th</sup> of February, 2020this index case was an imported case by an Italian on a business trip to Ogun state, Nigeria. Consequent upon this and in consonance with the measures taken across the world, the country took various measure to contain then spread of the covid- 19 pandemic and these include, full or partial lockdowns, testing, contact tracing, case isolation, among others.

The reason why the outbreak was severe in Nigeria and caused suffering to poor citizens was because of weak institutions that were ineffective in responding to the pandemic and the lack of adequate social welfare programme that would have catered for majority of the poor citizens and vulnerable citizens who were affected by the crisis.

### **Statement of the problem**

There is no doubt therefore, that one of the greatest problems that bedevil Nigeria economy today is as complex and intractable as finding a best way in tackling it spread among people. The spread of the COVID-19 virus continue disrupting economic activity and negatively impact manufacturing and service industries. And also the lockdown has led to major revenue drops for most and the survival of many is at stake. With the majority of the country employment depending on the health of small and medium sized enterprises.

### **Objective of the study**

The principal objective of this study is to examine the impacts of covid-19 pandemic on micro, small and medium sizes enterprises and households in the context of Nigeria.

### **Conceptual exploration**

#### **The impact on the Nigeria economy**

Before the pandemic, the Nigeria government had been grappling with weak recovery from the 2014 oil price shock, with GDP growth tapering around 2.3percent in 2019 in February, the IMF revised the 2020 GDP growth rate from 2.5 percent to 2 percent, as a result of relatively low oil prices and limited fiscal space. Relatedly, the country debt profile has been a source of concern for policy makers and development practitioners as the most recent estimate puts the debts service to revenue ratio at 60 percent, which is likely to worsen amid the steep decline in revenue associated with falling oil prices these constraining factors will aggravate the economic impact of the covid-19 outbreak and make it more difficult for the government to weather the crisis.

#### **Lockdown: The impact on small businesses**

Small companies tend to be vulnerable during an economic crisis, in part because they have fewer resources with which to adapt to a changing context. The ITC covid-19 Business impact survey gathered evidence on how the pandemic affected 4,467 companies in 132 countries. Analysis of this data collected from 21 April-2 June 2020. Shows that the pandemic has strongly affected nearly two-thirds of micro and small business operation, compared with about 40 % of large companies. One-fifth of SMES said they risked shutting down permanently within three months. In Africa, two out of three businesses said they had been strongly affected by covid-19, mostly involving reduced sales (75 %) and or difficult assessing inputs (54%) service companies have

been the hardest hit around the world in accommodation and food service for instance, 76% of surveyed firm said partial and full lockdowns strongly affected their business operations.

### **Shutdown impacts**

Have affected countries and regions where the pandemic led governments to adopt measures shutting down economic activity. Such containment efforts have hit hardest in tourism, travels wholesale and retail, hospitality and entertainment. In the short run, governments in affected countries have fused on keeping SMES in these sectors afloat.

### **Shutdown risk higher for smaller and youth - led firms**

SMES are likely to face more severe resource constraints than larger firms and thus find it harder to survive when negatively affected by the covid-19 crisis. Not surprisingly, one-fifth (21%) of SMES reported that they risked shutting down permanently within three months, highlighting the need for rapid government action to assist some companies youth-led firms were also at higher risk of permanently closing their business. About 26% of youth-led firms reported that they risked shutting down permanently within three months, compared with 18% for non-youth-led firms.

Youth-led companies felt more threatened by pandemic- induced bankruptcy than those in other companies. This contrasts with the surveys finding regarding severity of impact, where the percentage of young entrepreneur that reported being strongly affected by covid-19 was similar to the rest of the population.

It suggest that even though youth-led firms may be no more exposed than others to the pandemics economics impacts they are more susceptible and less able to cope. Even after taking into account that youth-led firms tend to be smaller, it appears they find it harder to adapt to turmoil. Possible reasons include lack of diversification, social networks, experience and access to resources.

The data also indicate that young entrepreneurs have had a somewhat different attitude to government support measure during the covid-19 crisis; young entrepreneurs found it easier, on average, to access information and benefits from covid-19 related government assistance programmes. They were significantly more likely to view rent subsidies as most helpful, for example employment programmes and support to self-employed people were popular among young people. In Nigeria the federal government came up with an economic sustainability scheme

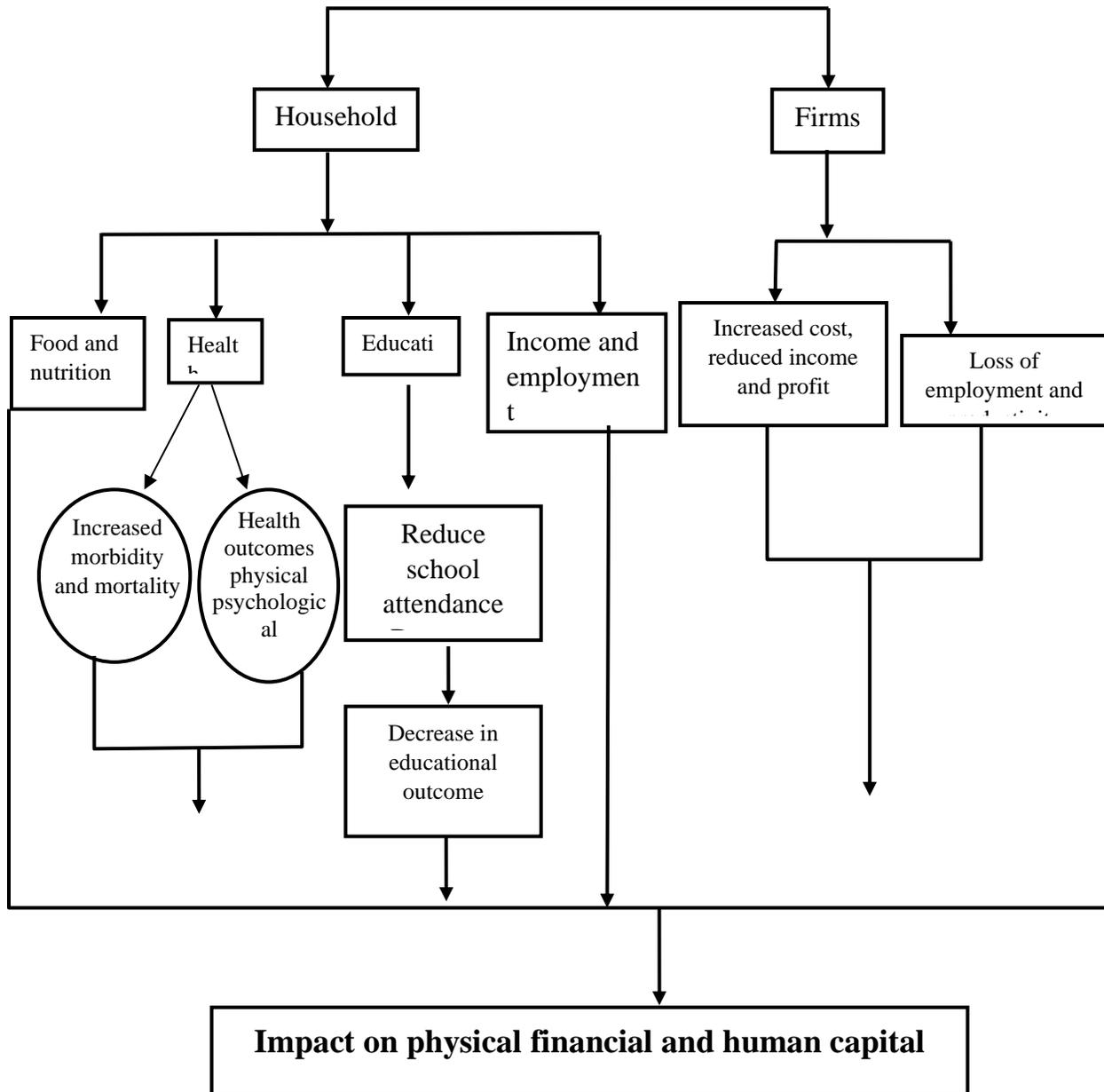
named as survival fund, to assist the small and medium entrepreneurs with a grant and covid-19 TCF loan and also special public work which was targeted to employ about 774,000 young Nigeria across the country for the period of three months and with a monthly stipends of #20,00 each.

### **Micro economic consequences**

Currently, it is difficult to properly assess the economic consequences of Covi-19 at household level and firm levels. This is due to the inability of conducting household survey which has restrained the possibility of carrying out research in this particular area of knowledge, the paper discusses possible micro economics consequences based on recent literature available at national and international levels.

The micro economic consequences of COVID-19 can be experienced at household level and at the firm level. At household level, the major effect will be on food security, health, education and labor market. At firm level, the businesses will suffer from increasing cost, reduced income, profit, and loss of productivity in the workplace. The disproportionate effects, however, are on poor and vulnerable. The world Bank (2020) estimates that the pandemic will push 49 million people into extreme poverty in 2020 with about 16 million (32 percent) in south Asia alone, second to sub-sahara Africa. Accordingly, south Asian countries, including Nepal, that have experienced rapid declines in poverty will face a significant decline in food security and rise in malnutrition among children (The world Bank 2020).

**Chart 1: A frame work for the microeconomic consequences of covid-19**



**The fall in household consumption**

In Nigeria partial or full restrictions on movement, thus causing consumers to spend primarily on essential goods and services, low expectation of future income, particularly by workers in the gig economy that are engaged on a short-term /contract basis, as well as the working poor in the informal economy and the erosion of wealth of the decline in assets such as stocks and home equity. The federal government has imposed the lockdown in Lagos and Ogun states as well as

Abuja which have the highest number of corona virus cases combined sub national governments have quickly followed suit by imposing lockdown in their state. Nigeria has a burgeoning gig economy as well as a large informal sector, which contribute 65 percent of its economic output. Movement restrictions have not only reduced the consumption of nonessential commodities in general, but have affected the income generating capacity of these groups, thus reducing their consumption expenditure.

### **Food Insecurity**

Since the pandemic began, the rates of moderate or severe food insecurity among Nigerian households have increased significantly – for most households, reduced incomes due to business closures and job losses, has coincided with an increase in food prices.

The Food and Agriculture Organization (FAO) defines food insecurity as a situation that exists when people lack regular access to enough safe and nutritious food for normal growth and development and active and healthy life. This may be due to the unavailability of food and or lack of resources to obtain food. Severe food insecurity is akin to hunger and defined as when people have run out of food and gone on entire day without eating at times during the year. According to the National Bureau of Statistics (NBS) August 2020 Covid-19 impact monitoring report, 68% of Nigeria households experienced moderate or severe food insecurity in August, down from 76.8% in June and almost double the rate of 37% measured in the NBS Jan/Feb 2019 General Household panel (GHS) post-harvest survey.

The health implications of pandemic are both physical and mental. Although statistics show that elderly population are disproportionately affected from covid-19 in terms of infections, hospitalizations and deaths, the resultant physical and mental health problems can be a concern for all age groups. Specifically, under 5 children are particularly affected due to poor nutritional intake (originating, for example, in food supply disruptions) and irregularity in their immunization schedule (originating in reduced mobility). Studies have shown that the nutritional status and immunization has an effect on physical and cognitive development in the short run, and consequent effect on labor market outcomes in the long run (Alex- Petersen, 2017; Bloom, Canning, and Shenoy, 2011; Butikofar, Molland, & Salranes, 2018; MCGovern, Krishna, Aguayo, & Subramanian, 2017)

## **Methodology**

The researcher adopted content analysis as the research methodology, in it, he used some other literature of other authors in the field and after review, drew conclusions.

## **Conclusion**

This study has examined the micro economic impacts of covid-19 pandemic in Nigerian. In estimating the effect of covid-19 related shocks, and findings have shown that the covid-19 pandemic has insignificantly caused a decline in basic microeconomic variables in Nigerian. This was consequent upon the Sundry measures taken to curtail the spread of the virus. The number of infected cases has therefore had significant correlations with economic activity. More so the study revealed that the majesty of small and medium businesses, particularly in manufacturing, have experienced a severe decline in access to inputs, alluding to the risk of over reliance on international rather than regional or domestic supply chains.

## **Recommendations**

- In order to address the economic crisis, government should have scrambled to alleviate the impacts of covid-19 on small business, introducing policies to help them cope with the short-term financial risks and long-term business implications.
- Although there is a cash transfer program in place, the federal government should improve efforts towards enhancing the efficiency and effectiveness of the distributive mechanisms to reach households that are worst-hit by the pandemic.
- There is also a need to bring about a policy coherence across various sectors. For example, an integrated approach to manage health and education crisis is important since they are both critical for overall development of human capital, resilience in one sector without the resilience in the other sector would be incomplete and meaningless. In this context, it is also important to ensure that there is no coordination failure. For the effective handling of the crisis, it is important that there is both a vertical and horizontal coordination of government both across and within different tiers of government and lastly African countries should boost trade by looking at negotiation at free trade area with China.

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## ASSESSING THE IMPACT OF COVID-19 ON CONSUMER BEHAVIOUR FOR ONLINE GROCERY SHOPPING IN MAURITIUS

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### *Abstract*

The novel COVID-19 was identified in 2020 and has been declared as a global pandemic by the World Health Organisation. Till date, it has been detected in 220 countries and territories including Mauritius. Going digital is the new normal; supermarkets and other businesses have not been the ones lagging. Numerous Online Grocery Shopping websites have been launched to help consumers meet their needs and wants during the sanitary crisis.

This study aims at investigating the factors that influence attitude and consumers intention towards Online Grocery Shopping during the COVID-19 pandemic. External variables have been added to Technology Acceptance Model (TAM) and Theory of Planned Behaviour (TPB) to understand consumers' Attitude and Intention to use Online Grocery shopping. For this study, quantitative research has been used and data was collected from 342 respondents through online platforms.

Results showed that TAM is effective during the pandemic in Mauritius. However, Social Norm which is a major antecedent of Intention from TPB was not statistically significant. Some hypotheses developed for this study have been accepted while others were rejected. Based on the study, relevant strategies are suggested to help Online Grocery Shopping service providers favourable Attitude towards OGS and also to influence Intention to use their service.

Keywords: Consumer Behaviour; Online Grocery; Technology Acceptance Model

**The benefits of technological developments on businesses: A survey conducted among SMEs in the city of Beni, Democratic Republic of Congo.**

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**Summary**

New technologies are increasingly influencing companies. Every year, considerable amounts of money are invested in information technology. This trend has led many people, business managers and researchers, to question the benefits of technology for these companies. Very few studies of this kind have been conducted in the Democratic Republic of Congo (DRC). Our research therefore sought to place itself in the Congolese context. Data were collected from 111 SMEs in the town of Beni in the DRC and analysed using SPSS. The results of our research show that companies derive certain benefits from the use of technology, notably improved performance, increased profits, optimized time management, reduced paperwork, improved information quality and improved financial quality. Regarding the relationship between the amount invested in technology and the benefits, it turns out that the more a company invests in technology, the more benefits it receives.

**Key words: ICT, impact, business, performance, investment, SME.**

## Microeconomic Resilience Practices in Entrepreneurship During Pandemic A Study of Pokhara, Nepal

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### Abstract

Local economic system was highly affected due to pandemic. Due to Covid019 spread in wider level, most of entrepreneurs were highly impact in first and second lockdown at Pokhara, Nepal. Social support and personal support preparedness initiatives are too low with envision of pandemic. Lack of enough saving, weak social support system, lower social protection policy, and lack of recovery packages to entrepreneurs, they were in crises.

This study finds out what has been going on in self-sustaining practices aftermath of long lockdown, how the local supporting factors has been contributing on scaling up local entrepreneurship to bounces back after economic shocks and stresses. Is there any social protection mechanism and policy exist in local to provincial level, how existing professional groups, local cooperatives, existing financial institutions, and corporate houses has been supported to revive their entrepreneurs in tourism sector? Open-ended questionnaire, observation, key informant interviews, case studies, and in-person based discussion method were applied in this study. Content analysis of existing finding, logistic regression and available study results facilitate to draw conclusion of study.

The findings of the research indicate that contribution towards the professional based formal supporting group was highest, followed by self-saving capacity and least from state agencies on building socioeconomic resilience. This study concludes that social safety nets and social protection towards entrepreneurship in the area have not been as effective as expected in the pandemic.

**Keywords:** Informal-support, pandemic, resilience, socio-economic, social support, safety nets.

## Background

The episode of novel coronavirus named COVID-19 has distributed the local and national economy crises and is spreading universally. The advancement of the disease and its financial impact is exceedingly uncertain, which makes it troublesome for policymakers to define a suitable macroeconomic arrangement response at the local to national level. The world health organization declared the Covid-19 as a global pandemic on the 11<sup>th</sup> of March 2020 (Kenyon, 2020). While spreading of virus, the human movement and human induce trade and business is badly break down due to its higher speediness of transmitting capacity and chronic characteristics. It seems with infected of high Covid-19 spread around the globe, which could impact more in trade and local business, which is highly depend on tourism and human movement.

“While nearly all spheres of life have been affected by the pandemic and the resulting socioeconomic impacts, the focus of this report is on the pandemic’s massive consequences for trade and development” (DEVELOPMENT, 2020). Whereas about the all circles of life have been influenced by the widespread and the coming about socioeconomic impacts due to pandemics. This study is rounding among of pandemic situation, impact on tourism based, and other enterprenures, their own social protection and supporting practices, state socioeconomy recovery polices and program, and enterprenures are being baounce back in study area. Moving along with the travel and tours associated business is being hard to survive due to low traveler movement, low socioeconomic support practices in trade institusions, and lack of policies of state. This study paper try to dig out how the Covid019 widespreads has impact into the local enterprise business including in the hotel and tourism, and small budgeted entrepreneurs in Pohara, Nepal. There is impact on national and provinical economic impact and including in hotel, tourism, and small shops due to low human mobility. Due to disturbance of Covid-19 has had real and unbalanced results on helpless economic situation of trade and business particularly in Pokhara (study area).

“The longer-term responses are even more important. Despite the potential loss of life and the possible large-scale disruption to a large number of people, many governments have been reluctant to invest sufficiently in their health care systems, let alone public health systems in less

developed countries where many infectious diseases are likely to originate” (Fernando, 2020, p.25). The immediate and long-term impact is seems of Covid019 in travel, tourism and hotel management due to human movement is very low. The affect of this health emergency could affect in long run due to lower coverage of vaccination to whole population, and the single person can chance to spread to others. Having of lower economic conditions and loan-based business being more impacted due to low transaction. Which lead to business loss, and enterprenures could harldy manage their monthly installments to the bank. Which was being more fragility in business sectors in study area. Social support sytem was not in satisfactory level and socioenconomic recovery plan of state was also in low level.

### **1. Conceptual background**

After of Covid019 spread all over the globe, its impact was being spread into multiplier domain. Business, especially the tourism was affected too negatively due to band of human mobility and stop all travel mode. Tourism base business-like travel, tracking, and hotel services are devastatingly affected due to lock down.

“The negative effects have ranged from a severe contraction of GDP in many countries to multi-dimensional environmental and social issues across the strata of society. In many respects, socio-economic activities came to a halt as: millions were quarantined; borders were shut; schools were closed; car/airline, manufacturing and travel industries crippled; trade fairs/sporting/entertainment events cancelled, and unemployment claims reached millions while the international tourist locations were deserted” (T. Ibn-Mohammeda, 2020, p4). May Portuguez Castro et al. (2020) explain the Covid-19 pandemic has had an uncertain impact on the global economy, especially for entrepreneurs and small and medium- sized enterprises that have suffered significant consequences. However, resilience has emerged as an entrepreneurial skill that allows companies to adapt and grow stronger in the face of challenges. Therefore, this paper conducted a literature review to identify that factors that comprise resilience to strengthen training programs for entrepreneurial skills.

“The emergency has as of now changed into a financial and labor showcase shock, affecting not as it were supply but to request. All businesses, in any case of measure, are

confronting genuine challenges, particularly those within the flying, tourism and neighborliness business, with a genuine risk of critical decays in income, bankruptcies and work misfortunes area. Maintaining trade operations will be especially troublesome for little and more, especially into tourism" (ILO), 18 March 2020, p. 2). During these pandemic, tourism base business is heavily impacted, its being negatively effects from household income to local GDP with to multi-dimensional economic environment and impacted into social domain. The pandemic has raised the economic uncertainty and impact on the local, especially for small entrepreneurship base economy contributors.

The small and midium sized enterprises & informal economic sector are in crises due to long lockdown, low human mobility and limited financial transaction oppourtunities. Farah N. Mawani et al. (2021) explains the Covid019 is a global heath issues and econmice unfolding simultaneously in unpredicted situaion. Which has been devastatingly affecting into employment and socioeconomic status from rural to urban setting. These crises is rapidly exacerbating with socioeconomic and health enequalities including contributing on economic crises in developing world. Lossing of job markets are common, limitizing of market leads into to limited production and limited human movement directly impacting on enterprenureship and self business motives.

The enterpreneurship is a crucial drivers of sicioeconomic factors in community. Which is essential growth engine for social development. It promotes the essentail innovation of local and self enterprenureship based on local setting and global demand. Wright, F. and Kelley, D.

(2020) explains the government are responding to pandamic are quite more effective for bounce back to normal for local enterprenures. When the local enterprenures received financial support from government it is quite more easy on their business sustain or recovery. Actually the enterprenures are expecting on their socio-economic recovery support from local state, development partners, and financial instituions. Due to Covid019 the local oppourtunity and its contributions are being limited in local setting and local enterprenures are being partial to their service and economic drives. The promotion of local enterprenurehsip can contribute into economic development and capital formulation in local level. Which can mainly make a major drivers for societal run. The central approach of promotion and establishment of local

entrepreneurship can make a difference in local community and support to financial regularize in local market.

The global scale of pandemic making socioeconomic fragility in local to global context. Which has been directly impact into private, and public microeconomic environment, and finally its highly impacting on debt cycle from entrepreneurship to market, market to financial institutions, and financial institutions to nations GDP. Which is finally influencing into global

economic order. Takahashi, N. and Guelich, U. (2020) define the Japan and Thailand government were financial support to entrepreneurs, direct support with enabling policies, like; reduce taxes, address their demand through government program, online with post-school entrepreneurial education, internal market dynamics, enabling environment on local market opening, and vocational training to newly entrepreneurs. They are trying to convert this pandemic as working opportunity, due to these pandemic the working time, travel for meeting is being more adjustable due to virtual learning and meeting, and finally adding IT literacy is quite high.

Its time for global collective engagement for fight against this economic fragility, contribute into local financial strengthening, run for financial order, and do small do able economic contribution. Through the social support among of entrepreneurs, social protection fund and revolving fund from government, banking debt provision without control or based on zero interest loan for reviving local entrepreneurship, contribute for local economy and contribute into sustain socio-economic order.

Covid19 has appear when the developing world are already struggling for betterment of socioeconomic status. Many nations had trying to reach sustainable economic destination and tried to find better way on prosperity. The recent pandemic badly confronted before the socioeconomic struggling line in front of developing world. Diego D'Adda, et al. (2020) explain the dramatic changes in economic due to Covid19 people behaviour, and public institutions. They revive the adapting and changing situation of business models and how it become too quickly. The lockdown reflected the major negative role on socioeconomic consequences, decreasing on saving and further investment.

Social capital, social safety nets and state policies on social protection can play a vital role on entrepreneurship recovery in pandemic. May Portuguez Castro, M.P., Georgina, M. and Zermeño, G. (2020) define the resilience capacity are contributing on local entrepreneurship. The entrepreneurship is collective action of human relationship, social capital, social protection, social safety nets and strategic management. These factors can contribute to scaling up entrepreneurship enabling in market and contribute to make social capital formulation. Which is crucial on crises management as like pandemic.

Sigala, M. (2020) defines the COVID-19 impacting on local entrepreneurship and tourism, which is impacting on local to global economic movement. When human movement is band for internal and international movement, absolutely impacted on economic impact in local entrepreneurship like tourism-based economy. Tourism-based economy can contribute directly into strengthening of local economy with widely using of local resources. Due to Covid019 impact local entrepreneurship, tourism-based economy and associate business are badly affected.

Based on the above discussion, most of the entrepreneurs trying to protect recent jobs, trying stable enterprises and their workers. It seems entrepreneurs trying to towards sustainable and resilient entrepreneurship. Most of the previous literature has escaped to study of the Covid019 impact on entrepreneurship, financial constraint in their own business, especially on socioeconomic resilience context. Some were explained about the individual in social support practices, and characteristics of social support. But, none of explain about the social support system among of entrepreneurs, and how they are alive even in this pandemic, what are the major supporting factor to sustain their entrepreneurship in this complex situation. This study will try to find out on remaining finding in context of Nepal in Pokhara. Mainly this study will find out the social support system, social protection mechanism among of entrepreneurs in study area, and how the professional groups as like local cooperatives, relatives, and state agency has been supporting to entrepreneurs for sustain their business in this pandemic.

## **2.Objectives and methods**

During this study I had tried to find out the major socio-economic constraint trends and what are the major supporting factors in socioeconomic recovery during and aftermath of the pandemic. For

collecting of information and data, we had applied qualitative research methodology in this research and all primary data collection from field. During the information gathered by talking directly to the responders based on open-ended questionnaire and used observation in the natural setting. In this research, researcher is a key instrument for information gathering via observation, and directly interviewing the responders. Used purposive sampling for sample collection from entrepreneurs list of Pokhara. The total sample size of the google survey was fixed nearly 31, among of 19 are hotel & resort owner and staff, 3 are Spa & Restaurant, 3 dairy product, 2 fast food entrepreneurs, 3 from fruit & vegetable shop and 1 travel agency entrepreneurs. Listed respondents were first prepared based on records of those who have their own entrepreneurship recorded in around of Pokhara, Nepal. The data collection strategy was focus on in-depth analysis of economic status, supporting mechanism, social support system (practice), and social protection policies based on entrepreneurs, financial institutions, and state.

Through this qualitative & quantitative base research; it facilitates or explore the issues, tried to collect previous finding from literature review on build further insights, take depth interview, collect case analysis and do small focus group discussion which support on collect answer of research questions in descriptive mode. Telephone interview and questionnaire tools will used in same responders for data triangulation. In this study I tried to generalize common understanding of real-world practices, link with experiences, tie-up with real ground knowledge about the reflection of support behaviors, difficulties of social support structure and tried to share their reforming ways. Major source of information stored in notebook, regular communicate with entrepreneurs. The all responded interviews were transcribe and do thematic analysis in qualitative analysis and logistic regression was done in quantitative analysis.

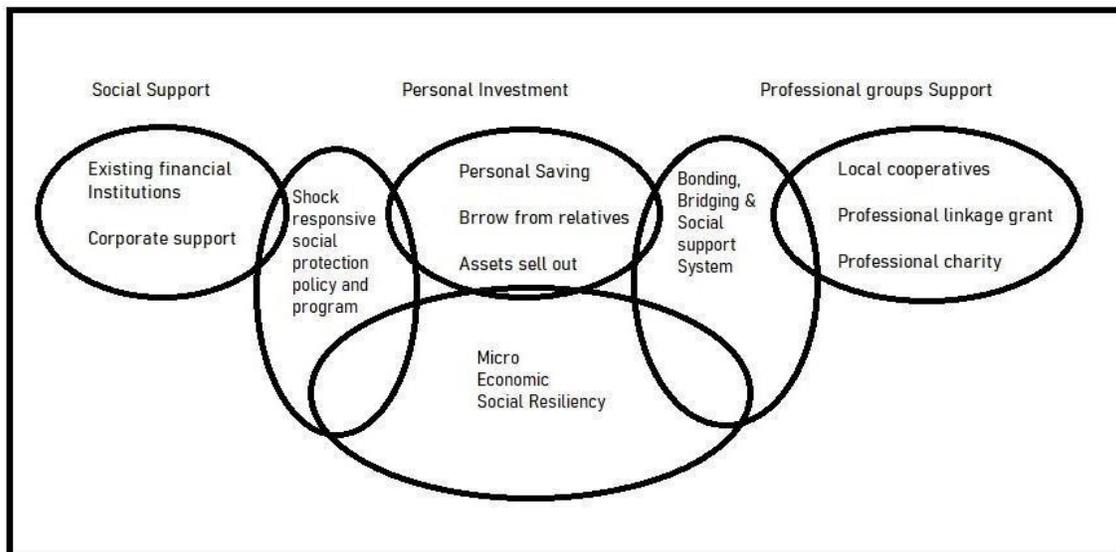
### **3. Theoretical Framework**

This study is primarily based on conservation of social resources: social support resource theory. Freedy and F. Jhon (2016), explain the social support theory was derivative from based on general stress model termed conservation of resource theory (CoR). Author added further; building rich and strong bonding situation in community and person, who can cope existing shocks & stresses, could support to needy people based on the existing available social resources. The shocks and stresses are not in form of origin as ancient period, but it is also occur in changing order in

recent period so we must be prepared for future shocks, stressess, and uncertinities in social, psychological and biological world.

Our daily intervention, socioeconomic activities, risk assessment and anticipation capacity can contribute into builiding resilience capacity. Holtzman, S. and Delongis, A. (2017) decribe the personal performance and social relationship plays an important role on social support as building of coping capacity. The social relationship, especially on social support, building coping strategies and effective support system contribte into building resilience. We can elaborate the major socioeconomic resilience integration in this study as follows:

### Conceptual Framework of Microeconomic Resilience



Social support is the supporting level from the people, professional community, and policy backup towards vulnerable and needy community. These supports can be emotional, tangible or intangible. Social support could be measure from assistance mode and frequency to the needy community, or the degree of support can be providing who are in integrated in the social network. These supports could be beginning from differ sources, such as friends, relatives, neighbors, professional community or from institutions. Every entrepreneurs have their basic resilience capacity, it could be multiply if they can manage their saving capacity, added professional support agency, if get financial support from local cooperative and financial institutions, if they get social

protection with envision of future risk, and high level of bonding-bridging among of entrepreneurs.

The personal and social relationship among of professional community can make differences on shocks and stresses management along with shocks responsive preparedness in affected communities. The specific nature of the stress, shocks and uncertainty can make differences the level of vulnerability. The engagement in social supporting factors, communities and response can contribute on coping capacity to needy people during the crises. The social support reduces the effect of the shocks and stresses via supportive activities to others. The supportive activities can enhance coping capacity of subject.

#### **4.Result and discussion**

The economic growth and impact of the regular shocks such as pandemics are seeming to be an interrelated phenomenon. During the normal period, industrial production, tourism, travel, farm production, and market service were easily operated. In the aftermath of the Covid019 pandemic, most of the normal services are being either slowdown or shutdown due to state prohibitory orders, shut down and purposively making social distancing to reduce the spread of the virus. Due to a long period of lockdown, most of the service providers were shut down and almost they were bankrupt due to no trade. After of long-time shutdown in entrepreneurship, the economic shocks and stresses have been mounting. People's socio-economic condition was being fragile; who were especially engaged in tourism-based entrepreneurship. In the aftermath of the second lockdown, most of the tourism-based, others entrepreneurship, and local service providers have been trying to scale up their services in partial mode. Due to the heavy pressure of staff management and their benefits, most hotels are going to be weak and hardly they could be sustaining themselves in the recent socioeconomic condition in Pokhara, Nepal. Most responders are belonging to hotel tourism entrepreneurs, and the rest are restaurant owners, Spa service providers, fast food owners, fruit shop & juice making owners, and dairy producers. Among all responders, hotel base entrepreneurs are major service providers in the study area including the majority on 30 to 40 years of age group,

#### 4.1 Entrepreneurship being affected during to Pandemic

Among the responder, entrepreneurs responded more than 97% of responders said their entrepreneurship was being affected due to Covid019 in this pandemic. Hotel, restaurant, trekking, Spa, and travel agency was badly affected due to low movement of local and international tourist. The dairy product and fruit store were partially affected during these pandemics.

“From the first lockdown, we had completely shut down my hotel. we were hopeful on open soon and our trade will be normal after of first quarter. But unfortunately, our trade was shut down for nearly 12 months. During this period, the bank has repeatedly asked us for installment payment, and we had requested for consideration as an adding these interests into the capital loan. Still, our hotel is loose, we must manage our staffing and pay to them on monthly basis and all these expenses are at a negative rate. If we could not get a low base rate of loan in interest or get recovery fund from government or not get subsidy from financial institutions, definitely we have to either shut down or consider another option” (Case one: Owner of Hotel Barahi, 42).

Most of the entrepreneurs were invested for Visit Nepal 2020 with the borrowing of heavy loans from banks & cooperatives and they were seeming on the heavy loose. Hotel owners share their opinion on the local government haphazardly did lockdown. They added further on lockdown should be on partial or should be on cluster approaches. Due to prompt lockdown, they could not manage properly their staffing, loan management with financial institutions, and even could not close properly. Due to the rush shut down, they faced many losses on damaged assets and in loan installment. (Case two: The Nepali Khana owner (25) added his further opinion);

“The lockdown decision of the local authority seems too impractical. We cannot properly manage and shut down our internal management. Due to lockdown our stored food items were waste and cannot dump in the correct places, which also affect my storeroom and we reinvestment to repair the aftermath of lockdown. We lost our most professional staff and they are out of contact now, now we are investing on new staffs who are low professional and we should do retrain them. Which is also a big loss for us in our business”.

## 4.2 Major socioeconomic support

The socio-economic status among entrepreneurs was in a critical situation due to their lower capital formulation and saving capacity. Due to the pandemic the economic-based shocks and stress were mounting. Entrepreneurs can be recovering from the recent economic shock and stresses, which depend on how they have their saving, supporting factors from own saving and credit cooperatives, professional supporting groups, other financial institutions, and states social recovery plan and policies. Economic resilience can define in several ways but in this study, these terms are used only to the ability to recover capacity from the pandemic shocks and stress.

Only 14% of respondents were response on received social support, especially from their local cooperatives and professional saving groups. The remaining 86% of responders have not received any social support during this pandemic. Among of 14% responders, there are 80% of responders have been engaged in small budget base business and the remaining responders have engaged in huge investment. The major social supporting groups are local cooperatives and professional groups of entrepreneurships.

Among of respondents, 23% said they were running their enterprise in this pandemic based on their savings of the bank, and cooperatives. 63% of respondents have added their loans from cooperatives, relatives, and financial institutions (banks) on the socioeconomic recovery package. 14% of respondents were sold out their other property and invested in to retain their existing entrepreneurship.

Based on the above discussion, most of the entrepreneurs are in crisis due to this pandemic. They have tried to wake up from the first lockdown crises and again badly affected by the second wave of this pandemic. Most of the entrepreneurs are waiting for socioeconomic recovery grants support from financial institutions and the government. While entrepreneurs were trying to revive their services, some of the financial institutions were supported by their initiations. The financial intuitions were considered waiting for their monthly installment including deducted the monthly installment rate, some were added additional loans for recovery package, and state agencies has planning to lunch socio-economic recovery plans to migrated workers, local entrepreneurs and

going to lunch socioeconomic recovery package to enterprise recovery from the pandemic. 85% of responders were responded on the financial institutions were supported in recovery through the loan, 10% of respondents were said the local government was supported on their enterprise recovery and the rest of 5% were said the provincial authority has started to support the enterprise recovery.

Due to the first time of the pandemic attack, lack of proper readdressed policy on the pandemic, and lack of proper funds and anticipatory actions, the local and provincial authority has been unable to support in large coverage on socioeconomic recovery package. According to of new fiscal policy of the provincial policy and planning commission of Gandaki province, Nepal, has going to support local entrepreneurs through the recovery package in this fiscal year.

#### **4.3 Further backup plan for reviving enterprise**

Entrepreneurs were standing with enough defensive own back-up for recovery through their savings, trades, and business capacity. They have been shown their bounce-back capacity for recover quickly from the effect of an advanced incident. They have been trying to recover quickly as soon as possible, trying to reduce the pandemic shocks and stresses, and trying to anticipation further shocks prepared. Among the respondents 45.71% said they have planned to add personal loans from existing financial institutions, 17.14% said they have planning to sell out their property, 14.29% planning to invest own their savings, 11.42% planning to borrowing loans from relatives, and saving groups, and 11.42% have no further idea.

Find nearly 12% of respondents expecting support from their professional support agency on further reviving of their enterprises. The professional bonding, bridging, and support mechanism were looking strong among small enterprise holders with compare of huge investors in the study area. 14% & above of respondents share they have their savings and they could invest in the further recovery process of their trade and business. It seems, most entrepreneurs had had their saving culture, anticipation capacity, and the idea of future crises management in their capacity. More than 45% of respondents were shared they do have not any alternatives and they are going to add the loan budget from the nearest financial institutions and expecting on lower EMI rates. Nearly 40% of responders were well known about the socio-economic recovery plan

of the state, 48.57% responders were said 'no', and 11.43% responders were having no idea on receiving socio-economic support package of states.

During this study, most of the local entrepreneurs have their supporting expectations from financial institutions and state authorities. Among of respondents, 17.14% were expecting 7 on deduction in existing loan interest rate, 14.29% expecting lower interest rates in further loan, 31.43% respondents were expecting a socioeconomic recovery plan, grants, and policy-based support from the state, 11.43% expecting financial recovery package from state authority, 14.29% expecting on zero or negative interest base recovery package from the bank, and,

11.43% expecting support on loan polices and recovery package to entrepreneurs. The economic impact such as long-term shocks and stress on local entrepreneurs will be heavy. They have been struggling to retain their profession and somehow trying to pay their monthly installment. But their effort is countless, the reviving Covid019 another waves, lockdown, deduction in internal and international tourist movement affecting into local entrepreneurs in study area.

#### **4.4 Logistic Regression of professional group support and self-saving capacity contributing into building social resilience**

Calculation Summary
Sum of X1 = 5
Sum of X2 = 26
Sum of Y = 23
Mean X1 = 0.1429
Mean X2 = 0.7429
Mean Y = 0.6571
Sum of squares (SSX1) = 4.2857
Sum of squares (SSX2) = 6.6857
Sum of products (SPX1Y) = 2.2143
Sum of products (SPX2Y) = 3.9143
Sum of products (SPX1X2) = 0.2857
<b>Regression Equation</b> = $\hat{y} = b_1X_1 + b_2X_2 + a$

$$b_1 = ((SPX1Y)*(SSX2)-(SPX1X2)*(SPX2Y)) / ((SSX1)*(SSX2)-(SPX1X2)*(SPX1X2)) = 13.69/28.57 = 0.479$$

$$b_2 = ((SPX2Y)*(SSX1)-(SPX1X2)*(SPX1Y)) / ((SSX1)*(SSX2)-(SPX1X2)*(SPX1X2)) = 16.14/28.57 = 0.565$$

$$a = MY - b_1MX_1 - b_2MX_2 = 0.66 - (0.48*0.14) - (0.57*0.74) = 0.169$$

$$\hat{y} = 0.479X_1 + 0.565X_2 + 0.169$$

Above table shows, the professional support groups (0.479) and personal saving capacity (0.565) added the value into building of entrepreneur's resilience capacity. Its shows without of professional groups support and entrepreneurs saving capacity the constant resilience capacity level in each entrepreneur is 0.169. When entrepreneurs get professional groups support, they could be multiplying their resilience capacity by 0.479 times and could multiply 0.565 times by when they add saving capacity respectively. Its support to explain on the minimum resilience capacity is existing with local entrepreneurs and it could be multiplying when they get additional social support from differ supporting structures.

Above stated social support resource theory by Freedy and F. Jhon (2016) social support theory which was derivative from based on general stress model termed conversation of resource theory (CoR). Which was seems more relevant to this study. Thourgh this theory, this study was link with social support based on local avialable resource and interlink with personal capacity, professional supporting practices, financial institutions support, and social recovery support of state. Which has been contributing in building resilience capacity of local entrepreneurs in study area. The social support and social protection especially find into individual and social context.

The federal government, provincial authority, and local governance structure also can support to sustain or recover of local business from social recovery package to entrepreneurs. If the provincial and local state would like to ensure socio-economic sustainability and financial regularity at local level, state authority should start to make social protection policy and should provide recovery grant to local enterprenures with professional alternates and do enabling environments.

Social support, and social protection is crucial drivers for execute in risk situation, crises management, and manage uncertainty to entrepreneur's community. It could be execute based on social interaction and relationship among of professional society or from shocks responsive state policy and plan. The social support can be effective in promotional action of coping capacity and can help to reducing effect of shocks & stresses in uncertainty. Through these study evidence showing the social support measures can contribute on reducting shocks, stresses and uncertainty of target people and the ability of interpersonal resources making more resilient to subject, which is directly impact on wellbeing.

## **5.Conclusion**

After the first lockdown, the local entrepreneurs tried to retain their trade and business based on their savings. They have been standing with these adverse effects of pandemic shocks and trying to absorb the business losses. Already tried to bounce back from personal saving, sold-out property, already added additional loan from existing financial institutions, borrowing personal loan from relatives, and waiting for recovery policies, programs, and budget from local & provincial state. Social support can be a useful tool for shock-responsive coping action. Individual and enterprise action should be interrelated with an understanding of the underlying

causes of risk, building coping capacity, enhancing anticipation capacity, and envisioning future risk capacity which can contribute to the future pandemic management capacity of individuals and institutions.

Through these pandemic and economic losses, the entrepreneurs learned to lessen to build social support mechanisms at the local level, enhance professional-based groups for bonding and bridging practices, which could make a difference during crises response. Personal savings makes difference during crises and microeconomic entrepreneurs an easy to cope with crises compare to big investment-based entrepreneurs. The professional groups base support and personal saving with anticipatory action, and shock preparedness can make difference for entrepreneurs' sustainability. Shocks preparedness, anticipatory budget for future risk management, negative interest base socioeconomic recovery package from financial institutions are major tools for retaining entrepreneurs for pandemic recovery. The socioeconomic enhancement, microeconomic stability, market and value chain efficiency, financial governance, and social cohesion among entrepreneurs are major foundations for the building of future microeconomic resilience.

This study only considers as current absorptive capacity of individuals (entrepreneurs) on responding to the pandemic among entrepreneurs, did not consider the remaining capacity of resilience. Due to limited study of Pokhara, Nepal which might not represent the whole microeconomic resilience experiences at different places in pandemic-affected entrepreneurs' communities. But this study can be a foundation for further studies of the microeconomic resilience practices of Nepal. The further researcher can explore the issues which have not been considered in this research.

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## Impact of Covid-19 on SMEs in Mauritius

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### Abstract

Mauritius had its first three COVID-19 cases on 18 March 2020 and the island was under "sanitary" lockdown for two weeks. From 24 to 31 March, the country went under complete lockdown with only essential services being open. This lockdown was extended until 15 April, then again until 4 May and finally a third time on 1 June, with a gradual reopening of certain economic sectors starting from 15 May. The lockdown was lifted entirely on 15 June. Mauritius had a contamination rate below the WHO forecasts. The WHO predicted more than 20,000 cases and 1,139 deaths in the age group of over 60 years (WHO, 2020). At the end of May 2020, the island had recorded 332 coronavirus confirmed cases, all recovered, and 10 deaths. With less than 3% of the population infected, Mauritius is one of the few jurisdictions in the Indian Ocean which has been able to control the progress of the pandemic. Mauritius has been COVID-19 free with no local cases since 26 April 2020. The island had only one local case in November 2020.

However, at the time of writing, we were facing a second wave of the COVID-19 pandemic with 198 additional local cases, totalling 829 cases as at 22 March 2021. Travel restrictions and sanitary measures are in place to contain the spread of the virus. During the COVID-19 pandemic, the Government came up with major economic and social policies to assist businesses, employees in the private sector as well as informal workers. These strategies aimed to ensure that the island becomes more resilient to the crisis and protect businesses as well as workers. The impact of the pandemic has been felt and will continue to impact the different economic sectors in Mauritius.

This study has been conducted to probe into the effects of the COVID-19 pandemic on trade, investment and employment in Mauritius. The main report is divided into three parts. The first consists of an assessment of the pandemic on employment across a sample of 300 firms operating in different sectors of Mauritius sampled over the period November 2020 to January 2021. The quantitative analysis was also supported by Focus Group Discussions with heads of associations across different economic sectors. The second part of the report probes into the impact of COVID-19 on trade (both exports and imports) in different goods and services while the third part of the report focusses on the FDI situation during the pandemic using both secondary data as well as a

survey on 70 investors in different economic activities in Mauritius. But we are here presenting only the first part of the an assessment of the pandemic on employment across a sample of 300 firms operating in different sectors of Mauritius sampled over the period November 2020 to January 2021. Among the 300 firms, 165 firms are MSMEs and the rest are large firms.

## **1. Introduction**

The COVID-19 outbreak triggered in the city of Wuhan, China during December 2019 has brought many countries to a standstill. Some countries have since January 2020, experienced several waves of the virus and the number of cases and deaths keeps on rising globally. In an attempt to mitigate the number of cases, nations around the globe have implemented containment measures to prevent the spread of the virus in terms of travel restrictions, border closures, lockdowns, sanitary curfews, social distancing, school closure and cancellation of public gatherings amongst others. These strategies have, without doubt, led to economic shocks in various sectors.

Mauritius had its first three COVID-19 cases on 18 March 2020 and on 19 March, the island was under "sanitary" lockdown for two weeks. The lockdown was extended several times and was lifted entirely on 15 June 2020. Mauritius has been COVID-19 free with no local cases since 26 April 2020. The island had only one local case in November 2020. Nonetheless, at the time of writing, we are presently facing a second wave of the COVID-19 pandemic with 198 additional local cases, totalling 829 cases as at 22 March 2021. The COVID-19 pandemic is likely to be the next most serious global economic crisis. There is general consensus that the global economy will contract as a result of the unexpected and sudden stop in several economic activities. Needless to say, that both the developed and developing countries are affected by the spread of the virus. Mauritius, is no exception to the problem as the economy is highly linked to the global world and dependent on international trade, investment and tourism. The contraction in the global economy will evidently be felt in Mauritius and the three main transmission channels that are likely to be affected by COVID-19 are trade, FDI and employment. It should also be noted that prior to COVID-19, the global economy was already struggling due to an increase in trade protectionism, trade disputes among major trading partners, as well as economic uncertainties in the EU due to Brexit.

## **2. IMPACT OF COVID-19 ON EMPLOYMENT IN MAURITIUS**

### **2.1 Introduction**

The COVID-19 crisis is not only a health crisis, but also an economic and employment one. The pandemic has had devastating effects on economies and workers across the globe (World Bank,

2020). A health crisis can become a labour market crisis very quickly by affecting both the supply and demand for labour. Containment measures like travel bans, quarantines and lockdowns are imperative to reduce the rate of contagion and as such many workers could not work (especially low wage and low skilled workers and manual workers who cannot perform Work From Home (WFH)). Informal and low-skill workers have been affected most by the pandemic.

The longer the public health crisis, the greater the impact on the economy's ability to bounce back. This will arise from the closures of businesses and the loss of jobs, generating secondary multiplier effects to as falling firms and reduction in household incomes will further curtail demand. The extent of recovery will depend on policies abroad and on government policy interventions. In Mauritius, to reduce the vulnerability and improve the resilience of businesses and workers to the pandemic, the Government has put in place several economic and social measures. The important measures are the Wage Assistance Scheme (WAS) and the Self-Employment Assistance Scheme (SEAS).

The WAS targets businesses in the private sector and their employees drawing a monthly basic wage of up to Rs 50,000 (USD 1,250). Priority sectors for assistance are the travel and tourism sector, export-oriented enterprises, ICT/BPO sector and SMEs where workers become technically unemployed on a temporary basis due to the impact of the Coronavirus. The SEAS assists self-employed persons who have suffered a loss of revenue as a consequence of the lockdown following the COVID-19 pandemic. The scheme is applicable to self-employed individuals who are in business and tradespersons operating in the informal sector, e.g. masons, cabinet makers, plumbers, hairdressers and artists provided the self-employed or tradesperson is a Mauritian national above 18 years of age and who has been economically active for the last 3 months.

COVID-19 had severe impacts on the informal sector and, more so, on families who live on daily wages for their subsistence. Hence, a financial support of 50% of the minimum wage, that is, Rs 5,100 to every self-earned person was provided by the Government starting as from 16 March 2020 till the end of the June 2020. However, the SEAS is still being provided to those working in the tourism sector. Many casual workers, who form part of the informal sector and are in a position of vulnerability, including the beneficiaries of the Marshall Plan Social Contracts, have been able to benefit from the assistance. The purpose of the two schemes is to cushion the socio-economic impact of COVID-19 by providing financial and psychological support to employees who have become unemployed on a temporary basis, as well as those who are employed in informal sectors or are self-employed. From mid-March to end of June 2020, the Government has

paid out Rs 8.2 billion (USD 205 million) of WAS to more than 268,000 workers in 14,700 companies. Further more than 197,000 self-employed Mauritians received Rs 2.4 billion (USD 60 million) over the same period. A total of Rs 10.6 billion (USD 265 million) has been disbursed under the two employment assistance programmes to companies and self-employed people affected by the Covid-19 pandemic. The Government has decided to maintain both schemes for workers in the tourism industry as long as the borders are closed.

The Government also set up the COVID-19 Solidarity Fund Framework and Operating Guidelines which aimed at building a resilient society by alleviating suffering during and in the aftermath of the COVID-19 pandemic. The Fund aimed to help strengthen the preparedness and response of the nation to face COVID-19 type situations. It will intervene during the confinement/curfew period and the recovery period. The key objectives of the fund were to contribute to the financing of projects, programmes and schemes related to the COVID-19 and other related public health issues and provide financial support to citizens and organisations affected by the COVID-19 virus. The COVID-19 Solidarity Fund received its financing mainly through sums received from the Consolidated Fund, public enterprises and statutory bodies; contributions, donations, grants and other receipts from the private sector, national or international organisations, and any other person; and any other sum which may lawfully accrue to it.

## **2.2 Objectives**

This report first analyses the impact of COVID-19 on businesses and employment on a sample of 300 firms across sectors. We address the following issues:

- Impact of COVID-19 on firms' performance
- Effects of the pandemic on employment
- Firms' strategies to continue operations e.g. Work From Home (WFH)
- Future prospects and measures

## **2.3 Methodology and Survey Analysis**

The survey instrument is a quantitative questionnaire with various dimensions to capture the impact of COVID-19 on the firm's activities, performance, employment level as well as different strategies put in place to mitigate the effects of the pandemic. The survey was conducted between September 2020 and January 2021. Section one of the questionnaire analyses the socio-demographics of the 300 firms. Section two probes into the firm's performance in terms of its operation prior, during and after the lockdown. Performance is gauged in terms of revenues, cash flows, investment and operating costs. The next section of the questionnaire analyses the

employment level of firms with respect to dismissal or reskilling of workers. Section four examines the challenges faced by businesses and the strategies they have adopted to adapt to the pandemic such as work from home amongst others. Lastly, the questionnaire evaluates the different schemes provided by the authorities to firms in varied sectors, the usefulness of such programmes as well as additional support and policy measures needed by enterprises.

The mode of data collection was face-to-face interviews. The strength of the data is that it provides micro level data on 300 firms in the difficult time of COVID-19. A stratified random sampling methodology was adopted where all small, medium and large firm size have the same probability of being selected so no weighting of the observations is required to scale up the results to the economy-wide level. The strata for the survey are firm size, business sub-sector, and geographic region within Mauritius.

Table 2.1 shows the profile of firms surveyed, where it is observed that 84.5% of firms have been in operation for more than 10 years, whilst 15.5% have been in business for 10 years or less. Most firms (60.1%) in the sample are domestic firms and around 40% engage in trade. It can be further postulated that 62.6% rely on local supplies only while the rest 37.4% depend on international suppliers. Only 12.3% of firms form part of a multi-firm corporate group. Information on the number of employees in the enterprises is also analysed where 73% have 10 or less workers, 18% have between 11 and 50 employees and the rest (8.6%) have more than 50 workers. The survey also probes into the gender dimension of the business by gauging on the number of female employees in the enterprise as well as the gender of the head of the business. Around 16% of firms have a female head and 33.1% have a share of female employees in the range of 0-10%.

Table 2.1 Profiling of Firms Surveyed in 2020 and 2021

Sector	%	Share of female employees	%
Primary	2.0	0 - 10%	33 .1
Secondary	20.1	11 - 20%	14 .7
Tertiary	77.9	21 - 40%	17 .8
<b>Number of years in operation</b>		41 - 60%	16 .6
0- 10 years	15.5	> 60%	17 .8
More than 10 years	84.5	<b>Head of the Enterprise</b>	
		Female	16 .0
<b>Firm part of a multi-firm corporate group (conglomerate, holding company, or network)</b>		Male	84 .0
No	87.7	<b>Business Trade</b>	
Yes	12.3	Domestic Companies (Buy and sell within Mauritius only)	60 .1
<b>Number of employees in the enterprise</b>		Trading Companies (Involve in either exports of imports or both)	39 .9
10 or less	73.0		
11 to 50	18.4		
>50	8.6	<b>Type of Suppliers</b>	
		International Suppliers only	37 .4
		Local Suppliers only	62 .6

Source: Firm Survey, 2020/ 2021

Our sample is in line with the survey conducted by Business Mauritius in collaboration with UNDP and Statistics Mauritius in December 2020 (DCDM Research, 2020). Their sample covers a larger number of firms totaling 2,707 firms across various sectors. Their survey encompasses 5% of firms in the primary sector, 25% in the secondary sector and 69% in the tertiary sector. Our sample covers slightly more firms in the tertiary sector with 78% and less in the primary sector with 2% of firms. In terms of export and domestic orientation, the DCDM survey accounts for 33% export oriented and 67% domestic firms. With respect to gender, 77% of enterprises were male led whilst 23% were female led.

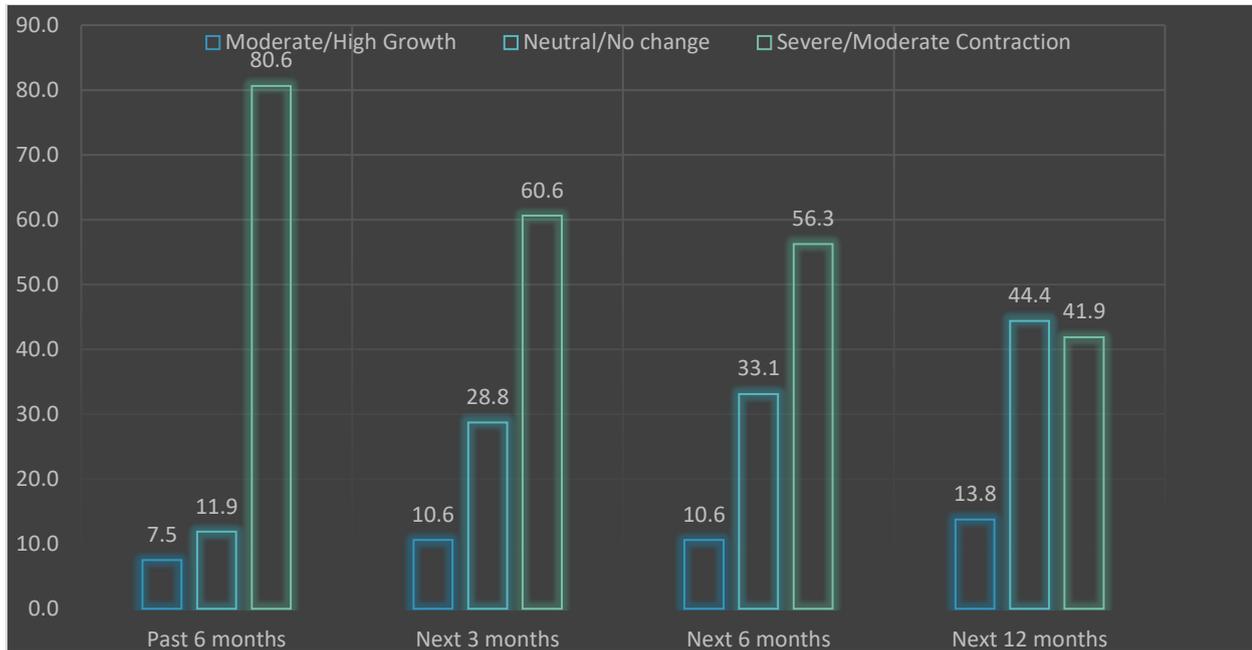
## 2.4 Findings

### 2.4.1 Impact of COVID-19 on Firms' Performance

Firms were interviewed during the period September 2020 to January 2021 and were asked about the impact of COVID-19 on their performance over the past 6 months as well as the following months. From Figure 2.1 below, in the past 6 months prior to September 2020, there has been a severe contraction in their activities. This has been the case for the majority of firms surveyed (81%) and it is forecasted that the contraction is likely to decline over the coming months. In the next 12 months, around 42% reported that there would be a

severe or moderate contraction in their activities while 44% reported that there would be no change and 13.8% stated that their performance would improve.

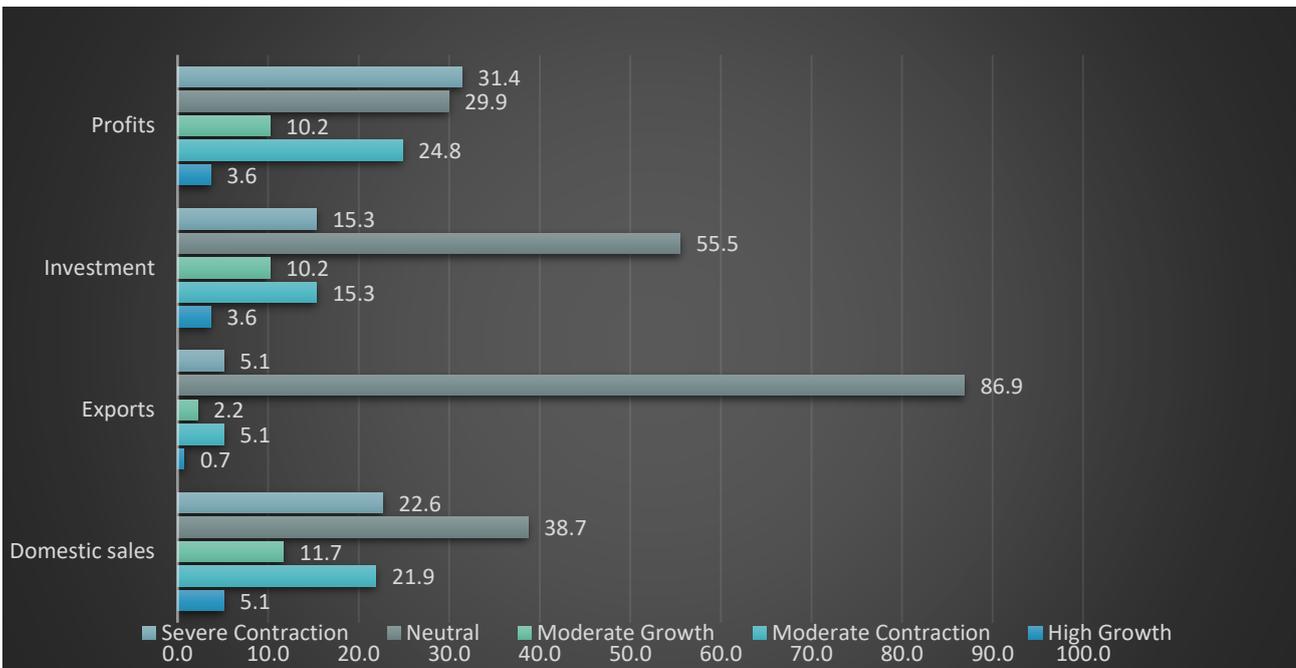
**Figure 2.12 Impact of COVID-19 on Firm’s Performance over Time**



Source: Firm Survey, 2020/ 2021

Potential contraction or growth of the firm’s activities in 2021 were further assessed in terms of its exports, profits, investment and domestic sales. Since the majority of firms produce for the domestic market, the impact on exports was reported to be none. However, 31.4% of firms are expecting a severe contraction in their profits, while 24.8% forecast a moderate contraction. In terms of investment, 15.3% expect a severe decline in investment. A similar result is noted for a moderate contraction in investment. Firms surveyed have also reported that they expect a contraction in their domestic sales in 2021 ranging from a severe contraction for 22.6% firms to a moderate contraction for 21.9% of firms (see Figure 2.2).

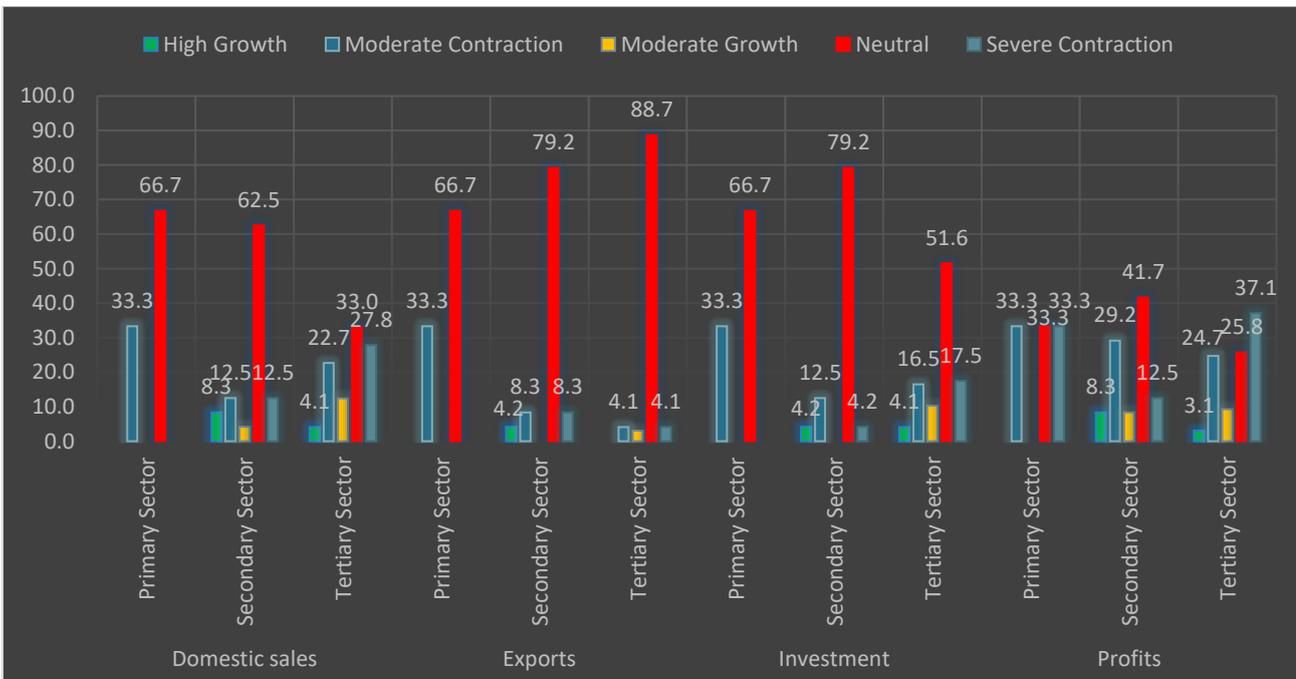
**Figure 2.13 Impact of COVID-19 on Firm’s Performance in 2021**



Source: Firm Survey, 2020/ 2021

Next, we probe into the firms’ contraction in in profits, exports, domestic sales and investment by sector. It can be noted that the tertiary and primary sectors experience a large decline in profits while a moderate fall in profits is observed for the secondary sector.

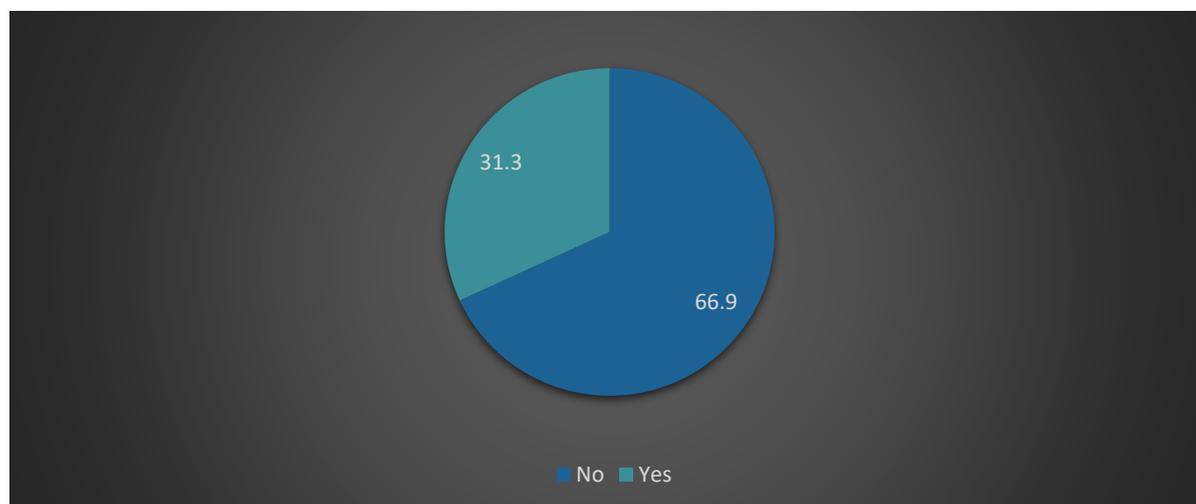
**Figure 2.14 Impact of COVID-19 on Firm’s Performance in 2021 by Sector**



Source: Firm Survey, 2020/ 2021

The firms were further asked as to whether there was a risk that their business will permanently close down because of the pandemic. The data reveals that 31.3% of enterprises stated that they may actually close down as seen in Figure 2.3 below.

**Figure 2.15 Risk of Closure due to COVID-19**



Source: Firm Survey, 2020/ 2021

The risk of closing business is further assessed in terms of the type of business, size, gender of the head of the enterprise and number of years of operation of firms surveyed. Table 2.2 shows that the risk of closure tends to be higher for firms who produce essentially for the domestic market. In addition a higher percentage of firms having 10 or less employees are likely to close down (33.3%) compared to those having around 11 to 50 employees (31.0%) and those having more than 50 workers (21.4%).

**Table 2.2 Risk of Closing Business across Size, Types of Business, Years in Operation and Head of Enterprise**

Risk of Closing Business (%)			Risk of Closing Business (%)		
Type of Business	No	Yes	Number of Years in Operation	No	Yes
We buy and sell within Mauritius	64.9	35.1	0- 10 years	68.2	31.8
We export and import	71.4	28.6	More than 10 years	67.9	32.1
We export but do not import	75.0	25.0	Grand Total	68.6	31.5
We import but do not export	73.7	26.3	<b>Size</b>	<b>No</b>	<b>Yes</b>
Grand Total	68.1	31.9	10 or less- MSMEs	66.7	33.3
<b>Head of Enterprise</b>	<b>Female</b>	<b>Male</b>	11 to 50- MSMEs	68.9	31.0
No	60.0	69.6	>50	78.6	21.4
Yes	40.0	30.4	Grand Total	68.1	31.9

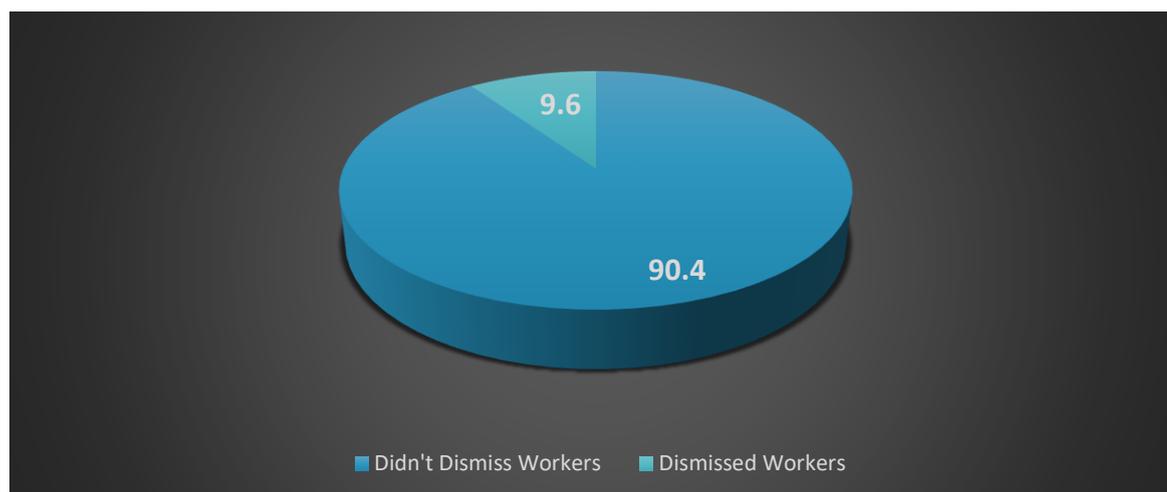
Source: Firm Survey, 2020/ 2021

Among female heads of business, 40% reported there is a risk of closure compared to 30.4% of male heads. There is a higher percentage of firms with more than 10 years in business (32.1%), which faces a risk of closure in 2021 compared to their counterparts having between 3 to 10 years of operation (31.8%).

## **2.4.2 Impact of COVID-19 on Employment**

### **Reduction in Workforce**

The main focus of the survey was to assess the impact of the pandemic on employment across the 300 firms in varied sectors of activities. The study first reported as to the percentage of enterprises which have dismissed workers as a result of COVID-19. It can be seen in Figure 2.5 that around 9.6% of enterprises dismissed workers. Dismissal tends to be essentially in the tertiary sector and across firms with more than 50 employees (i.e. 21.4%). Around 6.8% of firms with a firm size of 10 or less workers have also reduced their workers whilst 17.2% of firms with 11 to 50 workers adopted a similar strategy.

**Figure 2.16 Dismissal of Workers due to COVID-19**


Source: Firm Survey, 2020/ 2021

The firms also reported on their plans to lay off workers in the near future as a result of the pandemic. It can be observed from Table 2.3 below that for 21.9% of firms, there may be a probability of dismissal while for 6.2% it is certain that they will lay off workers.

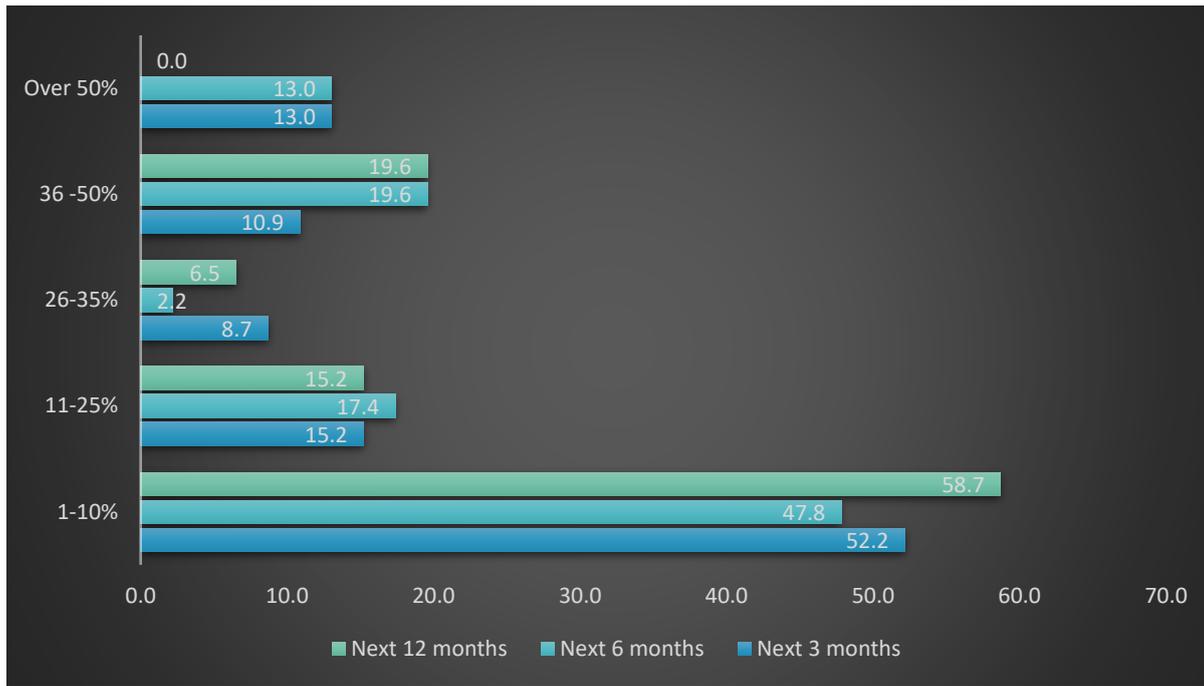
**Table 2.3 Plan to dismiss workers due to COVID-19 impacts**

Sector	Maybe	No	Yes Definitely
<b>Primary</b>	66.7	33.3	0.0
<b>Secondary</b>	13.3	80.0	6.7
<b>Tertiary</b>	23.0	70.8	6.2
<b>Total</b>	21.9	71.9	6.2
Number of Employees	Maybe	No	Yes Definitely
<b>10 or less- MSMEs</b>	22.2	70.9	6.8
<b>11 to 50- MSMEs</b>	20.7	72.4	6.9
<b>more than 50</b>	14.3	71.4	14.3
<b>Total</b>	21.3	71.3	7.5

Source: Firm Survey, 2020/ 2021

In contrast, around 72% reported that there will be no dismissal of employees. Future dismissal is surely to happen in firms with more than 50 workers relative to the other enterprises. Around 22% of firms with 10 or less employees may reduce their workforce relative to 21% of those enterprises with 11 to 50 workers. The percentage of dismissed employees over time is assessed next across firms surveyed. In the next 12 months, 58.7% of firms who reported to lay off workers, will do so in the range of 1 to 10% of its workforce while 15.2% will reduce its personnel by 11 to 25% over the same period. Likewise 19.6% may reduce around 36 to 50% of its employees in the next 12 months (see Figure 2.6 below).

**Figure 2.17 Percentage of Dismissed Workers over Time due to COVID-19**



Source: Firm Survey, 2020/ 2021

### Work from Home

Governments have implemented measures ranging from physical distancing, restrictions on the freedom of movement and the closure of non-essential companies and undertakings, to the lockdown of entire cities in different parts of the world. As the pandemic evolves, so have the measures governments have taken to address it. Reducing face-to-face contact is an important action to mitigate the impact of COVID-19. According to the International Labour Organization (ILO, 2020), around 68% of the world’s total workforce, including 81% of employers, are currently living in countries with recommended or required workplace closures. In this new environment, employers have to be able to adapt and make contingency plans to respond to new measures as they arise. Many companies have explored working from home (WFH) as a temporary or alternative working arrangement. The Work from Home strategy has been adopted by many firms and Mauritius is no exception to that.

The Coronavirus has made Work from Home the new normal and in the survey, we note that 24.4% of firms adopted the WFH strategy. By firm size, the data indicates that small firms are less likely to adopt WFH may be due to other constraints which will be analysed next. This is also confirmed by ILO (2020) findings which indicate that many small and medium-sized enterprises struggle with WFH, and use telework much less than large companies. WFH has been adopted across 64.3% of firms having more than 50 workers and for 41.4% of firms with a workforce ranging between 11 to 50 employees (see Figure 2.7).

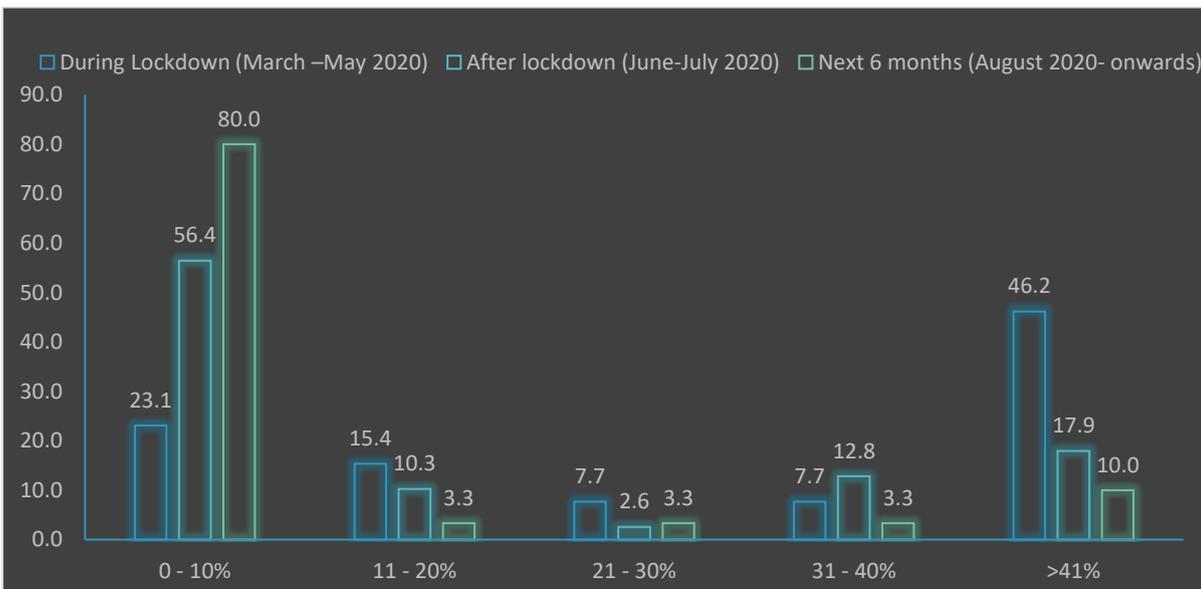
**Figure 2.18 Percentage of Firms Adopting WFH due to COVID-19 (By Firm Size)**



Source: Firm Survey, 2020/ 2021

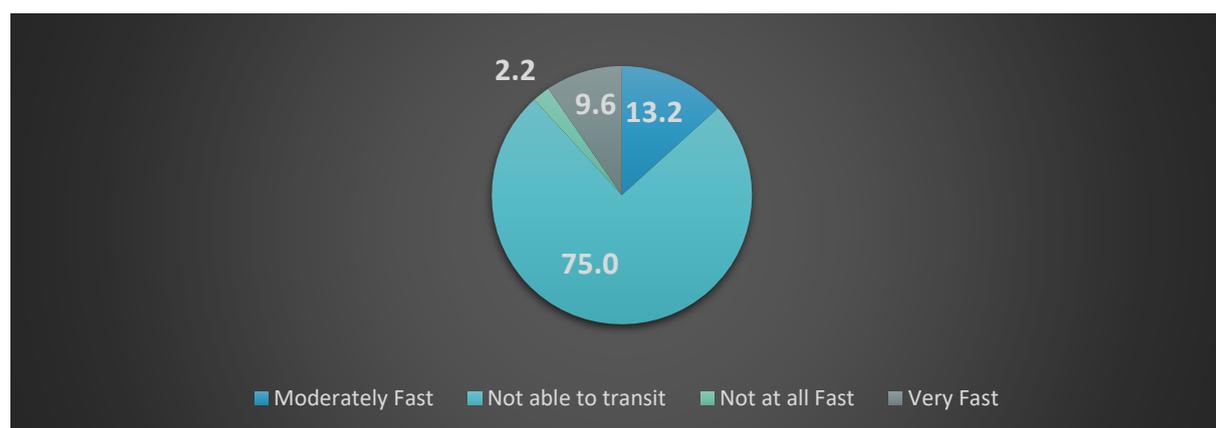
Figure 2.8 indicates the percentage of employees who have been working from home during the lockdown (March to May 2020), after the lockdown (June-July 2020) and after that (August 2020 till date). During the lockdown, 46% of firms have applied the WFH strategy to more than 41% of their personnel. After the lockdown, 56.4% of enterprises surveyed have asked around 10% of their workforce to work from home. Telework has fallen in the coming months after the confinement, but 80% of firms still have around 10% of their workforce operating from home.

**Figure 2.19 Percentage of Employees WFH due to COVID-19 over time**



Source: Firm Survey, 2020/ 2021

The transition to WFH is further analysed as although many companies recognise its benefits, some have had difficulty making the transition. In the sample, 75% of firms were not able to transit to WFH. Around 13.2% could move to WFH moderately fast while 9.6% adopted this working mode very fast (see Figure 2.9).

**Figure 2.20 Transition to WFH due to COVID-19**

Source: Firm Survey, 2020/ 2021

ILO (2020) indicates that the main reason for companies not able to adopt this form of working was that paperwork was not digitized and the required internal rules and procedures for teleworking were not ready. Concerns over confidentiality of information or possible security breaches can also limit the use of WFH. In the Mauritian survey, the main reasons were that the nature of work did not allow for WFH especially for manual work or there were not enough equipment in terms of laptops, hardware and software. Poor internet connection as well as data protection and security issues represent a constraint for many firms surveyed.

### **Restructuring or Reskilling**

Around 15% firms surveyed reported that they adopted restructuring and reskilling to survive the COVID-19 pandemic and maintain employment. This is what one would expect since Workers across industries must figure out how they can adapt to rapidly changing conditions, and companies have to learn how to match those workers to new roles and activities. This dynamic is about more than remote working or the role of automation and Artificial Intelligence. It is about how companies can reskill and up skill the workforce to deliver new business models in the post-pandemic era.

### **2.4.3 Future Prospects and Measures**

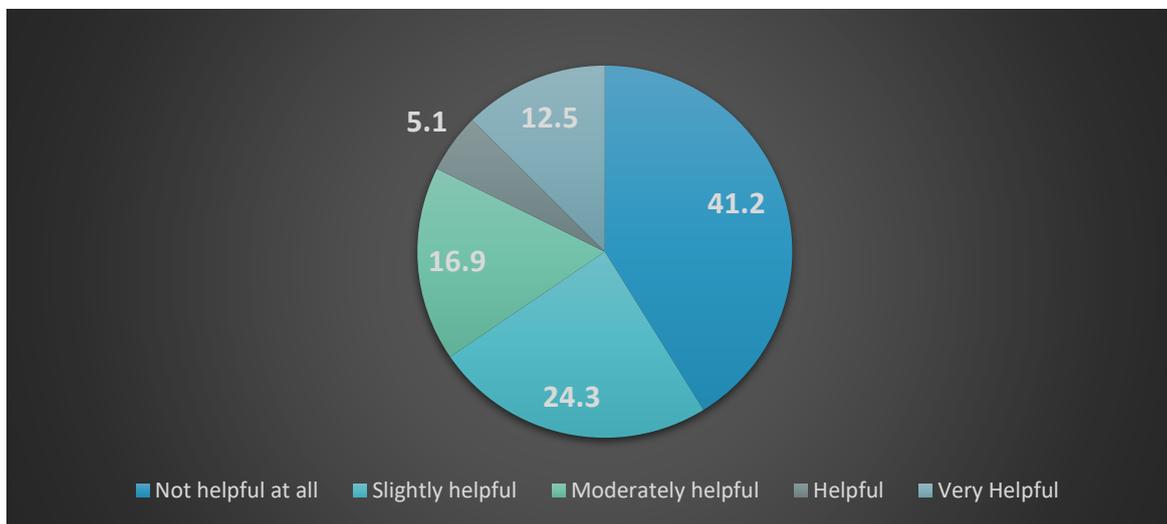
The Mauritian government has adopted various economic stimulus measures in terms of (e.g. loans, moratorium on debt repayments, amongst others). In addition to the Wage Assistance Scheme and the Self Employed Assistance Schemes, other measures have been adopted to reduce the socio-economic impacts of the crisis on businesses and households. For instance, the Central Bank allows households impacted by COVID-19 a moratorium of six (6) months on capital repayments on their existing household loans as from the 1st of April 2020. Low income groups will see the Bank of Mauritius bear the interest payable on outstanding household credits with commercial banks up to June 2020. Electricity consumption rates have been reduced for low income groups and small businesses. The Bank of Mauritius has also initiated a

USD/MUR swap arrangement with commercial banks for an initial amount of USD 100 million to enable commercial banks to support import-oriented businesses. The Bank of Mauritius has removed shared ATM fees and will continue to maintain adequate supply of banknotes to commercial banks for their ATMs (Bank of Mauritius, 2020). It has reduced the interest rate applicable on its Special Relief Amount under its COVID-19 Support Program equally by 100 basis points. Accordingly, the interest rate on advances to impacted economic operators under the Special Relief Amount, initially capped by the Central Bank at the fixed rate of 2.50% per annum, now stands at 1.50% per annum.

In a context marked by uncertainty over the duration and depth of the COVID-19 pandemic, the Bank of Mauritius, has set up the Mauritius Investment Corporation Ltd (MIC) in June 2020. The aim of the MIC is to ensure an orderly and balanced economic development of the country as well as safeguard the stability and soundness of the financial system. The Mauritius Investment Corporation Ltd, with funds of Rs80bn, is expected to provide further support to companies in distress.

From the survey, firms were asked the extent to which the policies put forward by government were helpful for them to maintain their workforce. Figure 2.10 shows that around 59.8% of firms have reported that the policy measures were helpful.

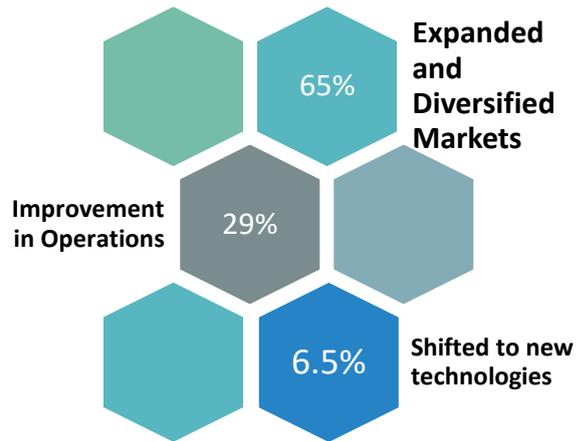
**Figure 2.21 Policy Measures to Maintain Employment**



Source: Firm Survey, 2020/ 2021

In essence, some respondents have benefited positively from the pandemic. In fact, among those where COVID-19 has helped their business activities, 65% stated that they have been either able to expand their domestic market share or diversified their markets or use e-commerce to sell their products online while 29% have improved their existing operations and around 7% have adopted new technologies (see Figure 2.10).

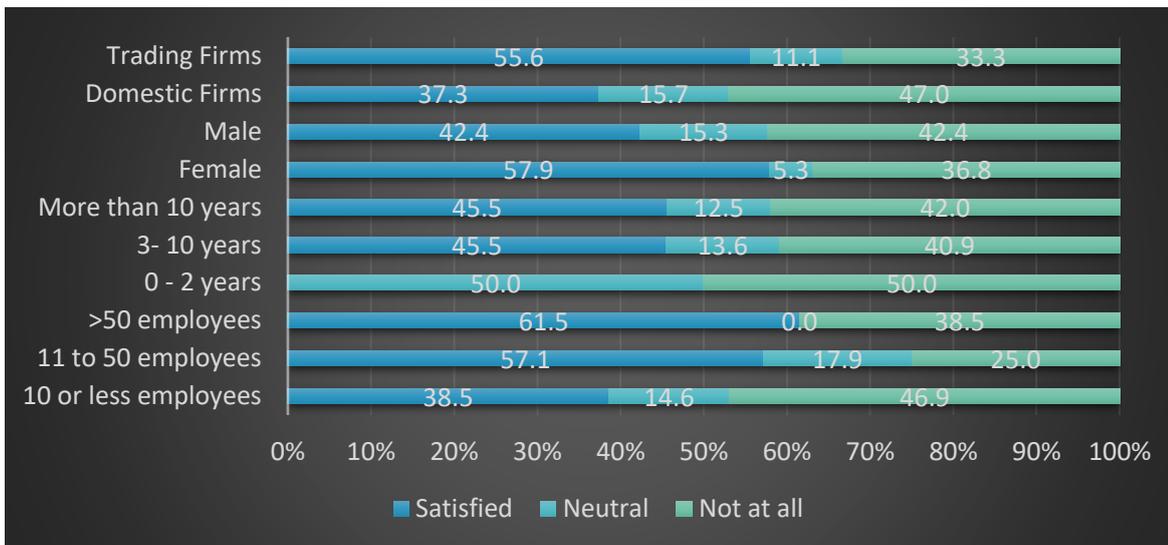
**Figure 2.10: Firms’ Measures to Maintain or Expand Activities**



Source: Firm Survey, 2020/ 2021

We probe in terms of the benefits of these measures across the different types of firms surveyed. It can be highlighted from Figure 2.11 that the majority of trading/ exporting/ importing firms are satisfied with the measures adopted by government. A similar result is noted for male and female heads of enterprises as well as for those firms with more than 11 employees and those who have been in business for 3 years or more.

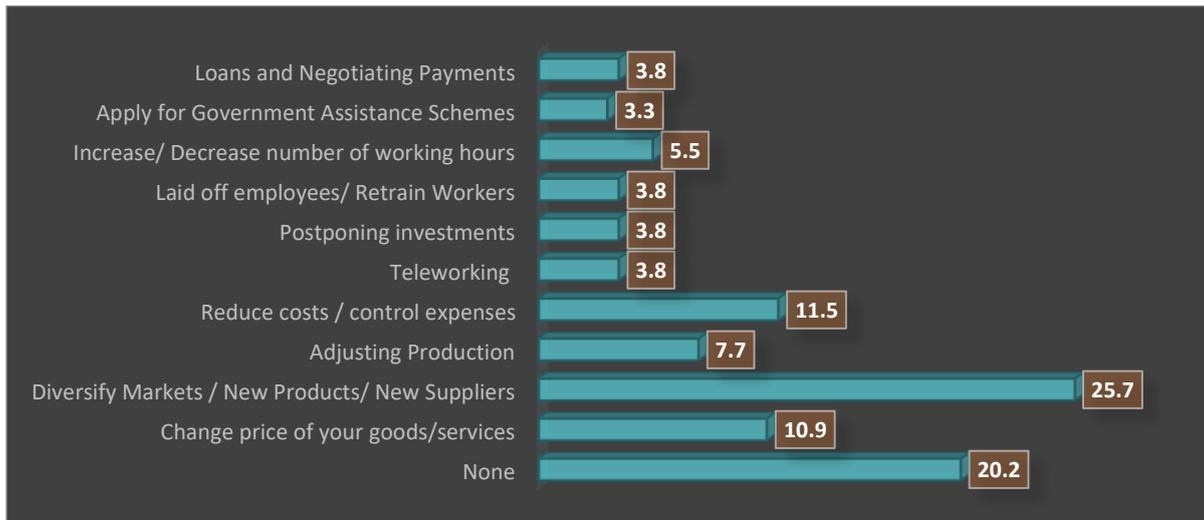
**Figure 2.22 Satisfaction on Government Measures by Firm Type**



Source: Firm Survey, 2020/ 2021

In addition to government support measures, enterprises surveyed also adopted various strategies to adapt to the situation created by the outbreak of the pandemic and as such reduce the economic effects on their activities. From the data, it can be stated that around 26% of firms either diversify their markets, produce new produce or change suppliers. Around 10.9% change price of their commodities, 11.5% reduce costs and control expenses while 7.7% have adjusted their production process.

**Figure 2.23 Measures by Firms to Circumvent the Effects of the Pandemic**



Source: Firm Survey, 2020/ 2021

Overall it can be postulated that firms have been highly impacted by the COVID-19 pandemic but many have adopted different coping strategies as to either diversify their markets or products or adopt new technologies and adjust to demands. Many measures adopted by the authorities have also proved to be useful in increasing the resilience of enterprises to respond to the socio-economic shocks of the pandemic. It can be seen that the impact of employment is rather negative as dismissal of workers has taken place across firms in different sectors and is likely to be more pronounced in the coming months.

### Policy Recommendations

The state could further positively discriminate in favour of the SME sector (over and above the already announced set of measures for SME recovery) by increasing the preferential margin on procurement.

Government is undoubtedly a key player in the SME ecosystem. Its role can be viewed through two lenses: as an enabler of SME growth, and through the delivery of targeted support, especially to high growth businesses.

The following are four key areas where government support could be critical:

- Enhance the national entrepreneurial culture by promoting programmes that prioritise SMEs as preferred suppliers. Government can identify and bridge gaps that hinder SME growth and also focus on raising awareness among SMEs on the kind of support financial or otherwise available to them.
- To ensure that entrepreneurs are supported with the skills and capabilities they need to rebuild and grow after the crisis. For example, most would benefit from additional training, in business scenario planning or managing scarce financial resources.
- Government could also work with industries and sectors that are most under threat from COVID-19 to develop resilience strategies and to help them reimagine their business models going forward.
- Encourage research and development as requisites for innovation and growth.

- Provide targeted and sector-specific support for SMEs now and post crisis. There is a significant opportunity for governments to work with entities created to support SMEs to provide sector-specific interventions to help them get back on their feet post-crisis.
- Government can also drive specific support to unlock growth, in export-focused companies.

In the medium to long-term, and in partnership with the international community, government should continue to strengthen health systems and extend health and social protection coverage. It is important for both Government and business owners to tap the different trade agreements recently signed by Mauritius. Government support and measures to boost investment, exports and performance of SMEs will aid enterprises to tap the new regional integration initiatives and digitalization process. These measures will be key to reduce the vulnerability to external shocks in trade and commodity prices, advancing the productive transformation of the region, and building human, societal and economic resilience for future global crises.

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## Supply chains in times of crisis: Evidence from Kenya's production networks\*

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### Abstract

What role does a firm's network position play for its trajectory during times of heightened uncertainty and the recovery from a severe aggregate shock? The ongoing pandemic put spotlight on the role of supply chain structures for firm dynamics. This paper draws on up-to-date firm and transaction level data to study the impact of Covid-19 related shocks on formal firms in Kenya up until March 2021. We find that linkages to international supply chains were more robust during the crisis and imports and exports recovered more swiftly than their counterparts. While many supply chain linkages were put on hold during the first weeks of immense uncertainty, firms seem to have adjusted their supply chains only in minor ways in the short-run. In the medium-run old and newly formed firm-to-firm relationships gained in importance relative to younger ones (less than 24 months of age). Further, firms with a more diversified supplier and/or buyer based faced a less dramatic initial downturn. We find diversification on the extensive margin to matter more than on the intensive margin. Firms with a customer base that is more diversified on the intensive margin, however, experienced a more dynamic recovery. Finally, studying the transmission of domestic and foreign demand shocks, we find a substantially higher elasticity of firm level outcomes with respect to demand shocks during the crisis relative to the pre-crisis period.

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\*We thank the Kenya Revenue Authority (KRA) for the outstanding collaboration. Romeo Ekirapa, Simon Mwangi, Benard Sang provided excellent technical support and advice. A related project on tax incentives done jointly by the authors for KRA with assistance from the data support team gave birth to this work. We thank Daniela Villacres Villacis for excellent research assistance. We further thank seminar and conference participants at the CSAE research workshop, the annual CSAE conference, the Oxford Applied Micro, and the Oxford Firms Discussion Group for comments and feedback. We received valuable guidance from Chris Woodruff and have benefited a lot from discussions with and feedback from Vatsal

Khandelwal, Hannah Zillessen, Luke Milsom, Sanghamitra Mukherjee, and Raphael Bradenbrink. We gratefully acknowledge financial support from the Private Enterprise Development in Low Income Countries (PEDL) programme, a joint initiative by Centre for Economic Policy Research (CEPR) and the UK Foreign, Commonwealth & Development Office (FCDO). Verena Wiedemann further acknowledges funding from the Oxford Economic Papers Research Fund (OEP) and the German National Academic Scholarship Foundation. This study has been approved by the Department of Economics Research Ethics Committee at Oxford (protocol no.ECONCIA20-21-23), and the Kenyan National Commission for Science, Technology and Innovation (protocol no.NACOSTI/P/20/5923). The views in this paper are those of the authors, and do not necessarily represent those of the KRA or any other institution the authors are affiliated with.

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## 1. Introduction

What role does a firm's network position play for its trajectory during times of heightened uncertainty and the recovery from a severe aggregate shock? The ongoing pandemic put spotlight on the role of supply chain structures for firm dynamics. This paper draws on up-to-date firm and transaction level data to study the impact of Covid-19 related shocks on formal firms in Kenya up until March 2021. A large and growing literature highlights the key role of these interdependencies in the transmission and amplification of shocks (Acemoglu et al., 2012; Gabaix, 2011; Barrot and Sauvagnat, 2016; Huneus, 2018; Bernard and Moxnes, 2018; Carvalho and Tahbaz-Salehi, 2019; Korovkin and Makarin, 2021; Carvalho et al., 2021; Arkolakis et al., 2021; Kashiwagi et al., 2021). Building on this literature, this paper zooms in on the role of the ex ante network a firm is embedded in prior to large and aggregate shock for its trajectory during the crisis and subsequent recovery. Studying the ongoing pandemic further provides us with an interesting case study to empirically study relationships and network dynamics during times of heightened uncertainty, a type of shock that attracted increased attention in the theoretical debate on supply chain dynamics (Elliott et al., 2020; Bimpikis et al., 2019). Up-to-date administrative data allows us to map Kenya's formal domestic production network as well as its links to global supply chains before and during the crisis. Specifically, we focus on the diversification of input and output linkages and the complexity of the supply chain. Further, we provide descriptive evidence on firm-to-firm relationship dynamics during times of heightened uncertainty. We finally use this setting to quantify the transmission of both domestic and global demand shocks through inter-firm linkages and study immediate supply chain adjustments in response to the shocks.

First, we show that the structure of Kenya's production network closely resembles the one documented in other contexts (Dhyne et al., 2015; Alfaro-Urena et al., 2018; Bernard, Moxnes and Saito, 2019; Cardoza et al., 2020). Our findings complement evidence that key characteristics of firm-to-firm networks, which have until recently largely been studied using international trade data, are also mirrored in domestic firm-to-firm networks (Bernard and Moxnes, 2018). The characteristics include negative degree assortativity (Alfaro-Urena et al., 2018; Bernard, Dhyne, Magerman, Manova and Moxnes, 2019; Cardoza et al., 2020), a highly skewed in- and outdegree distribution (Alfaro-Urena et al., 2018; Cardoza et al., 2020), and a high correlation between firm size and the number of links to buyers and suppliers (Alfaro-Urena et al., 2018; Bernard, Moxnes and Saito, 2019).

Second, turning to the impact of COVID-19 shock on Kenya's production networks, we show that after an initial drastic downturn, links to global supply chains have proven themselves resilient. We find that during the initial downturn exports and imports were hit to a far lesser extent than domestic sales and purchases. Zooming in on domestic firm-to-firm linkages, the data reveals that despite initial high separation rates, the vast majority of pre-existing relationships was recovered. In the medium-run younger relationships (less than 24 months of age) have suffered in particular and seem to have been replaced with older or newly formed ones.

Third, firms with a more diversified set of buyers and suppliers faced a smaller initial downturn between March and April 2020. Looking at diversification on the intensive margin, i.e. the degree to which the firm's sales or purchases are concentrated within its existing portfolio of suppliers and buyers, we find that the diversification of sales matters in particular for the recovery process. Interestingly, firms with purchases and/or sales that are more concentrated among key suppliers and/or buyers, experience less drastic of a downturn during the peak of the shock. Considering this finding in the light of the immense level of uncertainty experienced during the peak of the Covid-19 crisis, it suggest a rise in the cost of communicating with trade partners and managing relationships. Firms with that are able to focus their resources and attention on key suppliers and buyers will fare better in such a scenario. We do not detect a significant role of the complexity of upstream supply chains or travel time to buyers and suppliers in explaining short- and medium run firm dynamics during the pandemic.

Fourth, we show descriptive evidence on the exposure to demand shocks through direct and indirect channels. Importantly, exposure to indirect demand shocks is not limited to firms that are very centrally located in the firm-to-firm network. During the peak of the Covid-19 crisis in April 2020, even firms in the periphery of the network were exposed to substantial indirect demand shocks via firm-to-firm linkages. The average exposure of firms to foreign demand shocks was negligible throughout the Covid-19 crisis, mainly because of weak pre-crisis linkages to export markets. Estimating the pass-through of foreign and domestic demand shocks on firm-level outcomes, we find that (i) the elasticity of sales and purchases in response to sector-level shocks to household demand increased several-fold during the pandemic, (ii) firms hit by negative shocks during the peak of the crisis relied on older and established suppliers, and (iii) during the recovery period high-productivity suppliers were thought after.

Our research complements related work on the role of production networks and inter-dependencies between sectors for the propagation of shocks in general (Acemoglu et al., 2012; Gabaix, 2011; Barrot and Sauvagnat, 2016; Huneus, 2018; Bernard and Moxnes, 2018; Carvalho and Tahbaz-Salehi, 2019; Korovkin and Makarin, 2021; Carvalho et al., 2021; Arkolakis et al., 2021; Kashiwagi et al., 2021), and the COVID-19 shock (Barrot et al., 2021; Baqaee and Farhi, 2020) in particular. We also contribute to the literature on the role of trade and global supply chains in the transmission of the Covid-19 shock (Gerschel et al., 2020; Socrates, 2020; Berthou and Stumpner, 2021). In a paper closely related to ours, Lafrogne-Roussier et al. (2021) look at French exporters studying the pass-through of the initial import shock triggered by the first lockdown in China in February 2020. The authors provide evidence for a close link between the disruptions to imported inputs and a subsequent decline in export volumes. The adjustments to export volumes can almost exclusively be attributed to adjustments on the extensive margin, i.e. the destruction of trading relationships. The authors further show that pre-pandemic geographic diversification of imports does not necessarily mean that firms are better able to mitigate the consequences from the import shock. This result can mainly be attributed to less diversified firms swiftly taking on new trade partners. Instead, the authors show that inventory plays a key role in mitigating shocks from disruptions to supply chains. A key distinction between their and our paper is focus of Lafrogne-Roussier et al. (2021) on the transitory, more localised initial trade shock related to lockdowns in China. Our paper instead looks at firm dynamics during the collapse of the global economy, and hence a more aggregate macro shock, and a period of highly elevated uncertainty. Further, they restrict their sample to firms that are both importers and exporters. All of the above mentioned papers either rely exclusively on data reflecting international firm-to-firm transactions from customs records or pre-pandemic domestic input-output tables. Our analysis thus provides vital complementary evidence on domestic firm-to-firm trade relying on up-to-date, high-frequency data. Further, we provide evidence for a substantially broader set of firms, most of which exclusively engage in domestic trade and operate in a large variety of sectors.

Closely related to our result on the importance of uncertainty for firm-to-firm relationship dynamics, Martin et al. (2020) show that higher levels of uncertainty result in fewer new firm-to-firm relationships being formed and a reduction in the destruction of firm-to-firm relationships. The authors look at French firms involved in import and export activities and their international trading relationships with firms based in other EU countries between 1996-2010.

Our paper complements the analysis and findings in Korovkin and Makarin (2021), who focus on the adjustment of the network in response to a shocks and find that firms which become more central as a result of the shock benefit from higher revenues and profits. In their case the shock is more localised, in this case a local outbreak of war, and their data allows for a long-term study of resulting network adjustments.

Finally, we contribute to a fast growing literature on the impact of the Covid-19 pandemic on firm dynamics (Humphries et al., 2020; Chetty et al., 2020; Vargas Da Cruz et al., 2020; Pape et al., 2020; Davies et al., 2021; Bloom et al., 2021; Ayele et al., 2021). We build on this literature by (i) adding empirical evidence from unique up-to-date data rather than having to rely on pre-pandemic information and projections, (ii) using firm level data rather than input-output tables or country-level information on trade flows, (iii) being able to simultaneously study the impact of the domestic and international component of the Covid-19 crisis and its impact on firm dynamics in Kenya, (iv) adding evidence from administrative data which covers a wider range of firms, in particular larger ones, than business surveys. Our paper seeks to contribute to a mounting stock of evidence on the impact of the Covid-19 crisis on business outcomes, employment, and trade in Kenya (Shupler et al., 2020; Pape et al., 2020; Socrates, 2020; Kansiiime et al., 2021; Egger et al., 2021; Kinyanjui et al., 2021).

## 2. Context and Data

### 2.1 Covid-19 in Kenya

The pandemic and the resulting economic crisis have disrupted supply chains across the world. The story of Kenya's private sector is no exception. The private sector in Kenya was first impacted by disruptions of its trade with China in early 2020.<sup>1</sup> Starting in mid-March the Government of Kenya closed national borders, restricted domestic travel, banned public gatherings, closed schools, and later imposed a night-time curfew. Figure 1 depicts key events of the epidemic in Kenya and the business cycle for 2019, 2020 and the first quarter of 2021. As a result of Covid-19-related economic shocks Kenya faced its first recession in almost two decades.<sup>2</sup>

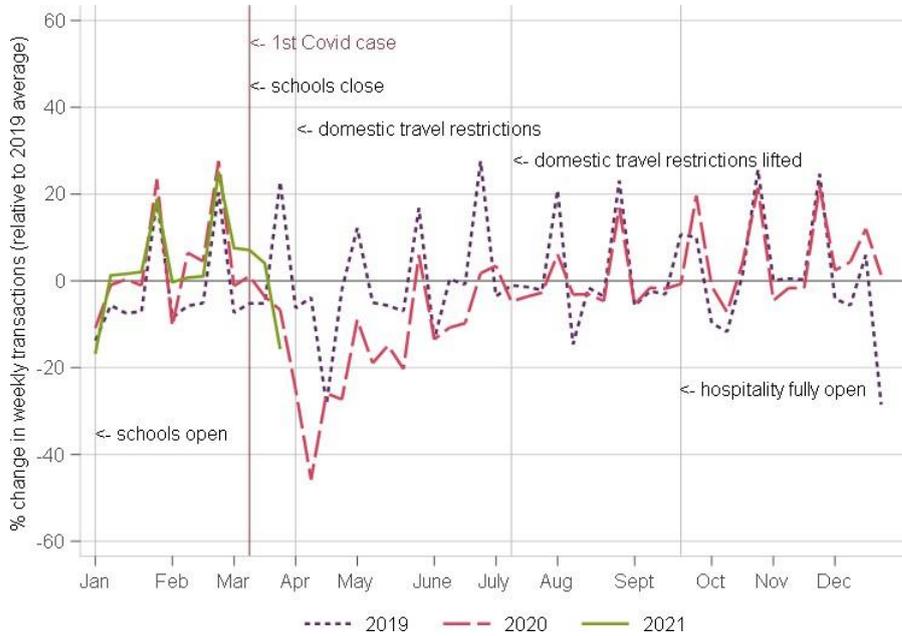
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<sup>1</sup>See for example Socrates, Majune K. (2020) "The Effect of Lockdown Policies on International Trade Flows from Developing Countries: Event Study Evidence from Kenya." [https://www.wto.org/english/news\\_e/news20\\_e/rese\\_15dec20\\_e.pdf](https://www.wto.org/english/news_e/news20_e/rese_15dec20_e.pdf).

<sup>2</sup><https://citizentv.co.ke/business/kenyas-economy-slumped-into-recession-after-18-years-in-september-5068864/>  
#:~:text=The%20Kenyan%20economy%20sunk%20to,cent%20in%20the%20third%20quarter.

The government responded with a fiscal stimulus package, which included measures like an new youth employment scheme, provision of credit guarantees, fast-tracking of VAT refunds, and a temporary reduction of key tax rates.

Figure 1: Weekly firm-to-firm transactions



The figure shows the evolution of the percentage change in the number of purchase transactions relative to the weekly average number transactions in 2019. The data includes the universe of input VAT transactions reported by any tax filing entity.

The number of firm-to-firm transactions started to fall substantially in the second half of March 2020, immediately after the first Covid case was reported in Kenya and a series of measures to contain the spread of Covid-19 were introduced. These included the closure of schools and universities, orders for restaurants to operate on a take-away basis and factories to introduce a shift rotation system to limit the number of social interactions.<sup>3</sup> Since most transactions are usually reported for the last week of a given month, the drop in the number of transactions relative to the same week in March 2019 is particularly stark. The number of transactions continues to decline for another two weeks as passenger travel in and out of the Kenya’s largest metropolitan areas was restricted, before the recovery process starts to kick in around mid-April. By early July the major domestic travel restrictions were lifted and by September, the evolution of inter-firm transactions had largely caught up with the regular fluctuations experienced in 2019. Most restrictions on the hospitality sector were removed by end of September. Schools, however, only reopened in January 2021. As cases began to rise again later that month, addi-

tional restrictions on the size of public gatherings were re-introduced. In March 2021, Kenya experienced its third and until then largest wave of Covid cases. Another round of containment measures was imposed. These included restrictions to social gatherings and travel within five counties in the Greater Nairobi metropolitan area.<sup>4</sup> This is reflected in the final week observed in the transaction-level data. While the trajectory in 2021 has thus far largely followed the pre-pandemic fluctuations, the transactions in the last week of March declined by 15% relative to the 2019 average due to the evolution of the epidemic in Kenya. Overall, the transaction-level records suggest both a sharp initial downturn between March and April 2020, as well as a relatively swift recovery.

### **a. Data description**

Our analysis combines information from five different data sets collected by the Kenya Revenue Authority: The first group are transaction-level data on domestic firm-to-firm trade from Value-Added-Tax (VAT) records, and import and export transactions from customs records. The second group are firm-level information on (i) aggregate monthly sales, purchases, imports, and exports from VAT records, (ii) the monthly number of employees and payroll from Pay-As-You-Earn returns, and (iii) information on basic firm characteristics from registration forms. The data sets can be linked through unique anonymised firm identifiers. The data covers the period 2015 to March 2021. We restrict our analysis to private sector firms and firms with annual purchases greater than zero and annual sales of at least KES 5 million (about US\$ 46,500) in at least one year that we observe in the data (for a more detailed discussion of the firm definition adopted see Appendix D). In 2019, the value added of these firms corresponded to 30% of Kenya's GDP.

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<sup>3</sup><https://www.health.go.ke/wp-content/uploads/2020/03/1584711987736-Press-statement-20th-March-2020.pdf>

<sup>4</sup>For a summary of key policy responses see, for example: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#K>.

We use the transaction-level firm-to-firm data to construct a monthly supplier-buyer panel, capturing the monthly transaction volume and the number of transactions between each supplier-buyer pair. We further compile a monthly firm panel detailing sales, purchases, imports, exports, number of employees, and total payroll. We complement this data with information on firm age, firm headquarter location, and the sector of operation collected from registration forms. The sector classification corresponds to the 4-digit International Standard Industrial Classification of All Economic Activities (ISIC) code. The customs data yields information on the origin/destination of imports/exports, as well as, 8-digit Harmonized System (HS) product codes, quantity and value of the goods traded. Due to the reporting system implemented as part of the East African Community's Single Customs Unit we are unable to map product-level details for trade with other EAC member states to the firm data. The information on total monthly imports and exports in the VAT data, however, still captures aggregate trade with the EAC.

We complement the administrative data with monthly product-level customs data from UNComtrade data base to measure changes in world demand for products using 4-digit HS codes.<sup>5</sup> A number of important trade partners of Kenya do not report to the monthly data base, including China, Vietnam, and South Africa. Nevertheless, the export transactions that can be linked to the monthly UNComtrade database represent 78% of the observed export volume.

All variables denoted in monetary terms are deflated using the monthly consumer price index published by the Kenya National Bureau of Statistics.

The firm- and transaction-level tax records enable us to map and characterise the domestic production network of Kenya's economy and its linkages to global supply chains. (see appendix B). The distribution of inter-firm down- and upstream linkages within Kenya's domestic production network closely resembles the ones found in other contexts for which these stylized facts have been documented in the literature, namely Belgium (Dhyne et al., 2015; Bernard, Dhyne, Magerman, Manova and Moxnes, 2019), Costa Rica (Alfaro-Urena et al., 2018), the Dominican Republic (Cardoza et al., 2020), and Japan (Bernard, Moxnes and Saito, 2019).

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<sup>5</sup><https://comtrade.un.org/Data/bulk>

In Table 1 and 2 we compare the characteristics of the degree distribution to statistics documented and reported in four other papers characterising the domestic production network of Costa Rica (Alfaro-Urena et al., 2018), the Dominican Republic (Cardoza et al., 2020), and Belgium (Dhyne et al., 2015; Bernard, Dhyne, Magerman, Manova and Moxnes, 2019).<sup>6</sup> A number of key patterns generalize across the four economies. First, the mean number of customers per firm exceeds the number of suppliers per firm. Second, the mean-variance ratio for downstream linkages is higher than for upstream linkages. In line with Figure 22, the statistics on the number of linkages at the different percentiles of the distribution show that the distribution of buyer linkages is much more skewed: a small fraction of firms has a large number of customers, while the majority of firms only has fewer than 10 customers.

Table 1: Number of buyers per supplier: Cross-country comparison

Country (year)	Number of suppliers	Number of buyers per firm							
		Mean	Sd	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>	99 <sup>th</sup>
<i>Size restrictions only</i>									
Kenya (2019)	37,390	41	177	1	2	6	24	83	553
Costa Rica (2015)	24,741	21	141	1	2	4	11	33	290
Belgium (2002-2012)	2,766,444	1021	5629	1	2	8	49	393	-
<i>Firms with min. one employee</i>									
Kenya (2019)	22,973	61	222	1	4	12	44	134	763
Dominican Republic (2017)	32,112	57	364	1	3	9	28	94	769
Belgium (2014)	94,334	123	801	3	-	26	-	152	1297

This table compares the distribution of firm-level links to buyers for Kenya, Costa Rica, the Dominican Republic, and Belgium. For Costa Rica we take the statistics from Alfaro-Urena et al. (2018), for the Dominican Republic from Cardoza et al. (2020), and for Belgium from Dhyne et al. (2015) (2002-2012) and Bernard, Dhyne, Magerman, Manova and Moxnes (2019) (2014). We group the statistics according to restrictions imposed on the sample of firms in the respective papers.

### 3. The impact of Covid-19 related shocks on firm outcomes - an event study approach

We start by looking at the evolution of firm level outcomes during the Covid-19 pandemic in Kenya. We use a simple event study design, regressing firm level outcomes of interest on a series of time dummies, firm, and month fixed effects, to study the magnitude of the Covid-19 shock.<sup>7</sup> We find that between March and April 2020, firm level sales dropped by 70% on average. Only considering firms that continued to have positive sales in April 2020, we find an average decline of 35% compared to March 2020. The top plot in Figure 2 shows that domestic sales and purchases fell more drastically in comparison to imports and exports. To allow for comparison of the relative magnitude of the decline we compute z-scores, relying on the pre-Covid mean and standard deviation of each of the outcome measures. To investigate how the Covid-19 shock compares to seasonal fluctuations in sales, we further include time dummies for the same months in the previous year in an alternative specification. The results shown in the bottom left graph of Figure 2 indicate that the observed recovery process in May, June and July 2020 might have been facilitated by seasonality, but the magnitude of the Covid shock exceeds any fluctuations observed in the previous year by large. The crisis affected firms across the supply chain – sales to final consumers (non-registered parties) declined by a similar magnitude compared to sales within the firm-to-firm network, as well as sales to other registered parties such as government agencies and NGOs.

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<sup>6</sup>Cardoza et al. (2020) and Bernard, Dhyne, Magerman, Manova and Moxnes (2019) document the distribution of supplier and buyer-linkages for firms with at least one employee. To make our sample comparable we therefore also report the degree distribution of Kenyan firms with at least one employee. Further note that Dhyne et al. (2015) report the distribution for all relationships firms formed over the course of the 10-year period between 2002 and 2012.

7

$$y_{it} = \sum_{k=1}^5 \tau_{-k} \text{april}_{t-k} + \sum_{k=0}^3 \tau_{+k} \text{april}_{t+k} + \phi_i + \eta_m + \varepsilon_{it}$$

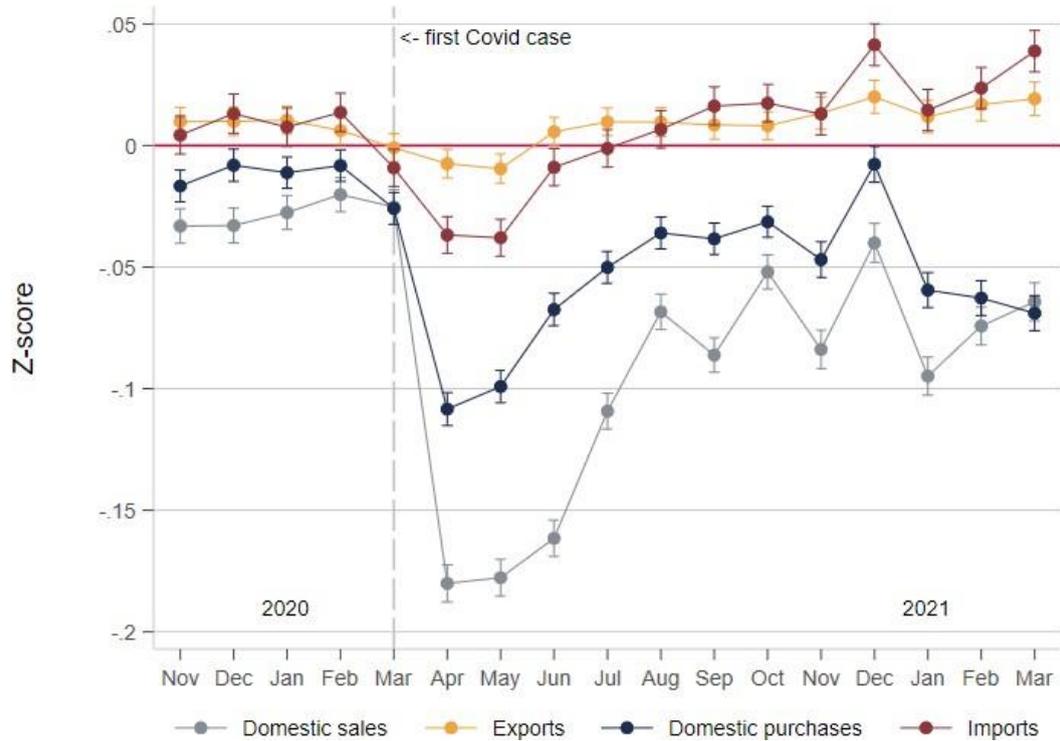
Table 2: Number of suppliers per buyer: Cross-country comparison

Country (year)	Number of buyers	Number of suppliers per firm							
		Mean	Sd	10th	25th	50th	75th	90th	99th
<i>Size restrictions only</i>									
Kenya (2019)	46,645	33	50	2	5	16	41	82	22
									7
Costa Rica (2015)	31,841	14	39	2	3	6	13	29	32
Belgium (2002-2012)	2,766,4	135	31	8	19	46	11	28	-
	44		7				8	9	
<i>Firms with min. one employee</i>									
Kenya (2019)	25,938	48	60	4	12	30	62	11	28
								0	2
Dominican Republic (2017)	37,986	48	68	6	14	30	59	10	31
								5	1
Belgium (2014)	94,334	79	10	20	-	53	-	15	46
		9						2	6

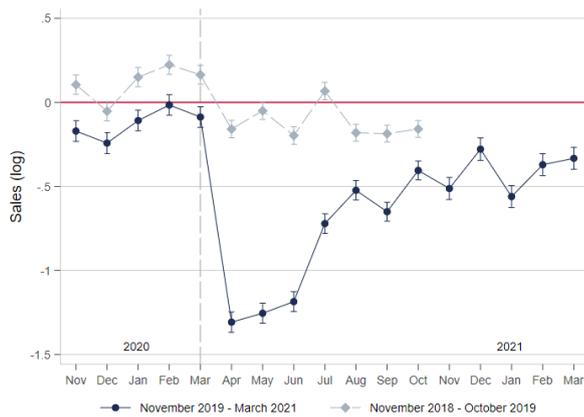
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were  $y_{it}$  denotes the firm-level outcome,  $\varphi_i$  firm FE,  $\eta_m$  month FE, and  $\varepsilon_{it}$  the error term, which is clustered at the firm level.

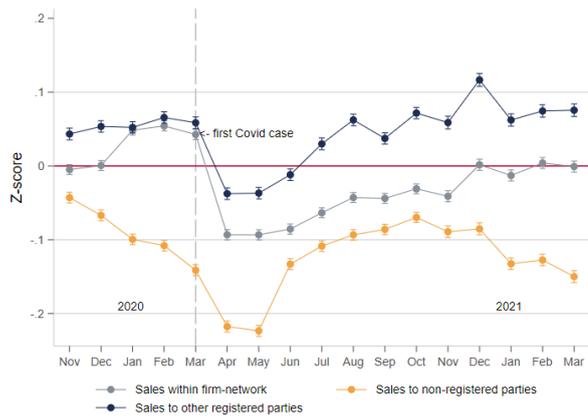
Figure 2: The impact of the pandemic on major firm-level outcomes  
Sales, purchases, imports, and exports



Comparison with previous year's trends



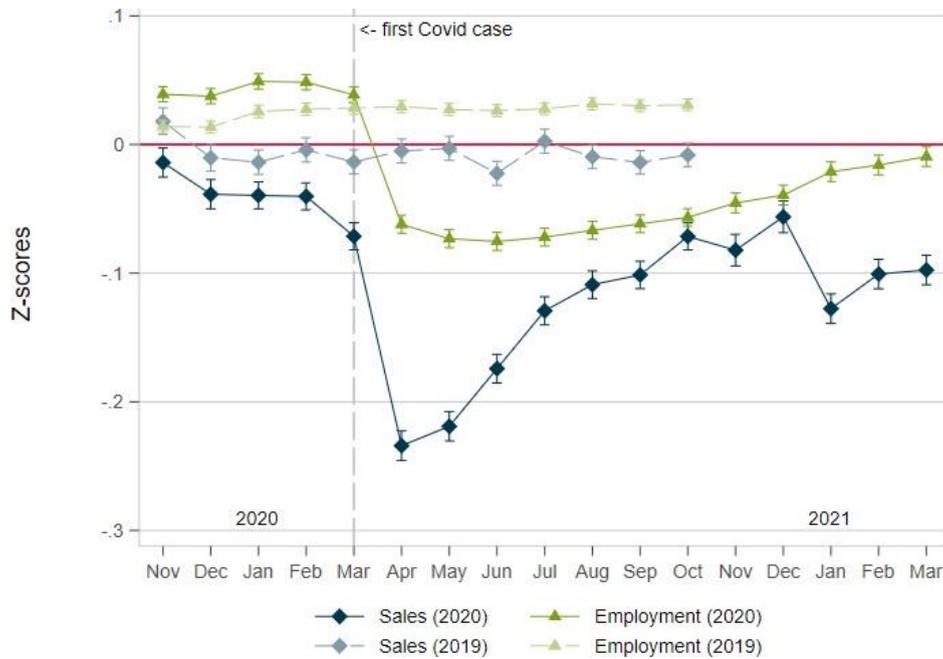
By sales category



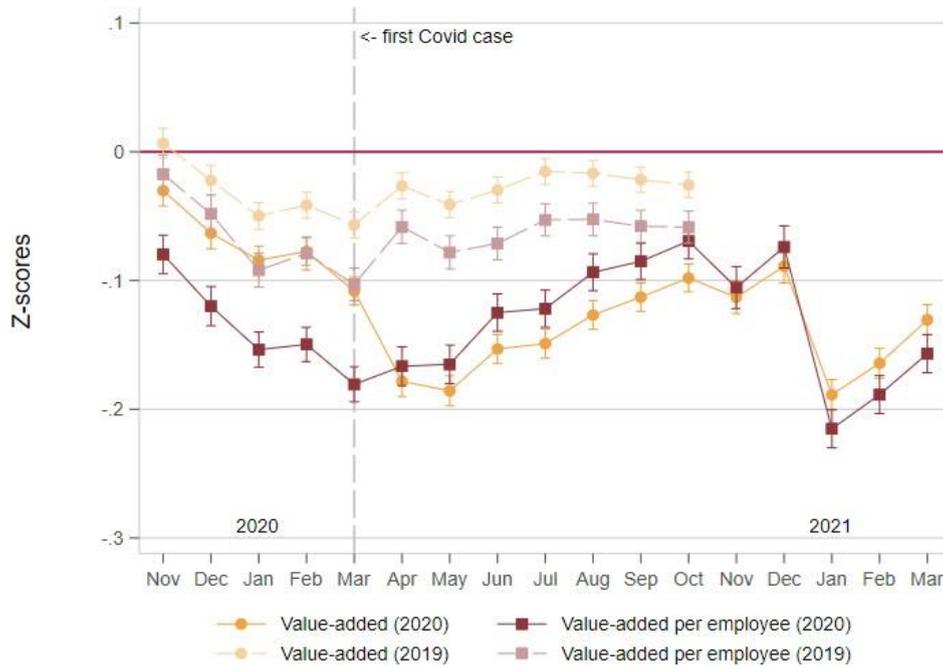
In the above graphs we regress firm level outcomes on a series of monthly time dummies. The firm level outcomes are normalised. The effect size can thus be interpreted in terms of standard deviations. We further include firm fixed effects and cluster standard errors at the firm level. The error bars show the 95% confidence intervals. The regressions include data from March 2017 to March 2021.

How did firms respond to the shock? Mainly by laying off employees. While firms were able to cut down on purchases to counter the drop in their sales, their value added still declined substantially between March and April 2020. The right graph in Figure 3, however, shows that value added per employee did not drop by the same magnitude. The left graph, plotting sales as well as employment suggests that this is largely driven by the sharp fall in employment at the firm level. In contrast to sales and purchases, we document a much slower of recovery of firm level employment - at least for the average firm. The main caveat is that we are only able to compute value added per employee for firms with a positive value added and firms which file PAYE tax returns. While this excludes a number of smaller firms, we still capture two-thirds of the firms in our overall sample.

Figure 3: Firm-level adjustments in response to the Covid-19 shock  
Sales and employment



Value-added and value-added per employee



In the above graphs we regress firm level outcomes on a series of monthly time dummies. The firm level outcomes are normalised. The effect size can thus be interpreted in terms of standard deviations. We further include firm fixed effects and cluster standard errors at the firm level. The error bars show the 95% confidence intervals. The regressions include data from July 2018 to June 2020.

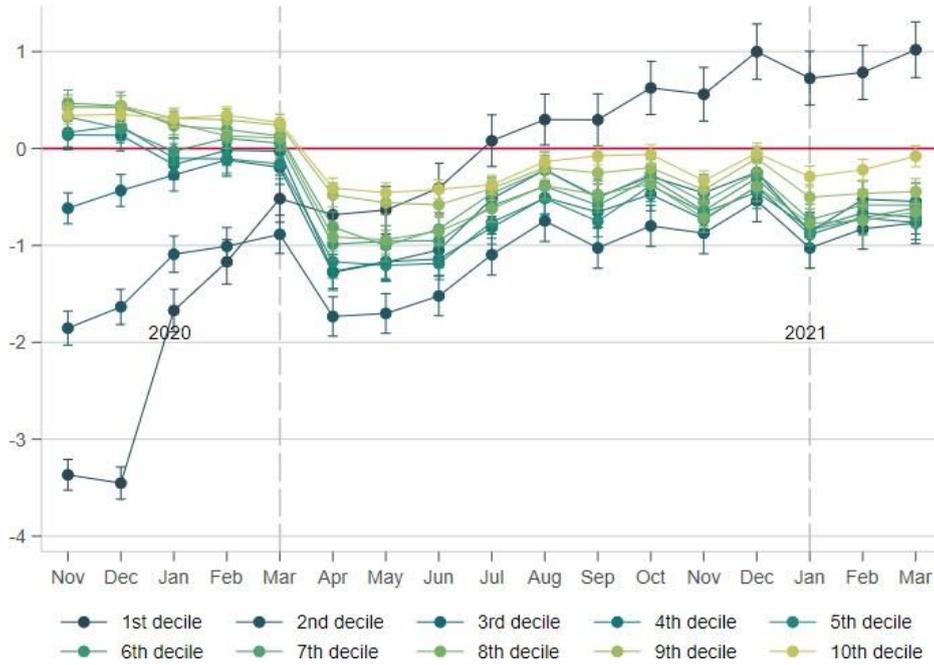
### 3.1 Firm dynamics by firm size and firm age

Firms of all sizes and age cohorts saw a downturn during the Covid-19 crisis. The initial downturn was particularly pronounced for mid-sized firms in the 2nd to 8th pre-pandemic sales decile (see figure 4. Firms in the 3rd sales decile experienced more than double the downturn between March and April 2020 relative to firms in the 9th and 10th decile. Firms in the smallest sales decile continued their general upward trend throughout 2020, indicating that many of them are fast growing new businesses. Looking at the trajectory of growth rates instead of the change in levels we find similar patterns. All but the 1st decile of firms see a slow in their growth rates in April 2020 relative to the April 2019. However, while large and smaller firms start their recovery in June 2020, the growth trend is more sluggish for mid-sized firms.<sup>8</sup> However, across the firm size distribution, we do not see enough of an uptick in firm-level growth rates that would allow firms to fully make up for the lost output, and for young firms also growth, during the initial months of the pandemic. In the bottom graph of figure 4 we separate firms into four different age cohorts. Firms younger than five years are growing fast year-over-year and we hence observe an elevated level of sales for those firms in all months of 2020, but April and May, relative to the previous year. For the two cohorts younger than five years and five to nine years, sales increase strongly in July 2020, a sign of recovery. For firms of ten years or older the recovery trajectory is more gradual and sluggish. Only by January 2021 do their sales again become indistinguishable from those of the five to nine year old firms. However, this is mainly because of a slow in growth of the latter group. On average, sales do not fully bounce back to previous levels for neither of the groups of firms aged five years and above.

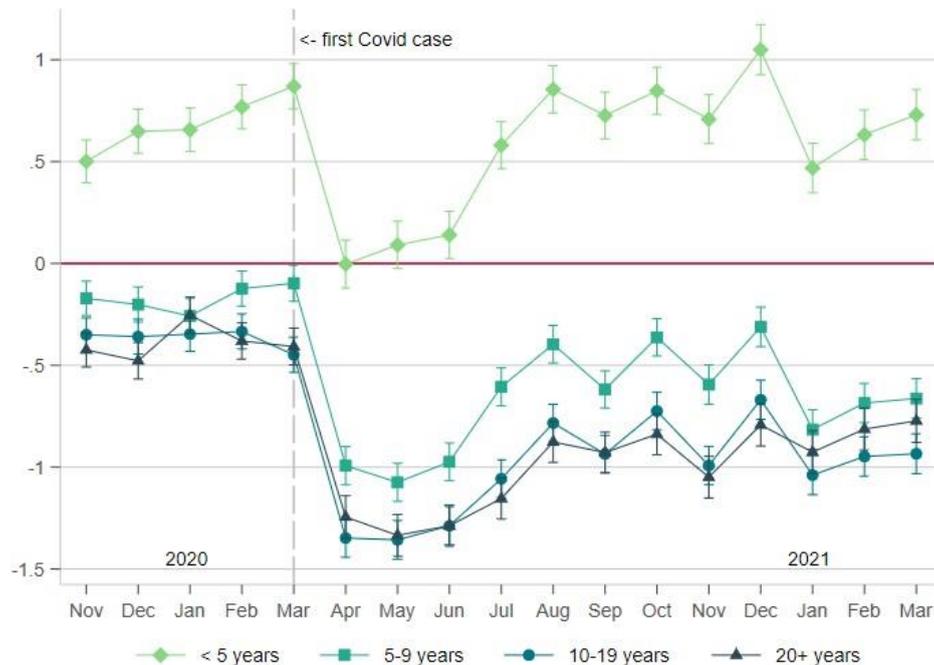
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<sup>8</sup>Related results are available on request.

Figure 4: Firm dynamics by firm size and age  
By sales decile



By age cohort



In the above graphs we regress firm level sales on a series of monthly time dummies. The firm level outcomes are normalised. The effect size can thus be interpreted in terms of standard deviations. We further include firm and month fixed effects and cluster standard errors at the firm level. The error bars show the 95% confidence intervals. The regressions include data from April 2017 to March 2021.

### 3.2 Putting the Covid-19 into perspective

While the impact of the Covid-19 crisis evidently exceeds any seasonal fluctuations in firm outcomes, it is further interesting to compare its magnitude to other aggregate shocks in recent years. 2020 witnessed the first recession of the Kenyan economy since 2002.<sup>9</sup> As the data does not date back as far, we instead compare the magnitude to the slowdown in economic growth around Kenya's last general election in 2017. The election and a drought in the second quarter of 2017 are thought to have depressed the economy's growth rate in 2017 by about 1%.<sup>10</sup> In figure 5 we jointly plot the results of the event study specification for both 2020 and 2017.<sup>11</sup> In 2020,  $t$  corresponds to the month of April, the first full month with all Covid-19 related restrictions in place. In 2017,  $t$  represents the month of the general election - August 2017. The decline in sales between July and August 2017 was not nearly half as large compared to the drop between March and April 2020 (see top right graph in Figure 5). For the firms with positive sales and employment, the drop in value added, however, was almost as pronounced. This is largely driven by the fact that firms did not lay off workers during the election period. Both indicators - value-added per employee and sales (almost) fully recovered by December 2017. The presidential re-run in October ( $t + 2$ ) seemed to have had close to no added negative effect on firm-level outcomes, but might have delayed the recovery. The contrast between the election period and Covid-19 becomes particularly pronounced once we look at the number of buyers and suppliers firms engage with (see bottom row of figure 5). The number of buyers and suppliers barely dropped around the time of the election and quickly recovered. In contrast, the number of buyers and suppliers dropped by a similar magnitude compared to firm level sales (measured in standard deviations) during the height of the Covid-19 crisis. We interpret the findings of (i) a strong response of value added per worker, (ii) firms holding on to their relationships with buyers and suppliers as a sign that firms anticipated the election-related slowdown and/or had clear expectations about it being only a temporary shock. In contrast, the period shortly after Covid-19 was pronounced a pandemic by the World Health Organisation featured a massive surge in uncertainty over the state of the economy and the reliability of both supply and demand in many sectors. The findings and our proposed interpretation are in line with Huneus (2018), who shows that inter-firm relationships in Chile do not respond notably to smaller, short-term shocks, but to large-scale shocks like the financial crisis discussed in the paper.

<sup>9</sup><https://citizentv.co.ke/business/kenyas-economy-slumped-into-recession-after-18-years-in-september-5068864/>

<sup>10</sup><https://www.capitalfm.co.ke/business/2017/11/election-fever-hits-kenyas-economy-loss-sh130bn/>

<sup>11</sup>In both cases we include 24 months of data around the event date.

Figure 5: Firm-level adjustments in response to the Covid-19 shock

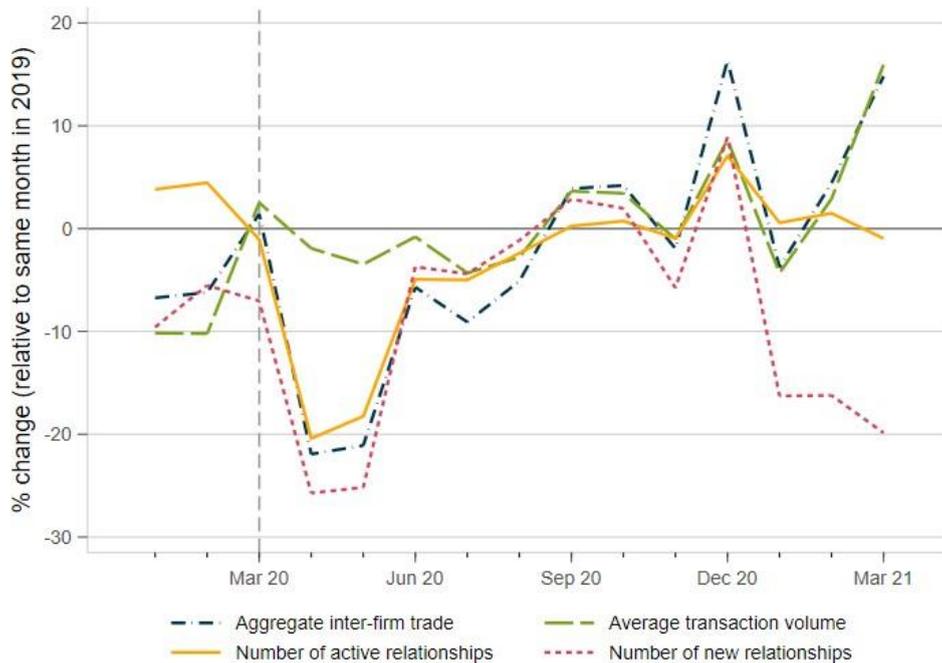


In the above graphs we regress firm level outcomes on a series of monthly time dummies. The firm level outcomes are normalised. The effect size can thus be interpreted in terms of standard deviations. The z-scores are computed using the mean and the standard deviation for the years 2018 and 2019, the two years in between the two events. We further include firm fixed effects and cluster standard errors at the firm level. The error bars show the 95% confidence intervals. The regressions for the Covid-19 period include data between September 2018 and August 2020. For the election period we include data from January 2017 until December 2019. In each regression we thus include data spreading 24 months while ensuring that the two time periods do not overlap.

#### 4. Firm-to-firm relationship dynamics during the Covid-19 crisis

Zooming in on relationship level outcomes, we indeed find that the crisis has had a drastic impact on inter-firm relationships. The number of active firm-to-firm relationships dropped by 20% between April 2019 and April 2020 (see figure 6). Aggregate firm-to-firm trade dropped by as much as 22%, while the change in average trade volumes was relatively mild initially. These figures highlight that the initial decline in inter-firm trade was primarily an outcome of drastic drop in the extensive margin of trade. As the crisis progressed, the number of active firm-to-firm relationships (extensive margin) recovered fairly quickly, which the average trade volume (intensive margin) continued to fall 1-5% short of its 2019 levels in all month between April and August 2020. At the start of the year 2021, we see a drastic decline in the formation of new relationships. This is might partly be driven by the uncertainty surrounding the evolution of the epidemic in Kenya that emerged in early 2021.

Figure 6: The evolution of firm-to-firm trade between January 2020 and March 2021



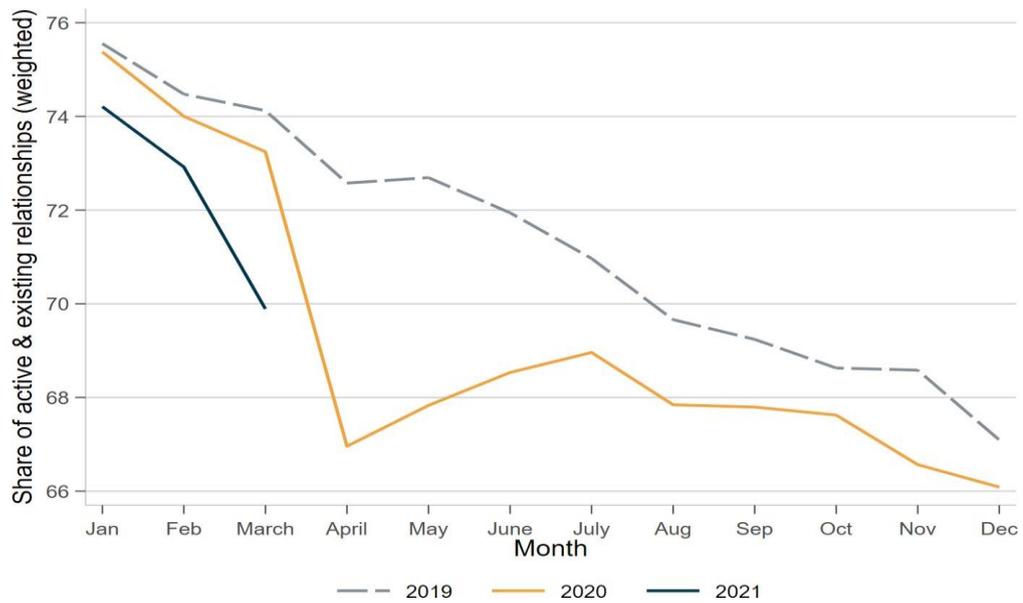
The above graph shows the percentage change in firm-to-firm relationship outcomes relative to the same month in 2019. The indicators shown are (i) the aggregate inter-firm trade volume, (ii) the average transaction volume across all active firm-to-firm relationships, (iii) the number of active firm-to-firm relationships, (iv) the number of newly formed inter-firm relationships.

#### 4.1 Unpacking relationship dynamics during the recovery period

With the number of inter-firm relationships down by 20%, it is important to understand the nature of both the potentially separated relationships and those that could never form. At the heart of this question we are trying to understand how the economy's relational capital was affected during this period of heightened uncertainty and collapse in firm-to-firm trade.

In figure 7 we look at the stock of relationships that we observe in the previous year and how its activity status evolve during a typical year (2019) in order to then compare it to the Covid-19 period. Figure 7 plots the share of relationships that were both observed in the previous year and active during a given month. At the start of both 2020 and 2019, over 75% of the relationships observed at any time in the previous calendar year were still active. This figure declines to 67% by the end of 2019. The trends for 2020 and 2019 start to diverge in March, at the end of which the first Covid restrictions were implemented in Kenya. By April 2020, only 67% of the relationships that have been active in 2019 are still trading actively. That is a difference of close to 6 percentage points relative to the same month in 2019. While there is no full catch-up, the gap narrows down to a 1 percentage point difference by the end of the year. At the start of 2021, we observe the same gap for relationships that have been active at any point in 2020, but are not observed in January 2021. Much of this gap can thus likely be attributed to relationships that had been intact at the start of 2020, but separated during the Covid-19 shock. Taken together the figures imply that close to 5/6 of the relationships separated at the height of Covid-19 have been revived by the end of 2020.

Figure 7: Share of existing relationships that are active on a monthly basis

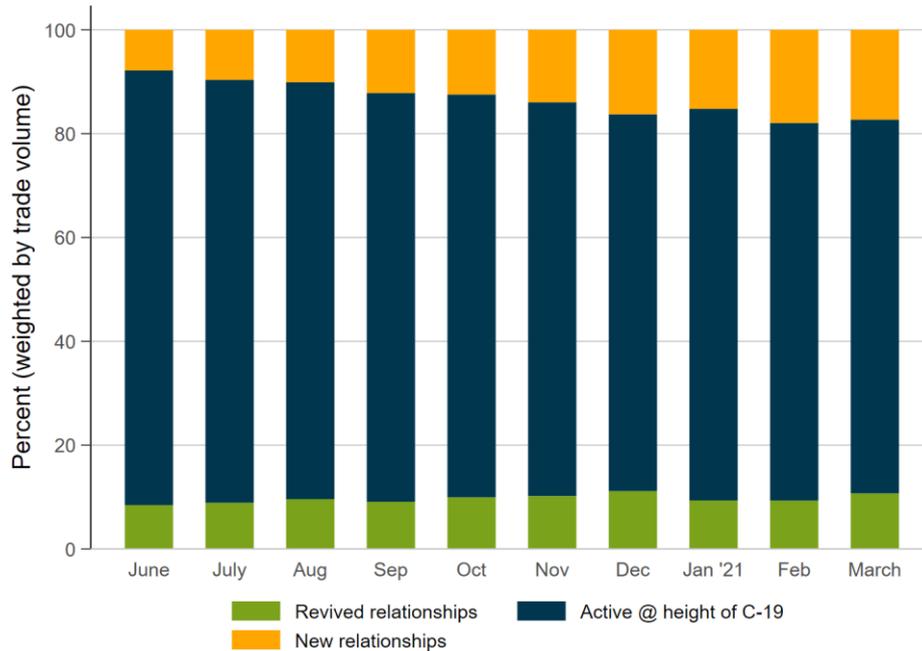


The above graph plots the share of relationships, which were active at any point during the past year and are also observed as being active in the respective month plotted on the x-axis. The denominator is the number of relationships that were active at any point in the previous year. Each relationship is weighted by its annual trade volume in the previous year.

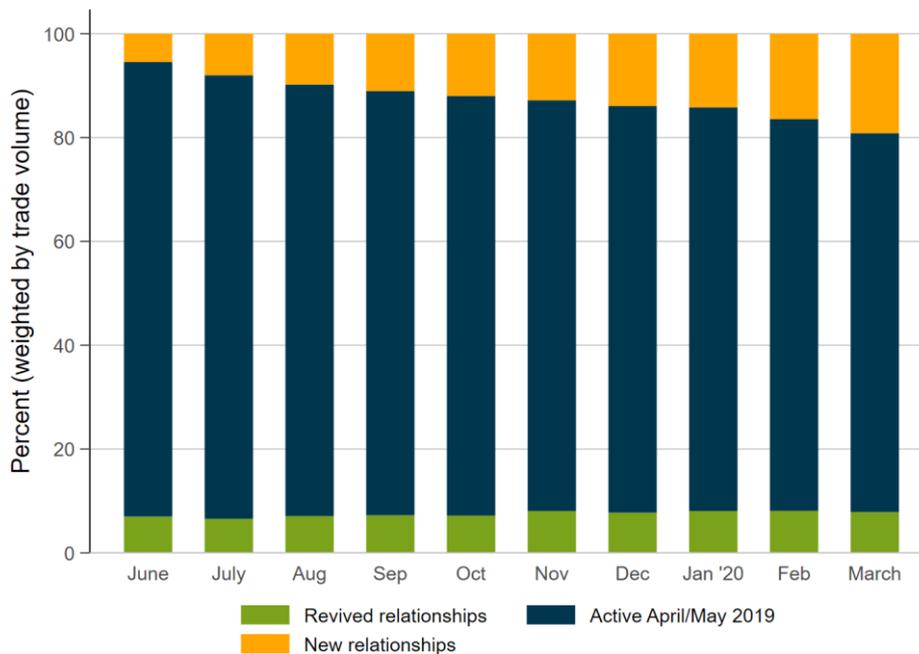
To understand what types of relationships firms relied on during the recovery period in the second half of 2020 and the first quarter of 2021, we now classify relationships observed during this period based on their activity status during the height of the Covid-19 crisis. Specifically, we look at (i) relationships that were inactive in April and May 2020, (ii) relationships that were active in April and May 2020, and (iii) relationships that have been newly formed since April and May 2020 in figure 8. The bulk to firm-to-firm trade occurs in relationships that have survived the height of the Covid-19 shock. We further compare the dynamics to 2019 in the bottom graph of the figure. Here we also classify relationships based on their activity status in April and May. The two graphs look remarkably similar. The bulk of trade in the second half of 2019 also occurred in relationships that were active in April and May 2019, and thus presumably all year round. In the last quarter of 2020, newly formed relationships become relatively more important compared to the same period in 2019. Likewise relationships that have been inactive during April and May 2020 now carry a slightly higher weight, which is mechanically expected given the re-bouncing identified in the previous graphs. An alternative plot (figure 28) with the unweighted share of each relationship type can be found in the appendix. Figure 28 highlights that revived and newly formed relationships make up a substantial share of the active

relationships, but carry less weight in terms aggregate firm-firm to trade volume. Here the contrast between 2019 and 2020 is much stronger, especially with the respect to the share of revived relationships, which is above 20% in the case of 2020. In a nutshell, the composition of inter-firm relationships with respect to the revival of pre-existing ones vs newly formed is relatively stable in the pre-Covid period.

Figure 8: The nature of relationships observed during the Covid-19 recovery period  
2020



For comparisons – 2019



The above graphs distinguishes between three types of relationships: those active in April and May 2020 (/2019), revived relations that have been active at any point in the past, but not in April/May, and finally relationships that have newly formed since April and May. The denominator is the total number of relationships observed in a given month. Each relationship is weighted by its trade volume.

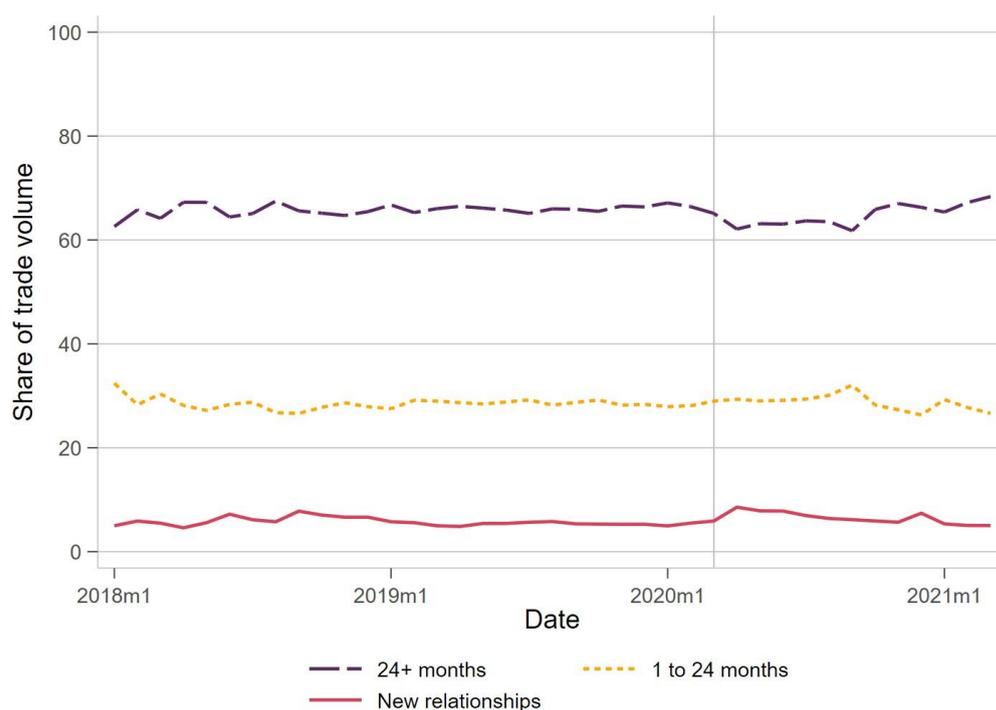
## 4.2 Old vs new relationships

We complement this evidence by looking at the composition of inter-firm trade by relationship age in figure 9.<sup>12</sup> In 2019, 62% of the inter-firm trade occurs in relationships that date back more than 24 months. 13% of the trade is undertaken between firms that have engaged in a transaction for the first time. In 2020, the share of old established relationships dropped to 59%, while the share of trade in newly established relationships rose to 17.5%. Most of this shift occurred right at the onset of the Covid-19 crisis. The vertical line indicates March 2020 when the first Covid-19 case was confirmed in Kenya. In April 2020, the share of overall trade undertaken in new relationships rose, while the one in old relationships fell. However, over time the share of new relationships starts to decline again and the one of old relationships rises. It does so especially towards the end of 2020 and in early 2021, when instead the trade share of the young relationships (1-24 months old) sees a decline. By the start of 2021, old relationships make up 66% of the trade share. The pattern would be consistent with an interpretation that some relationships were abruptly terminated, with some firms potentially even replacing suppliers or customers. As the pandemic continued, however, firms seem to have turned to their long-standing trade partners to navigate the recovery period and rebuilding, which especially at the start of 2021, is still marked with a lot of uncertainties.

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<sup>12</sup>Interestingly the figure also replicates a stylized fact from the international trade literature (Monarch and Schmidt-Eisenlohr, 2020), which documents that the bulk of imports into the US occurs through established relationships. Figure 9 shows that this regularity translates to a domestic setting as well.

Figure 9: Share of trade volume by relationship age



The above graph plots divides the aggregate trade volume in each month by type of relationship. Here we classify relationships by the duration that the relationship has been active for up until a given month. We distinguish between old (24+ months) relationships, young relationships (1-24 months), and newly formed ones. The plotted time period covers January 2018 to March 2021. The denominator is the number of active relationships in a given month. Each relationship is weighted by its trade volume.

#### 4.3 Standardised vs differentiated manufacturing products

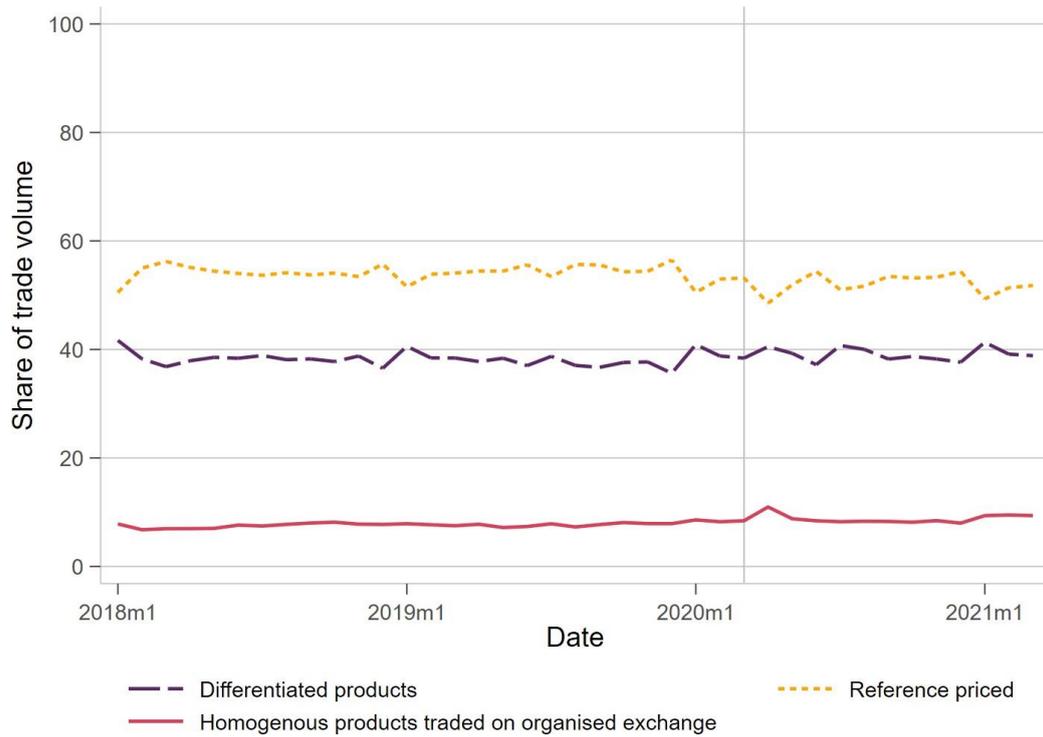
For a subset of relationships that account for about 10% of the 1.7 million relationships we track between 2018 and early 2021, we are able to map them to an indicator of product differentiation. To do so we draw on the product classification by Rauch (1999) and the mapping of products to 4-digit industry codes by Liao et al. (2020). The classification is mainly available for agricultural or manufactured products. Therefore this section only speaks about relationships that have a supplier that is involved in either manufacturing, agriculture or mining and quarrying. The classification differentiates between (i) homogeneous products traded on an organised exchange, (ii) reference priced products, and (iii) differentiated products. We are using this classification to again study the composition of inter-firm trade during the height of the Covid-19 crisis and

the recovery period up until March 2021. Over 60% of the inter-firm relationships that can be classified exchange differentiated products. Products that are reference priced account for a little over 30% and homogenous products traded on an exchange account for a little less than 10%. These shares are very stable throughout the entire time period plotted in the top graph of figure 10. However, once we account for the volume of trade in the respective product categories, the share of customised products falls to 40%. The largest category are now products that are reference priced. Customised products increase their share at the start of each calendaryear as companies seem to place orders for annual purchases. During Covid-19 the share of customised products dipped slightly, but with a delay of one month, but quickly rose again. Inthe meantime, the share of homogeneous products rose in April 2020 at the expense of reference priced products, which saw a decline in their share. However, all of those fluctuations remain rather small and within the 2-3% range.

Figure 10: Share of trade volume by product type  
Unweighted



Weighted



The above graph plots divides the aggregate trade volume in each month by type of product. We map Rauch (1999)’s product classifications to the 4-digit sector of suppliers using Liao et al. (2020). The plotted time period covers January 2018 to March 2021. The denominator is the number of active relationships in a given month. In the bottom graph, each relationship is weighted by its trade volume.

## 5. Network position and firm resilience

The structure of supply chains and their relevance for firm resilience in times of crisis have attracted increased interest in the recent years (Freund et al., 2021). Since the onset of the Covid-19 pandemic it has taken centre stage in the policy debate. In this paper we focus on two key aspects of supply chain structures: diversification and complexity.

Throughout the following section we group firms into bins of concentration and complexity while controlling for their 3-digit sector<sup>13</sup> and age. Put differently, we group firms by age cohort,<sup>14</sup> and 3-digit sector. We then use the respective measures of concentration or complexity to compute the 25th, 50th and 75th percentile for each sector-age bin and group the firms into quartiles of concentration/complexity. Our approach is motivated by the fact that firms differ greatly in the set-up of their network depending on their age and sector (see Appendix tables 11 and 10). We only include firms that have had at least one buyer and one supplier in the previous year.<sup>15</sup> We therefore abstract from endogenous adjustments to the network and exclude new firms and those who just joined the network in the past twelve months. When looking at a firm's network, we hold the network fixed to its structure in the same month a year ago. Further we consider the structure over the course of the previous twelve months in order to account for seasonality in purchasing patterns. To give an example, for a firm observed in April 2020, we will consider all its supplier and buyer relationships between May 2018 and April 2019 for the computations of our proposed diversification and complexity measures.

### 5.1 Diversification along supply chains

A common hypothesis is that ex ante diversified supply chains allow firms (and countries) to smooth shocks to one or more of their up- and downstream linkages. However, managing each relationship entails substantial communication and management cost. In uncertain times, managing a relationship and staying in touch with one's customers is particularly costly. Being able to focus on important customers with a substantial sales share thus comes at an advantage (Jackson, 2010).<sup>16</sup>

<sup>13</sup>We use 3-digit sectors instead of 4-digit sectors to avoid sector-age cells becoming too small.

<sup>14</sup>5 years, 5-9 years, 10-19 years and 20+ years.

<sup>15</sup>We therefore restrict our sample to a subset about 39,000 firms. These firms are on average larger and older than the overall sample. This is a reason why the growth and recovery dynamics in the event study plots of this section slightly deviate from the one in the previous section presenting results for the overall firm population.

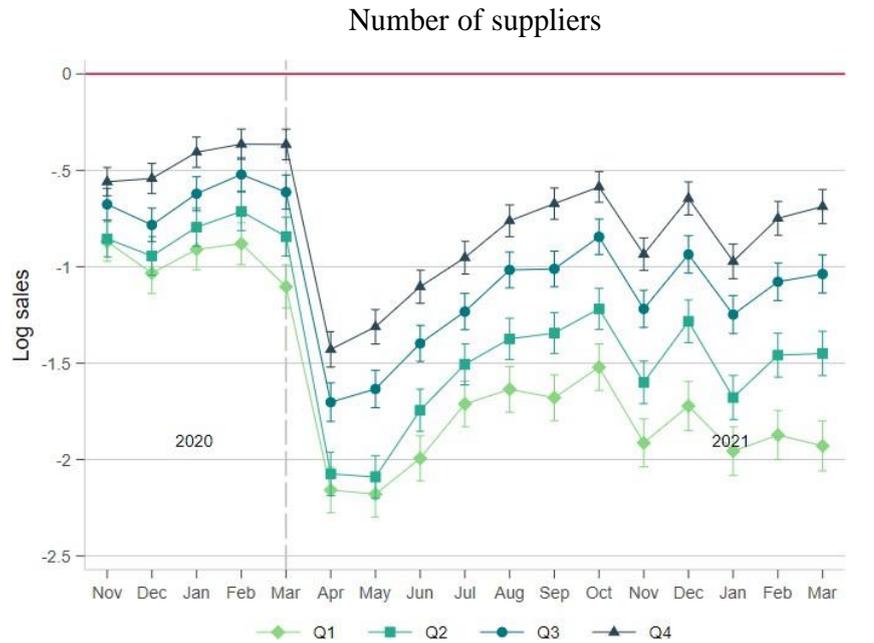
<sup>16</sup>Jackson (2010) discusses several seminal papers from the 90s that suggest a key role for this mechanism

**Measurement:**

Diversification can take place both on the extensive and the intensive margin. On the extensive margin firms can diversify their up- and downstream supply chains by investing in a greater number of active links. Here we measure diversification using the number of suppliers and buyers respectively. The top quartile contains the most diversified firms, while the bottom quartile contains those with the highest concentration among its buyers and/or suppliers. On the intensive margin, firms decide how much they buy from each of their suppliers and how concentrated their sales are among their existing buyers. To measure diversification on the intensive margin we use the Herfindahl–Hirschman Index (HHI), a popular concentration measure that can take a value between 0 (low) and 1 (high concentration). Here the top quartile contains those with the most concentrated supply chains. When studying the intensive margin we further condition on the buyer or supplier quartile within each sector-age cell. Simply ranking firms by the HHI almost mechanically classifies most of the firms in the top percentiles of the degree distribution as highly diversified.

For both the intensive and extensive margin we look at overall diversification of the firm's supply chain, but also at diversification within each industry the firm buys from/sells to. In the latter case, for the intensive margin, we first compute the HHI for each industry the firm operates in and then weight industries by their purchase/revenue shares to compute the firm-level concentration of inputs and sales respectively.

Figure 11: Diversification on the extensive margin - the number of up- and downstream linkages



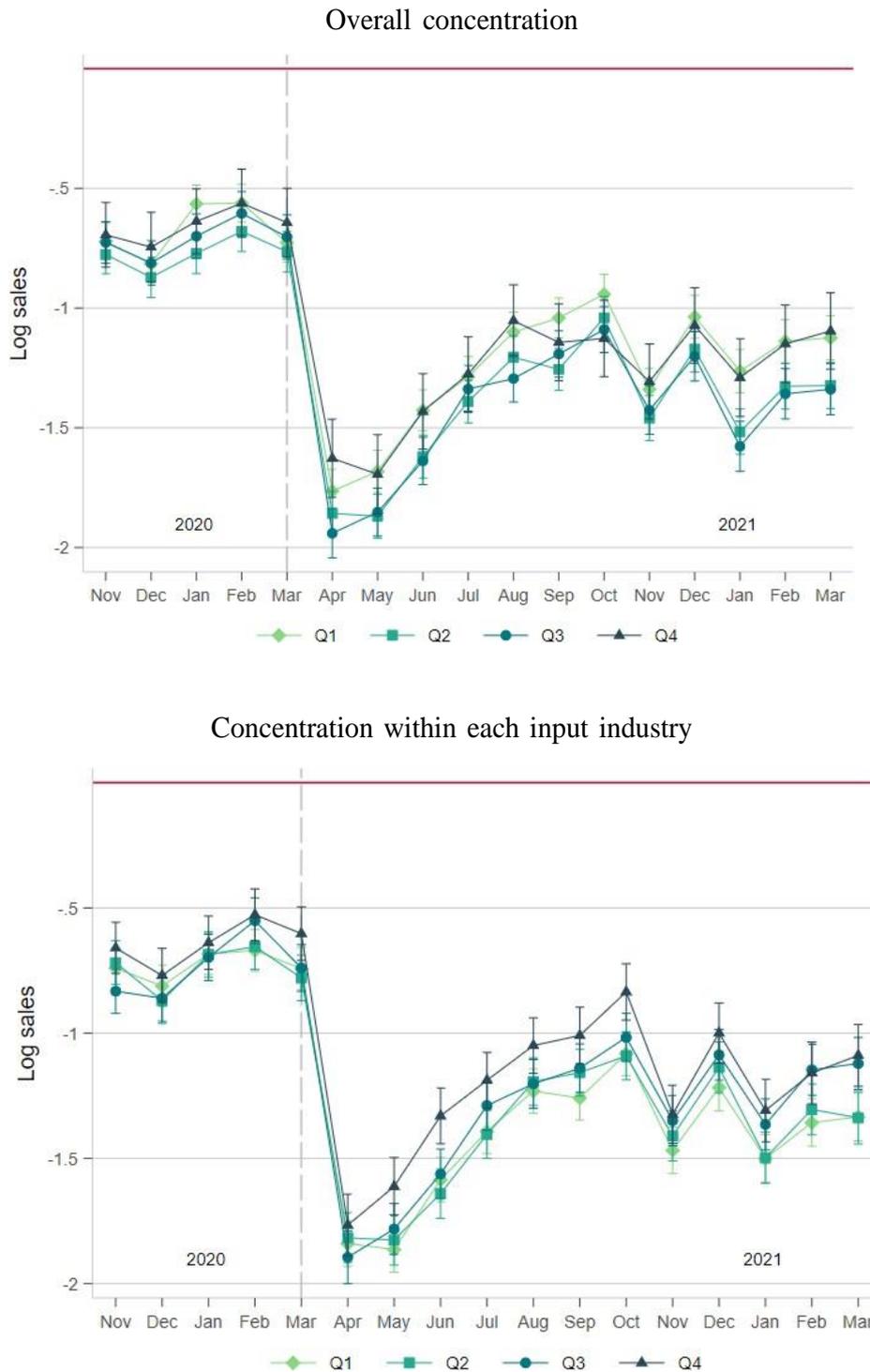
In the above graphs we regress firm level sales (log) on a series of monthly time dummies. Firms are grouped into quartiles after controlling for age cohort and 3-digit sector. Firms in the lowest quartile have the fewest buyers/suppliers, first in the top quartile the most. We further include firm and month fixed effects. Standard errors are clustered at the firm level. The error bars show the 95% confidence intervals. The regressions include data from April 2017 to March 2021.

**Results:**

Does a more diversified supplier and buyer base lead to more resilience during the pandemic? It depends. We find that diversification matters in particular on the extensive margin.

At the height of the pandemic we see a divergence in sales levels of firms with below median number of links to suppliers relative to those with an above median number of suppliers (see top graph of figure 11). While firms with a lower number of suppliers already had a level of sales that was on average lower than their peers in the same age and sector bin, this gap widens starting in March and accelerates through to May 2020. Sales of firms in the top quartile were on average 30% higher than those of firms in the second quartile in February 2020. By May 2020, the gap increased to 50%. For the second quartile the gap relative to well-connected firms narrows in June and July, it remains larger than prior to the pandemic until the end of March 2021. For firms in the bottom quartile the divergence even continues throughout - although not as drastically as during the initial downturn. Looking at diversification of downstream supply chains, we see a strong divergence between the top quartile and the three bottom quartiles between March and April 2020. While firms in the top quartile on average already have 10% higher sales than firms in the third quartile, this gap widens to 40% higher sales for the group with the most buyers relative to their sector-age peers. Further, we only see a minor convergence between this group and the less diversified firms.

Figure 12: Diversification on the intensive margin - the concentration of purchases within the supplier base



In the above graphs we regress firm level sales (log) on a series of monthly time dummies. Firms are grouped into quartiles after controlling for age cohort, 2-digit sector and quartiles based on the number of suppliers within each sector-age bin. Firms in the lowest quartile have the most diversified purchases. Purchases of firms in the highest quartile are the most concentrated. We further include firm and month fixed effects. Standard errors are clustered at the firm level. The error bars show the 95% confidence intervals. The regressions include data from April 2017 to March 2021.

We are further interested in diversification on the intensive margin. Here, we condition on diversification in the extensive margin by further conditioning on the previously computed supplier and buyer bins, alongside sector and age. Interestingly, we find very little effects of diversification on the intensive margin (see top graph of figure 12). Firms with either a very diversified or a very concentrated purchases face a less drastic downturn and fare better during May and June. However, by July the other firms have already caught up. However, the results indicate that both strategies, either relying on an extremely diversified supplier network or on key relationships with suppliers that allow for close coordination can be viable strategies for firms. The bottom graph of figure 12 confirms that on the intensive margin, a focus on key suppliers can be beneficial. When we account for within industry concentration of purchases (instead of overall concentration above), firms with the most concentrated purchases did better during the initial months of the Covid shock, in particular in May and June when uncertainty was still higher. The effects disappear thereafter.

On the downstream side we see much stronger effects of diversification on the intensive margin (see figure 13). Firms with an overall very diversified network of buyers, faced an initial downturn that was less pronounced, but importantly, they fared better during the second half of 2020 and early 2021 as the economy was recovering. Accounting for diversification within each industry the firm sells to in the bottom graph of figure 13, however, paints a different picture. The results suggest that firms with key buyers that capture a large share of their sales within each industry they sell to, fared better compared to firms with more dispersed sales. The contrast is particularly pronounced in the early month of the pandemic, May and June. Interpreted jointly, the seemingly conflicting results, could suggest that the ability to focus on key customers during times of heightened uncertainty had a positive effect on the firm trajectory during the peak of the crisis, whereas a diversified customer network made firms less reliant on the recovery trajectory of specific buyers.

In summary, we find that diversification matters. It does matter more on the extensive rather than intensive margin.



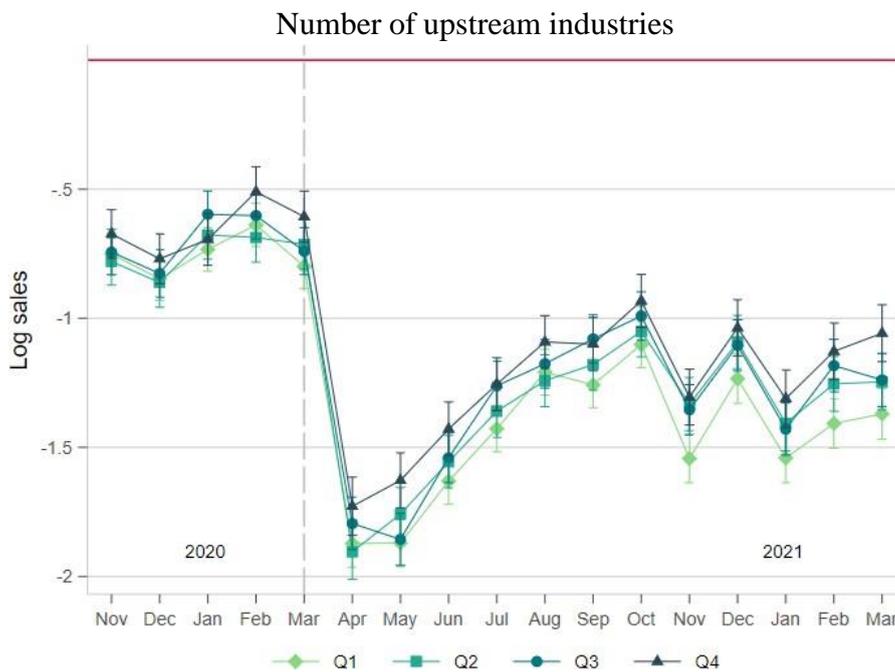
### 5.2 Complexity of supply chains

The delay or failure of a small input can often result in the break down of an entire product (Kremer, 1993). The increased probability of a component failing/being delayed in times of crisis, results in supply chains with a large number of inputs being particularly fragile during those times. We therefore look at the number of different industries a company sources from as a proxy for the complexity of the firm’s supply chain.

During both Covid and pre-Covid times, firms that source from a larger number of industries exhibit higher sales (see figure 14). These firms saw a slightly less drastic of a downturn during the initial downturn. The results are, however, not statistically significant at the 5% level. The observed patterns are if anything indicative of complex supplier network serving as a proxy for a number of relevant firm characteristics like high productivity and managerial capital.

We further looked at the relevance of distance to buyers and suppliers. Our results do not indicate a role for travel distance to buyers and suppliers for the firms’ growth trajectory during the Covid-19 crisis.

Figure 14: Complexity of supply chains



In the above graphs we regress firm level sales (log) on a series of monthly time dummies. Firms are grouped into quartiles after controlling for age cohort, 3-digit sector and quartile according to upstream linkages. Firms in the highest quartile purchases from the largest number of industries. We further include firm and month fixed effects. Standard errors are clustered at the firm level. The error bars show the 95% confidence intervals. The regressions include data from April 2017 to March 2021.

## 6. Supply chain adjustments in response to Covid-19 related demand shocks

### 6.1 Empirical strategy

As a final step we seek to better understand the pass-through of Covid-19 related shocks and their transmission through firm-to-firm linkages. Covid-19 is a systematic, global shock that differs substantially from many highly localised shocks. We therefore seek to use this setting to complement a growing literature that has focused largely on localised shocks (Carvalho et al., 2021) or the transmission of firm-level micro shocks (Acemoglu et al., 2012). A key exception is Huneeus (2018) who studies the pass-through of terms of trade shocks during the financial crisis.

For most of the following analysis we focus on demand side related Covid-19 shocks, but will distinguish between international and domestic shocks. The focus on demand shocks is motivated by more detailed information on domestic demand outside the network in the VAT data and the resulting ability to pin down the heterogeneity in the exposure to domestic demand shocks. Ultimately we seek to estimate the following regression model:

$$\Delta y_{it} = \beta Z_{it}^{domestic} + \gamma Z_{it}^{international} + \eta_s + \phi_{sy} + \varepsilon_{it} \quad (1)$$

$y_{it}$  denotes the change in firm-level outcomes of firm  $i$  in month  $t$ . We will estimate two alternative models considering both the change relative to the previous month or the same month in the previous year. We further control for 3-digit sector fixed effects  $\eta_s$  and 2-digit (e.g. manufacturing, hospitality) sector-year fixed effects  $\phi_{sy}$ . The sector-year fixed effects capture industry-year specific shocks.  $Z_{it}$  denote the firm-specific domestic and international demand shocks. To study the relevance of the firm network characteristics for the pass-through of shocks, we will extend this model by interacting the shocks with network characteristics in the previous year, i.e. for most of the pandemic period this will be 2019.

### 6.2 Characterising direct and indirect domestic and foreign demand shocks

We follow Dhyne et al. (2021)'s estimation strategy to simultaneously estimate the pass-through of both direct and indirect demand shocks. Indirect exposure takes into account a firm's exposure to foreign and domestic demand through their buyers. To give an example, a firm's total exposure to foreign demand is characterised by its own share of total output that is exported  $r_{iF}$ , as well as the export share of its buyers, the buyers' buyers and so on. The same holds for final demand of domestic households. Dhyne et al. (2021) further show that through direct and indirect sales, a firm's output ultimately get absorbed by either foreign trade or demand of domestic households.

They show that  $Z_{it}$  can thus be rewritten as:

$$Z_{it}^{domestic} = \sum_j \tilde{H}_{ij,t-1} r_{jH,t-1} \Delta \log DD_t$$

and

$$Z_{it}^{foreign} = \sum_j \tilde{H}_{ij,t-1} r_{jF,t-1} \Delta \log FD_t$$

A key element of the two above equations is  $\tilde{H}_{t-1}$ , which corresponds to  $(I - A_{t-1})^{-1}$ .  $A$  is the adjacency matrix of the domestic firm-to-firm network. Element  $i, j$  of the adjacency matrix  $A$  corresponds to the share of  $i$ 's output that is sold to  $j$ . By subtracting it from the identity matrix and inverting it, we obtain the matrix  $\tilde{H}_{t-1}$  which captures the share of output from  $i$  to  $j$  both directly and indirectly and thus serves as a weight for  $i$ 's total exposure to  $j$ . Following Dhyne et al. (2021), we focus on the exposure to foreign  $FD_t$  and domestic demand  $DD_t$  shocks holding

(i) the firm-to-firm network  $A_{t-1}$ , (ii) the firms' direct exposure to foreign demand  $r_{iF,t-1}$ , and (iii) domestic household demand  $r_{iH,t-1}$  fixed in the previous period. When estimating equation 1 we use monthly firm outcomes and shock measures, while relying on annual measures for the firm-to-firm network and the exposure of the firms to domestic and foreign demand. Put differently, we will take into account all firms that firm  $i$  has traded with over the course of the calendar year rather than just the firms that the firm interacted with in the same month of the previous year. Likewise, we consider each firm's annual exports and annual output to compute  $r_{iF}$  and its domestic counterpart  $r_{iH}$ .

The large-scale, global impact of the Covid-19 crisis poses a challenge to defining plausibly exogenous shock measures that would allow for a clean identification separating the firm's response from the general impact of the pandemic. Due to the coincidental demand and supply shocks during the pandemic, simultaneity bias is a major concern. To at least partly address some of those concerns, we seek to exploit the variation in exposure to foreign demand shocks as well as shocks to domestic demand from households. To construct a plausibly exogenous measure for foreign demand shocks, we deploy a popular shift-share design approach proposed by Hummels et

al. (2014) and subsequently in similar settings to ours by Huneus (2018); Dhyne et al. (2021); Arkolakis et al. (2021).

The measure exploits the heterogeneity in trends of demand for different products from world markets by different countries:

$$\Delta \log FD_t = \sum_{c,p} \omega_{i,c,p,t-1} \Delta WID_{c,p,t} \quad (2)$$

The measure consists of two components: Firstly the shares, which capture a firm  $i$ 's annual exports of product  $p$  to country  $c$  as a share of the firm's total revenues in time  $t - 1$ . Secondly, the change in demand for product  $p$  by country  $c$  from all other countries excluding Kenya. Here we again measure the shares at the annual level, but capture demand shocks at the monthly level. The data to construct the shock measure is retrieved from the UNComtrade database. Products  $p$  are defined by 4-digit HS codes.<sup>17</sup>

We propose a similar approach to capture shocks to demand from domestic households. Given their focus on foreign demand shocks, Dhyne et al. (2021) simply interact their measure of the total exposure to domestic demand with a year dummy. As the pandemic had vastly different effects on sectors as different as hospitality and construction, but also demand for durable manufacturing goods vs food items, we propose a simple extension that takes into account this heterogeneity:

$$\Delta \log DD_t = s_{i,s,H,t-1} \Delta HD_{s,t} \quad (3)$$

$s_{i,s,H,t-1}$  corresponds to firm  $i$ 's domestic sales outside the firm-to-firm network as a share of its total output. Each firm operates in a single sector  $s$ . Given we observe only one sector of operation for the vast majority of firms we rely on 3-digit sector classifications rather than the available reported 4-digit sectors to at least partly mitigate the problem of sector-misclassification and multi-product firms.  $\Delta HD_{s,t}$  captures the aggregate sector-level change in sales across all private sector firms observed in our data set excluding firm  $i$ . A key concern is that these demand shocks are more likely correlated with unobserved firm-level supply or productivity shocks. We partly, albeit still imperfectly, address this concern by excluding each firm when computing the measure for its direct shock exposure.

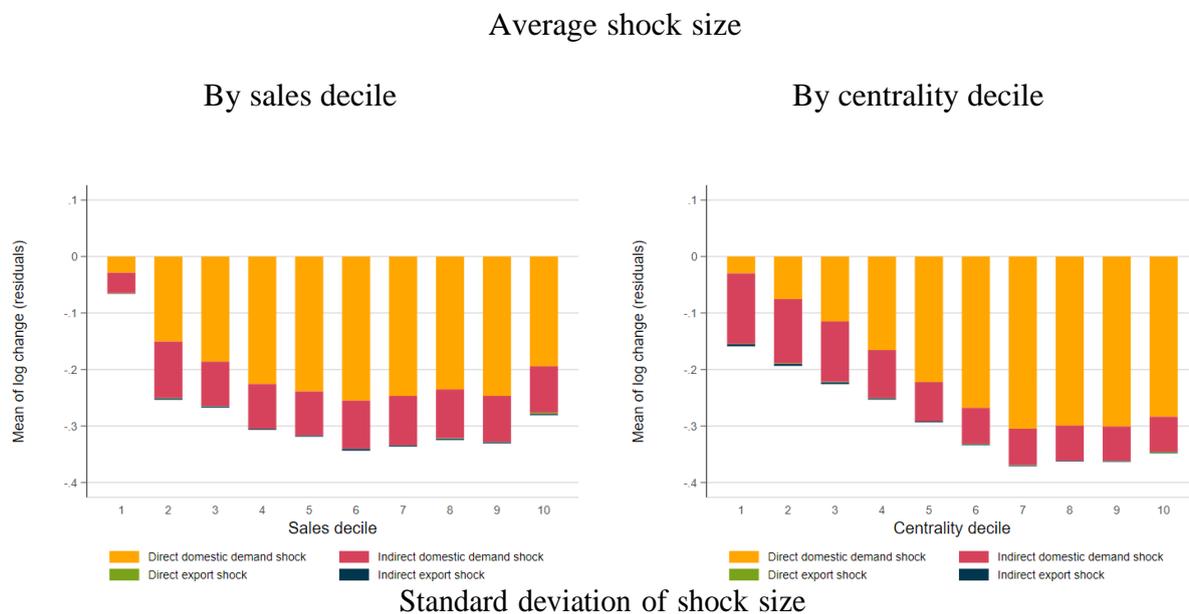
<sup>17</sup><https://comtrade.un.org/Data/bulk>

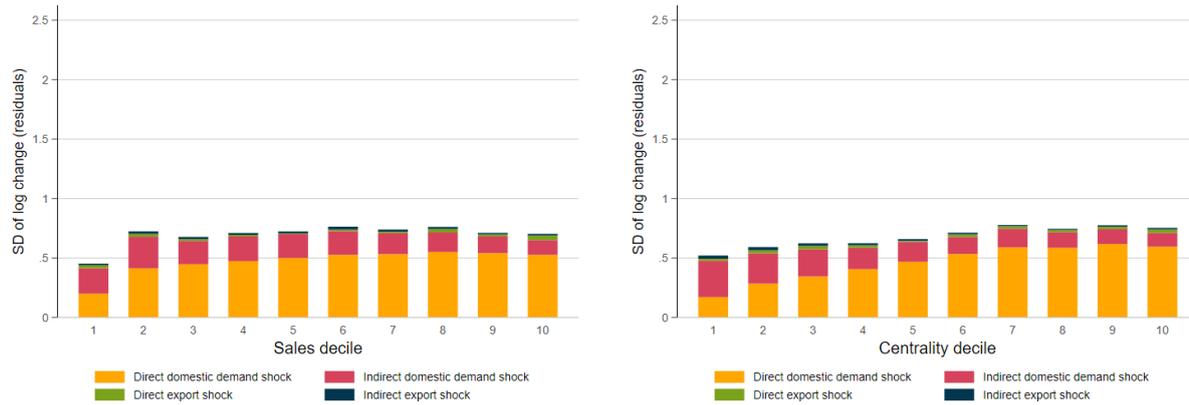
### 6.3 Firm characteristics and the exposure to demand shocks

Studying the variation in exposure to demand shocks by firm characteristics reveals three key patterns: (i) the exposure to demand shocks from abroad via the export channel is negligible relative to the exposure to domestic demand shocks, (ii) exposure to indirect demand shocks is smaller than to direct demand shocks but still sizable, and (iii) exposure to indirect demand shocks is not limited to firms that are located very centrally within the firm-to-firm network. In Figure 15 we plot the average shock size (top row) as well as the standard deviation (bottom row) by size and how central they are positioned in the network.

The firms are sorted from small to large and from less central to more central. In both cases we control 2-digit sector fixed effects. Export shocks - both direct and indirect are barely visible relative to the domestic demand shocks. This is largely driven by the fact that only 1,800 firms of the over 57,000 firms we track over time engaged in export activities in 2019. Through firm-to-firm linkages 2/3 of the firms are exposed to non-zero export shocks in April 2020. However, for the vast majority the size of shock is tiny due to the low level of exposure measured by the proportion of firm revenues that through direct and indirect linkages is exported.

Figure 15: The size of demand shocks and firm characteristics



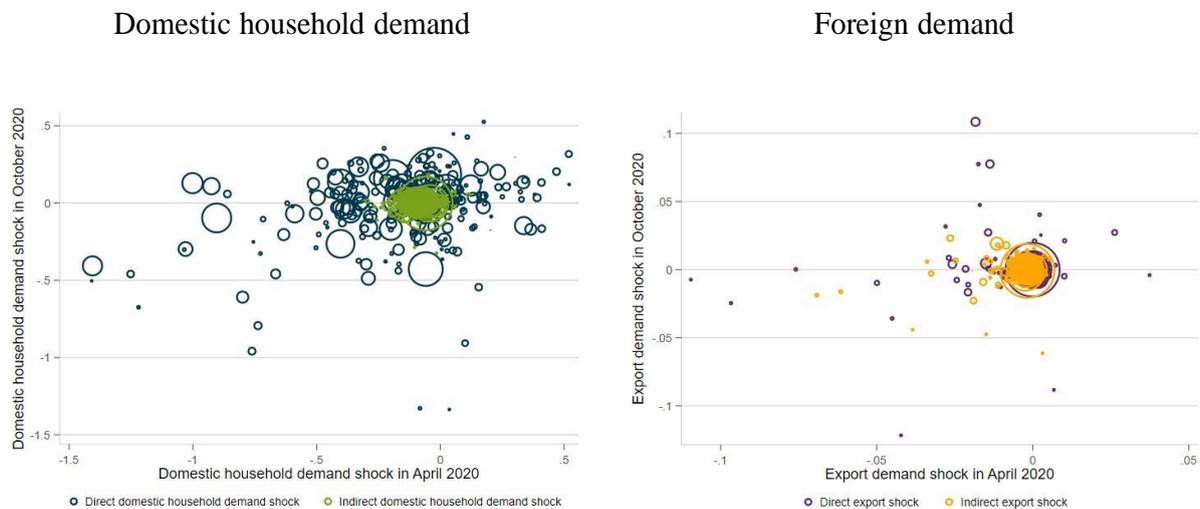


The above graphs plots the size of the weighted demand shock (in log terms) for both domestic household demand (left) and foreign demand (right) in April 2020 against the same shock in October 2020. The firm-specific weights scale the demand shock depending on the share of the firm’s exports and sales to domestic households of total revenues. We control for 2-digit sector fixed effects. In the right column we use the Bonacich-Katz centrality as our preferred centrality measure (following the definition used in (Barrot et al., 2021)). The higher the decile the more centrally the firms are located in the firm-to-firm network.

Indirect shocks that can be traced to demand from domestic households are also smaller in size and less dispersed than direct demand shocks (also see figure 16). In contrast to export shocks, they are, however, sizeable for all firms across the firm size distribution. Adding up direct and indirect shocks, the average firms in the 7th to 10th centrality decile face similarly sized shocks respectively. The total shock size is, however, smaller for firms that are less centrally located. Nevertheless, the indirect exposure to final demand shocks still plays a key role for those firms and increases in importance for the average firm as we move towards those in the periphery of the network (lower centrality deciles). The plot in the bottom right corner of figure 15, however, further highlights that the standard deviation increases as we move to the lower deciles in terms of centrality. This implies that the extent to which firms in the periphery are exposed to indirect shocks is more heterogeneous than for centrally located firms. Nevertheless, the key message of the patterns is that firms in the periphery of the firm-to-firm network can indeed also be exposed to indirect shocks despite their less central network position. One might have expected that a lower degree of centrality can to some extent protect firms from the pass-through of large-scale shocks like Covid-19.

Despite its global and drastic nature, the size of the measured demand shocks at the height of the pandemic vary substantially by sector. In figure 16 we plot the 4-digit industry averages of the demand shocks in April 2020, when the most comprehensive bundle of domestic and international travel restrictions was in place in Kenya, against those in October 2020, when the vast majority of the restrictions - including those affecting the service sector - had been lifted. The two graphs highlight that a particularly negative demand shock does not necessarily result in an immediate bounce back six months later. If anything, there is a positive instead of a negative correlation of the average shock size in April and October 2020.

Figure 16: Industry averages of direct and indirect exposure to demand shocks in April and October 2020



The above graphs plots the size of the weighted demand shock (in log terms) for both domestic household demand(left) and foreign demand (right) in April 2020 against the same shock in October 2020. The firm-specific weights scale the demand shock depending on the share of the firm’s exports and sales to domestic households of total revenues. We control for 2-digit sector fixed effects. The plotted shocks are industry averages. Each scatter represents a 4-digit industry with the size of the marker proportional to the number of firms that we observe in the respective industry at any given point in the years 2017 to 2020.

#### 6.4 The pass-through of foreign and domestic demand shocks

How did demand shocks transmit through the network during Covid-19 crisis? We find evidence for a substantially higher pass-through of sector-level demand shocks during the height of the Covid-19 crisis. Indirect demand shocks that are transmitted through the firm-to-firm played a key role during the recovery period in the second half of 2020.

To tackle this question we estimate equation 1 and first focus on the change in sales as the primary outcome in table 3. In the first column we combine monthly firm-level data from January 2018 to December 2020 to estimate the pass-through of foreign and domestic demand shocks. Both domestic and foreign demand shocks have a sizable pass-through. For ease of interpretation we will look at examples of firms that are highly specialised in terms of their sales, either on foreign or domestic demand. This is of course not the case for the vast majority of firms, which ultimately have their sales absorbed through the firm-to-firm network by foreign and domestic demand at the same time. For a firm that is selling to domestic households exclusively, a 10% increase in sector-level domestic demand results in a 4% increase of its sales. For a firm that is selling to other firms that in turn exclusively sell to domestic households, a 10% growth of the sectors it indirectly sells to translates to a 3% increase in its sales. We estimate a similar pass-through for direct foreign demand shocks - a 10% increase corresponds to a 4% increase in firm-level sales. However, while the coefficient for the pass-through of indirect foreign shocks also suggests a positive pass-through, we cannot reject the null hypothesis that the pass-through is indeed zero.

Table 3: Pass-through of direct and indirect shocks to domestic household demand and exports

	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Direct domestic demand shock	0.444* ** (0.092)	0.176* (0.104)	0.987*** (0.172)	0.194*** (0.054)	0.589** * (0.139)
Indirect domestic demand shock	0.334* ** (0.058)	0.113 (0.118)	0.096 (0.185)	0.106 (0.080)	0.574** * (0.125)
Direct export shock	0.401* (0.228)	0.288 (0.655)	0.448 (0.634)	0.412* (0.248)	0.466 (0.396)
Indirect export shock	0.477 (0.479)	-0.599 (1.402)	0.049 (1.815)	-0.483 (0.857)	2.287** (0.954)
No. observations	1,513,637	151,082	83,948	584,048	340,317
R2 adj.	0.027	0.042	0.054	0.024	0.028
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes

We regress the change in log sales relative to the same month in the previous year on the direct and indirect exposure to export and domestic final demand shocks. Standard errors are clustered at the 4-digit sector level. We include 3-digit sector fixed effects and 2-digit sector-year fixed effects and further control for firm age and the lagged sales decile. Sales are deflated using the monthly consumer price index. All variables are winsorised at the top and bottom 0.1 percentile. Note that the trade flow data are directly extracted from the UN Comtrade data base.

The underlying monthly data are not reported by a number of important trade partners, including China, Indonesia, Vietnam, South Africa, and Austria.

The high-frequency data allows us to split the sample into different time periods in order to get a better sense on how the initial Covid-19 shock and the recovery period. In columns 2 and 3 of table 3 we look at the months of April and May, comparing the experience of firms in 2018/19 to the pandemic year of 2020. In April and May 2020, all firms but those in the 90th percentile were exposed to a negative demand. In columns 4 and 5 we then look at the remaining seven months of 2020 and again compare them to the corresponding period in 2018/19. At the height of the initial Covid-19 shock, the pass-through of the industry-level demand shock was almost 1, meaning that firm-level sales moved one-to-one with sector-level trends. This is in sharp contrast to the pass-through of 0.17, which we estimate for April and May in 2018 and 2019. During the recovery period, the pass-through was still substantially elevated compared to the same months in the previous years, however, the pass-through drops to 0.59 relative to 0.99 in May and April. Indirect demand shocks, both foreign and domestic seem to have played a big role during the recovery period. The pass-through for indirect demand shocks is almost the same as for direct shocks. This is a strong hint that firm-to-firm linkages that broke down during the height of the crisis recovered and played an instrumental role in the demand-side aspect of the recovery from the initial shock.

On the export side the picture is more mixed. While we do find a positive pass-through for direct export shocks, the standard errors are too big for the estimate to be very conclusive.

This is likely driven by the fact that few firms directly export (also see (Arkolakis et al., 2021) for a discussion on a similar phenomenon in Chile). Wide standard errors also prevent us from reaching a conclusion on the pass-through of indirect shocks and point towards a mixed experience for firms. During the pre-Covid periods the point estimates of the pass-through are negative (but not significantly different from zero). A negative pass-through is not implausible given we hold the firm-to-firm network fixed when computing the shock measures. It hints at the possibility that some firms when facing a positive export shock switch away from their existing suppliers. During the Covid-19 recovery period, this strategy might have been tough to implement because of increased search cost and uncertainty. We therefore are not surprised to find a strong positive pass-through of indirect export shocks for the period June to December 2020. A 10% increase in world export demand for the products exported by a firm's suppliers results in a 24% increase in sales.

## 6.5 Supply chain adjustments in response to demand shocks

As a next step we look at the upstream adjustments firms make to their supply chains when faced with a demand shock. To simplify presentation of the results we now combine direct and indirect demand shocks of domestic and foreign demand respectively. In table 4 we regress the firms' change in total purchase volume, the number of suppliers and the average volume per supplier on the total shock to demand from domestic households and the total export shock. Faced with export shocks, firms do not immediately respond by adjusting their purchases. In April and May 2020, at the peak of the Covid-19 shock, we estimate a positive response, but the standard errors are slightly too large to reject the null hypothesis of a zero effect for all purchase-related outcomes but the number of suppliers. For domestic demand shocks, the response mirrors the one for sales: The elasticity is highest in April and May 2020. It is slightly more moderate during the second half of 2020, but still between 4 and 5.5 times as high as during the same period in 2018 and 2019. The response is particularly strong for the intensive margin, the increase in the average purchase volume.<sup>18</sup>

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<sup>18</sup>Note that it is not possible to directly compare the coefficients for the number of suppliers and the average transaction volume given the change in the number of suppliers has been computed using a growth rate formula that accounts for values of zero  $y_{it} = \frac{x_{it} - x_{it-1}}{(x_{it} + x_{it-1})/2}$ . Zeros are even more common in high-frequency firm level data since firms do not make purchases every month and the values for the number of suppliers cannot be transformed using  $\ln(x + 1)$ .

Table 4: The upstream effects of demand shocks

<b>Total purchase volume</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	0.255** *	0.030	0.688***	0.098***	0.388***
	(0.051)	(0.078)	(0.122)	(0.029)	(0.075)
Total export shock	0.050	-0.166	0.868	-0.345	0.468
	(0.230)	(0.621)	(0.686)	(0.347)	(0.435)
No. observations	1,513,637	151,082	83,948	584,048	340,317
R2 adj.	0.018	0.038	0.031	0.015	0.020
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes
<b>Number of suppliers</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	0.055** *	0.004	0.106***	0.014***	0.068***
	(0.011)	(0.011)	(0.021)	(0.005)	(0.014)
Total export shock	0.057	0.038	0.307**	-0.018	0.098
	(0.048)	(0.131)	(0.140)	(0.071)	(0.089)
No. observations	1,513,637	151,082	83,948	584,048	340,317
R2 adj.	0.021	0.036	0.051	0.012	0.025
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes
<b>Average purchase volume per supplier</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	0.210** *	0.039	0.639***	0.063**	0.351***
	(0.042)	(0.065)	(0.113)	(0.025)	(0.068)
Total export shock	0.139	-0.124	0.783	-0.189	0.449
	(0.218)	(0.641)	(0.692)	(0.340)	(0.366)
No. observations	1,513,600	151,082	83,948	584,025	340,303
R2 adj.	0.016	0.032	0.025	0.013	0.017
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes

We regress the change in total purchases, number of suppliers, and the average purchases volume per supplier relative to the same month in the previous year on the total (direct + indirect) exposure to export and domestic final demand shocks. The change in the number of suppliers and buyers is

computed using the following formula:  $y_{it} = \frac{x_{it} - x_{it-1}}{(x_{it} + x_{it-1})/2}$ . Standard errors are clustered at the 4-digit sector level. We include 3-digit sector fixed effects and 2-digit sector-year fixed effects and further control for firm age and the lagged sales decile. Purchase volumes are deflated using the monthly consumer price index. All variables are winsorised at the top and bottom 0.1 percentile. Note that the trade flow data are directly extracted from the UN Comtrade data base. The underlying monthly data are not reported by a number of important trade partners, including China, Indonesia, Vietnam, South Africa, and Austria.

Who are the suppliers firms rely on in times of crisis? A substantial body of literature suggests that firm-to-firm relationships can be very sticky (Bernard and Moxnes, 2018). Nevertheless, firms on average tend to keep only 60% of their trade partners each year (similar moments have been estimated for Chile Huneus (2018) and the US Lim (2018)). In addition, studying the response of firm-to-firm relationships in Chile to the global financial, Huneus (2018)'s results suggest that relationships are particularly responsive to large-scale shocks. Our findings in the context of Kenya point towards similar dynamics. Using the relationship-level network data, we compute several outcomes that summarise key supplier characteristics, namely the weighted average supplier age, productivity and the length of the relationship. We then regress the characteristics on the demand shock measures, again using equation 1. The results are summarised in table 5. As expected in a world with sticky relationships, we do not find much evidence for contemporaneous adjustments to the supplier network. However, again focusing on the two month of the major downturn in column 3 of table 5, the estimates give insights into which type of suppliers firms rely on in times of crisis - old and established suppliers. The larger the negative demand shock, the higher the average age of the suppliers the firm buys from in the same month. When it comes to relationship length, the evidence is inconclusive. For export shocks the results point towards a pattern where firms with favourable export shocks (mainly column 5) seem to shift away from their established suppliers and seek new ones and likewise tend to rely on established ones in times of a negative shock (mainly column 3). Pooling the observations for all estimates suggests that firms unsurprisingly opt for more productive suppliers when faced with a positive demand shock. This criterion seems to be particularly relevant during the recovery period in the second half of 2020 (column 5). A next step will be to look at the medium-run adjustments of the supply chain.

Table 5: The chosen ones: supplier characteristics

<b>Average age of supplier</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	-0.003 (0.003)	-0.006 (0.007)	-0.025** (0.010)	-0.002 (0.005)	-0.001 (0.008)
Total export shock	-0.001 (0.028)	0.079 (0.081)	-0.051 (0.105)	-0.055 (0.040)	0.106 (0.090)
No. observations	988,950	103,741	57,923	374,925	212,519
R2 adj.	0.007	0.006	0.010	0.006	0.008
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes
<b>Average length of relationship</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	0.078 (0.253)	-0.094 (0.186)	0.413 (1.426)	-0.385 (0.531)	0.340 (0.393)
Total export shock	0.343 (0.857)	0.071 (1.523)	-8.623 (6.038)	1.008 (2.166)	-1.811 (1.210)
No. observations	948,792	100,219	55,524	357,142	201,536
R2 adj.	-0.000	0.000	-0.003	-0.000	-0.000
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes
<b>Average value added per employee of suppliers</b>					
	All periods	April-May pre-C19	April-May C19	Jun-Dec preC19	Jun-Dec C19
Total domestic demand shock	0.066** * (0.023)	-0.019 (0.020)	0.004 (0.015)	0.017 (0.028)	0.040*** (0.014)
Total export shock	0.131* (0.071)	0.061 (0.210)	-0.050 (0.225)	0.116 (0.119)	0.036 (0.122)
No. observations	988,983	103,742	57,924	374,935	212,530
R2 adj.	0.004	0.002	0.002	0.012	0.005
3-digit sector FE	Yes	Yes	Yes	Yes	Yes
2-digit sector-year FE	Yes	Yes	Yes	Yes	Yes

We regress the change in the weighted average age, length of the relationship and value added per employee of suppliers relative to the same month in the previous year on the total (direct + indirect) exposure to export and domestic final demand shocks. Standard errors are clustered at the 4-digit sector level. We include 3-digit sector fixed effects and 2-digit sector-year fixed effects and further control for firm age and the lagged sales decile. Note that the trade flow data are directly extracted from the UN Comtrade data base. The underlying monthly data are

not reported by a number of important trade partners, including China, Indonesia, Vietnam, South Africa, and Austria.

## 7. Conclusion

We use up-to-date, almost real-time data on monthly firm and relationship level outcomes to study the impact of the Covid-19 crisis on private sector firms in Kenya. The data allows us to map Kenya's domestic production network of formal firms and its links to international supply chains. After an initial drastic downturn that was almost universal across sectors, firms recovered almost completely within the course of three months. The observed recovery dynamics are, however, insufficient to make up for the lost growth during the height of the pandemic. The almost v-shaped trajectory of initial downturn and recovery suggest an interpretation of Covid-19 as both a supply and a demand shock, but importantly also, and potentially primarily, a massive shock to uncertainty. We show the domestic margin of the crisis has been far more important, as domestic sales and purchases decline a lot more in both absolute and relative terms compared to imports and exports. We show that a large proportion of domestic firm-to-firm relationships came to a halt during the time of heightened uncertainty in the second quarter of 2020. However, many of the relationships recovered to the extent that patterns surrounding the formation of new relationships and the destruction of existing ones only differ from pre-pandemic dynamics on the margin. Looking at the volume of trade that takes place within relationships that are either newly formed, young (between 1 and 24 months) or old/established (24+ months), we see a shift towards a larger volume of firm-to-firm trade taking place in established or newly formed relationships relative to younger relationships. While we only consider overall trade volumes and the number of relationships in the current draft of this paper, we plan to take a firm level perspective in future versions of this paper to better understand which types of firms choose to rely on more stable relationships and which firms engage in more intensive search during the recovery period.

Importantly, the data allows us to study the role of supply chain diversification and complexity in explaining firm dynamics during the height of the crisis and the recovery period. To so, we hold the firm's network fixed to its status in the same month of the previous year. We find that both diversification on the up- and downstream side matters for firm dynamics during the pandemic. The initial Covid-19 shock widened the gap in sales between firms with a lot of linkages relative to those with ex ante fewer supplier and/or buyer relationships. On the upstream side, firms with an above

median number of suppliers fared better, while on the downstream side it is mainly the top quartile with a large number of buyers that experienced a less pronounced downturn in sales.

We find less pronounced and conclusive results when looking at diversification of sales and purchases within an existing portfolio of suppliers and buyers. Firms that were able to focus on key suppliers during the peak level of uncertainty in April, May and June 2020, experienced a less drastic decline in their sales. We find similar effects on the downstream side when looking at the concentration of sales among buyers within the same industry. These results are highly suggestive of the important role communication and the ability to manage relationships in times of heightened uncertainty plays for firm-to-firm trade. Being able to focus on the relationship with key suppliers and buyers seems to be key. This is an area we hope to expand our analysis on in future iterations of the paper. At the same time, we find that firms with a more diversified customer portfolio show a stronger medium-run recovery trajectory. A bit more surprisingly, we find that the complexity of supply chains and the travel time to buyers and suppliers did not play a significant role in explaining short- and medium run firm dynamics during the pandemic.

As a final step we use the Covid-19 case study to study the propagation of domestic and foreign demand shocks through the production network. First, our descriptive results suggest that not only firms that are centrally located in the network, but also those in the periphery face indirect exposure to demand shocks via firm-to-firm linkages. Second, on average the exposure to demand shocks stemming from a fall in domestic demand from households is much greater than the average exposure to the decline from foreign demand. This is largely driven by limited exposure of the network to export markets. Only 4% of the firms exported directly in 2019. Third, firm sales growth is more sensitive to demand shocks during the initial downturn in April and May 2020 than during the same time of the year in 2018 and 2019. While the contrast is less stark, this pattern persists during the recovery period between June and December 2020. During this period the pass-through of export shocks, which are largely positive during the recovery period, is particularly strong. This suggests that international linkages have been robust to the crisis and firms with direct and indirect linkages to international supply chains are either more robust to begin with or benefited disproportionately from the global recovery.

The patterns we find for sales translate 1:1 to purchases and supply decisions of firms. Given the stickiness of firm-to-firm relationships, we find little evidence of drastic, immediate adjustments of supplier networks. However, firms that faced more negative demand shocks at the height of the Covid-19 crisis, relied more heavily on older, established firms during this period. During the recovery period, suppliers with high value added per employee were sought after. In future iterations of the paper, we plan to look at medium-run adjustments of the network in response to demand shocks.

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## Appendices

### Appendix A Kenya's domestic production network - stylized facts from administrative data

Using transaction-level tax records we map out the production network and trading-relationships among formal firms in Kenya.<sup>19</sup> In 2019, we track 44,888 formal firms in the firm-to-firm network data, which form close to 1.5 million relationships among each other (see Table 6). Their domestic sales aggregate to 6,806 billion KES (about 62 billion USD) and their value added (sales-purchases) corresponds to about 30% of Kenya's GDP.

Table 6: Basic statistics on inter-firm relationships and sales (2015-2019)

Year	Firms	Total sales (in bn. KES)	Relationships	Firm-to-firm sales (in % of total sales)
2015	31,617	4,854.6	886,334	49.2
2016	36,816	5,887.2	1,132,913	49.3
2017	40,572	6,245.9	1,203,430	50.3
2018	44,868	6,588.5	1,330,453	48.9
2019	48,569	6,818.3	1,526,669	56.1
2020	49,885	6,632.3	1,527,037	59.9

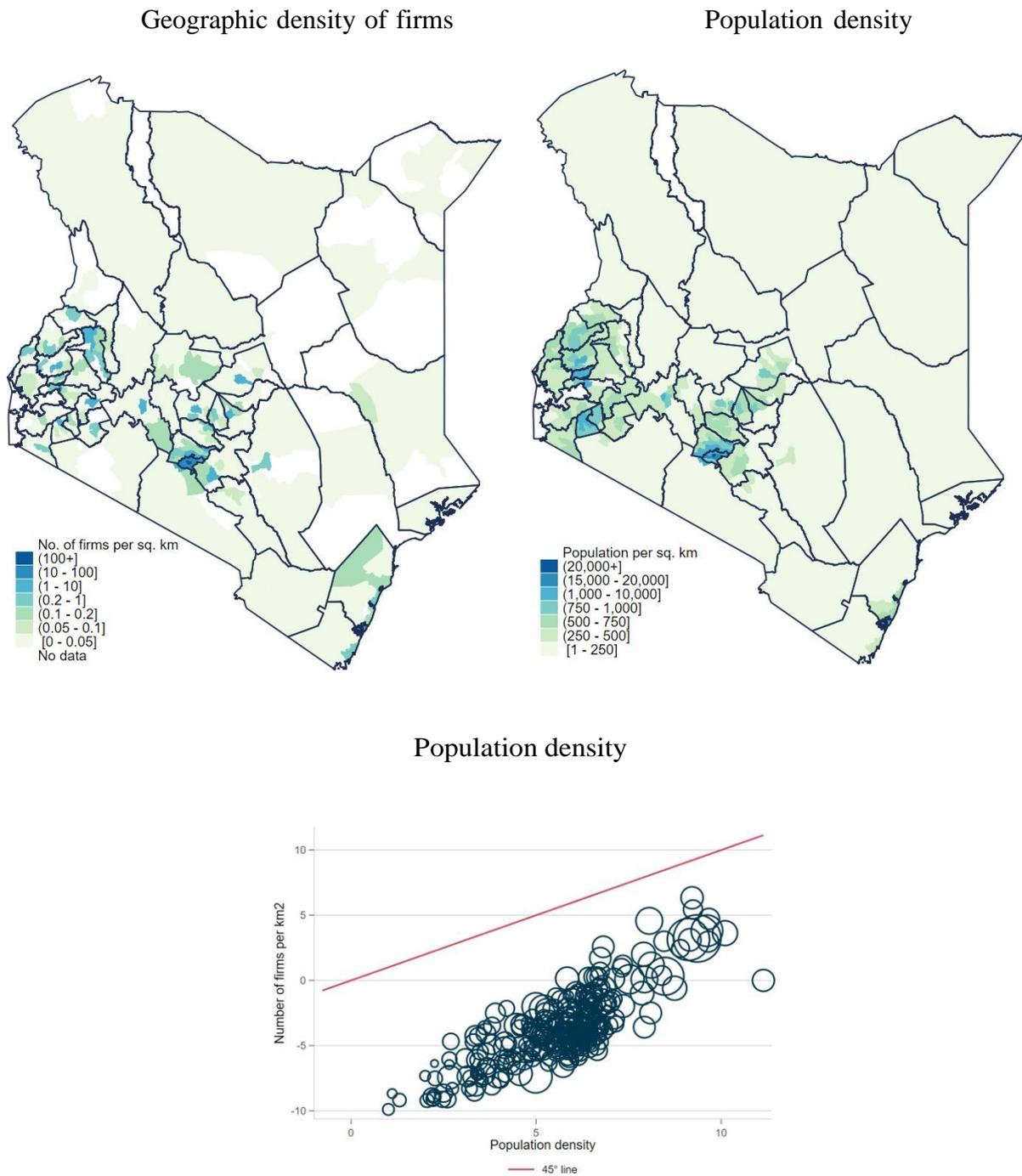
This table shows the number of firms in the production network, firm-to-firm relationships, the aggregate sales volume, as well as the share of aggregate sales that is linked to transactions between registered firms. The underlying data are from VAT returns.

#### A.1 Trade between geographies and sectors

In Figure 17 we map the location of firm headquarters across sub-counties, the second administrative layer. The two main (rather unsurprising) take-aways are: (i) firm locations are concentrated in sub-counties around urban centres, and (ii) the geographic dispersion is highly correlated with population density. The overwhelming majority of the firms is located in Nairobi, with high-sales firms being particularly concentrated in and around the capital (see left map in Figure 18). The right map in Figure 18 shows that the geographic dispersion of exports is even more concentrated. In addition to Nairobi and Mombasa, three other counties emerge as major origins of exporting firms: Murang'a, Kericho and Nakuru county. Murang'a and Kericho are well-known for their tea farms, while Nakuru county is the hotspot of Kenya's cut flower industry.

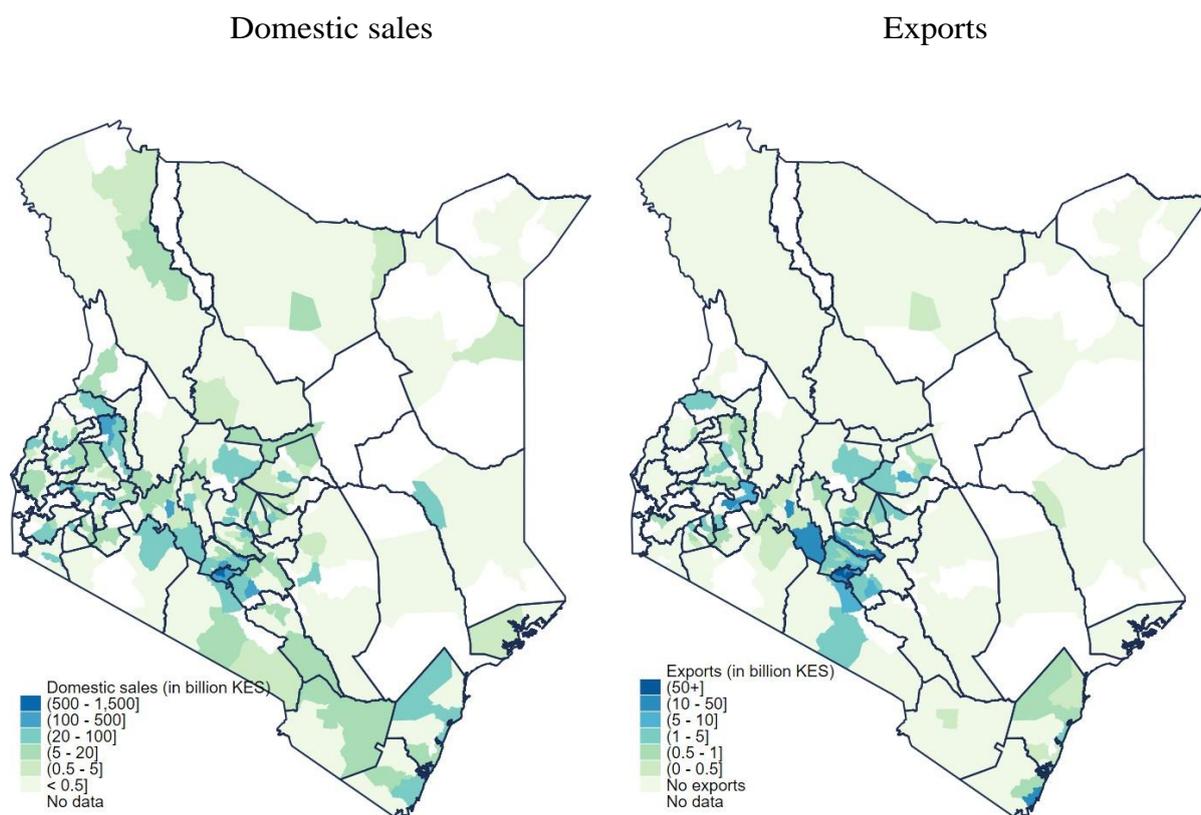
<sup>19</sup>For a detailed description of the data and the cleaning process see D.

Figure 17: Firm headquarter locations and population density



The left map shows the density of firm headquarter locations at the sub-county level. The right map shows the population density - also at the sub-county level. The scatter plot at the bottom shows the correlation between log population density and the log number of firms per  $km^2$  at the sub-county-level. The size of each scatter is proportional to the population of the sub-county. Sub-counties represent the second administrative layer. Their size varies between 3 and 19,837  $km^2$  with a median size of 1,738  $km^2$  and an average size of 421  $km^2$ . We therefore chose to map the density of firms rather than absolute numbers. Sub-counties are much more comparable in terms of population. The median sub-county has a population of 143,156 people, while the average sits at 129,263.

Figure 18: The geography of sales and exports



The left map shows the density of firm headquarter locations at the sub-county level. The right map shows the population density - also at the sub-county level.

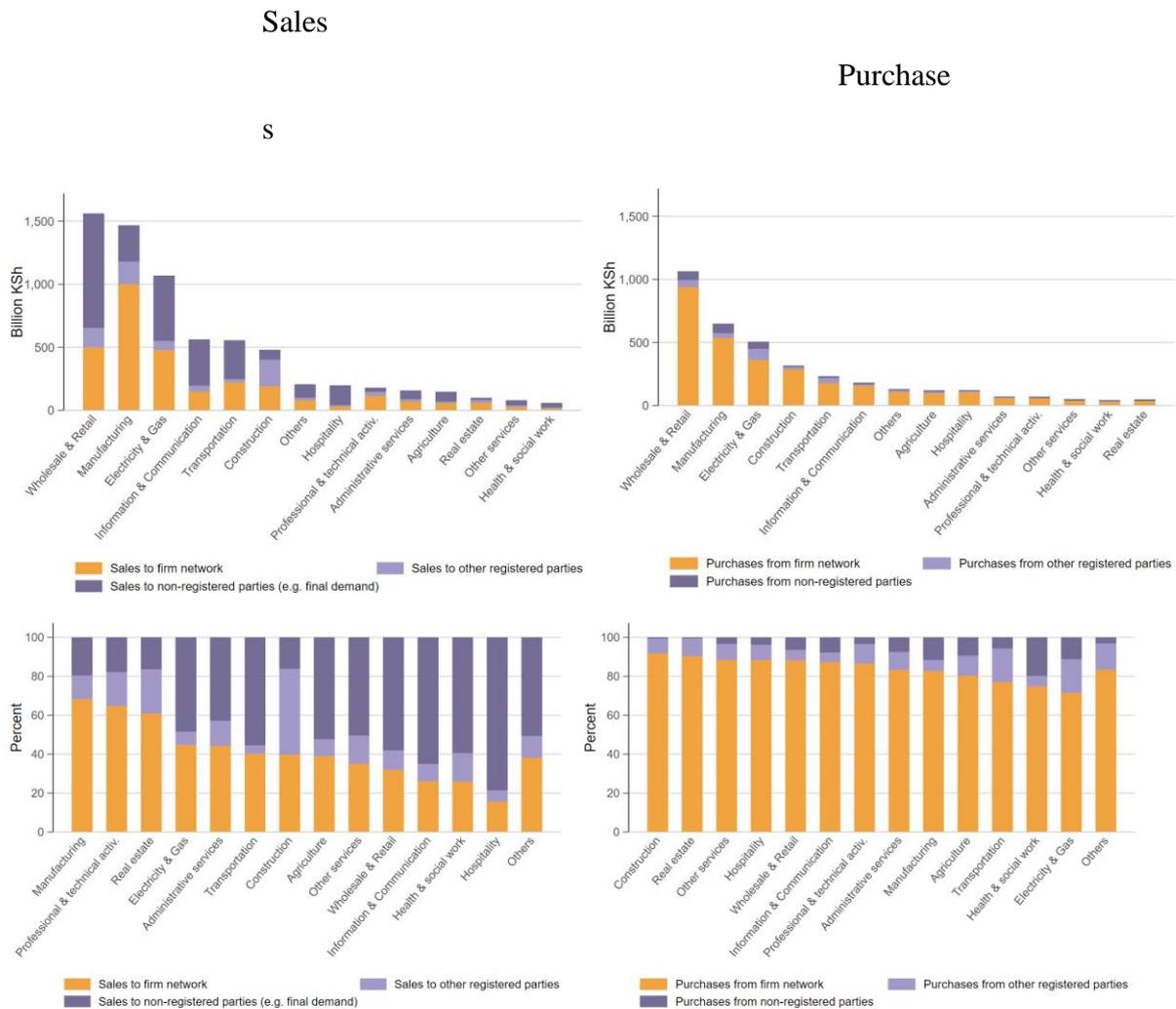
Table 7: Sector-level breakdown of total sales (2019)

Sectors	%
Wholesale & Retail	22.90
Manufacturing	21.50
Electricity & Gas	15.66
Information & Communication	8.19
Transportation & Storage	8.14
Construction	7.09
Hospitality	2.92
Professional, Scientific & Technical	2.63
Administrative & Support Services	2.32
Agriculture, Forestry, & Fishing	2.11
Total	93.47

This table shows the share of aggregate sales or the ten biggest sectors measured by sales volume. The underlying data are from VAT returns.

About half of the firms’ sales take place within the formal domestic production network (see again Table 6). The remaining half can be attributed to (i) sales to other VAT-registered parties like government agencies, NGOs, and international organisations, and (ii) sales to non-VAT-registered parties like final consumers, and businesses that do not file VAT returns.

Figure 19: Aggregate sales and purchases by sector (2019)



The figures in the first row show sector-level aggregate sales and purchases for 2019. In the second row we plot the sales to and purchases from registered vs non-registered parties as a percentage of total sector-level sales and purchases. The underlying data are summary sheets from VAT returns detailing monthly sales and purchases.

Businesses that do not file VAT can be small firms with annual revenues of less than 5 million KES and those that are VAT exempt. Firms in the data overwhelmingly purchase from other registered firms.

Figure 19 plots aggregate sales and purchases as well as the share of sales and purchases to and from parties within the formal domestic production network and outside of it. Combined the manufacturing, and wholesale and retail sector account for nearly 50% of aggregate sales observed in the data (also see Table 7). Manufacturing firms purchase almost 20% of their domestic purchases from outside the firm-to-firm network, but sell close to 70% of their output to other firms within the observed domestic production network. The large share of purchases from non-registered parties observed for manufacturing firms could be an indication that these firms purchase a significant share of their inputs from businesses in the agricultural sector, which are mostly VAT exempt. Unsurprisingly firms involved in professional, scientific and technical service activities (e.g. lawyers and accountants) are the most embedded within the domestic

production network of formal firms: Close to 80% of their sales are to parties that are VAT registered, with the vast majority of it being firms within the network of formal firms. About 85% of their inputs are purchased from other formal firms. Firms in the health sector have the largest share of purchases from non-registered parties, which can be explained by the exemption of medical products from value-added-tax. Another interesting case are construction firms. Their largest group of customers are other registered parties that are not private firms. This suggests that they make most of their revenues from government contracts.

In Figure 20 we study trade flows between sectors. Unsurprisingly the most significant of all inter-sectoral trade flows is the one from manufacturing to wholesale and retail. In addition, manufacturing firms trade a substantial proportion among each other. The most important sectors for manufacturing inputs are transportation, utilities, and wholesale and retail. The information and communication sector has the weakest links to other sectors, with roughly half of its transactions occurring among firms within the sector.

We plot the same type of graph for trade flows between Kenya's 47 counties (see Figure 21). Here we aggregated the firm-to-firm flows up to county-to-county trade flows based on the location of firm headquarters. The graph illustrates the dominant role of Nairobi's economy for the formal Kenyan economy as a whole. Close to half of the trade-flows take place between firms that have

their headquarter located in Nairobi (assets and operations like factories and warehouses could be located outside Nairobi). The second most notable edge is the one between Nairobi and Kenya's second largest city Mombasa. The graph further highlights that with the exception of the Nairobi-Mombasa link, the trade flows from Nairobi into any of the other counties are larger than the trade flows flowing back from the counties to the capital (i.e. the flows coloured in dark brown - out of Nairobi - are larger than the flows flowing into the dark brown segment - into Nairobi).

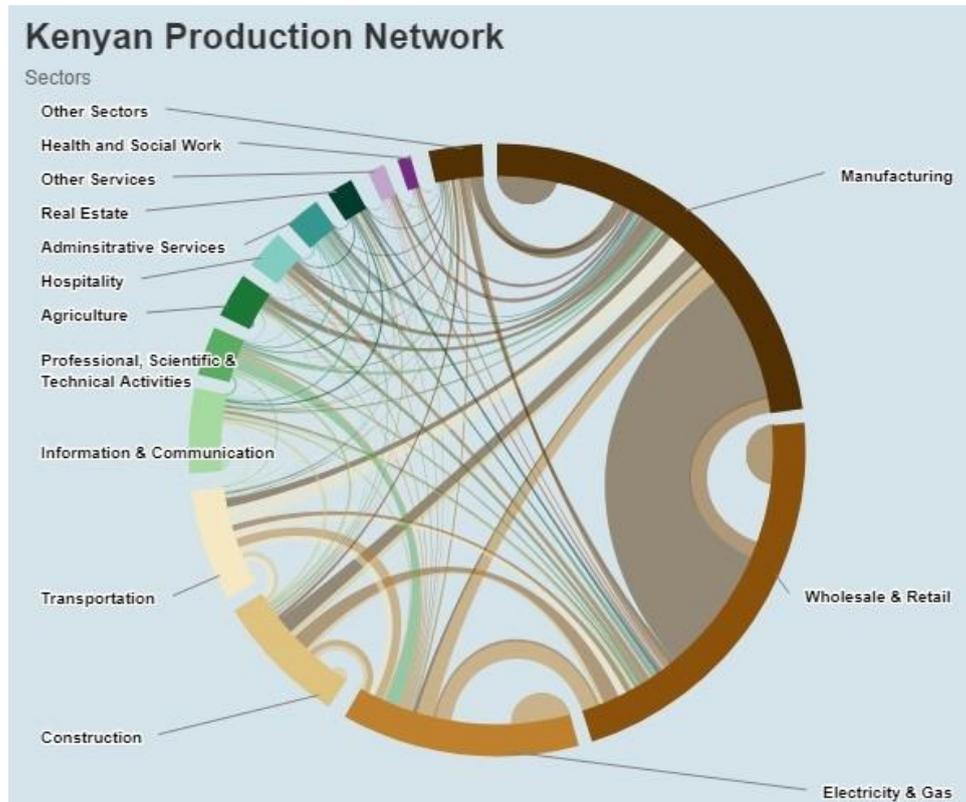
## **A.2 Firm-level participation in firm-to-firm trade**

Zooming in on the firm-level, we observe that three-quarters of all firms act as both buyers and suppliers within the domestic production network, i.e. they purchase and sell to and from other formal firms. In the meantime, about one fifth of the firms only show up as buyers and do not sell to any other party within the network, while about 5% sell to other parties within the network, but do not buy from it.<sup>20</sup>

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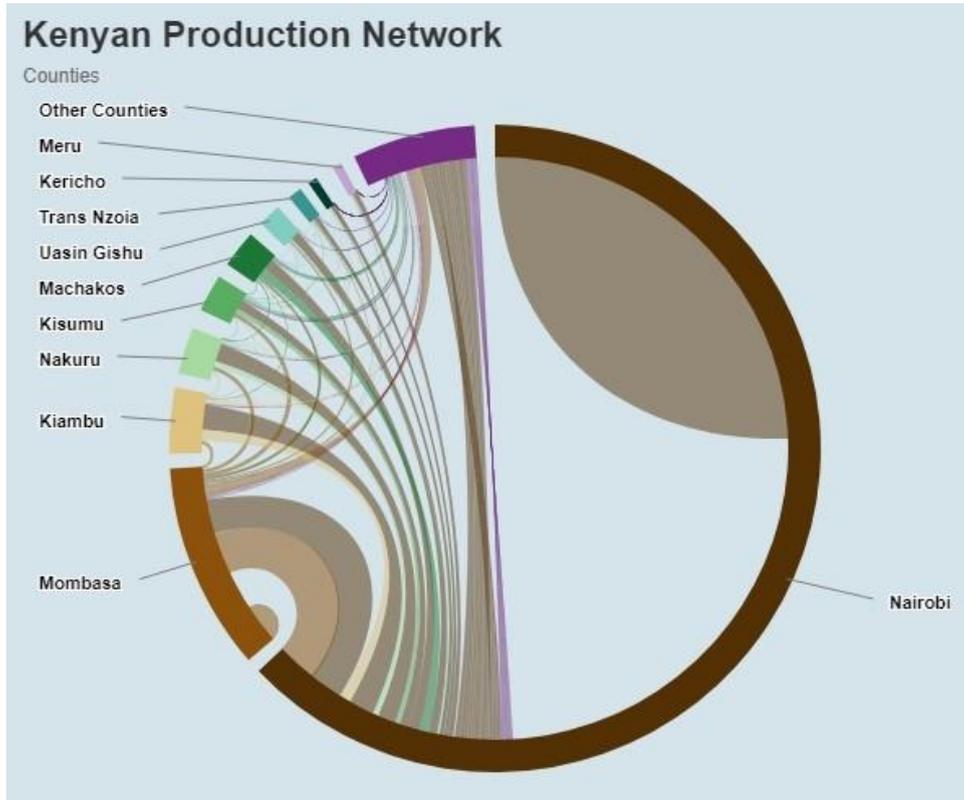
<sup>20</sup>These figures closely align with the pattern observed in production network of the Dominican Republic and documented in Cardoza et al. (2020).

Figure 20: Sector-level trade flows between formal firms (2019)



The figure shows inter-firm trade flows aggregated at the sector-level. The size of each node (segment) is proportional to the sector’s share of purchases and sales relative to the aggregate volume of firm-to-firm trade between formal firms in Kenya. The colour of the edges (links between segments) indicate the direction of the trade flow. They take the colour of the supplying sector (e.g. goods and services provided by the transportation and storage sector to the manufacturing sector take the colour of the transportation sector’s segment). The width of each edge (links between segments) is proportional to the share of the trade flow with respect to the aggregate volume of trade flows in the transaction-level VAT data. To improve readability we only separate out the trade flows for the ten counties with the largest aggregate amount of transactions within the domestic production network. We bundle the trade flows for the remaining 37 counties

Figure 21: County-level trade flows between formal firms (2019)



The figure shows inter-firm trade flows aggregated at the county-level. The size of each node (segment) is proportional to the county's share of purchases and sales relative to the aggregate volume of firm-to-firm trade between formal firms in Kenya. The colour of the edges (links between segments) indicate the direction of the trade flow. They take the colour of the supplying county (e.g. goods and services provided by firms in Nakuru to firms in Nairobi take the colour of the segment for Nakuru). The width of each edge (links between segments) is proportional to the share of the trade flow with respect to the aggregate volume of trade flows in the transaction-level VAT data.

Table 8: Number of firms in the firm-to-firm production network (2015-2019)

Year	Firms	Buyers only	Suppliers only	Both
(in % of total number of firms)				
2015	31,617	19	7	74
2016	36,816	20	5	75
2017	40,572	21	5	74
2018	44,868	23	4	73
2019	48,569	23	4	73
2020	49,885	23	4	73

This table shows the number of firms observed in the VAT returns and the role they take in the observed firm-to-firm production network. The underlying data are from VAT returns.

Table 9: Characterising firm-to-firm trade flows (2015-2019)

Year	Relationships	Transaction volume in million KES		
		Average	Standard deviation	Aggregate
2015	886,334	2.23	64.87	1,980,735
2016	1,132,913	2.10	60.98	2,379,873
2017	1,203,430	2.10	62.51	2,522,797
2018	1,330,453	1.92	56.42	2,560,011
2019	1,526,669	1.97	55.55	3,009,326
2020	1,527,037	2.02	69.41	3,081,701

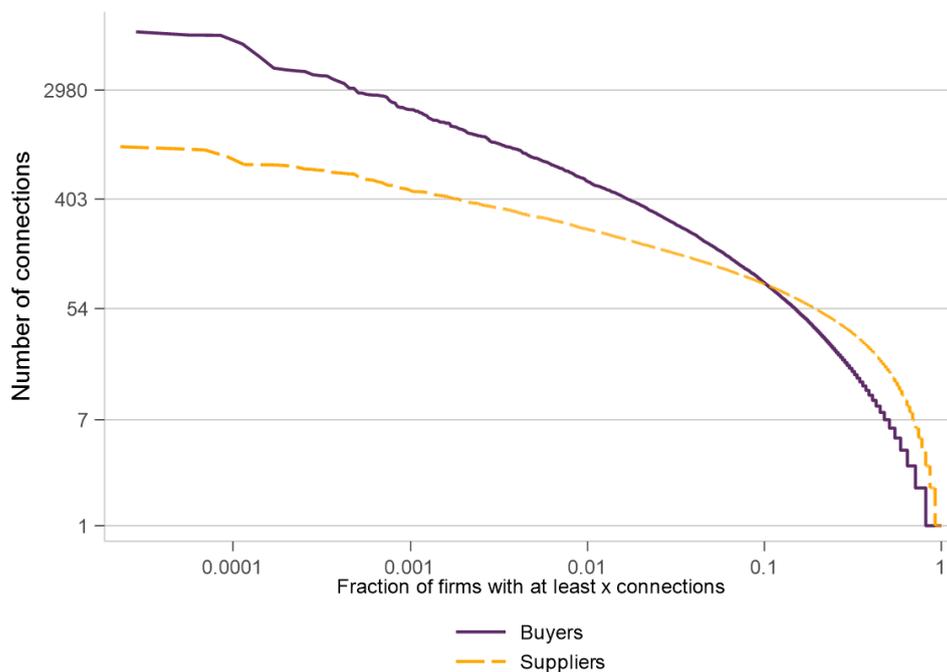
This table shows the average transaction volume, the standard deviation of it, and the aggregate bilateral transaction volume observed across all firm-to-firm relationships for 2015-2019. The underlying data are transaction-level data from VAT returns. The presentation follows [Huneus \(2018\)](#).

The number of observed firm-to-firm relationships and their aggregate transaction volume increased substantially between 2015 and 2019. At the same time, however, the average transaction value decreased from 2.25 million KES to 2.02 million KES in those years. The sizable standard deviation of relationship-level trade volumes hints at the substantial underlying heterogeneity on the intensive margin of inter-firm relationships.

### A.3 Stylized facts from the empirical literature on production networks

We now discuss fundamental characteristics of Kenya’s production network and compare relevant stylized facts to the network structure documented for other economies for which similar data are available, namely Belgium (Dhyne et al., 2015; Bernard, Dhyne, Magerman, Manova and Moxnes, 2019), Costa Rica (Alfaro-Urena et al., 2018), the Dominican Republic Cardoza et al. (2020), and Japan (Bernard and Moxnes, 2018).

Figure 22: In- and Out-degree CDFs



The figure shows the inverse cumulative distribution function (CDF) for the number of buyers and suppliers per firm. Note the log scales on both the y- and the x-axis. The figure replicates Figure 2 in Bernard, Moxnes and Saito (2019) and Alfaro-Urena et al. (2018), and Figure A1 in Cardoza et al. (2020).

### A.3.1 The distribution of firm-to-firm linkages is highly dispersed and skewed

The degree distribution, i.e. the distribution of up- and downstream firm-to-firm linkages, is highly skewed. In line with patterns observed in other countries (Bernard, Moxnes and Saito, 2019; Alfaro-Urena et al., 2018; Cardoza et al., 2020), only a small proportion of Kenyan firms is very well-connected. Figure 22 shows that 14% (17%) of all firms have more than 55 buyers (suppliers). The median firm in Kenya has 7 buyers and 17 suppliers, while firms in the 99th percentile have several hundred up- and downstream linkages (see Table 10 and Table 11). The skewness of the distribution varies across sectors, with the manufacturing sector and hospitality showing the least skewed distribution of upstream linkages. The distribution of supplier and buyer-linkages (in- and out-degrees) is very stable over the five-year period observed in the data (Tables 12 and 13).

### A.3.2 Negative degree-assortativity: Less well-connected firms are connected to well-connected firms

Next we show well-connected a firm's suppliers and buyers are and how it compares to the firm's own in- and outdegree. The left graph in Figure 23 plots the number of buyers against the average number of suppliers of the firm's buyers. Following the same logic we plot a firm's indegree against the average number of buyers of its suppliers. In both cases we find a strong negative relationship - a phenomenon described as negative degree assortativity. Less-well connected buyers and suppliers tend to be connected to highly connected firms. Highly connected firms in turn are connected to firms across the board, but as a result their buyers/suppliers are, on average, less well-connected. This empirical pattern has been found in both international traderelationship and domestic inter-firm relationships and can be explained by a network formation with fixed relationship-specific cost associated with link formation (Bernard and Moxnes, 2018).<sup>21</sup> The exact functional form of the negative relationship between the number of buyers (suppliers) and the average number of suppliers (buyers) of the latter seems to vary slightly across contexts. In Costa Rica, Alfaro-Urena et al. (2018) find an almost perfectly linear relationship. The structure found in Kenya closely resembles the one found by Cardoza et al. (2020) for the Dominican Republic. Specifically, firms in the 75th percentile of the indegree distribution tend to be particularly dependent on large suppliers with a large number of buyers.

<sup>21</sup>For an in-depth discussion see (Bernard and Moxnes, 2018).

Table 10: Number of suppliers per buyer by sector (2019)

Sector	Number of buyers	Number of suppliers per							
		Mean	Sd	firm	10th	25th	50th	75th	99th
Wholesale and Retail	10,310	3.6	52.2	6	1	4	88	230	
Construction	9,335	2.8	48.1	4	1	3	72	218	
Manufacturing	3,458	6.4	73.4	1	4	8	152	354	
Accommodation and Food Services	3,026	4.2	53.3	1	2	5	95	242	
Professional, Scientific, and Technical	2,980	2.5	33.2	5	1	3	61	156	
Administrative and Support Services	2,794	2.5	34.1	4	1	3	61	157	
Transportation and Storage	2,748	3.4	46.2	6	1	4	88	221	
Information and Communication	2,630	2.2	48.1	3	1	2	54	152	
Electricity and Gas	1,400	2.5	45.1	3	1	2	65	186	
Agriculture, Forestry, and Fishing	1,131	4.0	51.2	6	2	5	104	246	
Total	46,645	3.3	50.2	5	1	4	82	227	

This table shows the distribution of firm-level links to suppliers across sectors in 2019. We include the ten sectors with the highest shares of sales. The underlying data are transaction-level data from VAT returns. The presentation follows Alfaro-Urena et al. (2018).

Table 11: Number of buyers per supplier by sector

Sector	Number of suppliers	Number of buyers per firm							
		Mean	Sd	10th	25th	50th	75th	90th	99th
Wholesale and Retail	9,096	70	257	1	4	14	53	15	84
								6	4
Construction	5,169	12	52	1	1	2	7	20	17
									0
Manufacturing	3,163	85	211	2	6	22	76	21	92
								0	2
Professional, Scientific, and Technical	2,565	19	62	1	2	5	14	37	22
									8
Information and Communication	2,457	28	214	1	1	4	12	42	35
									5
Transportation and Storage	2,439	33	138	1	2	5	15	51	60
									3
Acommodation and Food Services	2,373	24	91	1	2	7	20	50	25
									4
Administrative and Support Services	2,302	25	112	1	2	5	15	50	32
									8
Electricity and Gas	1,270	84	290	1	3	13	60	22	91
								3	8
Agriculture, Forestry, and Fishing	789	19	45	1	2	5	15	44	21
									3
Total	37,390	41	177	1	2	6	24	83	55
									3

This table shows the distribution of firm-level links to buyers across sectors in 2019. We include the ten sectors with the highest shares of sales. The underlying data are transaction-level data from VAT returns. The presentation follows Alfaro-Urena et al. (2018).

Table 12: Number of suppliers per buyer (2015-2019)

Year	Number of buyers	Number of suppliers per firm							
		Mean	Sd	10th	25th	50th	75th	90th	99th
2015	29,429	30	45	1	4	15	38	74	207
2016	34,935	32	48	2	5	17	42	80	218
2017	38,561	31	47	2	5	16	39	77	215
2018	42,987	31	45	2	5	16	40	77	204
2019	46,645	33	50	2	5	16	41	82	227
2020	48,134	32	47	2	5	16	40	79	217

This table shows the distribution of firm-level links to suppliers over a period of five years from 2015 to 2019. The underlying data are transaction-level data from VAT returns. The presentation follows Alfaro-Urena et al. (2018).

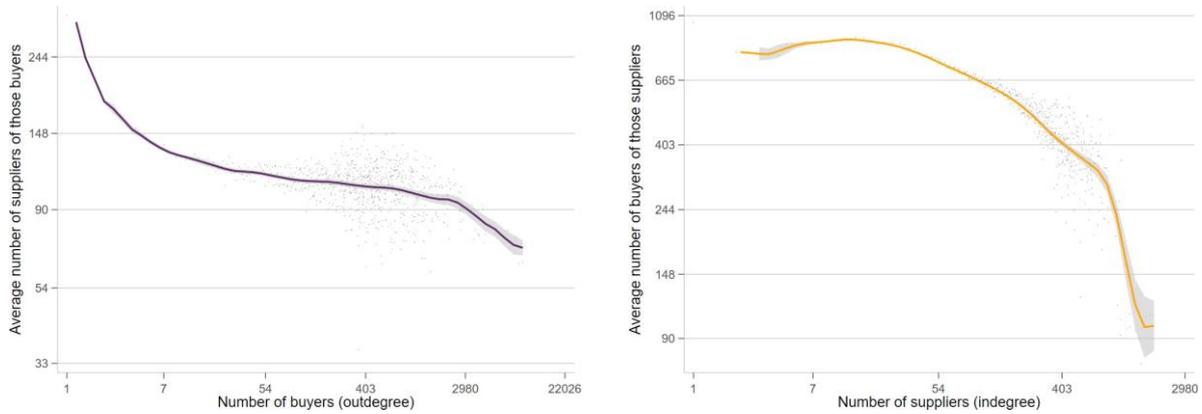
Table 13: Number of buyers per supplier (2015-2019)

Year	Number of suppliers	Number of buyers per firm							
		Mean	Sd	10th	25th	50th	75th	90th	99th
2015	25,648	35	147	1	2	6	22	72	441
2016	29,587	38	168	1	2	6	23	80	491
2017	32,062	38	166	1	2	6	22	78	487
2018	34,513	39	167	1	2	6	23	80	503
2019	37,390	41	177	1	2	6	24	83	553
2020	38,228	40	173	1	2	6	23	80	536

This table shows the distribution of firm-level links to buyers over a period of five years from 2015 to 2019. The underlying data are transaction-level data from VAT returns. The presentation follows Alfaro-Urena et al. (2018).

Figure 23: Degree Assortativity: How connected are a firm’s suppliers and buyers?

Average number of suppliers of the firms’ buyers      Average number of buyers of the firms’ suppliers



The graphs plot a local polynomial regression of the average number of suppliers (buyers) of a firm’s buyers (suppliers). The shaded area indicates the 95% confidence intervals. Following the literature (Alfaro-Urena et al., 2018), we compute the y axis by grouping firms with the same number of buyers (suppliers) to then compute the average number of suppliers (buyers) of those buyers (suppliers). The graph replicates Figure 5 and 6 in Alfaro-Urena et al. (2018), Figure A2 and A3 in Cardoza et al. (2020), and Figure 7 in Bernard, Moxnes and Saito (2019).

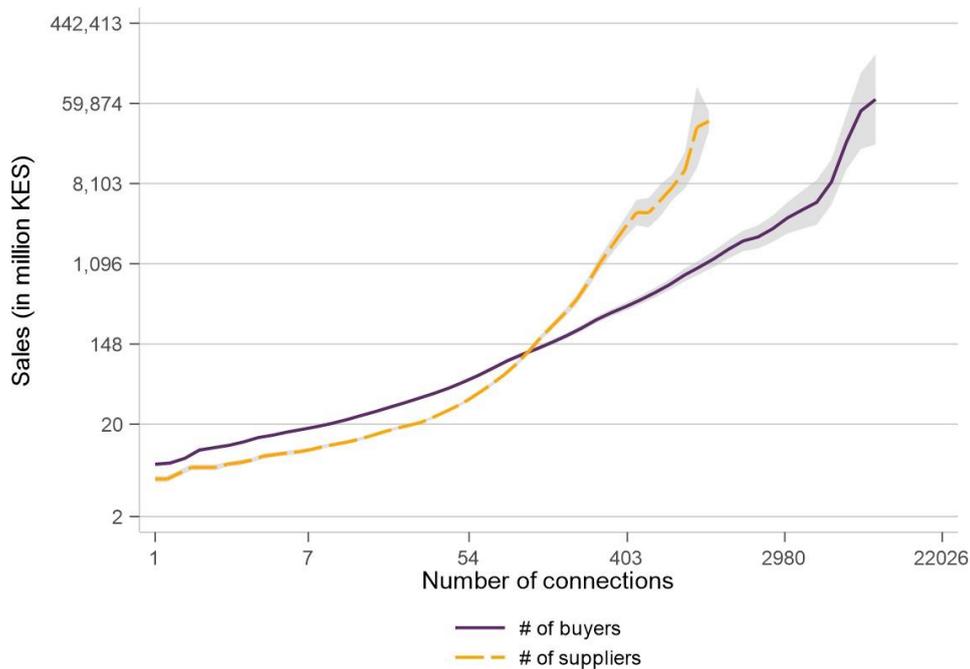
### A.3.3 Sales increase with the number of connections and the number of markets entered

Next we look at how sales patterns related to the number of inter-firm linkages and the geographic dispersion of trade partners. The positive association of sales and the number of connections - both upstream and downstream is a well-documented empirical pattern (Alfaro-Urena et al., 2018; Bernard, Moxnes and Saito, 2019; Cardoza et al., 2020) that replicates in for Kenya’s production network (see Figure 24). The flatter slope for the number of buyers relative to the number of suppliers highlights the importance of relationship formation on the downstream side for the expansion of firm-level sales. In addition, Figure 25 shows that firms with higher sales also have a larger geographic scope selling to and scouring from a larger number of subcounties (Kenya’s 2nd administrative layer). This pattern has also been documented in Japan (Bernard, Moxnes and Saito, 2019) and the Dominican Republic (Cardoza et al., 2020).

### A.3.4 Employment patterns mirror those of sales

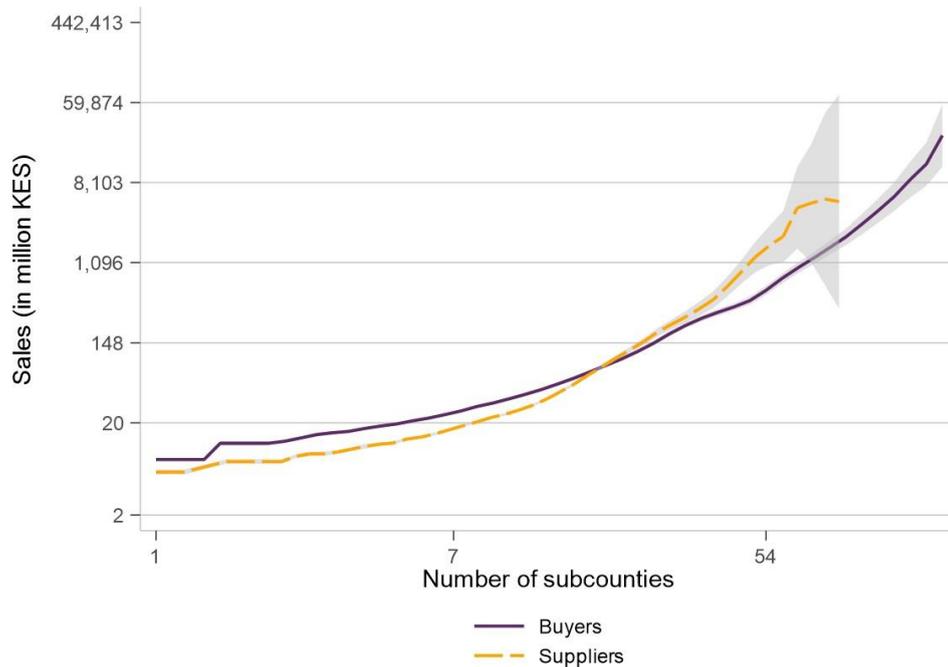
To get a better understanding of employment patterns of firms observed in the data, we compare their employment records to employment statistics published by the 2019 Population and Housing Census. As of 2019, the Kenya National Bureau of Statistics recorded that 22.8 million people of the overall population of 47.5 million are currently in the work force. 12% of the 22.8 million are actively seeking work. In the PAYE returns, we observe 2.15 million employees,

Figure 24: Sales and the number of firm-to-firm linkages



The figure shows the local polynomial regression of log sales on the number connections within the firm network. The purple (solid) line shows the number of buyers, the orange (dashed) line the number of suppliers. The patterns also replicate for an alternative specification using a third order polynomial of the x variable and county, year, and 2-digit sector fixed effects. The graph mirrors Figure 3 in Bernard, Moxnes and Saito (2019), Figure 3 in Alfaro-Urena et al. (2018), and Figure A8 in Cardoza et al. (2020)

Figure 25: Sales and the number supplier and buyer locations



The figure shows the local polynomial regression of log sales on the number subcounties a firm has linkages to. The purple (solid) line shows the number of sub-counties the firm sell to, the orange (dashed) line the number of sub-counties the firm buys from. The patterns also replicate for an alternative specification using a third order polynomial of the x variable and county, year, and 2-digit sector fixed effects. The graph mirrors Figure 4 in Bernard, Moxnes and Saito (2019) and Figure A9 in Cardoza et al. (2020) which includes, among others, government employees, employees in the financial sector, and NGO workers. Private sector firms observed in our sample only employ 0.92 million employees, or 4.6% of the overall population employed or self-employed in the census.<sup>22</sup> The number of employees observed in the firm-level data is highly dispersed across subcounties. As shown in Figure 26, this dispersion is mirrored in the dispersion of the working population in urban areas (5.8 million people in total) according to the 2019 census. In comparison, the overall working population, combining both rural and urban areas, varies relatively little across subcounties. Finally, Figure 27 looks at the subsample of firms for which we observe both employment records and the number of firm-to-firm relationships. The observed pattern closely mirrors the one for sales - firms with a large number of supplier and buyer connections employ more workers. Again both curves are convex and rises more steeply in the number of suppliers.

As more and more smaller firms entered the employment records over time, the average number of employees, as well as the dispersion of employees across firms fell between 2015-2019 (see

Table 15). Firms in the agricultural sector, manufacturing firms and administrative and support service firms, on average, employ the largest number of employees. In the latter sector the contrast between firms in the 10th percentile to the 90th percentile is particularly stark (see Table 14).

Table 14: Firm-level number of employees by sector (2019)

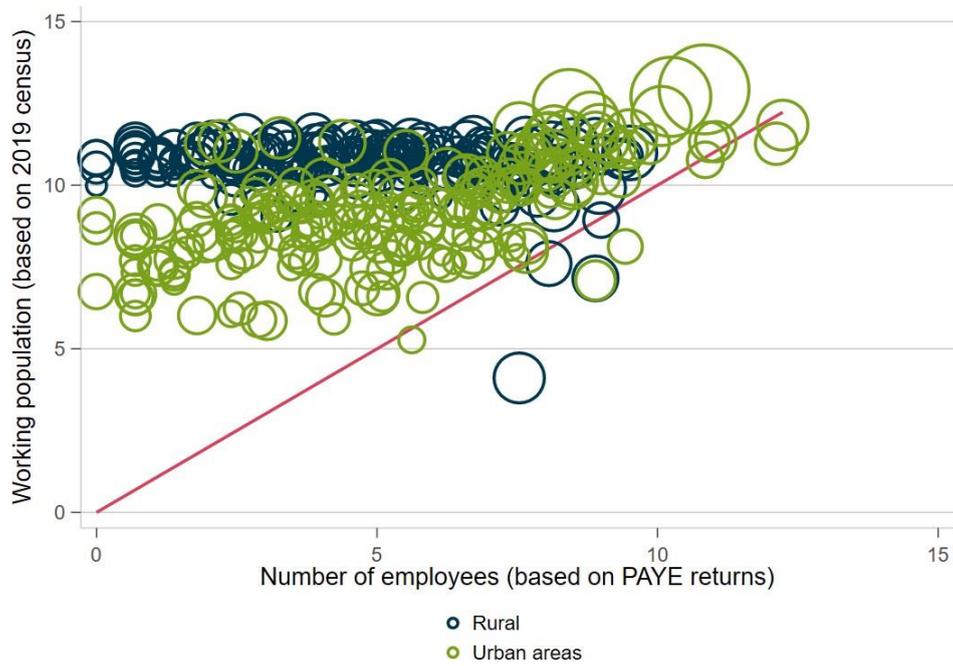
Sector	N	Mea n	Sd	10t h	25th	50t h	75th	90th	99th
Wholesale and Retail	6,200	15	83	1	2	4	11	25	166
Construction	2,864	25	199	1	2	4	10	29	402
Manufacturing	2,717	76	260	2	5	16	55	165	910
Acommodation and Food Services	2,199	35	100	2	5	12	30	72	402
Professional, Scientific, and Technical	2,054	22	98	1	3	6	13	31	423
Transportation and Storage	1,801	37	153	2	3	7	21	71	496
Administrative and Support Services	1,524	59	356	1	2	6	16	71	943
Information and Communication	1,488	25	165	1	2	5	13	39	312
Electricity and Gas	834	34	402	1	3	7	17	37	248
Agriculture, Forestry, and Fishing	786	119	495	2	4	13	64	351	1,342
Total	26,447	36	223	1	2	6	17	52	555

The table shows employment figures for the ten largest sectors in terms of aggregate sales.

The underlying data are PAYE tax returns. The presentation follows Alfaro-Urena et al. (2018).

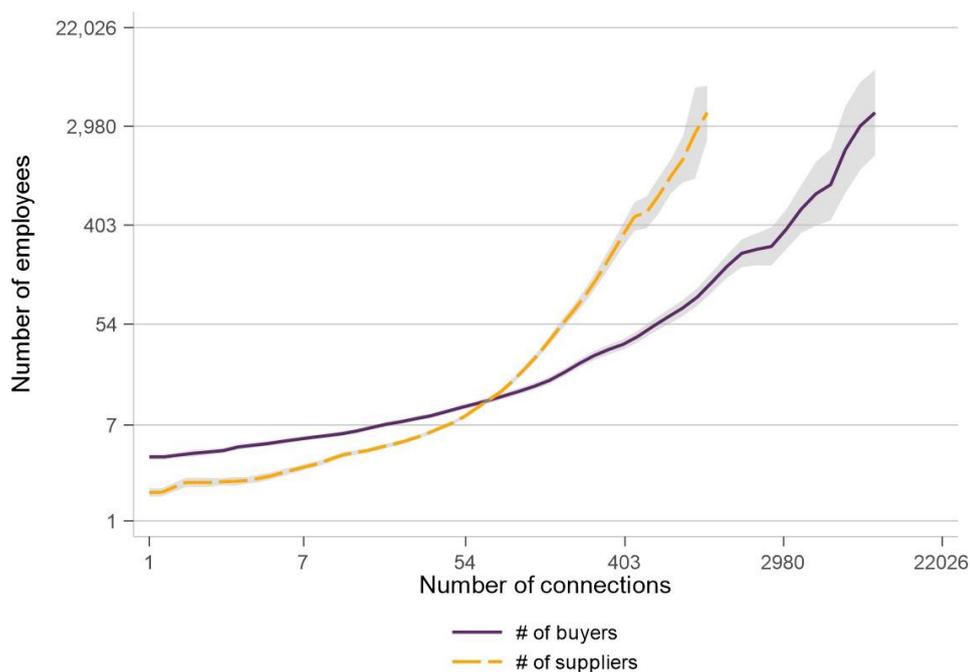
<sup>22</sup>This number improves to about 10.8% in the raw data, as we also observe parts of the government sector, most of the non-profit sector, as well as the financial sector in the tax returns.

Figure 26: The geographic dispersion of employment at the subcounty level



The figure compares the log number of employees per subcounty as captured in the tax records of the firms in our restricted sample to the working population (log) in each subcounty based on figures from the 2019 census by the Kenya National Bureau of Statistics. Not the log scale on both the x- and the y-axis. The size of each scatter is proportional to the population of the sub-county.

Figure 27: Number of employees and the number of firm-to-firm linkages



The figure shows the local polynomial regression of the log number of employees on the number connections within the firm network. The purple (solid) line shows the number of buyers, the orange (dashed) line the number of suppliers. The patterns also replicate for an alternative specification using a third order polynomial of the x variable and county, year and 2-digit sector fixed effects. The graph mirrors Figure A5 in Cardoza et al. (2020).

Table 15: Firm-level number of employees (2015-2019)

Year	N	Mean	Sd	10th	25th	50th	75th	90th	99th
2015	16,851	42	275	2	3	7	21	65	575
2016	19,804	41	296	1	3	7	20	60	584
2017	21,773	39	258	1	3	7	19	57	565
2018	24,319	37	246	1	3	6	17	54	548
2019	26,447	36	223	1	2	6	17	52	555
2020	27,773	31	198	1	2	5	14	43	476

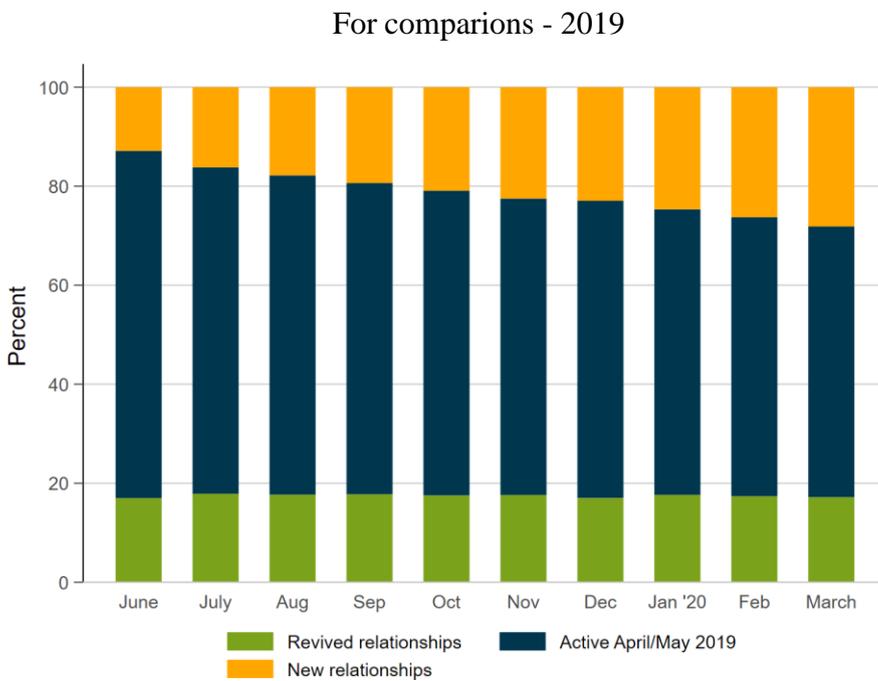
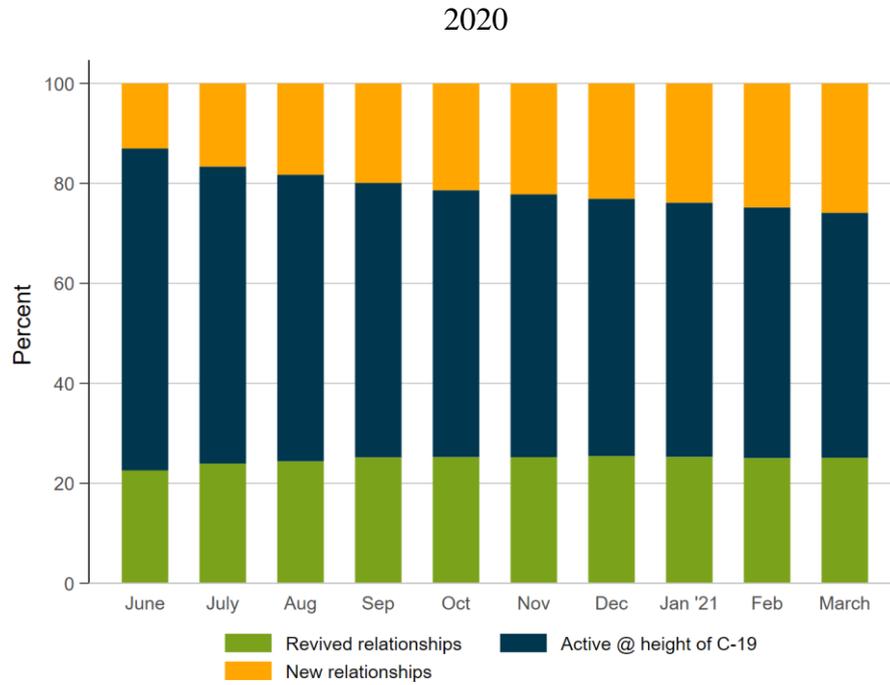
The table shows employment figures over a period of five years, from 2015-2019.

The underlying data are PAYE tax returns. The presentation follows Alfaro-Urena et al. (2018).

**Appendix B Production network descriptives - additional tables**

**Appendix C Complementary graphs on relationship dynamics**

Figure 28: The nature of relationships observed during the Covid-19 recovery period  
Unweighted version of figure 8



The above graphs distinguishes between three types of relationships: those active in April and May 2020 (/2019), revived relations that have been active at any point in the past, but not in

April/May, and finally relationships that have newly formed since April and May. The denominator is the total number of relationships observed in a given month.

## **Appendix D Data set description and cleaning**

We combine data on formal firms from five different administrative data sets gathered by the Kenya Revenue Authority.

### **D.1 Data description**

#### *Corporate Income Tax returns*

The first data set is based on annual corporate income tax returns filed by companies with an annual turnover of Kshs 5 million and above. In April 2020, the threshold was raised to Kshs 50 million. The corporate income tax return contains assets, liabilities, sales, purchases (broken down into local purchases and imports), specific expenses and the total staff cost.

#### *Pay-As-You-Earn returns*

Information on the number of employees were obtained from a second data set compiled from Pay-As-You-Earn (PAYE) tax returns, which are filed on a monthly basis by employers with at least one employee. The data set captures the number of employees and the total monthly payroll.

#### *Value-Added-Tax returns*

Third, we gather information on sales and purchases as well as business-to-business relationships from monthly Value-Added-Tax (VAT) returns. VAT applies to individuals and firms with a turnover of Kshs 5 million and above. Firms below the threshold, those offering financial and education services, and to a large extent, firms dealing in agricultural goods, pharmaceuticals as well as passenger goods, are exempt from VAT. They are not required to register for VAT and submit a monthly return. Kenya operates an input-output VAT system which requires registered VAT firms to declare both sales and purchases transactions on a monthly basis for the purpose of determining output and input VAT, respectively. In this system, sales made and declared by a registered VAT firm to another registered VAT firm is reported as purchases by the latter. Transactions between firms are reported at the transaction-level. Sales to and purchases from non-registered parties (e.g. exempt parties, final consumers) are recorded as an aggregate monthly figure.

Three different data sets are generated from the VAT returns. The first data set contains information on firm-level sales and purchases. Both sales and purchases are broken down into two categories: sales to registered VAT firms as well as non-registered firms, and purchases from registered VAT firms and non-registered firms. Sales to and purchases from non-registered parties are

further broken down into domestic sales/purchases and imports/exports. For transactions between registered parties the VAT returns further yield two transaction-level data sets, containing transactions reported by buyers (purchases) and suppliers (sales) respectively. The raw data contains over 195.5 million firm-to-firm transactions for the period January 2014 to June 2020. Each row of the transaction-level data contains an anonymised ID of the reporting party, an anonymised ID for the reporting party's trading partner, the invoice date, an unstructured product description, the transaction volume, the applied tax rate, as well as the amount of VAT levied on the transaction.

### *Customs records*

The fourth set of data comes from customs declarations. A declaration is required for each import and export transaction; and imports are classified as either transit or imports for domestic use. The transaction-level customs data contain taxpayer identification information, a harmonised standard code of product classification (HS10), country of origin (for imports) or destination country (for exports), quantities, cost, insurance and freight (CIF) values for imports and free on board (FOB) in the case of exports among other items.

### *Basic firm characteristics*

The fifth data set is a non-transaction-level data set and is compiled from taxpayer registration forms. This data set contains taxpayer identification information, the business type, the start date of business operations, the self-reported 4-digit sector of operation, and location of the firm-headquarter.

## **D.2 Data processing**

We now move on to discuss how each of the data sets has been processed and prepared for analysis.

### **D.2.1 Corporate income and Pay-As-You-Earn tax returns**

In both the annual corporate income tax returns and the monthly PAYE returns, we check for firm-level outliers in key variables such as the number of employees, salary payouts, sales, and local purchases and impute values based on historical records where necessary in a handful of cases which are obvious errors.

Between 10-15% of the firms filing CIT returns have a reporting cycle that does not align with the calendar year, e.g. a firm reports their annual tax return for the period April 2019 to March 2020. For variables that capture the value of stocks like assets and liabilities, we attribute them to the calendar year in which the last month of the return falls into. To compare the annual statistics of flow variables across firms, we harmonize the values of such variables to proxy reporting in line with the calendar year (the level at which we undertake most of our analysis). Examples for variables related to cash flows are sales, purchases, and employment expenses. To do so, we compute the length of the time periods covered by the return, which is typically 12 months. We then assume cash flows to be equally distributed across the months and split their values between the two years covered by the return. The share attributed to each year corresponds to the number of months observed in each year. E.g. if the return of a company is filled for July 2016 to June 2017, we attribute half of the sales to 2017 and the other half to 2016. If the return spans the months October 2016 to September 2017, we attribute only  $\frac{1}{4}$  of the sales to 2016 and the remainder to 2017.

### **D.2.2 Value-added-tax returns**

For the processing of the VAT returns we follow a number of robustness checks outlined in the literature (in particular Dhyne et al., 2015; Huneus, 2018; Alfaro-Urena et al., 2018), and add some additional tests to account for the specific structure of tax returns in Kenya.

#### *I. Basic plausibility checks*

Of the VAT data sets currently used in the academic literature, the structure of the transaction-level data closely resembles the one in Uganda (see Spray (2019); Almunia et al. (2019) plus a more detailed description of the data structure in Almunia et al. (2017)) and Belgium (see ? plus Dhyne et al. (2015) for a detailed description of the data). A key difference to the data used for research on production networks in Belgium, but also others like the VAT data from Chile Huneus (see 2018), is that Kenyan data are retrieved from a database that has already been screened and potential filing errors have been rectified by tax officials. The screening process together with the electronic tax reporting system employed by the Kenya Revenue Authority, which automatically implements many checks and computes the tax levy, explains the small number of obvious errors we find in the raw data in comparison to the literature (Dhyne et al., 2015).

We are able to show this using a series of plausibility checks largely following major steps of Dhyne et al. (2015)'s data cleaning protocol. Like Dhyne et al. (2015) we exploit the fact that we observe the VAT payment, the transaction volume as well as the tax rate applied. First, we check for sales and purchases with a transaction volume of zero (concerns only 0.14% of

all transactions) and impute the transaction value using the reported tax rate if we observe a related positive VAT payment. Second, we compare the value of the transaction (net of tax) to the amount of VAT due. In less than 100 of the cases we observe a transaction value that is equal to or smaller than the amount of VAT due. For these cases we cross-check the transaction records with those of the buyers, which reveal an error in the computation of the amount of VAT due. We thus assume the sales value to be correct and impute the VAT. As a third robustness check we recomputed the VAT tax levy to look for cases where applied VAT rate and the taxable value do not match. We found this to be the case for less than 2500 transactions, with the vast majority of cases occurring for transactions with a value of less than 1 KES. For transactions of a more sizable volume we used records of the trading partner to validate the transaction value and again traced the error back to the computation of the VAT rather than the reported transaction volume. Finally, we check for transactions with identical supplier and buyer IDs and only find 30 such cases across the two transaction-level data sets for sales and purchases.

## *II. Major cleaning steps*

As a next step we implement three major cleaning steps. First, we dismiss transactions where the buyer (supplier) is a mature firm (older than 12 month), but never recorded any positive purchases (sales) in their VAT summary sheet. Second, we examine all seven transactions that are larger than 10 billion KES. If they are implausible based on the other records of the two parties involved, we dismiss them entirely or, where possible, impute them based on other observed transactions between the two firms. Third, we dismiss or impute purchase transactions that are larger than the overall sales of the supplier that the buyer reports on. If no other transactions between the two parties are available, the transactions are dropped; if not, we use the highest value of the remaining transactions to impute the likely faulty transaction.

## *III. Constructing a monthly firm-to-firm relationship panel and a firm-level panel*

The goal is to construct both a firm and a firm-to-firm relationship panel, which are consistent with each other. We do so combining information contained in the transaction-level data and the monthly VAT summary sheets filed by each firm. Discrepancies between the raw data can arise because of differential reporting about one and the same transaction by the two firms involved. Common issues are (i) the two counterparts record the transaction at different points in time, (ii) only one party reports, (iii) the reported amount differs.

**Harmonising sales and purchases across time:** To address issue (i) we rely on the invoice date rather than the date of the tax return when the transaction was filed. However, this means that we need to adjust the total sales and purchases recorded in the summary sheets for transactions that were reported in a month that differs from the invoice date. Our first step therefore is to filter those transactions by comparing the date when the transaction was recorded to the invoice date. Next we aggregate the transactions for each month and subtract them from the month in which they were recorded. Finally, we add them to total sales and purchases in the month of the invoice date.

**Aggregating transactions to a monthly relationship panel:** Next we aggregate transactions to a monthly relationship-level data set where each row represents a buyer-supplier pair and summarises their aggregate monthly transaction volume. In cases where both parties report, we see deviations of less than 10,000 KES (less than 100 USD) in 75% of the cases.

Reporting discrepancies, where only one party reports, but not the other, occur because of two main reasons:

First, firms have the option to bundle their sales to non-registered parties in an unconstrained cell in the tax return spreadsheet. Although mainly intended for recording sales to final consumers and other non-tax-registered entities, firms can use this cell if they want to avoid spelling out every single sales transaction and simply bundle them there. For purchases, this option is only available if firms report VAT-exempt domestic purchases. The differential reporting requirements for sales and purchases result in a more comprehensive data set for purchase transactions as opposed to sales transactions. 59% of the monthly firm-to-firm transactions in the aggregated relationship-level data set are reported by buyers only.

Second, 18% of the observed monthly firm-to-firm transactions are recorded by suppliers only. The overwhelming majority of suppliers uses electronic recording machines. While the recordings in the machines are not directly forwarded to the tax return, we observe whether such a machine was used or not. We can thus attribute some of the one-sided reporting by suppliers to the fact that suppliers report transaction-level details for disproportionately many business entities or individuals who have a tax identification number, but actually do not file VAT themselves (likely suppliers ask for the tax PIN, but remain ignorant on the counterpart's VAT obligations). Another minor reason for one-sided reports by the suppliers are VAT exemptions on the buyer's side.

**Addressing discrepancies in reporting:** Our approach to address issue (ii) and (iii) - cases where only one party reports or transaction volumes differ - closely links to the source of the discrepancies. First, we use reports by the buyer as the default as buyers have less leeway to bundle purchases from registered parties in the category for transactions with non-registered parties. We only use the sales volume recorded by buyers if no information from the buyer side is available.<sup>23</sup> Another advantage of this approach is that it helps us to mitigate discrepancies because of credit notes, which are ubiquitous in the sales transactions.<sup>24</sup> It further helps us to address cases where the month of the recorded invoice date diverges and firms interact regularly. However, we currently do not have a way to address cases where a buyer-supplier pair interacts infrequently and the firms report about one and the same transaction in different months.

**Time and firm size inconsistencies:** We now implement two additional cleaning steps targeted at detecting outliers following Dhyne et al. (2015); Huneus (2018). First, we check for time inconsistencies of transactions. Here we log-standardise all transactions using the mean and the standard deviation of all transactions between a pair of firms. If the absolute value is larger than 2.58 (critical value for a 2-sided t-test), we tag the transaction as a time-inconsistent (Huneus, 2018). Among the time-inconsistent transactions we focus on those that are upward-inconsistent and where the mean ratio exceeds 100 (Dhyne et al., 2015). For this sub-set of transaction we now replace the inconsistent value with the highest alternative transaction between the two parties involved. Second, we check for exceptionally large transactions involving a small suppliers/buyers. We define a small buyer or supplier as an entity that has sales in the 25th percentile and a large transaction as a transaction that exceeds the 99th percentile (> 7.5 mio. KES). We tag these transactions as inconsistent and replace the tagged value with the value of the highest consistent transaction between the two parties. With the cleaned relationship-level at hand we turn back to monthly panel with the firm-level outcomes.

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<sup>23</sup>An exception are the first five months of 2018, when a lot of purchases invoices were dismissed during a large-scale audit. The audit did not affect invoices reported as sales by suppliers.

<sup>24</sup>The raw data further contains credit notes with a negative transaction value, which capture cancelled purchases/sales or rectify errors. 5.8% and 2.73% of all sales and purchase transactions are credit notes.

If issued in the same month as the invoice the credit notes cancel out as we aggregate transactions up to the monthly level.

**Computing firm-level sales and purchases within the firm-to-firm network:** For each firm we use the relationship-level data (or edge list) to infer firm-level aggregate monthly purchases and sales that are made within the firm-to-firm network. We then combine this information with the monthly summary sheet. Unsurprisingly we find that the sales and purchases recorded in the relationship-level data set often deviate from the original records on sales and purchases to/from other registered parties. In most cases sales in the firm-to-firm relationship data set exceed the sales to registered parties (sometimes even total sales) in the summary sheet. Remember that is because buyers are forced to break down their purchases by transactions, whereas suppliers have the option to declare them as sales to non-registered parties.

**Harmonising monthly sales and purchases:** We divide cases with discrepancies into three categories:

First, cases where the sales (purchases) in the network data, which takes the supplier's (buyer's) records into account, deviate from the sales (purchases) to (from) registered parties in the summary sheet. Here we assume the sales (purchases) to non-registered parties in the summary sheet are correct and simply add/subtract the amount by which the network sales (purchases) differ from the sales (purchases) to (from) registered parties in the summary sheet. Consequently, total sales (purchases) are corrected up- or downwards as well.

Second, cases where we observe zero sales (purchases) to (from) registered parties in the summary sheets, but positive sales in the network data. These are cases where firms do not report any sales transactions themselves (this rarely happens for purchases). Here we assume total sales in the summary sheet are correct and re-allocate the equivalent for the sales observed in the network data from the sales to non-registered to the sales to registered parties category in the summary sheet.

After those two steps we remain with more substantial discrepancies in 16% of the monthly firm-level sales and 12% for monthly firm-level purchases.<sup>25</sup>

We now proceed as follows: If the sales to non-register parties are zero, we assume that no bunching of sales in this category occurred and that the sales observed in the network data correspond to the total sales of that firm in a given month. We conclude that partial bunching occurred, if the sales to non-registered parties are positive, and the difference between the sales in the firm-to-firm panel and the sales to registered parties is smaller than the sales to registered parties. We then subtract the difference from the sales to non-registered parties and add it to the sales to registered parties. If the sales to non-registered parties in the same month are insufficient to account for the difference, we include the sales to non-registered parties in the previous month. Finally, we are left with a few unresolved cases. Here we simply assume that the overall sales (purchase) volume as per firm-to-firm panel is correct and add the difference to the total sales (purchases) captured in the summary sheet.

We now use this harmonised firm-level data set and merge it with other firm-level information such as firm age, sector, location, and where available, number of employees.

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<sup>25</sup>For the unfiltered firm panel (see more on the filtering process below) the share is 10% and 8% respectively. The lower figures can be explained by the substantial number of entities reporting zero sales/purchases in the unfiltered database.

### D.3 Customs data

To study linkages to international supply chains we further use transaction-level customs data. A common feature of transaction-level customs records are standardised product codes. The first six digits of the code are based on the 6 Digits Harmonized Commodity Description and Coding System (HS code).<sup>26</sup> In most cases two, sometimes even four, additional digits further refine the product description to a level relevant for the Kenya's tariff regime. The HS codes are frequently revised, typically every five years. The last two revisions took place in 2012 and 2017. As our data set includes transactions recorded before the 2017 revision was implemented, we harmonise all recorded product codes to align with the HS 2012 revision.<sup>27</sup>

The East African Community's (EAC) Single Customs Territory<sup>28</sup> rules allow for firms to choose in which country (either destination or origin) they want to report their trade transaction. The revenue authority recording the transaction then shares the information with their EAC counterpart. Such information is, however, not shared at the firm-level and can thus not be mapped into our data set. Nevertheless, a Kenyan firm reporting their export to Uganda with the Uganda Revenue Authority is still obliged to report their exports in their VAT records. We therefore rely on the VAT records to measure a firm's monthly imports and exports. For any analysis that requires product, origin/destination-level information, we have to exclude international transactions within the East African Community.

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<sup>26</sup><https://unstats.un.org/unsd/trade/kb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS>

<sup>27</sup>The relevant correspondence tables can be found here: <https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>.

<sup>28</sup>Member states are Burundi, Kenya, Rwanda, South Sudan (since 2016), Tanzania, and Uganda.

<sup>29</sup>The official classification is available here: [https://unstats.un.org/unsd/classifications/Econ/Download/In% 20Text/ISIC Rev 4 english structure.Txt](https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/ISIC_Rev_4_english_structure.Txt)

#### **D.4 Other data sets**

We further use taxpayer registration forms to identify the 4-digit sector of operation, as well as the county (1st admin layer), and subcounty (2nd admin layer) of operation. Firms typically report their sector of operation at the 4-digit level. Most of the sector classifications observed in the database align with the UN's International Standard Industrial Classification of All Economic Activities (ISIC).<sup>29</sup> We harmonise classifications in case of deviations. We use the firm address noted in the registration form, to extract the county and sub-county (1st and 2nd administrative level) of operation.

Typically firms report the address of the firm's headquarter or the location of their main administration. 66% of the firms in the filtered report an address in Nairobi County (in the unrestricted data set 60% do). As Kenya's capital hosts the highest density of office space across the country, we expect some bias towards Nairobi in the data. I.e. some of the firms might have their headquarters located in Nairobi, but hold most of their assets in another county.

We use information on the business type as well as the tax station where the return is filed to identify public entities, NGOs, international organisations, trusts, membership organisations, and clubs. Government agencies, but also any other entity whose files are handled by the public sector tax unit are classified as a public entity. We then classify the remaining companies and partnerships as private firms. This includes special economic zones, export processing zones, and foreign firms.

**Cases with multiple subsidiaries or PINs:** Firms have the option to register multiple subsidiaries under the same tax PIN. For a small number of firms we therefore observe multiple sectors of operation and multiple firm locations. However, these firms make up less than 1% of all registered entities that file either VAT or income tax. For the case of the roughly 6,000 firms that report multiple sectors of operation, we unfortunately do not observe, which of the sectors is the most important one in terms of overall sales. Meanwhile, we cannot rule out the possibility that large corporations use different tax PINs for their affiliates. In contrast to other papers in the literature working with similar data (see for example Alfaro-Urena et al., 2018; Tintelnot et al., 2018), we are unfortunately unable to determine affiliations among firms from the data sets available to us.

#### **D.5 Firm definition**

For our main analysis we filter the data set for firms that identify themselves as a private company or partnership in their tax-registration form. In doing so we exclude all government-owned firms, government agencies, international organisations, NGOs, trusts and clubs. We further exclude firms

operating in the financial sector (most of which are banks and insurance companies) (Alfaro-Urena et al., 2018). Finally, we limit our sample to firms with annual sales of at least 5 mio. KES and non-zero purchases in at least one year between 2015 and 2020. In 2019, we observe information on 236,729 tax-paying entities in the VAT data. Our sample restriction reduces the number to 47,471 firms. The sales of those firms, however, accounts for 90% of the total sales observed in 2019. Overall, the filtered data set for the period 2015 up until the first half of 2020 contains 50,000 firms, which form 3,501,875 supplier-buyer-relationships among each other.

## What Causes Spread of COVID19 across-Countries, Regional Groupings and across Indian States and Districts: An Econometric and Deep Learning Investigations<sup>1</sup>

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### Abstract

The COVID 19 pandemic has engulfed the whole world and affected the lives and livelihood of the world economy but also imprinted the long-lasting health, economic and security impact on the economies of the world. Our study would try to explain the factors affecting spread of COVID19 across countries, regional grouping, Indian states, districts and cities. We will use cross sectional and time series daily data of COVID19 cases and growth rates and fatality rates to determine the causes of COVID19 spread across countries, regional groupings and Indian states and districts. The study would help us in determining the magnitude and directions of interventions like lockdown measures to capital health expenditures, share of urban population, immunization, ethnic population, mortality rates, democracy index, governance and rule of law, health infrastructure, demographic dividend, inequality index, media reach, poverty, undernourishment, temperatures and humidity, pollution, vulnerable population, among others in determining causes of covid spread and ensuring lives and livelihood across regions. Various econometric (Spatial Analysis, Count Data, FGLS, Panel data procedures, OLS with corrected standard errors) and mathematical models are applied along with non-parametric approach to data analysis. We will also use deep learning models (Artificial Neural Network model) that would help us to analyze dynamic nature of the data. One aspect of the study is also to work on SEIR model (susceptible (S), infected (I), and resistant (R)). Further, we would suggest various areas of collaboration to address present and post COVID19 issues related to pandemic spread in future.

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<sup>1</sup> With assistance from Manish Chauhan, Abhay Raghuvanshi shradha bhatia, Deepthi, Aman Mishra, Naman, Shreyash and Pragati. We thank the discussant and the chair of the session on Country Experiences at the recent SIDC Conference, Dhaka, Bangladesh for the helpful comments in shaping up the paper

The study would model Indian states that have led the corona war and suggest new models of integrated and inclusive development, education and health care systems to take care of

economic, security and health crises confronting economies all over. The paper addresses how to tackle health, security and economic crises confronting most of covid impacted economies after discussing socio-economic-politico-health and climatic factors impacting the spread of covid 19 across the world and in India. At the end policies leading to global cooperation are enumerated along with some lessons learnt from other countries who have managed to have mitigated such crises.

### **I. Introduction, Data and Motivation of the Study**

Over 100 million COVID19 cases across more than 200 covid affected countries with more than 21lakhs deaths and 56 Million recoveries. India has seen over 10.72 million covid cases, 10.29 million recoveries but with more than one lakh fifty four thousand deaths since January 2020 . We (states of India) have crossed the Chinese number of covid infections of 90000 infections and are second in the tally among 215 covid affected economies.

US around 4 percent, Brazil nearly 3.3 percent, Uk around 3 percent, world nearly one percent of population getting impacted by the covid 19 virus. Compare it with Spanish flu of 1918 20. Around 27 percent of world population got impacted by the flu. Covid 19 has played havoc with the health care systems despite the above numbers.. Don't we need a newworld order where in global governance and global health management should define the same. About concentration of virus around 9 percent of covid cases in india,US has 25 percent, while US, India, and Brazil have around 45 percent of world covid cases. . In india ,around 77 percent of cases concentrated in 20 districts out of 733 districts of India covering 12 states out of 33 states. California, Texas and Florida impacted more in the US out of 50 states.

Death rate in India is though low at less than 1.44 against global average of more than 3.05 Death rates. Death rates are deaths as a ratio of total infections. India now has a recovery rate of more than 96 percent as opposed to world average of 56 percent recovery rate. Peak may be over but worrying are daily additions of nearly fifteen thousand new cases and the high growth rates of covid cases confined to few states and districts in India. At this rate, we would have in India around 11 million cases by end of March,2021. This is happening when India is increasingly opening the economy. Could there have been a better way which could ensure lives and livelihood for all.

The mutating virus is known for its speed, scale, scope, seasonal and waves of re- emergence, spread and gross uncertainty regarding its termination. Spanish flu,1918-1920,though affected 500 million people out of 1800 million world population across the world with 50 million deaths India, among many are reeling under the health, security and economic crises due to

pandemic outbreak and the grand lockdown measures taken by countries across the world. Countries are faced with the decision of how much to open up their economies keeping the covid 19 spread in mind.

What causes its spread across countries and in Indian states and districts keeping the grand lockdown strategy in mind? This is the motivation behind this study keeping in mind that rich countries with better health capacities and lower population densities were impacted more at least initially

We enumerate the data below and use OLS with robust standard errors, count data regression, spatial regression, FGLS, Panel regression, nonparametric plots and Artificial Neural Network for our analysis+

These are the motivation behind this study keeping in mind that rich countries with better health capacities and lower population densities were impacted more at least initially. We enumerate the data below and use OLS with robust standard errors, count data regression, spatial regression, FGLS, Panel regression, nonparametric plots and Artificial Neural Network for our analysis. We have used cross sectional data at various point of times of all 215 countries of the world<sup>2</sup>, various regional groupings like the 27 EU countries, 54 African nations, 19 Latin American countries and 34 East Asian and Pacific nations, all Indian states and districts<sup>3</sup>. Time series using daily data from January till date and panel study for all Indian states have been also performed to understand the economics of the lockdowns. The data sets are all lying with the author and will be reproduced on demand.

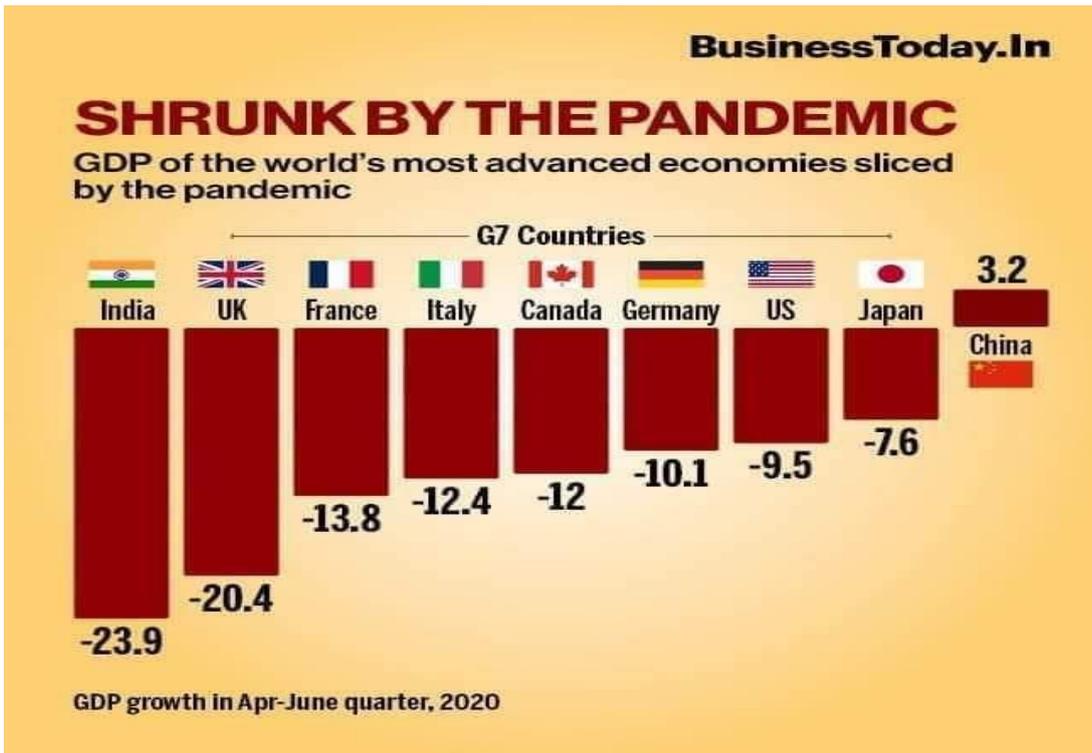
According to the IMF(2020), Latin American and Caribbean are impacted the most in terms of decline in GDP per capita followed by middle east and the north Africans, then Europeans and North Americans, followed by South Asians and the least impact is nations of the East Asian countries. We need to know the factors explaining such trends. The paper addresses this issue. In South Asia, India has seen a decline of negative 9 percent fall in GDP this year due to the grand lockdown and the host of vulnerabilities existing before the strike of the pandemic in early 2020. These relate to the domestic factors like the weak balance sheet of NBFCs, realty sector and infrastructure sector, among others while the trade war and recession in the rest of the world reduced growth rates leading to fall in the imports and exports of India. The diagram I below is evident of the weak performance of the Indian economy.

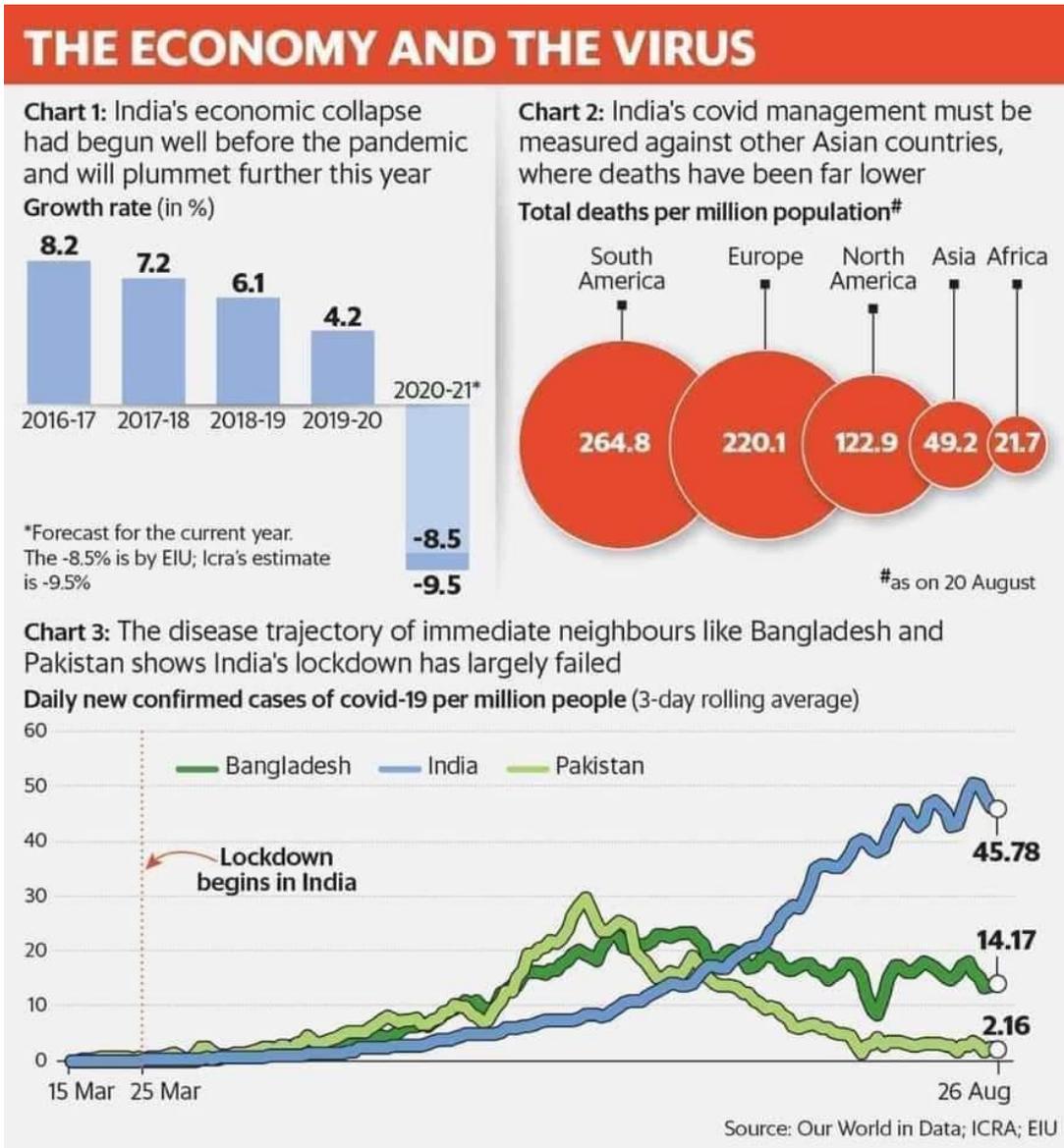
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<sup>2</sup> Country names of all 215 covid affected economies are given at the end of the paper

<sup>3</sup> List of Indian states are mentioned at the end of the paper

Diagram I: Shrunk by the Pandemic and the economy and the virus





The paper is divided into ten sections. Section I is Introduction, Data and Motivation of the Study, section II is Objectives of the Study, III is on Literature Review, Section IV Is on Epidemiological Modeling and Forecasting Using Basic SIR Modeling and further motivation of our study, section V on Factors Affecting Spread of COVID 19 across countries including lockdown Stringency Index and Some Non Parametric Plots, Section VI is on What explains Covid Spread across 215 Covid Affected Economies using Count Data Regressions in September 2020, Section VII is on What factors explain Covid 19 spread across 32 Indian States and districts in May 2020 and October 2020, Section VIII is on Covid 19, Trade, International Collaboration and Global Politics, Section IX is on Lessons Learnt from Countries which have managed low covid cases and growth rates and the last section gives Conclusions and Policy Recommendations

## II. Objectives of the Study

Identifying the factors and magnitude of such factors impacting all covid cases, active cases, covid recoveries, covid fatalities and GDP per capita across 215 countries of the world, 35 EastAsia and Pacific Region, 54 African nations, EU27 and 19 Latin American Regions and in Indian states and districts keeping economics of lockdowns in mind

Why despite reproduction rate falling across countries the covid infections and fatalities have gone up. This study identifies socio economic politico, health, environmental and policy lockdown factors.

Why were developed nations impacted more economically and in terms of health crises initially?

How much should we relax the lockdown measures keeping the spread minimum? Did lockdown impact more of GDPs across countries or covid cases, recoveries and fatalities?

What lessons to be learnt from other countries which managed lower COVID19 cases?

And identifying areas of collaborations during and post COVID19 pandemic and elucidating alternative development models, namely of social entrepreneurship, comparative advantage, flying geese, rural and agrarian transformation with balance between ecology, skill training, environment and growth, connectivity and self sufficiency to mitigate health, security and economic crises.

## III. Literature Review

Ever since the COVID -19 outbreaks, various studies have been available exploring epidemiological trends as well as the dynamic spheres of life and economy that gets affected as a spill over. Taking the case of India, in the initial periods of the disease, CDDEP and ICMR had been on the forefront with engaging models of predicted peaks with and without social distancing and mitigating measures. According to the model released by CDDEP on March 24, India would need 1 million ventilators when the infection peaks, during which an estimated 100 million could be affected (baseline- without interventions). The ICMR model of March 23<sup>rd</sup> explores different scenarios based on different values of  $R_0$  and suggests that the peak can occur at the rate of 100-1000 cases for every 10,000 people taking the range of the most

optimistic to pessimistic scenario and suggests nearly 1%-10% of the population can be infected at the peak depending on the severity and intervention measures in place. The University of Michigan has relied on the SEIR model to come up with a prediction of 16 cases per 10,000 people in India with the regulations in place. The Indiasim model generated by the John Hopkins institute on March 24<sup>th</sup> has predicted that the number of cases in India could range from 1- 2.5 crore by August 2020 depending on the assumption about the spread of the disease. The University of Cambridge has used a SIR model to capture the intricacies of intergenerational contact; social and physical that is inherent in an Indian society.

Until medical interventions become widely available to stem this tide, non-medical interventions in the form of social distancing and lockdown measures have been availed to various degrees in different countries over the past few months. Six months into the pandemic, the state of restoration of normalcy remains uneven in various regions often influenced by the extent of efficiency of the isolation measures undertaken.

Although the fatality rate is considered low compared to other lethal viruses like Ebola, the speed of transmission will result in a large pool of people falling sick at the same time leading to congestion in health infrastructure. This can indirectly induce more fatality rates. On the other hand continuing lockdown measures by attaching a high value of statistical life, without testing procedures to allow the recovered to resume revenue generating activities will result in a permanent decrease in the per-capita GDP. (Alvarez et.al. 2020, NBER working paper).

Institutional and demographic dynamics lend evidence to the fact that regions with a “greater share of senior citizens, population employed in unstable occupation, a greater degree of democracy as well as distance away from the equator” ( Jinjarak et al. 2020, NBER working paper) exhibit larger sensitivity to the effects of lockdown measures. An uncertain implication of “longer duration to peak” is that the result may not necessarily be the result of slow transmission and would well certainly be due to poorly managed testing and diagnosis

Covid19 India National Supermodel Committee(2020) study is about progression of the Covid 19 pandemic in India: Prognosis and Lockdown Impacts using Extended SEIR model by considering different scenarios and claims that lockdowns in India have worked and reverse migration did not significantly impacted the covid infections in India. Also, the peak has occurred in September, 2020 in India. The model also predicted symptomatic and non symptomatic cases in India. Importantly, the scenarios were of no lockdown or delayed or early lockdown but no partial lockdowns. The projections can vary from one to ten percent of the

population. The study claims that 30 percent of population have antigens. Younger population and care of elderly have worked in India. Herd immunity is at lower levels using the extended SEIR model.

IMF study (2020) also claims that lockdowns have worked across countries but have led to economic crises in countries.

Beyer et al(2020)a state The COVID-19 pandemic has disrupted economic activity in India. Adjusting policies to contain transmission while mitigating the economic impact requires an assessment of the economic situation in near realtime and at high spatial granularity. This paper shows that daily electricity consumption and monthly nighttime light intensity can proxy for economic activity in India. Energy consumption is compared with the predictions of a consumption model that explains 90 percent of the variation in normal times. Energy consumption declined strongly after a national lockdown was implemented on March 25, 2020 and remained a quarter below normal levels throughout April. It recovered subsequently, but electricity consumption remained lower even in September. Not all states and union territories have been affected equally. While electricity consumption halved in some, it declined very little in others. Part of the heterogeneity is explained by the prevalence of COVID-19 infections, the share of manufacturing, and return migration. During the national lockdown, higher COVID-19 infection rates at the district level were associated with larger declines in nighttime light intensity. Without effectively reducing the risk of a COVID19 infection, voluntary reductions of mobility will hence prevent a return to full economic potential even when restrictions are relaxed. Together, daily electricity consumption and nighttime light intensity allow monitoring economic activity in near real-time and high spatial granularity.

Beyer et al ,2020b.This paper estimates the impact of a differential relaxation of COVID-19 containment policies on aggregate economic activity in India. Following a uniform national lockdown, the Government of India classified all districts into three zones with varying containment measures in May 2020. Using a difference-in-differences approach, the paper estimates the impact of these restrictions on nighttime light intensity, a standard high-frequency proxy for economic activity. To conduct this analysis, pandemic-era, district-level data from a range of novel sources are combined —monthly nighttime lights from global satellites; Facebook’s mobility data from individual smartphone locations; and high-frequency, household- level survey data on income and consumption, supplemented with data from the Indian Census and the Reserve Bank of India. The analysis finds that nighttime light intensity in May was 12.4 percent lower for districts with the most severe restrictions and 1.7 percent

lower for districts with intermediate restrictions, compared with districts with the least restrictions. The differences were largest in May, when the different policies were in place, and slowly tapered in June and July. Restricted mobility and lower household income are plausible channels for these results. Stricter containment measures had larger impacts in districts with greater population density of older residents, as well as more services employment and bank credit.

#### IV. EPIDEMIOLOGICAL MODELLING AND FORECASTING USING BASIC SIR MODELLING AND FURTHER MOTIVATION OF OUR STUDY

We have used the basic Susceptible, Infected and Recovered non linear differential equations model for projections of covid cases in India till August and September, 2020 with various intensities of social distancing. Mathur and Depth(2020) shows in the appendix of their paper show the method to solve the non linear simultaneous differential SIR model. Table I below shows that without any social distancing by August, 2020 India could have seen around 13 million cases (column third), while with low social distancing ( $\rho=0.9$ ) one would have witnessed 12.5 million cases (column fourth) and around 5.2 million cases (fifth column) with high level of social distancing ( $\rho=0.4$ ).

**Table I: SIR Model of India with Projections**

Dates	Infected Prediction	Cumulative Infected(CI) prediction	CI when $\rho=0.9$	CI when $\rho=0.4$
7/6/20	11,847	2,81,271	2,85,287	1,12,572
14/6/20	16,349	4,15,178	3,73,974	1,66,211
21/6/20	22,542	6,12,835	5,52,167	2,45,407
28/6/20	31,080	9,04,591	8,15,264	3,62,339
7/7/20	46,971	14,92,376	13,45,481	5,97,991
14/7/20	64,763	22,02,826	19,86,578	8,82,923
21/7/20	89,294	32,51,593	29,33,146	13,03,620
28/7/20	1,23,116	47,99,600	43,30,736	19,24,772
7/8/20	1,94,802	83,71,228	75,56,419	33,58,404
15/8/20	2,81,200	1,31,00,000	1,25,00,000	52,42,483

Source: Authors calculations

An important parameter that must be estimated in the context of epidemiology model like the SIR is the basic reproduction rate ( $R_0$ ). By definition reproduction rate refers to the average number of new infection cases that can be created by an infected individual or in other words the

potential of a pathogen to create an epidemic. Taking account of existing immunity and interventions to prevent disease transmission while calculating  $R_0$  will yield the effective reproductive rate ( $R$ ) that depends on the quality of the susceptible compartment in terms of previous exposure, general health levels, nutrient intake, etc. Since the lockdown measures have been in place during the course of the recorded cases, the effective reproduction rate is estimated to come close to the basic reproduction rate calculated from existing data. The ratio of estimated  $\beta$  to estimated  $\alpha$  is approximately equivalent to the basic reproduction rate. The effective reproduction rate can be calculated by multiplying  $R_0$  with  $s$ .

$$R = R_0 * s$$

$$R_0 \approx \frac{\beta}{\alpha} \approx \frac{\ln\left(\frac{s(0)}{s(\infty)}\right)}{1 - s(\infty)}$$

From the model estimated in this paper the  $R_0 \cong R \cong 1.12$  in August, 2020

Herd immunity can be calculated as follows  $(HI) = (1 - [1/R_0]) * 100 \approx 10.96\%$

Hence the model suggests that when nearly 150,919,200 of India's population are infected with COVID -19 the country will attain herd immunity.

Although we see that the reproduction rate has come down from a high such as **1.83** on April 6<sup>th</sup>, the threshold of 1 has not yet been crossed where we can expect to see herd immunity kicking in and bringing the S compartment gradually downhill. At the end of stage 1 the  $R_0$  stood at **1.69**, **1.44** by mid-May, and at **1.21** by the end of May. Hence, it has been empirically proved that the declining reproduction rate of the recorded cases may be the reason for the declining projections of cumulative infected at each stage.

Further, the reproduction rate in India and in other countries of the world,  $R_0$  has come down from 3 to 1.04 on September 14<sup>th</sup>, 2020 for India and objective is to bring it below 1 for flattening the curve, however, cases were rising in India in this period. Average R from March, 2020 is still 2.74. The  $R_0$  value for the US, Spain and Italy as on 14<sup>th</sup> September are 2.18, less than one and 1.97 respectively and yet we have seen cases rising in the developed nations due to second or third waves of the covid spread.

The governments can take comfort in the declining value of R0 by claiming lack of testing done across the population. Hence, **the further motivation of our study is that we feel that their arehost of socio-economic politico-environmental reasons for the spread. Lockdown stringencyand lack of testing may be one of them.** Doubling rates has increased to 70.4 days as on October 14th in India. Hospital Beds and Health Workers requirements can be worked out given the projections of Infections, Cured and fatalities. In this study, we have used various regression and ANN methodological tools for our work and projections.

**We have analyzed Indian Covid cases by studying the Impact of stringency and RO on infections in India using OLS AND FGLS with daily time series data**

We use daily data since March 2020 through September 2020 to perform time series regression of covid cases on oxford university stringency index(var 15) after controlling for RO value(var 12). OLS and FGLS have been used to get the regression estimates performed in SPSS19 after controlling for autocorrelation. Lockdowns have increased cases in India. The regression coefficient for RO(variable 12) is negative but insignificant but the coefficient attached to Oxford University time series stringency index for India is positive and significant. . It iselaborated below The value of Ro going down and yet cases going up again points to various other socio economic and politico factors impacting the covid spread in India.

**Coefficients**

	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta	Std. Error		
(Constant)	-56.246	19.300			-2.914	.004
VAR00012	-8.769	7.847	-.154	.138	-1.117	.265
VAR00015	6.262	2.022	.426	.138	3.097	.002

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29304.145	47912.967		.612	.541
	VAR00015	2825.041	641.176	.280	4.406	.000

a. Dependent Variable: VAR00008

## **V. FACTORS AFFECTING SPREAD OF COVID 19 ACROSS COUNTRIES INCLUDING LOCKDOWN STRINGENCY INDEX AND SOME NON PARAMETRIC PLOTS**

We have been working for past seven months on what causes spread of covid 19 across more than 200 countries of the world. The below given are some of the factors we have been able to identify to examine their impact on covid spread and GDP across countries. Covid cases, recoveries, deaths, are function of socio economic, politico, health, environmental, geography, policy factors, among others. These are tests done, lockdown stringency index given by Oxford University and debt to GDP ratio, GDP per capita, GDP growth, population density, democracy index, regulations, governance, health expenditures, number of doctors and nurses, smoking population, young population, population density, population above 65, persons with comorbidities, Buddhist and communist governments, Mobility index, covid growth, Mountainous population and geography, trade in covid products, Social cohesion index and proportion of ethnic population, Mortality rate, rule of law, regulatory quality, pharmacy business in each country, tuberculosis, malaria and BCG immunization, poverty, inequality, undernourishment, urban population share and capital health expenditures, family size, past administrative experience in dealing with epidemics, floods and cyclones, educational expenditures, migration percentage, pollution, temperatures and humidity, ICT reach and internet bandwidth. We analyze the changing data each day using mathematical, econometric and deep learning methodologies including non parametric plots. We have extended this analysis to Indian states and districts.

Oxford University stringency index is calculated on the basis of the following

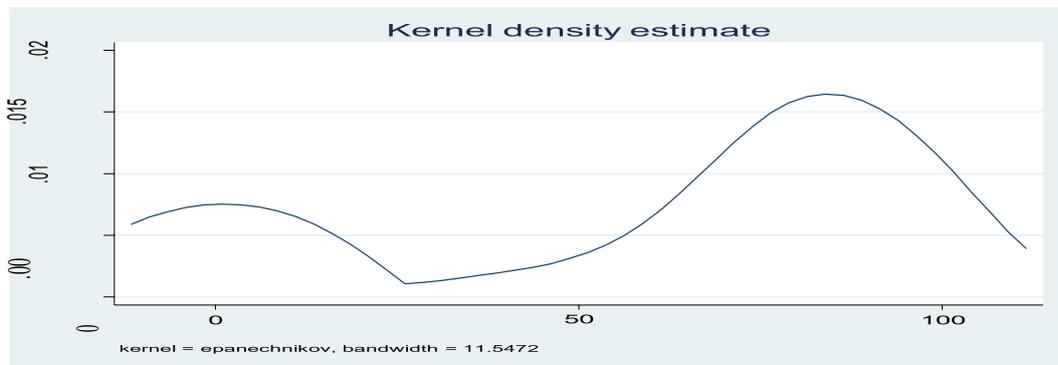
1. School closing
2. Workplace closing
3. Cancel public events
4. Close public transport
5. Public information campaigns
6. Restrictions on internal movement
7. International travel control
8. Fiscal measures
9. Monetary measures
10. Emergency investment in health care
11. Investment in vaccines

12. Testing framework

13. Contact tracing

University of Oxford publishes time series data on 13 measures of stringency index for 160 countries. We have witnessed Bimodal distribution of stringency index meaning that there are two sets of countries, one with high stringency index like some of the African and Latin American nations and some of the south asian nations and another ones with low stringency like Oceania and some East Asian economies. See the diagram II below

**Diagram II: Non Parametric PDF (Probability Density Function) of the Oxford University Stringency index across all covid affected economies depicting bimodal distribution**

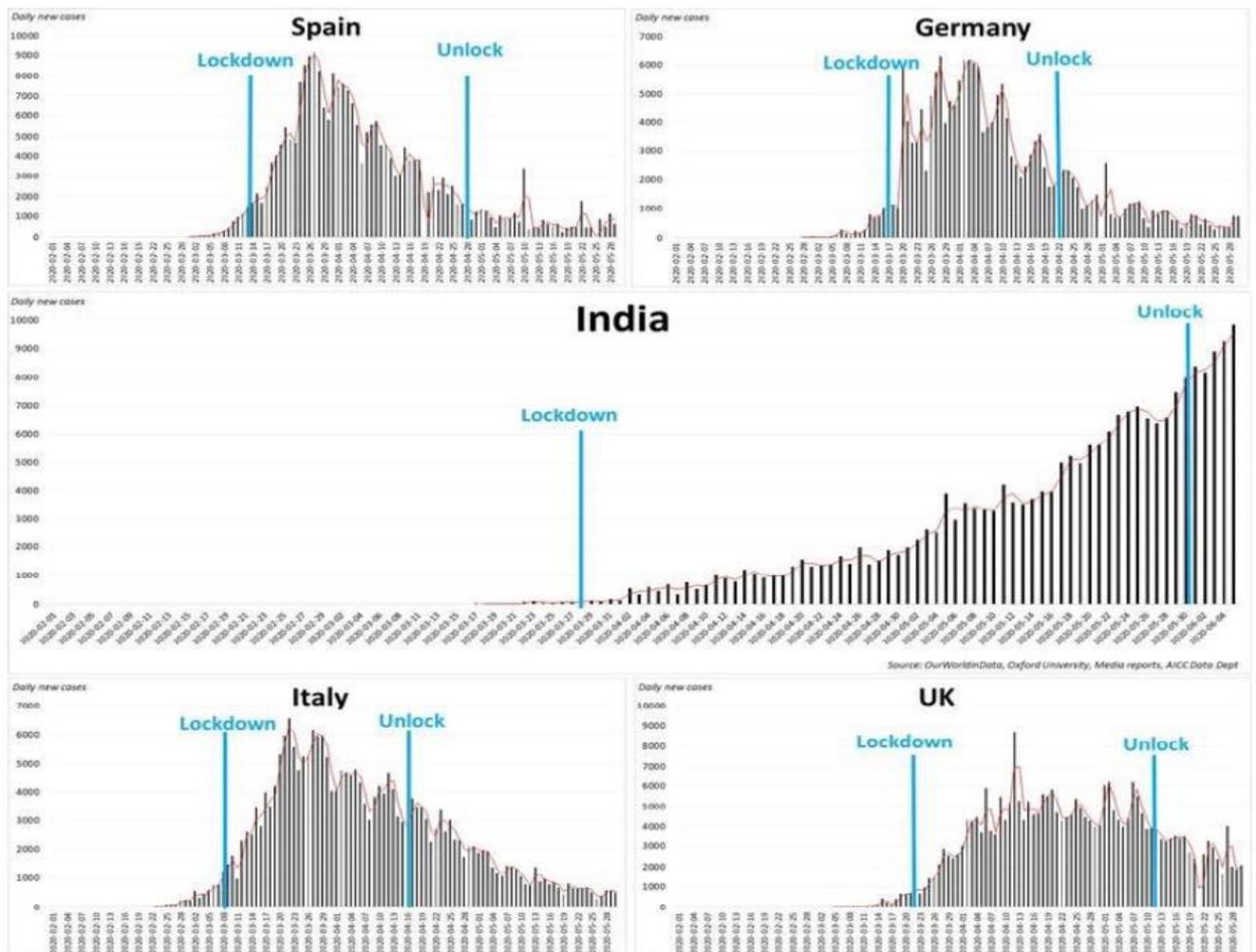


The variable description and data source of all variables related to all 215 countries and Indian states and districts are given at the appendix tables at the end.

The diagram III below shows that India unlocked its economy when cases were rising from March through September, 2020. This faulty design of the lockdown was also partly responsible for the reverse migration that took place in March through April, 2020 from urban cities leading to large job losses and spread of covid 19 in the rural areas. The latter may not be significant factor in explaining covid spread in India as detailed in the paper later. In case of India undernourishment may be significant factor in explaining the covid spread, among others. The diagram below also shows that developed nations in Europe opened up their economies when cases were falling. India could have had partial lockdown right at the beginning maintaining restriction one through seven of the Oxford University Stringency index while relaxing the other measures. The latter would have meant that we could have used fiscal and monetary measures to increase aggregate demand along with production of PPE kits, ventilators, face masks, disinfectants and increasing R and D in vaccine production, research

on steroids and medicines effectiveness and testing, tracking and testing on humans for containing the covid infections. Further, strengthening of urban and rural employment guarantee schemes would have led to taking care of the livelihoods of the people at large. In India in particular and South Asia in general the issue is that unorganized sector generates 45 percent of the GDP and around 94 percent of the work force is involved in the unorganized sector(india). MSMEs in India generate 110 million jobs and contribute 30 per cent of the GDP and 48 percent of the export revenue. Totake care of the lives and livelihoods the supply capacities had to be shifted to rural areas with focus on rural MSMEs to play transformational role in converting resources into power and energy employing agglomeration and clustering as its strategy.

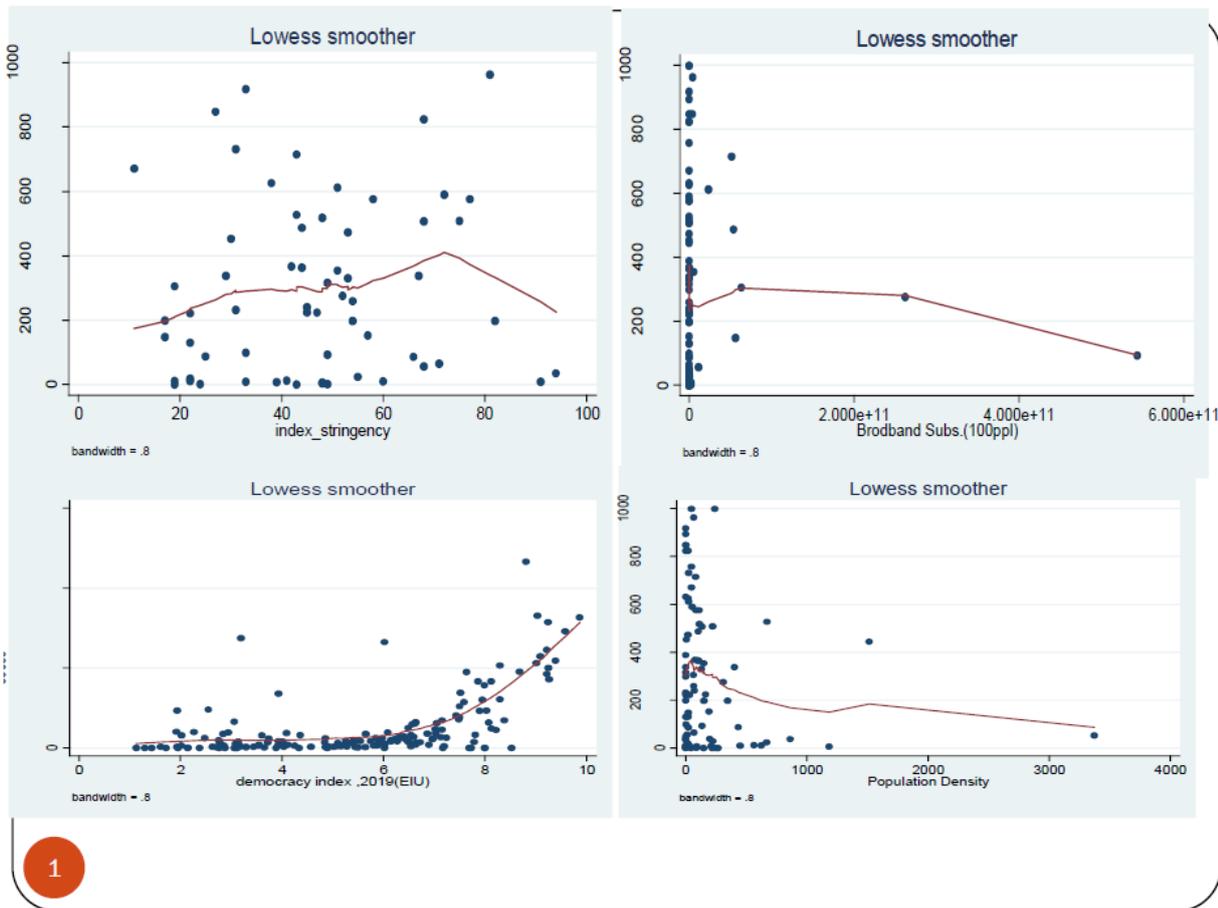
**Diagram III: Unlocking in India and Some European Countries**



The diagram IV below the non parametric plots relating active cases and GDP per capita across all 215 covid affected economies in September,2020 with some of its determinants without

imposing any functional form on the data. The non parametric regression gives slope of the regression line which is a weighted average of the dependent variable where in the weights are the kernels or the probability distributions which in turn are functions of the bandwidth of the points around the domain value. Non parametric PDF are the weighted sum of the probability distributions drawn around the domain points based on bandwidths build around the domain points.

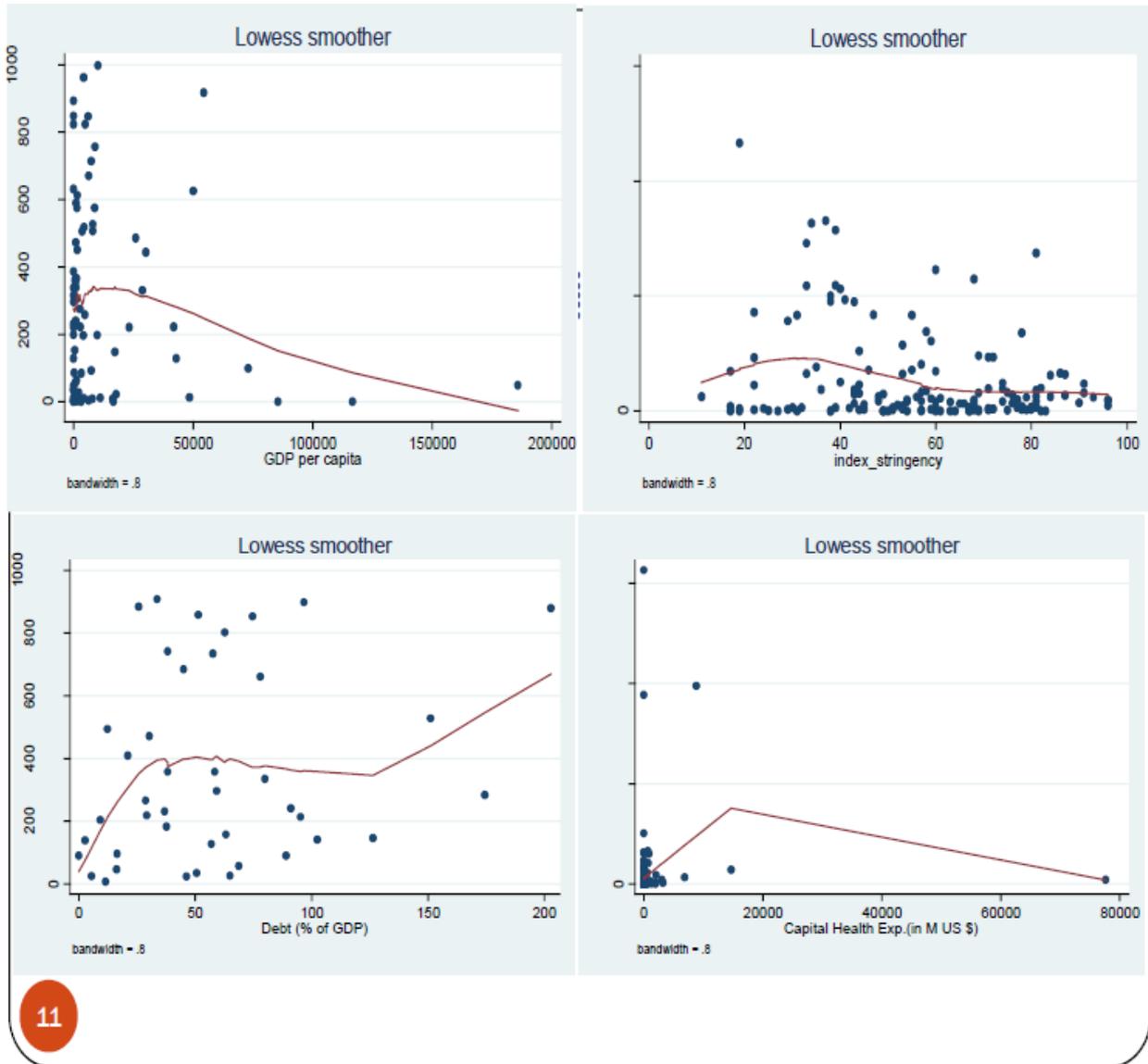
**Diagram IV: Non Parametric plots relating active covid infections and GDP per capita across 215 covid affected economies in September 2020 with some of its determinants**

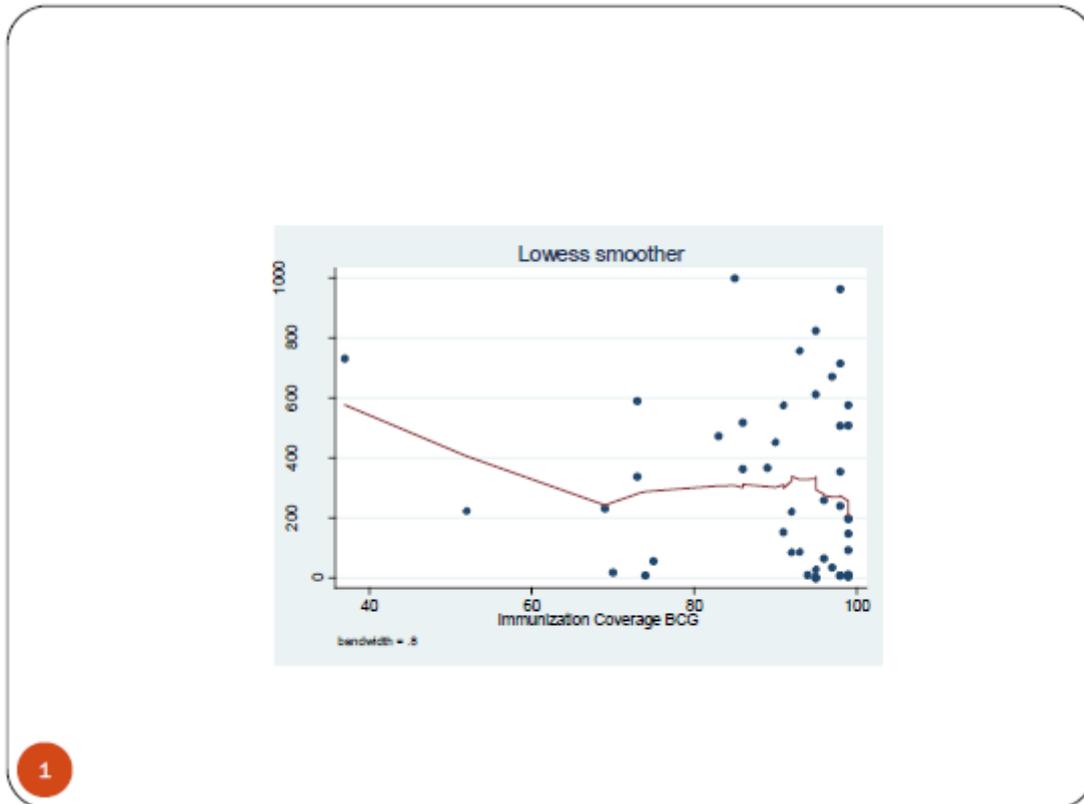


Non parametric plots show that average stringency index has inverted U shaped relationship withGDP per capita and total covid and active cases across 215 covid affected economies in September 2020. Most of the African nations, Latin American nations and India have high stringency index while most of the East Asian economies and Oceania have low stringency index. With data turning point occurring at 76 stringency value, means peak cases occurs at this value. India's average stringency score is 58 and the way we are opening up, we may see further fall in active cases surpassing the peak. We also find that capital health expenditures,

Broadband connections, BCG immunization and debt to GDP (helps in covid recoveries) reduce active cases across countries. Economic Intelligence Unit, UK designed Democracy index has positive slope with GDP per capita across all the 215 covid affected economies. Maybe financial, administrative and political decentralization is good for GDP recovery. We list and quantify the entire set of factors impacting the covid spread while we perform and use regressions and deep learning methodologies for our work.

**Diagram IV: Non Parametric plots relating active covid infections and GDP per capita across 215 covid affected economies in September 2020 with some of its determinants**



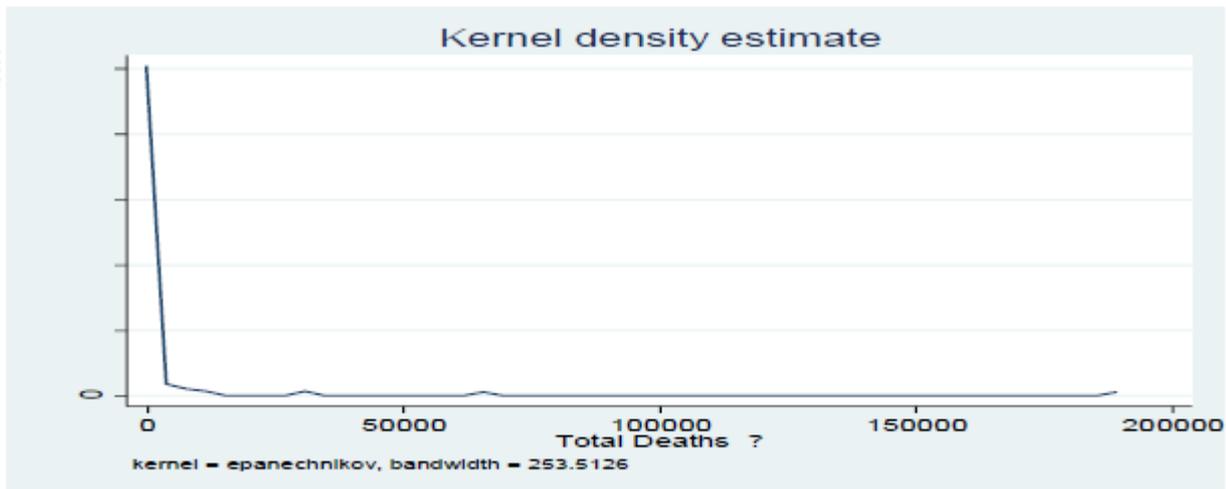


## VI. What explains Covid Spread across 215 Covid Affected Economies using Count Data Regressions in September 2020

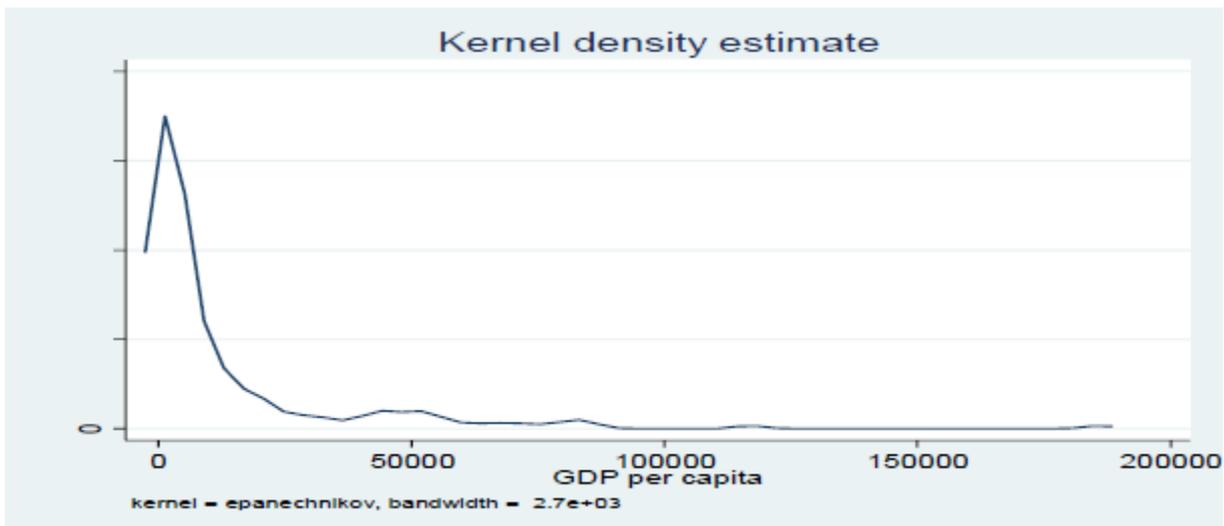
We have used count data regressions to explain covid active cases, covid cases, covid fatalities, covid recoveries and GDPs per capita across 215 countries of the world. Count data regression assumes Poisson probability densities in our study. Such regressions are used when the data is non normal and takes non negative integer values and as in our case the data throws up right tailed probability distributions using non parametric plots. The data takes non negative integer values depicting lower values (lower covid infections) impacting many countries of the world coming with high probability while there are maybe ten countries which have high cases with high probability. The latter includes the US, India and many Latin American countries and now under the second wave of infections, the European nations like the UK, Spain, France and Germany. The count data regressions use maximum likelihood estimation procedure. The count data regression model like the logit model gives the estimate of the incidence rate ratio which can be better interpreted than the normal parametric coefficients. While logit regresses uses log of odds ratio as its dependent variable, count data regresses uses log of lamda as its dependent variable. Lamda being mean and variance of the distribution.

The diagrams V and VI shows the non parametric pdf of the covid fatalities and GDPs per capita across countries in September 2020 justifying use of count data regression for our study because of the right tailed nature of the variables.

**Diagram V Non Parametric PDF of Covid fatalities across 215 Covid Affected Economies in September 2020**



**Diagram VI. Non Parametric PDF of GDP per Capita across 215 Covid Affected Economies in September 2020**



Tables II through IV shows the Poisson regressions of covid fatalities, covid cases and GDP per capita on host of its macro determinants. Incidence Rate Ratio estimates are reported. The results take care of endogeneity, multicollarity and specification bias if any (see the appendix section at the end) as such econometric issues naturally happens in cross country study at one particular

point of time. The other limitation of the study is that while performing stata codes the number of observations are lost maybe because the stata algorithm may be considering uniformity of the data across variables.

**Table II: Explaining Covid Fatalities across Countries in September 2020**

```
Poisson regression      Number of obs =      39
                        Wald chi2(13) =    605.24
                        Prob > chi2  =    0.0000
Log pseudolikelihood = -4513.5738      Pseudo R2   =    0.8590
```

totaldeaths	Robust				
	IRR	Std. Err.	z	P> z	[95% Conf. Interval]
capitalhealthexpinmus	.9956772	.0022321	-1.93	0.053	.991312 1.000062
BCG	.984983	.0159036	-0.94	0.349	.9543005 1.016652
MALARIA	1	6.49e-08	-0.33	0.742	.9999999 1
undernourishmentpop	.9888854	.0112997	-0.98	0.328	.9669846 1.011282
democracyindex2019eiu	1.259117	.1859316	1.56	0.119	.9426935 1.68175
unemploymenttotaloflaborforceilo	1.07727	.0411388	1.95	0.051	.9995827 1.160995
debttofgdp1	.9846855	.010123	-1.50	0.133	.9650433 1.004728
urbanpopulationshare	1.010911	.0064931	1.69	0.091	.9982643 1.023718
doctors16	.9999976	5.34e-06	-0.45	0.653	.9999871 1.000008
popproportionover6016	1.119898	.0487306	2.60	0.009	1.028347 1.219599
populationdensity	.9991263	.0010672	-0.82	0.413	.9970368 1.00122
governancerating06	.6410726	.098291	-2.90	0.004	.4746774 .8657964
index_stringency	1.03559	.0140476	2.58	0.010	1.00842 1.063493
_cons	103.9351	148.4054	3.25	0.001	6.329376 1706.725

Table II above shows that the following variables have significant impact on the covid fatalities by looking at the p values. Higher Population aged 60 and above and higher index of stringency leads to higher covid fatalities while better governance leads to reduction in covid fatalities. IRR helps us to gauge the magnitude of the changes in the dependent variable as well. Better

Governance leads to approximately 36 per cent reduction in covid fatalities while higher lockdown stringency leads to 3.5 percent increase in covid fatalities. Higher population above 60 leads to more than 11 percent increase in covid fatalities. Higher Capital health expenditures at 6 percent level of significance reduces covid fatalities by nearly one percent. The latter means that we need to equip our hospitals with greater capital health infrastructure also signifying that this covid virus probably affects the entire body starting from pulmonary infections to vascular. Unemployment is also weakly related with covid fatalities with 7 percent increase in covid fatalities due to unemployment. The other factors like BCG immunization, malaria incidence, share of urban population, debt to GDP, number of doctors and nurses, democracy, undernourishment, population density are insignificant in explaining covid fatalities across countries. We also tried another specification by including stringency square as one more explanatory variable. This specification did not show robust inverted u shaped relationship between average lockdown index and covid fatalities.

Table III below shows that the following variables have significant impact on the total covid cases by looking at the p values. Capital Health expenditures and debt to GDP ratio reduces covid case across countries while index of stringency and population above 60 increased the covid cases across countries. Capital health expenditures and debt to GDP reduces covid cases by one and two percent respectively. Aged population and index of stringency increased cases by thirteen percent and four percent respectively across 215 countries in September, 2020. We also tried another specification by including stringency square as one more explanatory variable. This specification did show robust inverted u shaped relationship between average lockdown index and covid cases.





like automation, Robotics and driverless vehicles, among others are impacting the GDP per capita across countries, higher life expectancy improves GDP per capita to the tune of two percent while higher capital health expenditures promotes GDP per capita while covid cases and covid deaths do not have significant impact on GDP per capita across countries.

It is to be noted from our study, using Oxford Stringency Index, lockdowns do not have impact on GDP per capita across countries. Maybe submeasures defining Oxford University Stringency Index are having negative impact on GDP per capita across countries. They include, work place closing, restrictions on domestic and international travel and public gatherings, among others. Grand lockdowns have surely increased covid fatalities and covid cases but the relationship may turn out to be polynomial in nature between lockdowns and covid infections..

Deep learning model ANN, Artificial Neural Network (description below in the relevant section) , are also applied to subset of covid affected economies, 125 in all using R Studio codes. BCG vaccinations, Health expenditures, urbanization and governance in that order matters for explaining covid cases, among others as of May 1 across 125 covid affected economies. The model has one input, one output layer and one hidden layer with two nodes. Output is weighted average of nodes. Nodes are in turn weighted average of variables.

## **VI. I Summarizing Empirical Results for all COVID Affected Countries across the World**

- Non-parametric plots show that average stringency index has inverted U shaped relationship with GDP per capita and total covid and active cases across 215 covid affected economies.
- Regressions results show that index of stringency has positive impact on covid cases while have insignificant impact on GDP per capita across countries.
- Sub measures of the lockdown like workplace closing, restrictions on movements, school closing among others have significant impact on GDP per capita across countries
- We have had early evidence and till date that capital health expenditures reduces covid cases and increases GDP per capita across countries.
- Capital health expenditures, number of doctors and nurses increases GDP per capita.
- Health expenditures may have two-way relationships with covid cases and GDP per

capita along with polynomial nature of relationships.

- Corona spread was an urban phenomena across the world till august 2020 and since then it has reached the rural population and surely in India.
- Share of urban population in countries across the world statistically has an insignificant role in promoting GDP per capita across countries. This may not hold for India.
- Population above 60 are quiet vulnerable to covid fatalities more than covid infections although population between 35 to 60 years are more exposed to the disease. Immunity is the key which varies across countries. Surely GDPs across countries are affected negatively by covid fatalities and population over 60 years
- Covid cases and active cases are weakly negatively related to GDP per capita as per the latest data.
- Strong governance surely reduces covid infections across countries and at the same time promotes GDP per capita and covid recoveries
- Better democratic values and traditions increases GDP per capita while has a polynomialrelationship with covid cases
- BCG immunization increases GDP per capita while reducing covid cases while malaria incidence has negative impact on GDP per capita with mixed impact on covid cases and fatalities.
- ICT reach especially broadband policies reduces covid cases and increases GDP per capita
- Regulatory quality and rule of law have polynomial relationship with covid cases and GDP percapita
- Debt to GDP reduces GDP per capita and reduces covid cases. The same variable has positive impact on active cases.
- Undernourishment and poverty reduces covid cases and GDP per capita while unemployment increases cases and increased GDP per capita across covid affected economies across the world. The latter may be due to adoption of disruptive and labour saving technologies across the world.

- Inequality and GDP per capita have inverted V relationship while as inequality goes up so are the total cases with eventual fall at the tail end
- Nonparametric plots show that across the world the evidence is that as population density goes up, cases goes down. This may not hold for India
- Mortality rates in countries decreases the cases and is associated with higher GDP per capita. Endogenous relationship.
- Temperatures and rainfall have negative but insignificant impact on covid cases. Polynomial relationship with GDP per capita.
- Life expectancy promotes GDP per capita and covid recoveries

## VI. II REGIONAL GROUPINGS

For saving space and time we give the final conclusions from running the various types of regressions on regional groupings data explain covid spread and gdp per capita variability across member states.

- EU27 countries. Better Democratic institutions and higher debt to GDP reduces covid cases in EU but higher unemployment, higher total tests and higher population density increases cases in EU.
- It seems higher democratic traditions leads to higher GDP in the EU nations. Average stringency lockdown measures since March 2020 reduced cases in EU in august but higher stringency index in august witnessed in the richer nations leads to higher cases in the EU.
- Broadband policies and mobile phones have lead to higher GDP and also reduced covid cases in the European Union. Nonparametric plots and linear regression used with correction for unknown heteroscedasticity
- What explains covid spread and covid fatalities among 54 African nations in comparison with 35 nations of East Asia and the Pacific? One, average stringency in African nations are greater than average stringency in East Asian nations. Stringency increased cases in Africa while statistically it had negligible impact in East Asia.
- Nonparametric plots show that as stringency went up cases went up in East Asia. International passenger movement had statistically significant impact in both the

regional grouping.

- What is to be noted that higher population density lowered covid cases in Africa indicating reflection of higher communication channel working with higher public information campaign which otherwise would have been reflected by higher ICT reach in African nations.
- Higher population density promotes covid cases in East Asia.. Rainfall, are also impacting covid cases. Higher the urban share of population lower are covid cases and GDP in East Asia and the Pacific. In Africa large number of cases are of non-smokers.
- Regulatory quality and BCG immunization decreases cases in East Asia and the pacific. GDP per capita of the African nations impacted positively by higher democratic values along with better governance and regulatory quality. Higher urban share promotes growth in African nations. Higher population density increases GDP per capita and higher gross debt reduces GDP per capita in African Nations.
- 35 East Asia and pacific countries impacted by the number of international passengers at least initially and so does population density in the same way, broadband services reduces cases, covid cases are more prevalent in richer nations of east Asia and pacific and share of urban population reduces covid cases in East Asia and Pacific, among other factors.
- GDP per capita impacted more by governance factors, rule of law, government effectiveness, regulatory quality, control of corruption, mobile and broadband services and number of doctors, nurses and health expenditures in East Asia and the Pacific. The governance factors have inverted u-shaped relation with covid cases in East Asia and pacific. Urban population has negative impact on GDP per capita in East Asia and pacific.
- Past temperatures have positive impact on GDP per capita while have negative impact on covid cases. Democracy, BCG immunization, capital Health expenditures have mixed impact in East Asia and the Pacific countries.
- Governance matters for reducing fatalities in East Asia and Pacific. Undernourished have impacts on covid cases. Poverty has U shaped relationship with covid cases. Debt to GDP ratio decreases covid cases but has v shaped relationship with GDP per capita and inverted U-shaped relationship with fatalities in East Asia and Pacific.

- In Latin America increase in debt to GDP and capital health expenditures decreases total covid infections. Total tests done, population over 60 and index of stringency increases cases. Higher democratic values and BCG immunization promotes GDP per capita and recoveries in 19 Latin American countries.

## **VII. What factors explain Covid 19 spread across 32 Indian States and districts in May2020 and October 2020?**

Again for saving time and space we do not show the count data regressions on Indian states data set on May 2020 and again in October 2020 in the text. They are available in the appendix tables at the end which show the magnitude of various factors affecting variability in state GDPs and covid infections. We summarize the results below-

Count data regression and spatial regression of covid cases across 32 Indian states on number of green spots in states, number of tests done in different states, population above 65, mortality rates, health expenditures, number of hospital beds, population density, average annual temperatures, humidity, malaria incidence, pollution levels, undernourishment, urban population share, immunization and internet usage a proxy for media reach.

All variables are significant and come with right signs except health expenditures and BCG immunization. Green spots, number of hospital beds, internet usage, and incidence of malaria, high temperatures, and capital health expenditures reduces covid infections.

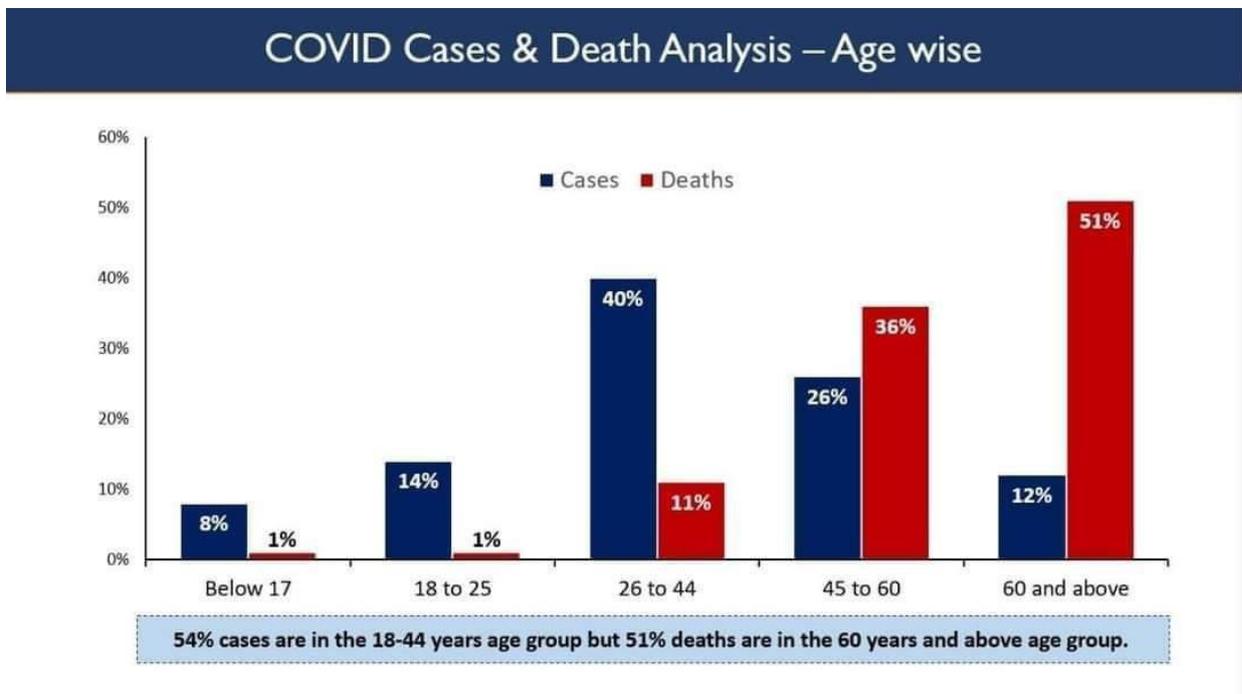
Pollution(polynomial relationship), population density(spatial with changing impact), mortality rates, urbanization, undernourishment in states, humidity and population above 65 and number of tests done causes higher covid infection in Indian states. Covid data on Indian states from [covidindia.org](https://covidindia.org) as of August, 2020

Count data has used MLE based on Poisson density function. Lakshadweep has zero covid cases among relatively some very low number for covid cases in north east states. That is why we found count data regression relevant and robust.

Covariates show that Indian state GDPs impacted more by GST collection, investments, education and health expenditures, among others. Covid cases are still more prevalent in richer states but are reaching rural areas. Unemployment leads to lower resources to fight the

pandemic. Capital health expenditures and higher health expenditures and total tests done reduce cases. Their maybe two way relationships of state GDPs and cases with health expenditures. Capital health expenditures acts as a good instrument for health expenditures and IV and GMM estimators are robust to reducing capital health expenditure in reducing covid cases and fatalities across Indian states. Although, Reproduction rate has come down for India, it is still above 1. AP, TN and southern states, along with Delhi and J and K are doing quite well in terms of doing testing. Surveys in Delhi are indicating that antigen tests in general may show that immunity are key to fighting the pandemic. It is to be noted that in case of Indian states covid deaths have negative impacts on state GDPs across states. This may be due to the fact that around 35 percent of deaths in India are happening in the age of 45 and 60(see diagram VII below). This relatively younger population may be more exposed to the covid infections and may not have incomes to support their long run health care once affected. Provision of health cards and making accessible large budget medical insurance are key to support the vulnerable population.

**Diagram VII: Age wise Profile of Covid cases and Covid Fatalities in India**



Source: Ministry of Health, GOI

What explains covid spread, covid fatalities and covid recoveries across Indian states and union Territories on October 26 Th, 2020 as compared to May 2020? We used Poisson and spatial

regressions for our work. Orange zones and population density reduces covid cases in October. Population density which came out to be positive using spatial regression in May 2020 is now having negative impact meaning probably information campaigns are important at least in the rural area for reducing covid cases. Number of tests done and poverty increases number of cases in October 2020. Ro is declining and maybe be nearing one and one of the reasons that cases are still touching fifty thousand per day is more number of tests are being done in India now, touching more than 100 million tests. In May 2020 green spots, number of hospital beds, internet usage, and incidence of malaria, high temperatures and capital health expenditures reduced covid cases across Indian states. Pollution, population density, mortality rates, undernourishment, humidity and vulnerable population, aged, people with co morbidities increased cases in May 2020. Immunity with social distance measures and patience are the key to fight the covid battle along with demographic dividend in terms of higher younger population and family values to take care of the elders. Higher incomes surely helps to fight the covid battle on sustained basis. Stringency in India had positive impact on cases using time series data and panel data (see below) and if quadratic relationship are accounted as in case of all 215 countries across the world, average lockdowns indices have inverted u shaped relationships with covid cases

District level analysis of India using count data regression, spatial regression and pictorial plots are shown at the end in the appendix tables. Sub districts hospitals, population density, urban population and sub centers of primary health care facilities matters for covid spread at district level. Interestingly, look at the histogram below. More than 200 districts out of 735 districts in India shares border with 6 to 7 districts, 150 districts shares its borders with 5 to 6 districts in India and so on.

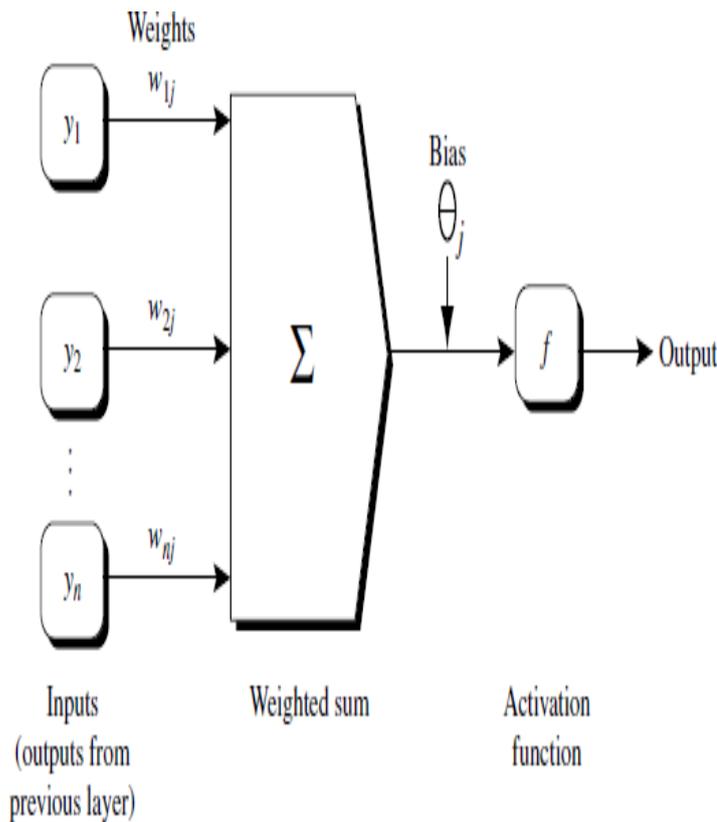
## **VIII ANN ANALYSIS OF INDIAN STATE LEVEL CORONA CASES**

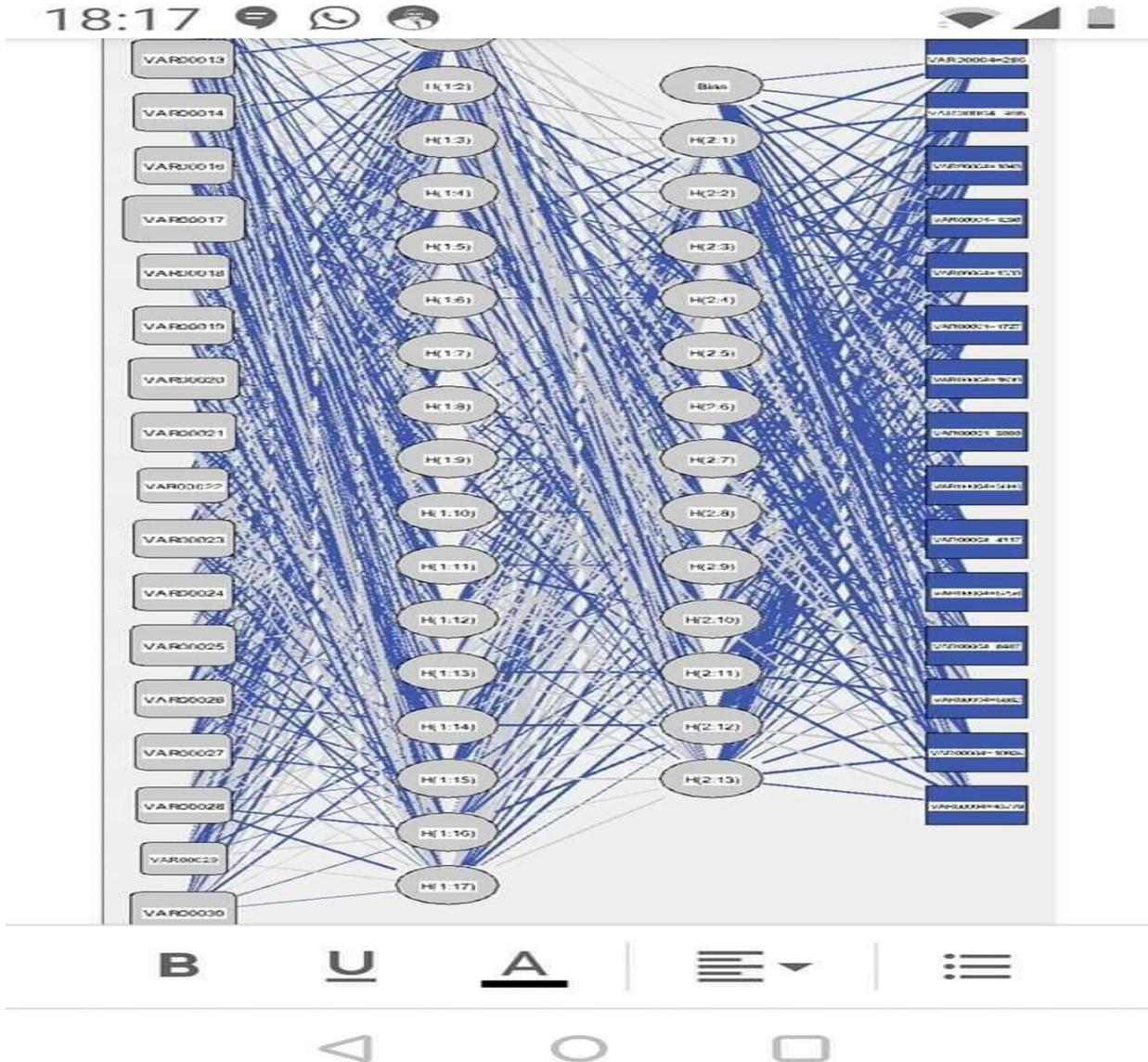
SPSS 19 can do Artificial Neural Network, ANN model besides the open source software R studio. ANN mimics human brain activities of neurons and like regression tells you the importance of each input variable. Non linearities and interdependence are accounted and like the logit model, percentage of success is taken to be the model adequacy. The model can have numerous hidden layers besides inputs and outputs. Model is solved through mathematical technique of back propagation. Logistic function allows you to get your outputs which are weighted function of nodes which in turn are function of the variables. Human Brain

is good in understanding relationships, face recognition and learns by doing.. Weights keep changing till loss function is minimized. Data needs to be divided into training and testing frames

Firstly, the system will learn from the training set and then be applied to the test data. Essentially, we put in a dataset, initialize weights and other aspects and get a trained neural network as the output. It will get us an estimate of accuracy, which will serve as a measurement of the performance of neural networks. Artificial Neural Network is based on the number of neurons, algorithm, and activation function. This study will aim to arrive at the optimum structure of the artificial neural network. The modus operandi for doing so will be the use of trialand error method. Neural networks learn the parameters or weights on the synapses.

**Diagram VIII: ANN Model**





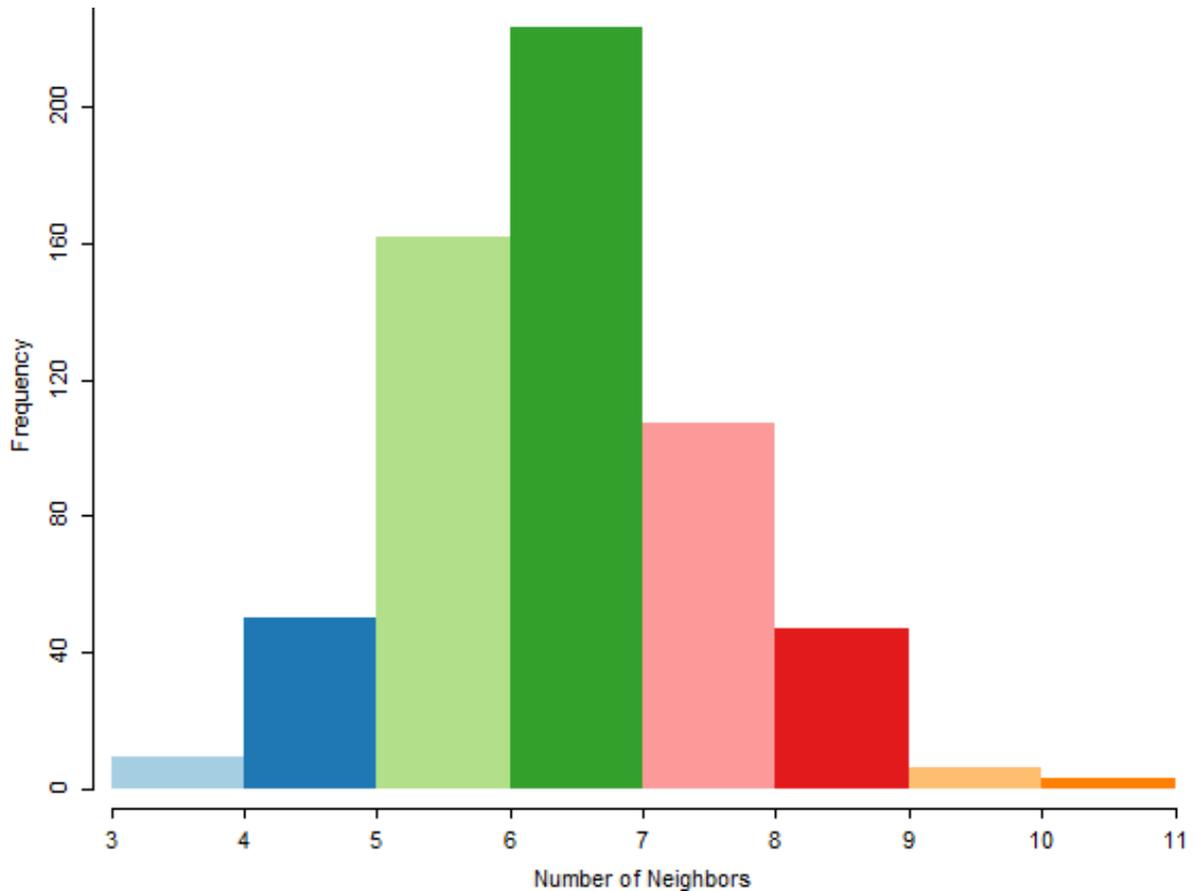
Output of Artificial neural network model in SPSS with various factors and their importance in explaining what causes spread of COVID19 across 32 Indian states. Two models gave minimum error using Theils entropy measure. In the first model malaria incidences, followed by mortality rates in states, then humidity, BCG immunization, co morbidity followed by population density, followed by population aged65 and above and so on mattered in explaining COVID19 spread across states. While the other model showed undernourishment as the most important variable causing spread of covid cases in India and not poverty, followed by prevalence of malaria incidence, then orange and red hotspots and, then humidity, no of beds, no of tests, population aged65 and above, average annual temperatures, var34 co morbidity population, population density, var29 immunization and so on. Deep learning ANN model mimics the working of the brain and our model has 23 inputs, one hidden layer with 6 nodes and one output layer of covid cases. Like regression it gives optimal Weights of the variables

using back propagation method. Just like Arrovian model of learning by doing applied through the algorithms and that do in the fastest mode.

**VII.II. What factors explain Covid 19 spread across 32 Indian States using spatial regression**

We justify using spatial regression because there are numerous districts across Indian states which have large number of immediate neighboring districts and hence closeness and clustering may prompt covid spread across neighbors, districts and states. Spatial autocorrelation using I Moran statistics although does not give significant results when applied on Indian states data. Please refer to diagram IX below

**Diagram IX: Histogram Depicting Number of Neighbors of the Indian 735 districts**



## Quantifying spatial dependence

We follow Bilal A Bhat and Mathur S.K. (2020) for the methodology on spatial regression.

### Spatial Weight Matrix(SWM)

Applying OLS and not taking spatial dependence into consideration will give the biased estimates in our regression model.

Spatial dependence is quantified through Spatial Weight Matrix(SWM)  $W=[W_{ij}]$  where  $i,j = 1,2,\dots,n$  and this takes into consideration the spatial dependence among  $n$  observations that are considered as neighbors. This SWM is usually row standardized and hence sum of elements in each row sums up to 1. The observations that are close to each other will effect each other more than the observations that are sparsely located. The diagonal elements of SWM are equal to zero. This study will examine the impact by estimating the spatial models taking in to consideration separately the following two SWM:

**Contiguity based SWM:** If the observation share the side with other observation then  $W_{ij}=1$  otherwise zero in case of Rook contiguity matrix and if the observation shares both side and corner with other observation then  $W_{ij}=1$  otherwise zero in case of Queen Contiguity matrix.

**Distance based SWM:** We define here some distance band and if the observations lie within that distance band then  $W_{ij}=1$  otherwise zero.

### Spatial autocorrelation

Once we have estimated the basic OLS model the next step is to check whether there exists the spatial dependence between the variables. This process is carried by checking for spatial autocorrelation defined as correlation among a variable in one region with that variable in other regions. The most common measure of spatial autocorrelation is Moran's I and we have two types of these measures: Local Moran's I and Global Moran's I. In this paper we will use Global Moran's I to test for spatial autocorrelation and is given by:

$$I = \frac{N}{\sum_i \sum_j W_{ij}} \frac{\sum_{i=1}^n \sum_{j=1}^n W_{ij} (X_i - \bar{X})(X_j - \bar{X})}{\sum_{i=1}^n (X_i - \bar{X})^2} \quad (5)$$

Where  $N$ = number of districts.

$W_{ij}$  is relevant element of weight matrix  $W$ .  $X_i$  and  $X_j$  are the values of variables in states and district  $i$  and  $j$  respectively.  $\bar{X}_i$  is cross sectional mean of  $X$ .

The global Moran's  $I$  uses a single value for entire geographical area. There is spatial autocorrelation if the Moran's  $I$  statistic is significant as the null hypothesis of no spatial autocorrelation is rejected.

we will estimate the following three spatial econometric models

### 1.1. SAR (Spatial Autoregressive Model or Spatial Lag model)

This model takes into consideration the spatial dependence among the dependent variables.

$$Y_i = \alpha_i + \rho WY_i + u_i$$

$W$  is spatial weight matrix,  $WY_i$  depicts the spatial dependence among dependent variables, the estimated parameter ' $\rho$ ' gives the strength of this spatial dependence.

### 1.2. SEM (Spatial Error Model)

This model takes into consideration the spatial dependence among the error terms. This type of spatial dependence may arise because of omitted variables in the models.

$$Y_i = \alpha_i + \beta \ln X + \lambda Wu + e_i$$

where  $u_i = \lambda Wu + e_i$ ,  $Wu$  depicts the spatial dependence in error terms across the neighboring regions, the estimated parameter ' $\lambda$ ' gives the strength of this error term spatial dependence.

### 1.3. SCR (Spatial cross regressive model)

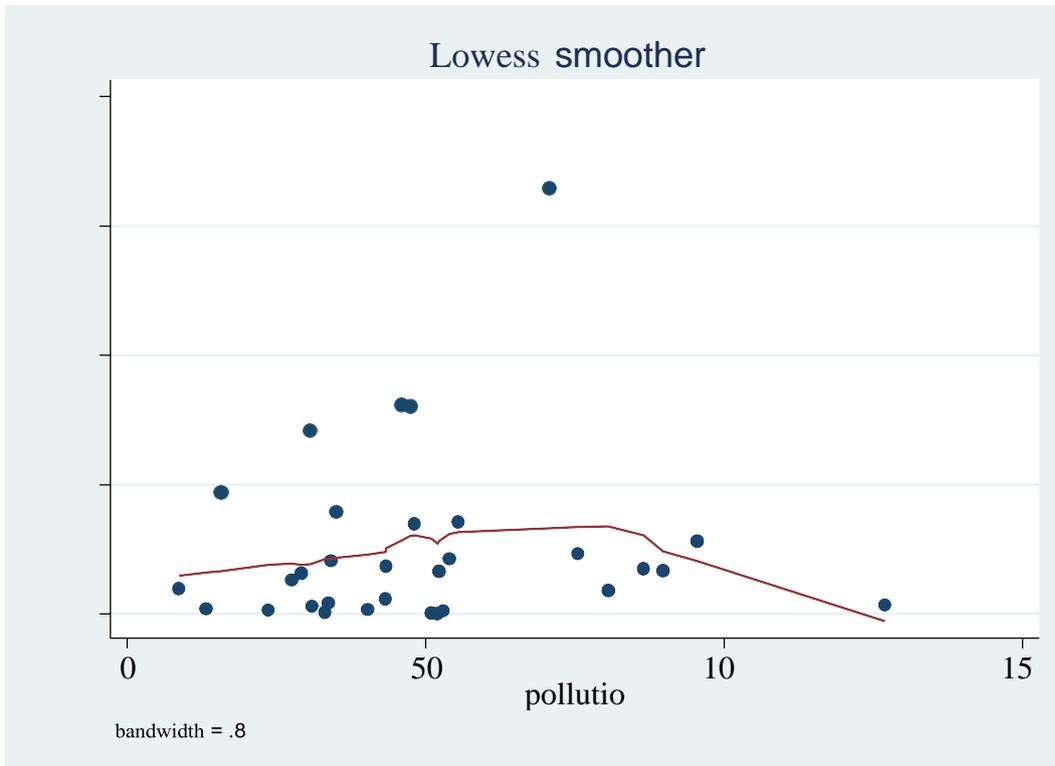
This model takes into consideration the spatial dependence among the independent variables. This model will be used to test for convergence when the growth rate of any region not only depends on its own initial per capita income but also on the initial per capita income of its neighboring regions.

$$Y_i = \alpha_i + \beta \ln x + \theta Wx + u_i$$

Where  $WY_0$  depicts the spatial dependence among independent variables, the estimated parameter ' $\theta$ ' gives the strength of this spatial dependence.

Table V below gives spatial regression of total covid cases across Indian states on host of explanatory variables in the month of May, 2020. The model gives the estimates based on OLS, SAR and SEM model. Health expenditures and population density are coming out to be significant factors in increasing covid cases while poverty across states and BCG immunization decreases cases across states. If we replace capital health expenditures for health expenditures as the instrument and use IV and GMM, we get negative and significant impact on covid cases across states(result not shown). Population density had positive impact in May, 2020 but now it may have negative impact now in October, 2020 as it may reflect a sign of robust public information campaign in addressing covid infections. Higher poverty leads to lower cases in May 2020 because by that time the cases in India were confined to urban areas with 20 richer districts in India having 80 percent of the cases. Pollution has positive impact in negative and it may have a polynomial relationship with cases across states (see diagram X below)

**Diagram X: Non Parametric Plot of Pollution across Indian States, October 2020**



**Table V: Spatial regression of total covid cases across Indian states on host of explanatory variables in the month of May, 2020**

## Spatial Regression Results

VARIABLES	OLS	SEM	SRM
Population above 65 years	67.29 (70.71)	96.69 (59.40)	62.46 (57.29)
Health Expend	0.156* (0.0805)	0.128** (0.0618)	0.159** (0.0629)
No. of Beds	-0.00709 (0.00979)	-0.00659 (0.00727)	-0.00730 (0.00761)
Population Density	0.131** (0.0489)	0.110*** (0.0404)	0.133*** (0.0385)
Avg. Annual Temperature	-22.21 (26.65)	-13.32 (20.04)	-23.36 (21.01)
Pollution	6.039 (4.279)	9.408** (3.848)	5.606 (3.648)
Undernourishment	53.60 (59.17)	48.05 (45.23)	53.89 (45.77)
Immunization	-18.14 (11.70)	-27.27*** (9.571)	-17.47* (9.360)
percbl	-20.26* (11.42)	-27.21*** (9.489)	-19.04* (9.835)
Humidity	6.789 (9.745)	3.761 (8.323)	7.775 (8.308)
Incidence of Malaria	6.98e-05 (0.000118)	5.49e-05 (0.000105)	6.89e-05 (9.12e-05)
Constant	548.3 (1,034)	964.3 (865.5)	475.0 (840.4)
Lamda		-0.998 (0.649)	
Rho			0.0721 (0.256)
Sigma		325.0*** (48.96)	353.8*** (45.69)
Observations	30	30	30

**Table V: Spatial regression of total covid cases across Indian states on host of explanatory variables in the month of May, 2020**

VARIABLES	OLS	SEM	SRM
poplnabv65yrs	67.29 (70.71)	96.69 (59.40)	62.46 (57.29)
healthexpend	0.156* (0.0805)	0.128** (0.0618)	0.159** (0.0629)
noofbeds	-0.00709 (0.00979)	-0.00659 (0.00727)	-0.00730 (0.00761)
poplndensity	0.131** (0.0489)	0.110*** (0.0404)	0.133*** (0.0385)
avgannualtemp	-22.21 (26.65)	-13.32 (20.04)	-23.36 (21.01)
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Constant	548.3 (1,034)	964.3 (865.5)	475.0 (840.4)
		-0.998 (0.649)	0.0721 (0.256)
		325.0*** (48.96)	353.8*** (45.69)
Observations	30	30	30

**VII. III Panel Data analysis of 35 Indian states and Union Territories**

We use panel data on 35 Indian states and UTs using daily data from March 23rd through May 31st, 2020 to understand the magnitude of the impact of four lockdowns that India implemented from March through May, 2020 on covid cases, covid recoveries or cured and covid fatalities. We use three dummies for lockdowns 1, 2 and 3 periods along with other control factors, namely temperatures, humidity and total tests done as our explanatory variables. Lockdown four periods was the base category. March 25th through April 14 is the period of the first lockdown, April 15 through May 3rd is the period for the second lockdown, and May 4th through May 17th is the third lockdown and fourth lockdown being from May 18th through May 31st, 2020. The questions we pose are

- How did cured, fatalities and confirmed cases respond to lockdown 1,2 ,3, and 4,temperatures, humidity and total tests done among 35 states and UTs of India using unbalanced panel?.
- Daily Data from March through May end.. Random effect, fixed effect and MLE procedures are used.
- Lockdown 1 and 2 dummies in respect to lockdown 4 increased confirmed cases.
- Lockdown three declined cured with respect to lockdown 4. Temperatures and humidity declined confirmed cases. Tests tend to increase the confirmed and cured cases.

We have extended the panel exercise on 33 Indian using daily data since March through December and included the impact on covid cases and covid fatalities of not only the four lockdown periods but also unlocking period in India since June through December besides including google mobility sub indices as proxies of economic activity. The google mobility index maps the movement of your smart phones through google map since the beginning of the pandemics in Jan, 2020 to visits with duration of stay during pandemic for recreation and retail, visits to groceries and pharmacies, transits and transportation, work place visits and staying at home. The tables below show that lockdowns and unlocking periods increased covid cases and covid fatalities along with economic activities related to visits to retail and recreation and parks. Staying at home, transit and visits to work place reduced covid infections in India. One significant result though is that lockdowns after controlling for testing reduced cases and covid infections. The latter again points to the design strategy of the lockdowns. Lockdowns should have been used to upgrade testing and tracking strategy right at the beginning. We have used poisson and negative binomial MLE procedures in the panel settings (random effect and fixed effects) for our regression estimates.

```

Random-effects negative binomial regression      Number of obs   =    8748
Group variable: state_id                       Number of groups =     34

Random effects u_i ~ Beta                      Obs per group:  min =     2
                                                avg   =   257.3
                                                max   =    294

Wald chi2(11) = 17408.66
Prob > chi2   =  0.0000

Log likelihood = -90244.417
    
```

confirmed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lockdown_1	2.242633	.1027588	21.82	0.000	2.041229	2.444036
lockdown_2	3.417236	.1072099	31.87	0.000	3.207109	3.627364
lockdown_3	4.534833	.1129782	40.14	0.000	4.313399	4.756266
lockdown4	4.777871	.1126549	42.41	0.000	4.557071	4.99867
unlock	6.064595	.1029873	58.89	0.000	5.862743	6.266446
retail_and_recreation_percent_ch	.0614935	.0007594	80.97	0.000	.060005	.0629819
grocery_and_pharmacy_percent_cha	-.024506	.0005196	-47.16	0.000	-.0255245	-.0234876
parks_percent_change_from_baseli	.005282	.000444	11.90	0.000	.0044117	.0061522
transit_stations_percent_change_	-.0138529	.0007465	-18.56	0.000	-.015316	-.0123897
workplaces_percent_change_from_b	-.0132918	.0006067	-21.91	0.000	-.0144809	-.0121027
residential_percent_change_from_	-.0099078	.0016668	-5.94	0.000	-.0131746	-.0066409
_cons	-2.827286	.0905893	-31.21	0.000	-3.004838	-2.649734
/ln_r	-.9215545	.1978016			-1.309239	-.5338705
/ln_s	7.064567	.3438404			6.390652	7.738482
r	.3979	.0787053			.2700256	.5863312
s	1169.775	402.216			596.2453	2294.985

1

Likelihood-ratio test vs. pooled:  $\chi^2(1) = 1.3e+04$  Prob>=  $\chi^2 = 0.000$

```

Conditional FR negative binomial regression
Group variable: state_id

Number of obs   =   7389
Number of groups =    32

Obs per group: min =    28
                avg  =   230.9
                max  =   264

Wald chi2(12)   = 25483.01
Prob > chi2     =  0.0000

log likelihood = -78833.835
    
```

confirmed	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
totalsamples	6.56e-08	2.16e-09	30.40	0.000	6.14e-08	6.98e-08
lockdown_1	-4.948536	.9160726	-5.40	0.000	-6.744005	-3.153067
lockdown_2	-4.367996	.9134393	-4.78	0.000	-6.158304	-2.577688
lockdown_3	-3.280426	.9127237	-3.59	0.000	-5.069332	-1.491521
lockdown4	-2.976254	.9124811	-3.26	0.001	-4.764684	-1.187824
unlock	-1.812383	.9116258	-1.99	0.047	-3.599137	-.0256294
retail_and_recreation_percent_ch	.0606305	.0008326	72.82	0.000	.0589987	.0622623
grocery_and_pharmacy_percent_cha	-.0331435	.0005671	-58.44	0.000	-.034255	-.032032
parts_percent_change_from_baseli	.0029919	.0004348	6.88	0.000	.0021397	.003844
transit_stations_percent_change_	-.0042681	.0008221	-5.19	0.000	-.0058794	-.0026568
workplaces_percent_change_from_b	-.0073935	.0005729	-12.91	0.000	-.0085163	-.0062706
residential_percent_change_from_	-.0108557	.0016756	-6.48	0.000	-.0141397	-.0075716
_cons	5.416168	.9134112	5.93	0.000	3.625915	7.206421

```

Conditional fixed-effects Poisson regression      Number of obs   =   1503
Group variable: state_id                       Number of groups =    32

Obs per group: min =    127
               avg  =   265.7
               max  =    294

Wald chi2(11)   =   5100.54
Prob > chi2     =    0.0000

Log pseudolikelihood = -1054779.6
    
```

(Std. Err. adjusted for clustering on state\_id)

deaths	Robust				[95% Conf. Interval]	
	Coef.	Std. Err.	z	P> z		
lockdown_1	.5037360	1.460125	0.40	0.691	-2.293736	3.46121
lockdown_2	4.549437	1.457307	3.12	0.002	1.693160	7.405706
lockdown_3	6.144322	1.462160	4.20	0.000	3.270525	9.01012
lockdown4	6.775007	1.464052	4.63	0.000	3.906317	9.645297
unlock	0.450426	1.497767	5.65	0.000	5.522057	11.394
retail_and_recreation_percent_ch	.0633044	.000177	7.75	0.000	.0473570	.079411
grocery_and_pharmacy_percent_cha	-.0339604	.0034789	-9.76	0.000	-.0407069	-.0271499
parks_percent_change_from_base	-.0029444	.0037013	-0.80	0.426	-.0101909	.0043101
transit_stations_percent_change	.0066545	.0039560	1.68	0.093	-.0011000	.0144097
workplaces_percent_change_from_b	-.0010231	.0034003	-0.53	0.593	-.0085032	.0040571
residential_percent_change_from	-.0054145	.0100901	-0.54	0.592	-.0251900	.0143610

```

Conditional fixed-effects Poisson regression   Number of obs   =   7344
Group variable: state_id                     Number of groups =    31

                                           Obs per group:  min =    20
                                           avg   =   236.9
                                           max   =   264

                                           Wald chi2(11)   = 567540.59
Log pseudolikelihood = -886854.47           Prob > chi2     =  0.0000
    
```

(Std. Err. adjusted for clustering on state\_id)

deaths	Robust				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
totalsamples	5.40e-00	2.16e-00	2.53	0.011	1.24e-00 9.72e-00
lockdown_1	-5.505402	.5706255	-9.51	0.000	-6.639567 -4.371397
lockdown_2	-3.995676	.5305744	-7.42	0.000	-5.051262 -2.94009
lockdown_3	-2.491033	.4900121	-5.00	0.000	-3.467919 -1.515747
lockdown4	-1.827301	.4697665	-3.89	0.000	-2.740026 -.9065753
mlock	-.1154252	.4276314	-0.27	0.787	-.9535674 .7227169
retail_and_recreation_percent_ch	.0554068	.0000499	6.27	0.000	.0301414 .0720321
grocery_and_pharmacy_percent_cha	-.030232	.0041004	-7.36	0.000	-.0382044 -.0221796
parks_percent_change_from_baseli	-.0063076	.0040600	-1.57	0.116	-.0143466 .0015714
transit_stations_percent_change	.003526	.0046072	0.75	0.452	-.0056607 .0127127
workplaces_percent_change_from_b	-.0006097	.0024389	-0.20	0.777	-.0054690 .0040905
residential_percent_change_from	-.000045	.0070152	-0.11	0.914	-.0161624 .0144725

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### VIII Covid 19, Trade, International Collaboration and Global Politics

Could covid 19 be linked to trade in merchandise, trade in services and investments? Removing restrictions on trade in covid products including trade of vaccines are understandable. However, WTO TRIPS flexibilities can be used for vaccine production by common or generic producers utilizing clinical data all across the board and further we would need rule based trading system for vaccine availability among all members. TRIMS should be used to address protectionist move of countries to include new clause to buy raw material from local suppliers only. In general one needs WTO to address protectionism gaining in nature and scope in this new global order. Also. When everything is digitalized rules regarding cross border trade needs to be strengthened. The digital identity of exporters and importers along with those of products traded are important. Block chain technology can help. However, other pernicious regulations regarding cross border trade has to be identified and addresses keeping data privacy, cyber security, mutual recognition, and consent of parties in mind.

Security crises can be dealt by strengthening economic security of the country. Promoting outward investments in telecommunications, ports and infrastructure development, harboring global value chains, investments in 4IR technologies and village development especially in border areas are some of the policy measures which can tilt the comparative development in favour of the country. In addition, promoting trade in covid products, strengthening GVCs through energizing rural and agricultural MSMEs based on socio entrepreneurship model, self sufficiency and flying geese modeling can bring sustained growth during and post covid times.. Agriculture needs to be used as a tool for transformation through agglomeration and clustering. However, challenges are Climate Change, Desertification, Global Warming, Pollution, Crass Urbanization, Melting of Glaciers, Cyclone and Drought resulting in different types of endemics and pandemics happening in future. Strengthening Multilateral Institutions like WHO for upgrading international surveillance of virus spread and WTO for promoting trade in goods, services and investments and addressing protectionism based on rule based trading system would bring new world order. Containing China is a new foreign policy posture of many countries post China's controversial role in delaying sharing of covid information early and its interventions in Taiwan, Ladakh, South China Sea, among others. We suggest a better way by strengthening the UN in fostering peaceful coexistence among countries with humanity and democratic decentralization.

## **IX Lessons Learnt from Countries which have managed low covid cases and growth rates**

- Social Distancing
- Large number of tests
- Identifying hotspots and clusters with contact tracing
- Upgrading health capacities especially capital health expenditures through public private partnership and direct benefit transfers
- Calibrated opening of Lockdown measures
- Using 4IR and AI techniques for international surveillances of virus. AI and ML tools for discovery of new molecules and using internet of things for up scaling medical infrastructure.
- Digitalization, ICT technologies, 5G and 4IR technologies, Innovations
- Strengthening Governance with democracy and decentralization
- Taking care of the vulnerable population
- Lifestyle taking care of health, home and hygiene

- Traditional medicines
- Social cohesion
- Use of Fiscal and Monetary Measures to increase aggregate demand in the economy and strengthening rural and urban employment guarantee schemes

## **X. Conclusions and Policy Recommendations**

Around 9 percent of world covid infections are in India, 10.72 million out of 105 million, and around 7 percent of world covid fatalities are in India, 1.54 lakh out of 21 lakhs, and recovery rate of 96 percent with global average of 56 percent, death rate of 1.45 percent, 72 percent of total covid infections in 12 indian states out of 33 states granularly corresponding to 20 indian districts out of 733 districts, India's one percent of the population, around 11 million ,would be affected by covid 19 by March,2021. Global population impacted by covid 19 are 105 million out of total population of 7.8 billion world population with correspondence percentage being 1 percent OR LITTLE MORE. EU has 30 million cases while the US has more than 25 million covid infections. With such percentages it has created havoc with the health capacities and economies across theWorld. Think of the Spanish flu 1918 20 when 500 million people got affected out of 1800 million with correspondence percentage being 27 percent. Are we in a relatively better world where in global governance and global health management should define the new world order.

Economics of lockdown on 33 Indian states using daily covid data, google Mobility sub indices, testing done and lockdown periods since March through October. Show that Lockdown periods and unlocking periods especially lockdown three and four and beyond increased covid cases, cured and covid fatalities. Google mobility index of visits to groceriesand pharmacies decreased cases while google mobility regarding visits to retail and recreation increased cases. Home mobility declined cases. Work place visits declined cases. Short distance mobility proxied by Google mobility indices declined due to covid cases and lockdowns. What are needed are not grand lockdown policies but very focusedcontainment strategies with testing, tracing and social distancing policies and upgradation of health infrastructure, doctors and nurses. Focused partial lockdowns help the cause of lives and livelihoods.

The lockdowns sub measures across the 215 affected countries including India seems to have more detrimental impacts on GDPs while having positive impact on covid cases, fatalities and

covid active cases. We did not find evidence of lockdowns having impacted GDPs across countries as it seems that countries which had adopted supply side and demand side measures to raise the aggregate supply and demand in the economies have been able to stem the detrimental impact of lockdowns on the economy. The lockdowns seems to have polynomial relationship with covid infections(robust) and GDP s across countries. Grand Lockdowns in India seems to have increased covid cases and infections in India. We should have had partial lockdown with commensurate use of fiscal and monetary measures to increase demand and adopt supply side measures like provision of wage subsidy to sustain employment. Rural and urban employment guarantee schemes should be strengthened.

- ❖ The study has used cross sectional and time series daily data of covid cases and growth rates and fatality rates to determine the causes of covid spread across 215 countries and indian states and districts. Cross country regressions do have econometric issues of multicollinearity, specification bias and endogeneity. The study takes care of such issues
- ❖ The study would help determine the magnitude and directions of interventions like stringency index to capital health expenditures, share of urban population, immunization, poverty, undernourishment, temperatures and humidity, pollution, vulnerable population, among others in ensuring lives and livelihood across regions.
- ❖ Various econometric and mathematical models are applied along with nonparametric approach to data analysis. Deep learning models would help us to analyze dynamic natureof the data.
- ❖ Further, the study would suggest various areas of collaboration to address post covid issues related to pandemic spread in future.
- ❖ The study would model Indian states that have led the corona war and suggest new models of integrated and inclusive development, education and health care systems to take care of economic and health crises confronting economies all over.
- ❖ Covid 19 is likely to impact the developed nations more than the developing nations in terms of reduction in GDP numbers. Unemployed in south Asia would be around 200 million people with 100 million people falling below the poverty line.

- ❖ Solidarity budget whether by printing notes or borrowing domestically and abroad needs to take care of lives and livelihood. Social distancing and patience would matter along with international surveillance of viral infections by multilateral institutions along with upgrading R and D in vaccination research
- ❖ What can reenergize the Indian economy? One, through trade and integration with Asia, Latin American economies, Oceania and African countries, by strengthening governance and democracy with decentralization, ICT reach, strengthening civil society, renewable, strengthening rural capacities, businesses, universities, technology and science and engineering education, health capacities and vaccination r and d, 4IR moving forward from electricity and steam engines to digitalization, AI, ML and deep learning.
- ❖ Vocal on local does not mean challenging the law of comparative advantage given by Ricardo and others. Changing comparative advantage in your favor is the key and can happen with 4IR, and that can happen with AI, deep learning, technology. E-governance, digitalization, provider of pharmacy to the world, automation. Will that effect employment. Did computers reduce employment?
- ❖ Surely as we relax lockdown measures cases would go up. However, at least in India death rates are low while recovery rate is above 90 percent. All governance factors, rule of law, effective governance and regulatory quality have inverted U shaped relationship with covid cases. Therefore, if governance measures are relaxed covid cases would go up. Numbers of physicians, hospital beds, higher temperatures, higher capital health expenditures, and democracy reduces covid cases.
- ❖ PDF of covid cases rightly skewed. For stabilizing economy fiscal and monetary measures through DBT would help, hand over dual aadhar card to migrants and shift production to rural areas for ensuring livelihood and lives. For increasing demand relax income tax and indirect tax measures for all.
- ❖ MSMEs and banks have their own set of issues, debt and they may use government funds to pay for their own debt. Core is contractualization and casualization of labor and

where in employment of contract/ casual labor has been outsourced due to regulations and cost saving exercise of parental organizations. Goes with outsourcing are medical benefits and other decent work conditions for the labor as spelt out in UNs SDGs.

- ❖ The lockdowns sub measures across the 215 affected countries including India seems to have more detrimental impacts on GDPs while having positive impact on covid cases, fatalities and covid active cases. We should have had partial lockdown with commensurate use of fiscal and monetary measures to increase demand and adopt supply side measures like provision of wage subsidy to sustain employment. Rural and urban employment guarantee schemes should be strengthened.
- ❖ World evidence has shown that corona is more prevalent among urban population. To sustain lives and livelihoods supply capacities should shift to rural areas where in rural and agricultural MSMEs should play transformation role of agriculture being transformed into industry by focusing on providing alternative energy needs by using biotechnology.
- ❖ Agglomeration and clustering in agriculture can sustain growth. Further inland connectivity, high tech construction, promoting trade and outward investments in ports, roads and telecommunications and harboring value chains are key to success. ICT and 4IR technologies can be facilitators to growth process. We need to shift comparative advantage in our favor by adopting the above policies and become *atmanirbhar* in true sense of the word.

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### Variable Description

## Data Source

Indicator Name	Source
Domestic general government health expenditure (% of GDP)	World Health Organization Global Health Expenditure database ( <a href="http://apps.who.int/nha/database">http://apps.who.int/nha/database</a> ).
Smoking prevalence, total (ages 15+)	World Health Organization, Global Health Observatory Data Repository ( <a href="http://apps.who.int/ghodata/">http://apps.who.int/ghodata/</a> ).
Specialist surgical workforce (per 100,000 population)	Data collected by the Lancet Commission on Global Surgery ( <a href="http://www.lancetglobalsurgery.org">www.lancetglobalsurgery.org</a> );
Urban population (% of total population)	United Nations Population Division. World Urbanization Prospects: 2018 Revision.
GNI per capita, Atlas method (current US\$)	World Bank national accounts data, and OECD National Accounts data files.
Poverty headcount ratio at national poverty lines (% of population)	World Bank, Global Poverty Working Group. Data are compiled from official government sources or are computed by World Bank staff using national (i.e. country-specific) poverty lines.
Prevalence of undernourishment (% of population)	Food and Agriculture Organization ( <a href="http://www.fao.org/publications/en/">http://www.fao.org/publications/en/</a> ).
Physicians (per 1,000 people)	World Health Organization's Global Health Workforce Statistics, OECD, supplemented by country data.
Immunization, BCG (% of one-year-old children)	WHO and UNICEF ( <a href="http://www.who.int/immunization/monitoring_surveillance/en/">http://www.who.int/immunization/monitoring_surveillance/en/</a> ).
Hospital beds (per 1,000 people)	Data are from the World Health Organization, supplemented by country data.
Capital health expenditure (% of GDP)	World Health Organization Global Health Expenditure database ( <a href="http://apps.who.int/nha/database">http://apps.who.int/nha/database</a> ).
Nurses and midwives (per 1,000 people)	World Health Organization's Global Health Workforce Statistics, OECD, supplemented by country data.

Indicator Name	Source
Population Density	Population Census of India
Average annual temp	India Stat
Pollution	Data.gov.in or Central Pollution Control Board
Undernourishment	Population Census of India
BCG Immunisation	Data.gov.in or WHO and UNICEF ( <a href="http://www.who.int/immunization/monitoring_surveillance/en/">http://www.who.int/immunization/monitoring_surveillance/en/</a> ).
Percentage BPL	Wikipedia
Per Capita Net SDP	Data.gov.in
Humidity	<a href="#">India Stat</a>
Incidence of Malaria	Data.gov.in
Internet subscription in millions	<a href="#">TRAI gov site</a>
Red, Orange and Green Zone	<a href="#">Covidindia.org</a>
COVID cases, recovered cases and number of Deaths	Covidindia.org
Good Governance Index Score	<a href="https://www.vidhiwise.in/good-governance-index-ggi-2019/">https://www.vidhiwise.in/good-governance-index-ggi-2019/</a> <a href="https://niti.gov.in/planningcommission.gov.in/docs/data/datatable/index">https://niti.gov.in/planningcommission.gov.in/docs/data/datatable/index</a>
Gross Debt of Government	<a href="#">datatab</a>
Population above 60	<a href="http://mospi.nic.in/sites/default/files/publication_reports/ElderlyinIndia">http://mospi.nic.in/sites/default/files/publication_reports/ElderlyinIndia</a>
Health Expenditure	<a href="https://data.gov.in/resources/state-wise-public-health-expenditure-durin-2017-18-ministry-health-and-family">https://data.gov.in/resources/state-wise-public-health-expenditure-durin-2017-18-ministry-health-and-family</a>
Allopathy Doctors	Data.gov.in
No of Beds	Data.gov.in
Nurses	Data.gov.in

Indicator Name	Source
Average temperature April May	<a href="https://www.timeanddate.com/weather/india/new-delhi/climate">https://www.timeanddate.com/weather/india/new-delhi/climate</a>
Average humidity April may	<a href="https://www.timeanddate.com/weather/india/new-delhi/climate">https://www.timeanddate.com/weather/india/new-delhi/climate</a>
Primary Health Centre PHCs	<a href="https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf">https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf</a>
Community Health Centre CHCs	<a href="https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf">https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf</a>
Sub Divisional Hospital	<a href="https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf">https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf</a>
District Hospital	<a href="https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf">https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf</a>

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Control of Corruption Estimate: captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interest. Estimates give the country score on the aggregate indicator in units of standard normal distribution i.e ranging from -2.5 to 2.5

(Source: <https://datafacalog.worldbank.org/control-corruption-estimate-0>)

Rule of Law estimate: captures perception of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property right, the police, and the courts as well as the likelihood of crime and violence. Estimates give the country score on aggregate indicator, in unit standard normal distribution ranging -2.5 to 2.5

(Source: <https://datafacalog.worldbank.org/database/rule-of-law>)

Government Effectiveness Estimate and Rank: captures perception of the quality of public service, quality of civil services and the degree of interdependence from political pressure, quality of policy formulation and implementation, and credibility of government commitment to such policies

(Source: <https://datacatalog.worldbank.org/government-effectiveness-estimate-0> )

Regulatory Quality Estimate: captures perception of ability of government to formulate and implement sound policies and regulation that permits and promotes private sector development. Percentile rank indicates the country rank among all countries covered by the aggregate indicator, with 0 corresponds to lowest rank and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by world governance index

(Source: <https://datacatalog.worldbank.org/regulatory-quality-estimate>)

The Democracy Index: It is an index compiled by the Economist Intelligence Unit (EIU), a UK-based company. It intends to measure the state of democracy in 167 countries, of which 166 are sovereign states and 164 are UN member states.

(Source: <https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators>)

## Indian states Data and Variable Description

Variables	Data Source	URL
Active COVID-19 cases	Statista	<a href="https://www.statista.com/statistics/1103458/india-novel-coronavirus-covid-19-cases-by-state/">https://www.statista.com/statistics/1103458/india-novel-coronavirus-covid-19-cases-by-state/</a>
Recovered cases	Statista	
Deceased	Statista	
Confirmed cases	Mygov	<a href="https://www.mygov.in/corona-data/covid19-statewise-status/">https://www.mygov.in/corona-data/covid19-statewise-status/</a>
Testing per lakh population	Covid-19 response center	<a href="http://covidindiaupdates.in/testing.php">http://covidindiaupdates.in/testing.php</a>
Poverty	State-wise poverty rate in 2011-12 based on MRP consumption (Tendulkar methodology)	<a href="https://m.rbi.org.in/Scripts/PublicationsView.aspx?id=18810">https://m.rbi.org.in/Scripts/PublicationsView.aspx?id=18810</a>
Unemployment	PLFS 2017-18	
Capital health expenditure(Rs. In 000), 2017-18	NHP, 2019	
Total health expenditure,2017-18	NHP, 2019	
Doctors	NHP, 2019	
Nurses( ANM, RN & NM , LHV)	NHP, 2019	
Broadband( service area wise broadband subscription in millions(2018))	Telecom statistics, India, 2018	
Internet(wireless internet subscription(in millions))	Telecom statistics, India , 2018	
Smoking( prevalence of current tobacco smoking)	GATS India , 2016-17	
Road density-Density of NH (in km/ lakh population)	Strategic Research Institute	<a href="https://steelguru.com/infra/road-density-in-various-states-of-india/466866">https://steelguru.com/infra/road-density-in-various-states-of-india/466866</a>

<b>Investment (worth)</b>	India government grid , GoI	<a href="https://indiainvestmentgrid.gov.in/states">https://indiainvestmentgrid.gov.in/states</a>
<b>Gross enrollment ratio(primary) , 2015-16</b>	Educational statistics at a glance , 2018	
<b>Agricultural growth-% growth over previous year in 2017-18(share of agriculture and allied sector in GSVA)</b>	Agricultural statistics at a glance, 2018	
<b>GST -GST collection in crores as on january 2020</b>	Financial express article (3rd January, 2020)	<a href="https://www.google.com/amp/s/www.financialexpress.com/economy/gst-collections-check-which-state-topped-collection-in-december-how-much-tax-other-states-got/1811984/lite/">https://www.google.com/amp/s/www.financialexpress.com/economy/gst-collections-check-which-state-topped-collection-in-december-how-much-tax-other-states-got/1811984/lite/</a>
<b>Pucca house,2011</b>	Office of the Registrar General of India, Ministry of Home Affairs	
<b>Population staying in rural areas,</b>	Census, 2011	
<b>Electrification-household electrification</b>	Saubhagya Dashboard	<a href="https://saubhagya.gov.in">https://saubhagya.gov.in</a>
<b>IMR-</b>	NITI ayog, SRS, 2016	
<b>GSDP</b>	MoSPI	<a href="http://m.statisticstimes.com/economy/gdp-growth-of-indian-states.php">http://m.statisticstimes.com/economy/gdp-growth-of-indian-states.php</a>
<b>HDI</b>	Global data lab, 2018	<a href="https://globaldatalab.org/shdi/shdi/?levels=1%2B4&amp;interpolation=0&amp;extrapolation=0&amp;nearest_real=0&amp;years=2018%2B2015%2B2010%2B2005">https://globaldatalab.org/shdi/shdi/?levels=1%2B4&amp;interpolation=0&amp;extrapolation=0&amp;nearest_real=0&amp;years=2018%2B2015%2B2010%2B2005</a>



Log pseudolikelihood = -69.149536  
 Wald chi2(14) = 31641.39  
 Prob > chi2 = 0.0000  
 Pseudo R2 = 0.9773

death17may	Robust					[95% Conf. Interval]
	IRR	Std. Err.	z	P> z		
redzone	1.345972	.0348255	11.48	0.000	1.279417	1.415989
orangezone	.9853333	.018937	-0.77	0.442	.9489078	1.023157
greenzone	.9888201	.025741	-0.43	0.666	.9396342	1.040581
nooftest	1.000002	1.82e-06	0.05	0.393	.999998	1.000005
poplnabv65yrs	1.042318	.1163292	0.37	0.710	.8375311	1.297179
mortalityrate	1.038953	.0154706	2.57	0.010	1.009069	1.069721
popladesity	.9992923	.000126	-5.62	0.000	.9990454	.9995393
pollution	1.00467	.0038156	1.23	0.220	.9972189	1.012176
undernourishment	1.471861	.0835662	6.81	0.000	1.316858	1.645188
urbanpoplapercent	1.099745	.0195429	5.35	0.000	1.062101	1.138723
immunisation	1.017122	.0196522	0.88	0.380	.9793244	1.056378
perchpl	.9713973	.0275818	-1.02	0.307	.9188146	1.026989
internetsubscriptionimillioas	.9745956	.0105403	-2.38	0.017	.9541545	.9954747
incidenceofmalaria	.9999851	5.47e-06	-2.73	0.006	.9999743	.9999958
_coas	.0159874	.0318715	-2.13	0.033	.0003544	.7212541

```
> nisation percpl internetsubscriptionimillions incidenceofmalaria, vce(robust)
```

```
Iteration 0: log pseudolikelihood = -637.44452
Iteration 1: log pseudolikelihood = -275.88681
Iteration 2: log pseudolikelihood = -260.22521
Iteration 3: log pseudolikelihood = -260.17193
Iteration 4: log pseudolikelihood = -260.17193
```

```
Poisson regression                Number of obs   =          18
                                Wald chi2(14)    =       5129.10
                                Prob > chi2         =         0.0000
Log pseudolikelihood = -260.17193 Pseudo R2       =         0.9851
```

recoveries17may	Robust				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
redzone	.0892107	.0157223	5.67	0.000	.0583956 .1200258
orangezone	.078615	.0113961	6.90	0.000	.056279 .1009509
greenzone	-.0365728	.0151878	-2.41	0.016	-.0663404 -.0068052
nooftest	3.80e-06	7.65e-07	4.97	0.000	2.30e-06 5.30e-06
poplnabv65yrs	.1282735	.0512576	2.50	0.012	.0278105 .2287365
mortalityrate	.0544229	.0086522	6.29	0.000	.0374649 .0713809
poplndensity	-.0000732	.0000533	-1.37	0.169	-.0001777 .0000312
pollution	.0169311	.0028857	5.87	0.000	.0112752 .0225869
undernourishment	.2481633	.0338246	7.34	0.000	.1818684 .3144582
urbanpoplnpercent	.0448792	.0075377	5.95	0.000	.0301055 .0596529
immunisation	.0381644	.0103271	3.70	0.000	.0179236 .0584052
percpl	-.0456414	.0139601	-3.27	0.001	-.0730027 -.0182802
internetsubscriptionimillions	.0015919	.0048225	0.33	0.741	-.0078601 .0110438
incidenceofmalaria	-.000014	3.26e-06	-4.30	0.000	-.0000204 -7.62e-06
_cons	-2.861934	1.184436	-2.42	0.016	-5.183387 -.5404816

Linear regression

Number of obs = 17

F( 13, 3) = 2481.02

Prob > F = 0.0000

R-squared = 0.9978

Root MSE = 70757

gdpcurrentpriceincrore201112ser	Robust Std.				Beta
	Coef.	Err.	t	P> t	
active	5.325105	2.406548	2.21	0.114	.2996424
deceased	-88.11705	22.63335	-3.89	0.030	-.5868388
povertyrate201112basedonmpconsu	-22526.88	10438.25	-2.16	0.120	-.336049
unemploymentrate	-21600	10692.52	-2.02	0.137	-.0653278
totalhealthexpenditure201718rsin	.0049196	.0017365	2.83	0.066	.2965463
serviceareawirelessinternets	-29366.63	27217.78	-1.08	0.360	-.7061727
serviceareawisebroadbandscrip	44983.53	30584.47	1.47	0.238	.9503765
densityofhinkmlkhppopulation	-4261.622	1966.639	-2.17	0.119	-.0558842
grossenrollmentratioprimarylevel	12133.66	3981.821	3.05	0.056	.1192278
worthofinvestmentinbillionusdoll	1412.07	617.0154	2.29	0.106	.1154925
growthofagricultureandalliedsect	8481.277	4705.084	1.80	0.169	.1251043
gstcollectionincrores	109.4068	21.0562	5.20	0.014	.6527245
householdshavingelectricityin201	0	(omitted)			.
percentagepopulationstayinginpuc	-5450.822	3999.762	-1.36	0.266	-.1504983
_cons	-1349379	604082.2	-2.23	0.112	.

```
> immunisation percblpl internetsubscriptioninmillions incidenceofmalaria, vce(robust) irr
```

```
Iteration 0: log pseudolikelihood = -523350.6
Iteration 1: log pseudolikelihood = -144400.03
Iteration 2: log pseudolikelihood = -140770.83
Iteration 3: log pseudolikelihood = -140770.35
Iteration 4: log pseudolikelihood = -140770.35
```

```
Poisson regression                               Number of obs =          10
                                                Wald chi2(14) =       3844.33
                                                Prob > chi2         =         0.0000
Log pseudolikelihood = -140770.35              Pseudo R2           =         0.9497
```

confirmedcasesoct26	Robust				
	IRR	Std. Err.	z	P> z	[95% Conf. Interval]
redzone	.9744317	.0240616	-1.05	0.294	.9283949 1.022751
orangezone	.9398099	.0111268	-5.24	0.000	.918253 .9618729
greenzone	.9925147	.01511	-0.49	0.622	.9633372 1.022576
nooftest	1.000000	1.42e-06	5.48	0.000	1.000005 1.000011
poplnabv65yrs	1.056884	.0648716	0.90	0.367	.9370887 1.191995
mortalityrate	.9775643	.012416	-1.79	0.074	.9535298 1.002205
poplndensity	.9997156	.0001088	-2.61	0.009	.9995024 .9999289
pollution	.9951516	.0030672	-1.58	0.115	.9891582 1.001181
undernourishment	1.027101	.0451975	0.61	0.543	.9422285 1.119619
urbanpoplnpercent	1.033613	.0173864	1.97	0.049	1.000092 1.068258
immunisation	1.021954	.0160274	1.38	0.166	.9910183 1.053854
percblpl	1.079462	.0181653	4.54	0.000	1.04444 1.115659
internetsubscriptioninmillions	1.012336	.0093398	1.33	0.184	.9941952 1.030809
incidenceofmalaria	.9999907	5.10e-06	-1.81	0.070	.9999807 1.000001
_cons	9201.669	16381.38	5.13	0.000	280.8695 301459.2





Linear regression

Number of obs = 177( 14, 2) = 53.17

Prob > F = 0.0186

R-squared = 0.9948

Root MSE = 7985.9

active	Robust Std.				Beta
	Coef.	Err.	t	P> t	
averagetestspermillion7dayrollin	.7910877	11.98878	0.07	0.953	.0185044
povertyrate201112basedonmpconsum	6242.208	1336.765	4.67	0.043	1.568572
unemploymentrate	19447.9	4098.652	4.74	0.042	1.006714
capitalexpenditureonhealth201718	-.0008266	.0027827	-0.30	0.794	-.1123898
totalhealthexpenditure201718rsin	-.0016571	.0004288	-3.86	0.061	-1.615605
doctorspossessingrecognizedquali	-.3596362	.3118743	-1.15	0.368	-.434705
registerednursesannrmm	.2160965	.0632431	3.42	0.076	.6384249
serviceareawisebroadbandsubscrip	37666.47	7581.38	4.97	0.038	12.75139
serviceareawisewirelessinternets	-24076.2	5147.707	-4.68	0.043	-9.260435
prevalenceofcurrenttobaccosmokin	7748.536	1693.617	4.58	0.045	.8306839
grossenrollmentratioprimarylevel	3920.171	1211.315	3.24	0.084	.6653427
imr2016	2713	1304.874	2.08	0.173	.787729
ofpopulationstayinginruralareasc	3637.799	742.6205	4.90	0.039	1.906367
percentagepopulationstayinginpuc	2741.654	601.0989	4.56	0.045	1.271505
_cons	-1306156	254887.7	-5.12	0.036	.

### Multicollinearity Diagnostics

. vif

Variable	VIF	1/VIF
redzone	15.59	0.064160
healthexpend	15.40	0.064919
poplndensity	7.87	0.127039
urbanpopln~t	6.28	0.159302
internetsu~s	5.75	0.174019
greenzone	4.08	0.244923
mortalityr~e	3.85	0.259719
nooftest	3.51	0.285100
orangezone	3.24	0.308662
undernouri~t	2.58	0.387824
pollution	2.45	0.408163
poplnabv65~s	2.43	0.410691
Mean VIF	6.09	

.

Variable	VIF	1/VIF
popprop~6016	4.54	0.220281
capitalhea~s	4.41	0.226943
undernouri~p	1.33	0.752383
MALARIA	1.22	0.819951
population~y	1.18	0.848152
democracyi~u	1.17	0.852686
BCG	1.06	0.940388
urbanpopul~e	1.06	0.944383
debtofgdp1	1.06	0.945472
Mean VIF	1.89	

<b>Covid19 Affected Economies of the World</b>	Indian States Impacted by Covid 19-
	Andaman and Nicobar Islands
Afghanistan	Andhra Pradesh
Albania	Arunachal Pradesh
Algeria	Assam
Andorra	Bihar
Angola	Chandigarh
Anguilla	Chhattisgarh
Antigua and Barbuda	Dadra and Nagar Haveli and Daman and Diu
Argentina	Delhi
Armenia	Goa
Aruba	Gujarat
Australia	Haryana
Austria	Himachal Pradesh
Azerbaijan	Jammu and Kashmir
Bahamas	Jharkhand
Bahrain	Karnataka
Bangladesh	Kerala
Barbados	Ladakh
Belarus	Lakshdweep
Belgium	Madhya Pradesh
Belize	Maharashtra
Benin	Manipur
Bermuda	Meghalaya
Bhutan	Mizoram
Bolivia	Nagaland

Bosnia and Herzegovina	Odisha
Botswana	Puducherry
Brazil	Punjab
British Virgin Islands	Rajasthan
Brunei	Sikkim
Bulgaria	Tamil Nadu
Burkina Faso	Telangana
Burundi	Tripura
Cape Verde	Uttar Pradesh
Cambodia	Uttarakhand
Cameroon	West Bengal
Canada	
Central African Republic	
Cayman Islands	
Chad	
channel of Islands(Jersey)	
Chile	
China	
Colombia	
Comoros	
Congo [Republic]	
Costa Rica	
Croatia	
Cuba	
Cyprus	
Czech Republic	
Denmark	
Djibouti	
Dominica	

Dominican Republic
Congo [DRC]
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
Faeroe Islands
Falkland Islands [Islas Malvinas]
Fiji
Finland
France
French Guiana
French Polynesia
Gabon
Gambia
Georgia
Germany
Ghana
Gibraltar
Greece
Greenland
Grenada
Guadeloupe
Guatemala
Guinea
Guinea-Bissau
Guyana

Haiti
Honduras
Hong Kong
Hungary
Iceland
India
Indonesia
Iran
Iraq
Ireland
Isle of Man
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kuwait
Kyrgyzstan
Laos
Latvia
Lebanon
Lesotho
Liberia
Libya
Liechtenstein
Lithuania
Luxembourg
Macau
Madagascar

Malawi
Malaysia
Maldives
Mali
Malta
<i>Martinique</i>
Mauritania
Mauritius
Mayotte
Mexico
Moldova
Monaco
Mongolia
Montenegro
Montserrat
Morocco
Mozambique
Myanmar [Burma]
Namibia
Nepal
Netherlands
New Caledonia
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Palestinian Territories

Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Réunion
Romania
Russia
Rwanda
South Korea
Saint Kitts and Nevis
Saint Lucia
Saint Pierre and Miquelon
San Marino
São Tomé and Príncipe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Somalia
South Africa
Sudan
Spain

Sri Lanka
Sudan
Suriname
Sweden
Switzerland
Syria
Taiwan
Tajikistan
Tanzania
Thailand
Timor-Leste
Togo
Trinidad and Tobago
Tunisia
Turkey
Turks and Caicos Islands
United Arab Emirates
Uganda
United Kingdom
Ukraine
Uruguay
United States
Uzbekistan
Vatican City
Venezuela
Vietnam
Western Sahara
Yemen
Zambia
Zimbabwe

## Assessing the economic impact of COVID-19 in Mauritius.

N Gooroochurn & S Seechurn (Economic Development Board, Mauritius)

### *Abstract*

Covid 19 has had a substantial impact on almost all economies around the world, mainly due to lockdowns and restrictions on movement, closure of borders, disruptions on supply chains and a general fall in consumer demand. Mauritius, a small island developing state, has not been spared, with its GDP contracting by 14.9% in 2020, following 40 years of uninterrupted growth. For 2021, growth is again expected to be below par.

COVID-19 is affecting the Mauritian economy and businesses from various channels, and it is important to consider all of them to get an accurate and complete picture of the impact of COVID-19. We will consider five channels via which COVID-19 would affect businesses, namely:

- (i) Closing the international borders
- (ii) The lockdowns in place in Mauritius
- (iii) Contraction in world GDP
- (iv) An increase in cost of imported inputs
- (v) Cost of containing the pandemic

These channels affect businesses through direct, indirect, or induced impacts with significant cost to businesses. Nonetheless, measuring the above channels are not straightforward and would require a robust economy-wide model that is able to capture the above channels within one framework and the interactions among them, and to measure the effects at both national and sectoral levels. We need to be able to assess how the economy is being affected and the effect across every sector in the economy to get a more accurate impact on businesses in each sector.

The model needs to accurately measure the supply chain effect across the economy. For instance, a contraction in the tourism sector will affect several sectors in the economy depending on the extent of linkages in the tourism supply chain. For example, the food, transport and even the banking sectors would be affected. In turn, when the transport sector is affected, the retail petrol sector is also affected. We should also be able to account for induced economic effects. With a lower production level across businesses, this is likely to lead to lower wages and higher level of unemployment which will in turn affect income of households. Lower income will reduce consumption and further affect businesses.

We propose to use a Computable General Equilibrium (CGE) model for the Mauritian economy. Computable general equilibrium (CGE) models are a class of economic models that use actual economic data to estimate how an economy might react to changes in policy, technology, or other external factors. The model is a fully dynamic based on rational expectation and it tracks the evolution of the economy over time (typically over 30 years) in response to a policy change. The model captures interlinkages among the sectors in the supply chain across the whole economy. The model will capture both the forward and backward linkages among the all the sectors and is disaggregated into 22 sectors. Investment in the model is subject to installation costs whereby the cost of investment is related to the current level of capital stock, the magnitude of investment and a ‘cost of capital adjustment’ parameter. This implies that more rapid capital accumulation becomes increasingly costly. Major tax heads such as income tax, corporation tax, VAT, customs duty, export taxes are also modelled.

- We found that Covid-19 has cost the Mauritian economy around 17% of GDP in 2020. The reduction in tourism arrivals accounted for the lion’s share of the GDP effect costing more than 8% of GDP. The lockdown in 2020 which has effectively stalled the whole economy for ten weeks, has led a reduction of nearly 6% in GDP. Contraction in world GDP in 2020 has accounted for 1.5% in GDP via reduction in exports and FDI. Covid-19 has also significantly affected MSMEs in Mauritius. During 2020, MSMEs have lost more than Rs32 billion in terms of GVA. The effect on employment has not been so severe because of the various schemes put in place by the government to support employment in general. Without government support, Covid-19 would have cost MSMEs more than 45,000 jobs

## **COVID-19 and Blue Entrepreneurship**

## The contradiction of the fisheries sector in relation to the socio-economic effects of COVID-19 and health measures in the Mauritian Blue Economy

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### Background

The Republic of Mauritius can be considered as a large ocean state with its Exclusive Economic Zone (EEZ) of 2.3 million square kilometres including the Chagos region.<sup>37</sup> In addition, the island has a continental shelf of 396,000 square kilometres which is co-managed with the Republic of Seychelles. Hence, the Mauritian Blue Economy can be seen as a potential driver for economic growth.”<sup>38</sup>

### Rationale

Despite the possible prospects that the Mauritian Blue Economy can bring, the transformation process of the Mauritian Blue Economy into a key economic pillar is somewhat questionable. For instance, the Republic of Seychelles is far much advanced in the development of its Blue Economy. As a Small Island Developing States (SIDS), the Republic of Seychelles has their own national fleet and are maximising the benefits from Tuna Fisheries.

With a population of around 95 000 inhabitants, the Republic of Seychelles with its Blue Economy is generating much more capital than Mauritius.<sup>39</sup>

It cannot be denied that Covid-19 has compelled all governments worldwide to take a series of sanitary measures in order to prevent the propagation of the virus; those measures which are the application of curfew, lockdown and restrictions on movement of persons and economic activities. It can be argued that despite those restricting measures, the Blue Economy is not impacted directly by them. The same argument can be applied in the Mauritian Blue Economy.

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<sup>37</sup> In 2019 an advisory opinion by the [International Court of Justice \(ICJ\)](#), endorsed by the UN general assembly, found the UK in breach of international law by seeking to maintain its claim to the archipelago. As per ICJ's advisory opinion, the archipelago which used to be part of the British Indian Ocean Territory should be considered as forming part of Mauritian territory <https://www.theguardian.com/world/2021/jan/28/un-court-rejects-uk-claim-to-chagos-islands-in-favour-of-mauritius>.

<sup>38</sup> The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping website: <https://blueeconomy.govmu.org/Pages/Blue-Economy.aspx>.

<sup>39</sup> Minister of Blue Economy, Marine Resources, Fisheries and Shipping's intervention on Budget 2020 - 2021

Therefore, nothing should prevent Blue Economy to evolve as it is in a better situation compared to inland activities, especially it can easily adapt to the new normal.

### **Objectives**

The first objective of this paper is to demonstrate that the socio-economic effects of COVID-19 are not the principal cause of preventing the Blue Economy to prosper. The health measures are aimed primarily at regulating inland human activities and not the monitoring of fisheries activities and more so illegal fishing.

The second objective focuses on the role of the fisheries sector in Mauritius which is an important area in the Blue Economy. Fish is a critical source of food provider and the sector should be able to provide a social safety net for those involved in it. By relying on the informal interviews carried out with the registered fishermen, recommendations can be made as to the elements needed to boost the fisheries sector in the Republic of Mauritius.

### **Problem statement**

There is a worldwide consensus that the Blue Economy can turn into a key economic pillar for SIDS. This paper argues the development of the fisheries sector should not be impacted by Covid-19 and health measures. The latter are geared towards the restriction of movements of people. On the other hand, Covid-19 should not bring any obstacle for the development of the fisheries sector. To date, in the region of the Indian Ocean, the Republic of Seychelles is a concrete and good example of the success that the Blue Economy can contribute to an economy.

However, in the Mauritian context, as stated above the Blue Economy has difficulty to become an important key pillar for the economy.

Based on the data collected, the reasons slowing down the developing are set out below:

- The main obstacle stems from the lack of an agreed definition. Universally, there is no agreed definition of the Blue Economy. Its adoption in the Mauritian context is relatively new.<sup>40</sup>

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<sup>40</sup> World Bank and United Nations Department of Economic and Social Affairs. 2017. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. World Bank, 2017 International Bank for Reconstruction and Development/the World Bank, Washington DC.

- The fisheries sector is highly dependent on policy decisions. Policy decisions are very slow in this sphere and the more slowly the policy-makers act, the more seriously will the fisheries sector be impacted.
- There is a considerable amount of foreign vessels exploiting the Mauritian EEZ. Those vessels are not monitored accordingly in their fishing activities.
- Serious concerns have been raised by fishermen of the fishing techniques used by foreign fishing vessels in Mauritian waters. The results are that they cause great damage to coral reefs and natural habitat of sea species. There is an urgent need to review this area.
- The climate change effects is another phenomenon. Those effects should prompt the policy-makers to take immediate, necessary and urgent actions in order to limit those effects. There are solutions.
- Much concerns have been raised by the hospitality sector. Hotels contribute to the degradation of the lagoons. There is a need to implement a monitoring system on hotel wastes.

## Methodology

As mentioned above, the focus of this study is on the fisheries sector. In order to understand the difficulty that the Blue Economy is encountering to boost up, a study has been conducted with registered fishermen and unregistered fishermen<sup>41</sup> operating in the northern part of the island.

The aim of choosing the fisheries sector is firstly to demonstrate that the fisheries sector sits in contradiction with the socio-economic measures due to Covid-19.

Data has been collected through informal interviews carried out with those fishermen operating in the northern part of the island namely Grand Bay, Cap Malheureux and Calodyne.

The second aim for choosing fishermen operating in that part of the island is based on the fact that hotel activities and illegal fishing are direct threat to the Blue Economy. For instance illegal fishing is rampant around Flat Island, Îlot Gabriel and Coin de Mire.

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<sup>41</sup> Fishermen not licenced with the Ministry of Fisheries to carry out fishing activities.

The third aim for opting for fishermen is that they are also the direct victims of the climate change effects.

All registered fishermen are highly dependent on the fisheries sector to earn a living. Their testimonies reveal the actual state of the lagoons and the outer lagoons. They can assess on a regular basis the drastic decrease of the fish population in our lagoons and elsewhere happening at an alarming rate.

Finally their views are important as they can make valuable recommendations on how to improve the fisheries sector.

### **Plan**

The next step is to assess the impact of an agreed definition of the Blue Economy to its implementation in the Mauritian context. The study then proposes to address the issues that the health measures are not impediment preventing the fisheries sector to boost the Blue Economy. It then proposes solutions with recommendations gathered through data collection in order to make the Blue Economy a key pillar in the Mauritian economy.

### **From an agreed definition of the Blue Economy concept to its implementation in the Mauritian context**

There is no universal definition of the Blue Economy. Agencies, institutions and States are yet to identify a specific or to an agreed definition.<sup>42</sup> The issue is, therefore, to what extent is it possible to bring a framework which can be both inclusive and sustainable economically when it is not clearly defined?

Since there is a loophole in terms of an agreed definition, it is the working concept devised by the World Bank Group that is going to be used in this paper.

It is through the report published in 2017 by the World Bank Group entitled *The Potential of the Blue Economy*<sup>43</sup> that a working definition on the Blue Economy has been provided. In the devising process of identifying a definition of the Blue Economy, the report also brings a

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<sup>42</sup> World Bank and United Nations Department of Economic and Social Affairs. 2017. *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*. World Bank, 2017 International Bank for Reconstruction and Development/The World Bank, Washington DC.

<sup>43</sup> Ibid

reflexion on the increasing long-term benefits of the sustainable use of marine resources for Small Island Developing States (SIDS) and Coastal Least Developed Countries (CLDs).

Mauritius is directly concerned by this definition for three reasons. Firstly the island forms part of the SIDS community.<sup>44</sup> Secondly it has initiated the Blue Economy concept before the 2017 report. Thirdly climate change is a reality in the Mauritian context.<sup>45</sup> The island is actually witnessing the drastic effects of climate change. Therefore the definition devised by the World Bank Group suits the Mauritian context.

As per this report, the “blue economy” concept seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. From this definition, it can be understood that the Blue Economy is a totally different concept. It goes beyond the idea of doing business as usual. Human activities and economic rules are both inclusive in that it brings all stakeholders together. However the condition is that these activities are set to be carried out in a sustainable manner.

Therefore from the above-mentioned definition, the Blue Economy is expected to cover the following sectors:

- Fisheries
- Aquaculture
- Coastal and maritime tourism
- Marine Biotechnology and Marine Bioprospecting
- Extracting Industries : Non-Living Resources
- Desalination (freshwater generation)
- Renewable Marine (off-shore) Energy

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<sup>44</sup> The Republic of Mauritius is party to various SIDS agreements internationally and regionally.

<sup>45</sup> Second Reading of the Climate Change Bill by the Minister of Environment, Solid Waste Management and Climate Change, on the effects of climate change in Mauritius,

Temperature readings show a warming trend of about 1.2 degrees Celsius, compared to an average increase of 1.1degrees Celsius on the global scale.

• On the other hand, a downward trend in annual precipitation of 8% has been observed since 1950, while episodes of high intensity precipitation over a short duration are becoming more and more frequent.

• In addition, the rise in sea level over the last decade is around 5.6 mm per year and exceeds the world average of around 3.3 mm per year. This accelerated rise in sea level causes serious degradation of our coasts and the intrusion of salt water into our water tables. So during the last decade, we have observed a loss of our beaches of almost 20 meters on average in some regions.

National Assembly, Parliamentary Debates Hansards, Tuesday 03 November 2020, Republic of Mauritius, pp. 91

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- Maritime Transport, Ports and Related Services, Shipping, and Shipbuilding
- Waste disposal management<sup>46</sup>

Mauritius is directly concerned with the above-mentioned sectors as it is a small island developing state. In order to integrate all these sectors within a Mauritian Blue Economy, major institutional reforms have to be undertaken. The next step is to go through the process of seeing how the Blue Economy made its way in the Mauritian context. To conceptualise or the coming to an agreed definition on the Blue Economy in Mauritius has been the victim of policy-makers.

### **From the Ocean Economy to the Blue Economy: a question of definition**

The enhancing of the Blue Economy or Ocean Economy as it used to be referred to in the Republic of Mauritius is highly dependent on policy decisions.<sup>47</sup> In order to understand their significance and to what extent do they really differ, it is recommended firstly to look at the vision set by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping. After which it will be able to establish whether the actual pandemic situation affecting the whole world is a deterrent factor preventing the Blue Economy to progress.

The Ministry's vision of the Blue Economy can be gathered in the following terms: *“To make the Blue Economy an important pillar to sustain economic diversification and growth, having due regard to the conservation of marine ecosystems.”*<sup>48</sup>

In fact, the concept of the Blue Economy finds its source under the Maurice Ile Durable Policy, Strategy and Action Plan back in May 2013.<sup>49</sup> The action plan was part of the then government programme 2012 – 2015. The ultimate objective was *“Moving the Nation Forward.”* However under that action plan, it was rather the concept of Ocean Economy that was chosen as the best option.

Under the 2013 action plan, the Ocean Economy was considered to be important since Mauritius has very limited land resources, most of which are already exploited and there is

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<sup>46</sup> World Bank and United Nations Department of Economic and Social Affairs. 2017. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. World Bank, 2017 International Bank for Reconstruction and Development/The World Bank, Washington DC.

<sup>47</sup> Policy decision in this paper means, decisions, measures decided by Cabinet.

<sup>48</sup> The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping website: <https://blueeconomy.govmu.org/Pages/Ministry.aspx>.

<sup>49</sup> Maurice Ile Durable Policy, Strategy and Action Plan in Final Report May 2013, Ministry of Environment and Sustainable Development, Republic of Mauritius.

little scope for further development or expansion on land in a sustainable manner. However, Mauritius has a huge EEZ of over 2 million km<sup>2</sup>, of which 99% is the unexplored ocean.<sup>50</sup>

As a result, the exploitation of ocean and marine resources presents an immense opportunity to promote and expand its spatial boundaries, develop scientific knowledge and new business opportunities, Mauritius will require significant resources and expertise to exploit its ocean and marine resources in a comprehensive and sustainable manner.

The country presently lacks the necessary financial capacity, skills, and technology to explore, study and utilise the immense potential offered by the marine environment for food security (seafood hub, fisheries, other marine living resources), economic development of non-living resources e.g. exploitation for manganese, nickel, and other mineral nodules, energy, water, health, pharmaceuticals, leisure, carbon sequestration, climate change studies.<sup>51</sup>

Since 2014<sup>52</sup> with the new Ministry of Blue Economy, Marine Resources, Fisheries and Shipping and Outer Islands, the Ocean Economy has made way for the Blue Economy. From the policy maker point of view, it is considered that the Blue Economy is more inclusive than the Ocean Economy.

The Ministry's definition of the Blue Economy is set in the following words, *"for a long time, we have defined ourselves as a small island with limited land, and this has to a large extent define our economic perspectives. Today, we see ourselves as a large ocean state when we factor in our Exclusive Economic Zone of 2.3 million square kilometres including the Chagos region, and a continental shelf of 396,000 square kilometres co-managed with the Republic of Seychelles. Hence, the Blue Economy is seen as a driver of future growth."*<sup>53</sup>

The Ocean Economy is the *"proportion of the economy that relies on the ocean as an input to the production process"*.<sup>54</sup> As per this new definition, the Ocean Economy has receded in terms of proportion to the benefit of the Blue Economy. The latter is considered as rather the simultaneous promotion of economic growth, oceanic sustainability (sustaining ocean resources and ecosystem), and social inclusion. At the heart of our strategy is the human

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<sup>50</sup> Ibid, p. 20

<sup>51</sup> Maurice Ile Durable Policy, Strategy and Action Plan in Final Report May 2013, Ministry of Environment and Sustainable Development, Republic of Mauritius, p. 20.

<sup>52</sup> In December 2014, the general elections made way for a new government in office.

<sup>53</sup> The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping website: <https://blueeconomy.govmu.org/Pages/Blue-Economy.aspx>.

<sup>54</sup> Ibid

perspective and ocean health.<sup>55</sup> *“Our vision is to double our blue GDP to 20 percent in the medium term, while realizing social economic development and dynamic balance of resources and environment.”*<sup>56</sup>

The focus is on revitalising the economy with mineral resources development, ship building, ship registration, communication cable laying, pharmaceutical enterprises, sustainable energy from waves and currents, seaside leisure tourism, and fisheries and aquaculture. Emphasis is on diversifying and deepening the blue economy value chain. At the same time, it tackles climate change via low carbon and resource-efficient shipping, fishing and marine tourism, and marine biotechnology. Innovative finance tools like the blue bonds are being developed and joint ventures in the fishing activities are being encouraged.<sup>57</sup>

From the different definitions provided by either the Ocean Economy or Blue Ocean, the following observations can be made:

- Both concepts are highly dependent on policy decisions, despite the fact that the Mauritian EEZ territory exceeds the 2.3 millions square kilometres. This can be explained by the fact that the sovereignty of the Republic of Mauritius is at stake. There appears to be a lack of transparency in terms of what has been decided to enhance the fisheries industry.
- Amongst the sectors identified to be promoted within the Blue Economy, the fishing industry is at the bottom of the sectors to be given priority. Despite the fact that the number of people dependant of the fisheries sector to earn a living is quite important.<sup>58</sup>
- Covid-19 has no bearing on the Blue Economy as the restrictions are concerned with inland measures. Therefore the measures are unlikely to affect what has to be done in order to prevent the spread of the disease.

### **Impact of Covid-19 health measures and restrictions on the Blue Economy**

The pandemic situation has compelled the Government of the Republic of Mauritius to react urgently in implementing several sanitary measures. The latter was provided by different legislations namely the COVID-19 (Miscellaneous Provisions) Act 2020 and the Quarantine

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<sup>55</sup> The Ministry of Blue Economy, Marine Resources, Fisheries and Shipping website: <https://blueeconomy.govmu.org/Pages/Blue-Economy.aspx>.

<sup>56</sup> Ibid

<sup>57</sup> Ibid

<sup>58</sup> From the 30 interviews carried from registered fishermen and those who undergo illegal fishing, many households depend on the fishing industry to earn a living.

Act 2020. Two main justifications were put forward in implementing these statutory measures. The first reason is to prevent the propagation of the virus on the island. The second reason is to bring support to some sectors which are deeply impacted by the several sanitary measures that have to be imposed in order to preserve public health. However, neither the COVID-19 (Miscellaneous Provisions) Act 2020 nor the Quarantine Act 2020 had any impact positive on the Mauritian Blue Economy concept.

It has been reported by some local newspapers through various articles that the sanitary restrictions brought on the free movement of individuals and economic activities during the first lockdown from March 2020 to May 2020 have had several positive impacts on the environment. According to those articles, as far as the sea is concerned, the quality of the water has regained its natural colour due to less human activity.<sup>59</sup> It cannot be denied that the first lockdown period has had positive impact on the environment due to less human and economic activities. It goes without saying that there is no need to carry out a scientific study to justify this statement. However it begs the question to justify the positive impact of the lockdown on the environment when nobody was allowed to actually move freely and more specifically to undergo scientific study in order to justify the positive changes that the lockdown period had on the environment.

On the other hand, it cannot be denied that those enactments namely the COVID-19 (Miscellaneous Provisions) Act 2020 and the Quarantine Act 2020 are to some extent, in line with the actual economic and public health situation. Despite the several measures brought due to COVID-19, it appears that the Mauritian Blue Economy has not benefitted directly from them. In other words, the health measures sit in contradiction with the Mauritian Blue Economy. In order to understand this contradiction the fisheries sector is the main area of investigation in this paper. After having justified the relevance of the fisheries sector in this study, the next step is to proceed with recommendations. They are proposed in order to boost the fisheries sector in the Republic Mauritius. The feedbacks received from the fisheries authorities and registered fishermen are necessary indicators on how to reinvigorate the fisheries sector and at the same time the Mauritian Blue Economy.

### **The Fisheries Sector in Mauritius**

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<sup>59</sup> Le Mauricien 20 Mai 2020, Week-end Special Edition 26 – 26 April 2020

Sustainable fisheries can be an essential component of a prosperous blue economy, with marine fisheries contributing more than US\$270 billion annually to global GDP (World Bank 2012b). A key source of economic and food security, marine fisheries provide livelihoods for the 300 million people involved in the sector and help meet the nutritional needs of the 3 billion people who rely on fish as an important source of animal protein, essential micro nutrients, and omega-3 fatty acids (FAO 2016).<sup>60</sup> The role of fisheries is particularly important in many of the world's poorest communities, where fish are a critical source of protein and the sector provides a social safety net. Women represent the majority in secondary activities related to marine fisheries and marine aquaculture, such as fish processing and marketing. In many places, employment opportunities have enabled young people to stay in their communities and have strengthened the economic viability of isolated areas, often enhancing the status of women in developing countries.<sup>61</sup>

For billions around the world—many among the world's poorest—healthy fisheries, the growing aquaculture sector, and inclusive trade mean more jobs, increased food security and well-being, and resilience against climate change.<sup>62</sup>

In Mauritius, the Blue Economy contributes up to 10 % of the country's GDP.<sup>63</sup> In terms of catch it amounts to 2,000 tons annually. The EEZ is mainly exploited 27 by foreign countries with the target species being mainly Tuna. The catch of foreign vessels in the Mauritian EEZ is 55,000 tons per year. At the lowest price of unprocessed Tuna of \$ 2,000 per ton, the catch value of foreign vessels in or EEZ represents approximately 4 billion rupees annually approximately 90,700, 000.00.<sup>64</sup>

The Mauritian Blue Economy covers the traditional sectors the fisheries, seafood processing, marine resources, ocean energy and shipping. This part of the study will focus on the fisheries sector in order to demonstrate the contradiction of the fisheries sector in relation to the socio-economic effects of COVID-19 and health measures in the Mauritian blue economy.

In this context the fishermen have been chosen to confirm that the despite having a very large territorial EEZ exploitation, the fisheries industry still lags behind. The informal interviews

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<sup>60</sup> World Bank and United Nations Department of Economic and Social Affairs. 2017. *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*. World Bank, 2017 International Bank for Reconstruction and Development/The World Bank, Washington DC.

<sup>61</sup> Ibid

<sup>62</sup> Ibid

<sup>63</sup> Minister of Blue Economy, Marine Resources, Fisheries and Shipping's intervention on Budget 2020 - 2021

<sup>64</sup> Ibid.

carried out with registered and informal fishermen working in the northern part of the island confirm this fact. They are being used as model in order to gather evidence as to how the Blue Economy is not working effectively. Evidence that the Mauritian fishing industry is not well performing has also been confirmed by the Minister Blue Economy, Marine Resources, Fisheries and Shipping in his 2020-2021 speech on the budget.

### **Informal interviews with fishermen**

The justification for choosing fishermen in the northern part of the island has been set out above.<sup>65</sup>

Around 30 registered fishermen and 20 unregistered fishermen have agreed to be interviewed.

Most of the 30 registered fishermen have over 50 years of experience in the fishing industry. They are now in their late seventies which means that they have started in this discipline when they were quite young. Over the decades of fishing they have acquired a very good knowledge of the sea. They are the third generation of fishermen as grandfathers and fathers were fishermen. They did not attend school as education was not free at that time. However through fishing they have been able to buy their own properties. They have been able to provide good education to some of their children. Others have been able to sponsor the studies of their children at overseas universities namely living in Canada, Europe and Australia.

The 20 unregistered fishermen are unemployed. 10 have been fishing for over 20 twenty years. The other 10 has lost their full time jobs due to the closing down of the businesses. The lockdown has been the main cause of closing down of the businesses in that part of the island.

The following are the common agreeable areas identified by the fishermen depriving the fisheries sector to become a boost to the Blue Economy:

#### **Water pollution**

- Climate change is a reality at sea. It can be witnessed by the quality of water is deteriorating.
- The level of water pollution is increasing.
- The activities carried out in the lagoons by the hotels are highly responsible for water pollution. The waste system of the hotels must be monitored.

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<sup>65</sup> Infra, methodology.

- The number of private catamarans mooring in Grand Bay have increased over the last decade which another cause of water pollution.
- The catamarans are destined for big game fishing.
- Over 12 months they can go fishing for a maximum of three months due to poor weather conditions.
- All fishermen interviewed have confirmed that the two lockdowns have had no effects in cleansing the water or improving the fish and seafood population.

#### **Other factors contributing to the decrease in the fish and seafood population**

- Twenty years ago the catch could reach the 1/2 ton on a weekly basis of fish and seafood.
- Nowadays they have to refer to kilos.
- The lagoons are literally empty as well as the outer waters.
- The amount of fish and seafood has decreased drastically over the last ten years.
- The drastic decrease in fish and seafood is due to water pollution.

#### **Monitoring of foreign vessels**

- Foreign vessels carry out aggressive fishing with net fishing. The latter must be prohibited as it destroys the natural habitat of the fish and seafood preventing them from regenerating.
- Foreign vessels should be closely monitored.
- Fishes and seafood are not given adequate time to reproduce.

#### **Illegal fishing**

- Illegal fishing is rampant throughout the year. This activity is often carried out in specific areas. Even the reserved areas of Coin de Mire, Flat Island, and Îlot Gabriel are victims to illegal fishing.
- The authorities have no appropriate means to monitor and deter illegal fishing.
- Officers of the National Coast Guard are not appropriately trained in order to tackle illegal fishing. They also lack the required equipment and logistics.

The data collected from the fishermen demonstrate that this sector is not directly affected by the socio-economic effects of COVID-19 and health measures in the Mauritian Blue Economy. The fisheries sector is totally independent of inland activities. The measures to be taken for the fisheries sector are not connected with COVID-19 measures.

#### **Recommendations**

From the above, it is clearly established that the Blue Economy can contribute to the economy. For this to succeed, drastic measures must be taken. The fisheries sector is vital for the Blue Economy to flourish.

The need for a change should not be entrusted only to policy makers. All stakeholders must contribute to allow the fisheries sector to contribute to the Blue Economy.

There is a strong feeling among the fishermen to be excluded from the community as all their requests have never been adhered to by the relevant authorities. According to them, several important policy decisions must be changed in order to solve the issues encountered by the fisheries sector. The unregistered fishermen feel to be completely left out and do not see a good scope from the fisheries sector.

Therefore the following measures should be taken:

- Marine life must regenerate. For this to happen fishing activities should be stopped for a period of two years. Stopping all fishing activities will allow the fish and seafood to breed.
- Illegal fishing must come to an end. As a first step, it must be severely punished. The monitoring of illegal fishing should be done at different levels. It must be entrusted to both the fishermen community and officers of the National Coast Guard.
- In order to prevent water pollution, hotels must review their waste system. Also, the hotels and the fishermen must work together to identify solutions of reducing water pollution.
- There must be quota in the number of catamarans that can moor in the region of Grand Bay.
- The policy allowing foreign vessels to exploit Mauritian seas should be reviewed as there is an urgent need to monitor their fishing technics.
- Allow the fishermen's federations to buy or import their fishing equipment themselves, so that they benefit from a better price.<sup>66</sup>
- Review the dimensions of the net for fishing seine.<sup>67</sup>
- Review the closing period and the opening of seine fishing.<sup>68</sup>
- Allow seine fishermen to venture out outside the lagoon.<sup>69</sup>

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<sup>66</sup> Minister of Blue Economy, Marine Resources, Fisheries and Shipping's intervention on Budget 2020 - 2021

<sup>67</sup> Ibid

<sup>68</sup> Ibid

<sup>69</sup> Ibid

- Offered materials for the construction of their locker.<sup>70</sup>
- Reorganization and embellishment of landing stages across the island.<sup>71</sup>
- The increase in bad weather Allowance.<sup>72</sup>
- Fishermen must be encouraged to participate fully in community base project, that is, Seaweed cultivation in Mauritian lagoons.<sup>73</sup>

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<sup>70</sup> Ibid

<sup>71</sup> Ibid

<sup>72</sup> Minister of Blue Economy, Marine Resources, Fisheries and Shipping's intervention on Budget 2020 - 2021

<sup>73</sup> Ibid

**Risk sharing and investment strategies for small fisheries enterprises (PEs) in the COVID-19 period**

**Partage de risques et stratégies d'investissement des petites entreprises (PEs) de pêches en période covid-19**

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***Abstract:***

Africa's ocean and aquatic resources contain huge schools of valuable fish, and exploited for trade by fishing companies. Unfortunately, COVID-19 will weaken the entire economy, including the blue economy. The study conducted among 33 small Cameroonian fishing companies aims to improve the maximization of their earnings during a period of COVID-19, taking into account the sustainability of the species through a better investment strategy. Based on agency theory and earnings-sharing analysis, the study shows that in period COVID-19, the pure risk is high among fishermen (agent) resulting in high agency costs and consequently, the increase in their earnings and the decrease in the earnings of the owners of small fishing enterprises (main).

**Keywords:** Blue economy, COVID-19, asymmetry in information, agency costs, risk sharing mechanism, control mechanisms.

**Introduction**

Rich with a vast network, aquatic resources and vast interconnected oceans, Africa's lake areas cover approximately 240,000 km<sup>2</sup>, while its transboundary river basins cover approximately 64% of the continent, UNEP (2010). According to Leijenaar (2012), it is estimated that the maritime economy of the African continent represents 90% of its total trade. Due to its importance for commercial, environmental and security reasons, according to the ECA (2019), the blue economy opens doors to the industrialization and economic development of Africa, because it contributes to food security of more than 200 million people in Africa and provide income for over 10 million people. In May 2014, the African Union (2014) estimated that the

value of the first sale of African fisheries (marine, inland and aquaculture) was 17.9 billion USD per year, it also estimates that 2 billion dollars would be available every year for African economies if the fishing sector was managed for sustainable development. Unfortunately, in 2020, African countries are suffering the consequences of the covid-19 health crisis, all sectors of the economy are affected. Cameroon has not remained without effect, we note the weakening of several companies, GICAM (2020), the sector most affected is the service sector, UNDP (2020).

The crisis has contributed to the reduction in the displacement of populations and the closure of markets, hotels, bars, restaurants, etc. customers, but also existing divergences of interests between the PPEPs and the sinners due to the risks incurred and the reward of the gains.

There is therefore a problem of risk sharing, thus, Stiglitz (1974) and Jensen and Meckling (1976) attempt to explain this divergence of interest through agency theory, by highlighting the mechanisms of sharing risk and control to limit conflicts of interest in companies to reduce agency costs and maximize profits. The central question is how to reduce the asymmetry in the information linked to blue contracts in covid-19 period. What are the appropriate investment strategies for small fishing companies in covid-19 period? The study aims to improve the maximization of gains of covid-19 period by considering the sustainability of fish through a better investment strategy. First, we will discuss the issues of agency theory and risk and then we will examine the methodological aspects of reducing agency costs for an efficient risk-sharing mechanism.

### **Risk analysis of blue contracts for small fishing companies**

The fish trade investment strategy involves two economic agents, the owner of the small fishing enterprise (principal) and the fisher (agent), through a contract. The reward for the gains is most often dependent on the sharing of risk between the two agents and the type of risk associated with the investment.

### **Risk sharing through agency theory**

The sharing of risks in an agency relationship is analyzed in several works. Stiglitz (1974) addresses it by defining the relationship between a landowner and an operator. To cope with the moral hazard that characterizes this situation, the (principal) owner mobilizes a particular contract called sharecropping in which he entrusts the operator (agent) with the care of cultivating his land in exchange for part of the harvest. . The operating and harvest costs are

then shared equally between the parties. Compared to other possible solutions, such as wage employment or renting, Stiglitz demonstrates that sharecropping is the best contract that the landowner can offer to the operator, because the resulting risk sharing makes it possible to encourage the second to increase its efforts, and finally to take decisions in accordance with the interests of the former: the more the farmer invests and works, the more he realizes, as does the landowner. The sharing of risks appears here as the contractual clause which makes it possible to encourage the agent to not only step up his efforts, but also to take decisions compatible with the interests of the principal.

The fact that agent behavior is closely related to the extent of risk sharing leads Grossman and Hart (1983) to question the optimal degree of risk sharing between principal and agent. According to Laffont (1987), most agency problems involve a combination of adverse selection, moral hazard, and risk sharing. Curien (2005) thinks that the optimal solution consists, for the principal, in defining a contract which protects him against anti-selection, which reveals the intrinsic characteristics of the agent, and which struggles also against moral hazard, by inciting it to provide a substantial level of effort. For Rochaix (1997), the contract defined by the principal must make a choice between risk sharing, which implies that the remuneration offered is independent of the result (due to the agent's risk aversion) and the implementation incentives which require a remuneration dependent on the result. This divergence of interest of the parties involved risks calling into question the sole objective of maximizing profit, which justifies the analysis of the investment strategies of small fishing companies in the Covid-19 period from the perspective of sharing risks. According to Jensen and Meckling (1976), the principal can limit the divergences of interests by proposing an appropriate system of incentives for the agent as well as means surveillance aimed at limiting the agent's opportunistic behavior. The establishment of such a control and incentive system reveals costs called "agency costs". The organizational form that minimizes these agency costs is the one that ensures the investment strategy. The agency theory then proposes a mechanism that reduces these agency costs by defining efficient contracts ex ante. According to Fama and Jensen (1983) the purpose of the contract is to specify the rights of each agent within the firm, the performance criteria on which each is judged and the remuneration to which they can claim. The signing of a contract must make it possible to limit the risks incurred by each member providing capital (human or financial). By analyzing the concession of Cameroonian railways, Bidiassé (2017) proposes a risk-sharing mechanism that could be perceived at the level of the State guarantee for the concessionaire's loans and the concession fee.

### **The risk in the investment strategy**

Investment is "the exchange of a present and certain amount of money for the expectation of future income spread over time." In this context, the manager must optimize the use of the resources of the company to accept only projects that are likely to increase the value of the company and therefore seek to maximize the wealth of the shareholders.

The investment strategy consists of making irreversible investment decisions which influence and determine to a large extent the risk class and profitability of the company. Risk means the quantification of uncertainty. The risk, according to the neoclassical theory of financing, results from the ex-ante variability of flows depending on the state of the world. It is to Knight (1921) and Keynes (1923) that economic and financial theory owes the most resounding developments in risk theory. According to Knight (1921) the notion of risk is that of uncertainty, which is reinforced by Keynes (1923) who proclaims the sovereignty of uncertainty, by asserting that the decisions affecting the daily life of men are too complex to be summarized in a trivial probability calculation, since the basis for performing such a calculation simply does not exist. According to Knight (1921) and Keynes (1923), the literature introduced a nuance into the very notion of risk, enshrining the notion of "pure risk" and "speculative risk". For Knight (1921) pure risk is that associated with events which can only have negative consequences on nature and affect the utility of business to varying degrees and which are therefore exposed to large losses. In contrast to pure risk, Keynes (1936) finds that the peculiarity of speculative risk is that it is intentional, wanted and accepted by the economic agent who takes it in the hope of realizing winnings greater than what he stands to lose if his bets on the future fail. In this perspective, Markowitz (1952) finds that speculative risk is intimately linked to that of return, which becomes its justification. Uncertainty in this case appears to be a central element of the investment strategy. MacDonald and Siegel (1986) analyze the characteristics of investment decisions and show that the greater the uncertainty about income from investment projects, the more the company will demand a high current yield from the project to invest. Hence the following theoretical propositions:

P1. The higher is the pure risk associated with the investment strategy, the higher is the return of the business owner (principal) in covid-19 period.

P2: The higher the pure risk linked to the investment strategy, the lower the return for the fisherman (agent) during a period of covid-19.

### **Methodological approach**

Our study questions the impact of risks associated with the investment strategies of small fishing companies. To answer this question, we will first present the methodology and the results obtained. Then the main contributions of the study.

### **Methodology and results obtained**

The analysis of our methodology allows us to focus on the method of data collection and analysis, the synthetic analysis of the results and the discussion of the results.

### **Data collection and analysis method**

The analysis of our study is essentially based on 33 cases, Yin (1994). The data collected concerns the artisanal fishing contracts (2017 to 2021) concluded informally between the PPEPs and the fishermen. An interview guide was sent to PPEP and fishermen beforehand and explained before each interview. The interview was arranged with the PPEPs and the fishermen where the latter fish for fish in the waters of Manoka and Mouanko, a coastal region in Cameroon. The processing of the data was facilitated by the method of analysis of the sharing of shares of earnings allocated to the investment. This method makes it possible to formalize a profit sharing ratio from the investment. Concretely these gains are allocated to each party involved in the investment, namely: equipment, PPEP, fisherman and members of the fishing crew, taking into account the reduction in agency costs. To process the data collected during the exploratory interviews, we chose to proceed with a content analysis, the purpose of which is to bring out new questions to supplement the theoretical readings. According to Bardin (1998), content analysis aims to manipulate messages (content and expression of this content) to update indicators allowing inference on a reality other than that of the message. The interview guide used includes, in addition to general questions, questions on attributes related to risks before and after the covid-19 crisis, agency costs, incentive, control and sharing mechanisms. risk, benefit sharing before and after the covid-19 period. The type of equipment used within the framework of the artisanal fishing exploitation contract, the agency costs borne by the PPEPs and the fishermen.

### **Synthetic analysis of the results**

Three tables analyze the results of our interviews

**Table 1. Empirical analysis of the investment strategy before Covid-19 - (2017, 2018, 2019)**

Period before Covid-19 - (2017, 2018, 2019)							
Investment	Speculative risk	Average net result	Investment strategy				
			Equipment share	Share of fishing PE(Principle)	Fisherman's Share (Agent)	Share of the fisherman's crew	Cost of Control
Canoe 1	low	13078000	4359333,33	4359333,33	2179666,67	2179666,67	500000
Canoe 2	low	8795000	2931666,67	2931666,67	1465833,33	1465833,33	500000
Canoe 3	low	14072050	4690683,33	4690683,33	2345341,67	2345341,67	500000
Canoe 4	low	15458000	5152666,67	5152666,67	2576333,33	2576333,33	500000
Canoe 5	low	21000500	7000166,67	7000166,67	3500083,33	3500083,33	500000
Canoe 6	low	10000475	3333491,67	3333491,67	1666745,83	1666745,83	500000
Canoe 7	low	18795425	6265141,67	6265141,67	3132570,83	3132570,83	500000
Canoe 8	low	27125145	9041715	9041715	4520857,5	4520857,5	500000
Canoe 9	low	16478546	5492848,67	5492848,67	2746424,33	2746424,33	500000
Canoe 10	low	17890000	5963333,33	5963333,33	2981666,67	2981666,67	500000
Canoe 11	low	14576125	4858708,33	4858708,33	2429354,17	2429354,17	500000
Canoe 12	low	15450000	5150000	5150000	2575000	2575000	500000
Canoe 13	low	22000000	7333333,33	7333333,33	3666666,67	3666666,67	500000
Canoe 14	low	18945000	6315000	6315000	3157500	3157500	500000
Canoe 15	low	16525000	5508333,33	5508333,33	2754166,67	2754166,67	500000
Canoe 16	low	14590000	4863333,33	4863333,33	2431666,67	2431666,67	500000
Canoe 17	low	16225500	5408500	5408500	2704250	2704250	500000
Canoe 18	low	19500000	6500000	6500000	3250000	3250000	500000
Canoe 19	low	27586000	9195333,33	9195333,33	4597666,67	4597666,67	500000
Canoe 20	low	12040000	4013333,33	4013333,33	2006666,67	2006666,67	500000
Canoe 21	low	13500750	4500250	4500250	2250125	2250125	500000
Canoe 22	low	15750000	5250000	5250000	2625000	2625000	500000
Canoe 23	low	18975000	6325000	6325000	3162500	3162500	500000
Canoe 24	low	15000500	5000166,67	5000166,67	2500083,33	2500083,33	500000
Canoe 25	low	25750000	8583333,33	8583333,33	4291666,67	4291666,67	500000
Canoe 26	low	23000750	7666916,67	7666916,67	3833458,33	3833458,33	500000
Canoe 27	low	12450000	4150000	4150000	2075000	2075000	500000
Canoe 28	low	17525750	5841916,67	5841916,67	2920958,33	2920958,33	500000
Canoe 29	low	14795875	4931958,33	4931958,33	2465979,17	2465979,17	500000

Canoe 30	<i>low</i>	17853000	5951000	5951000	2975500	2975500	500000
Canoe 31	<i>low</i>	22750000	7583333,33	7583333,33	3791666,67	3791666,67	500000
Canoe 32	<i>low</i>	21555000	7185000	7185000	3592500	3592500	500000
Canoe 33	<i>low</i>	14583240	4861080	4861080	2430540	2430540	500000

**Table 2. Empirical analysis of the investment strategy after Covid-19 - (2020, 2021).**

Period after Covid-19 - (2020, 2021)							
Investment	pure risk	Average net result	Investment strategy				
			Equipment share	Share of fishing PE (Principal)	Fisherman's Share (Agent)	Share of the fisherman's crew	Cost of Control
Canoe 1	<i>high</i>	11750584	3916861,33	2937646	2937646	1958430,67	500000
Canoe 2	<i>high</i>	8500000	2833333,33	2125000	2125000	1416666,67	500000
Canoe 3	<i>high</i>	11275750	3758583,33	2818937,5	2818937,5	1879291,67	500000
Canoe 4	<i>high</i>	14690000	4896666,67	3672500	3672500	2448333,33	500000
Canoe 5	<i>high</i>	21250000	7083333,33	5312500	5312500	3541666,67	500000
Canoe 6	<i>high</i>	10500000	3500000	2625000	2625000	1750000	500000
Canoe 7	<i>high</i>	15785750	5261916,67	3946437,5	3946437,5	2630958,33	500000
Canoe 8	<i>high</i>	24580000	8193333,33	6145000	6145000	4096666,67	500000
Canoe 9	<i>high</i>	14750580	4916860	3687645	3687645	2458430	500000
Canoe 10	<i>high</i>	15250000	5083333,33	3812500	3812500	2541666,67	500000
Canoe 11	<i>high</i>	13450000	4483333,33	3362500	3362500	2241666,67	500000
Canoe 12	<i>high</i>	14150000	4716666,67	3537500	3537500	2358333,33	500000
Canoe 13	<i>high</i>	22000000	7333333,33	5500000	5500000	3666666,67	500000
Canoe 14	<i>high</i>	13000500	4333500	3250125	3250125	2166750	500000
Canoe 15	<i>high</i>	12480000	4160000	3120000	3120000	2080000	500000
Canoe 16	<i>high</i>	14507800	4835933,33	3626950	3626950	2417966,67	500000
Canoe 17	<i>high</i>	15250000	5083333,33	3812500	3812500	2541666,67	500000
Canoe 18	<i>high</i>	17525000	5841666,67	4381250	4381250	2920833,33	500000
Canoe 19	<i>high</i>	24875000	8291666,67	6218750	6218750	4145833,33	500000
Canoe 20	<i>high</i>	12250000	4083333,33	3062500	3062500	2041666,67	500000
Canoe 21	<i>high</i>	13750000	4583333,33	3437500	3437500	2291666,67	500000
Canoe 22	<i>high</i>	14750000	4916666,67	3687500	3687500	2458333,33	500000
Canoe 23	<i>high</i>	17850750	5950250	4462687,5	4462687,5	2975125	500000
Canoe 24	<i>high</i>	15000750	5000250	3750187,5	3750187,5	2500125	500000

Canoe 25	high	24850750	8283583,33	6212687,5	6212687,5	4141791,67	500000
Canoe 26	high	22550750	7516916,67	5637687,5	5637687,5	3758458,33	500000
Canoe 27	high	13500750	4500250	3375187,5	3375187,5	2250125	500000
Canoe 28	high	16750450	5583483,33	4187612,5	4187612,5	2791741,67	500000
Canoe 29	high	14550750	4850250	3637687,5	3637687,5	2425125	500000
Canoe 30	high	16890000	5630000	4222500	4222500	2815000	500000
Canoe 31	high	21578680	7192893,33	5394670	5394670	3596446,67	500000
Canoe 32	high	20750550	6916850	5187637,5	5187637,5	3458425	500000
Canoe 33	high	13850005	4616668,33	3462501,25	3462501,25	2308334,17	500000

Table 3. Synthetic analysis of the investment strategy before and after covid-19.

Investment	Investment strategy (Period before covid-19: 2017, 2018 and 2019)			Investment strategy (Period after covid-19: 2020 and 2021)		
	Speculative risk	Share of fishing PE (Principal)	Fisherman's Share (Agent)	Pure risk	Share of fishing PE (Principale)	Fisherman's Share (Agent)
Canoe 1	low	4359333,33	2179666,67	high	2937646	2937646
Canoe 2	low	2931666,67	1465833,33	high	2125000	2125000
Canoe 3	low	4690683,33	2345341,67	high	2818937,5	2818937,5
Canoe 4	low	5152666,67	2576333,33	high	3672500	3672500
Canoe 5	low	7000166,67	3500083,33	high	5312500	5312500
Canoe 6	low	3333491,67	1666745,83	high	2625000	2625000
Canoe 7	low	6265141,67	3132570,83	high	3946437,5	3946437,5
Canoe 8	low	9041715	4520857,5	high	6145000	6145000
Canoe 9	low	5492848,67	2746424,33	high	3687645	3687645
Canoe 10	low	5963333,33	2981666,67	high	3812500	3812500
Canoe 11	low	4858708,33	2429354,17	high	3362500	3362500
Canoe 12	low	5150000	2575000	high	3537500	3537500
Canoe 13	low	7333333,33	3666666,67	high	5500000	5500000
Canoe 14	low	6315000	3157500	high	3250125	3250125
Canoe 15	low	5508333,33	2754166,67	high	3120000	3120000
Canoe 16	low	4863333,33	2431666,67	high	3626950	3626950
Canoe 17	low	5408500	2704250	high	3812500	3812500
Canoe 18	low	6500000	3250000	high	4381250	4381250
Canoe 19	low	9195333,33	4597666,67	high	6218750	6218750
Canoe 20	low	4013333,33	2006666,67	high	3062500	3062500
Canoe 21	low	4500250	2250125	high	3437500	3437500
Canoe 22	low	5250000	2625000	high	3687500	3687500
Canoe 23	low	6325000	3162500	high	4462687,5	4462687,5
Canoe 24	low	5000166,67	2500083,33	high	3750187,5	3750187,5
Canoe 25	low	8583333,33	4291666,67	high	6212687,5	6212687,5
Canoe 26	low	7666916,67	3833458,33	high	5637687,5	5637687,5
Canoe 27	low	4150000	2075000	high	3375187,5	3375187,5
Canoe 28	low	5841916,67	2920958,33	high	4187612,5	4187612,5
Canoe 29	low	4931958,33	2465979,17	high	3637687,5	3637687,5

<b>Canoe 30</b>	<i>low</i>	5951000	2975500	<i>high</i>	4222500	4222500
<b>Canoe 31</b>	<i>low</i>	7583333,33	3791666,67	<i>high</i>	5394670	5394670
<b>Canoe 32</b>	<i>low</i>	7185000	3592500	<i>high</i>	5187637,5	5187637,5
<b>Canoe 33</b>	<i>low</i>	4861080	2430540	<i>high</i>	3462501,25	3462501,25

The synthetic analysis of the results of Table 3, above shows that out of the 33 canoes of the fishermen (agent) studied, two risks impact the blue contract for the exploitation of the investment and consequently the remuneration of the two main economic agents: The PPEP and its fisherman. We also observe that the earnings-sharing criteria varied from the situation before covid-19 to the situation after covid-19. The results show that before the period of covid-19 the speculative risk is low resulting in low agency costs and that in period of covid-19, the pure risk is high among sinners, resulting in high agency costs among PPEPs.

Consequently, the yield decreases on the side of the PPEP (Main) and increases on the side of the fishermen (Agent) due to the evolution of the variation in the criteria for the distribution of earnings and the control of fishermen. This conclusion contrasts with the results of MacDonald and Siegel (1986) that show that the greater the uncertainty about income from investment projects, the more the firm will require a high current yield from the project to invest. Thus, these results highlight the following empirical propositions:

PA: The higher is the pure risk associated with the investment strategy; the lower is the return of the small fishing business owner (principal) due to the costs associated with the covid-19 pandemic.

PB: The higher is the pure risk associated with the investment strategy, the higher is the return for the fisher (agent) because he does not bear the costs associated with the covid-19 pandemic.

### **Discussion of Results**

The discussion will focus on the risks, agency costs and the criteria for sharing. With regard to risks, the results highlighted in Table 3 show that during the investment strategy, PPEPs face two risks: the risk before covid-19 which is a speculative or regular risk, therefore low and the risk after covid-19 which is pure or irregular risk, therefore high. In our study, the risk is speculative insofar as the consequences are known to both economic agents. For example: for the PPEP, we have the risks: of non-delivery of fish according to the contractual periods, of damage, destruction or loss of fishing equipment (canoe, motor, net, life jackets, floats, sinkers, wire for attaching floats and sinkers) before the return on investment.... For the fisherman we have: risk of going to be attacked in the ocean and not returning alive, of not being compensated

in accordance with the sharing of contractual gains, of losing a member of his crew.... To reduce these risks which creates conflicts of interest, the incentive and control mechanisms are designed to minimize the costs of existing agencies. Speculative risks are low and agency costs are low. The pure risk is qualified as abnormal because it occurs after the covid-19 crisis. The two economic agents ignore the consequences.

For the PPEP: we have the risk of high indebtedness with these creditors, the risk of loss of customers for non-compliance with orders, the risk linked to the sustainability of non-compliance with fishing standards ... For the fisherman, we have the risk of non-containment (the cost of selecting a fisherman increases), the risk of non-compliance with barrier measures when fishing between crew members (the cost of selecting crew members increases). The pure risk is therefore high and the agency costs are high. The PPEP therefore faces the risk of making an inappropriate choice of fisherman, Akerlof (1970), he therefore faces an ex ante informational asymmetry, that is to say a problem of adverse selection before the period of covid-19. After the period of covid-19, the adverse selection is based on the inability of the PPEP to choose between the good and the bad sinners, to choose between the fishermen who do not have covid-19 (can go to die in the sea ), fishermen who can meet the productivity objectives defined by the PPEP and finally fishermen who must respect the sustainability of the marine ecosystem. This informational asymmetry therefore leads to an inefficient allocation of investment. However, we observe that so far no mechanism has been put in place to reduce the problems of adverse selection in blue contracts with regard to artisanal fishing. PPEPs rely solely on the reputation and experience of sinners which is sometimes difficult to verify. PPEPs may also find themselves unable to observe the opportunistic behaviors of the fisherman, which could compromise the ability to repay debts incurred by PPEPs. This situation according to Jensen and Meckling (1976) is qualified as ex post informational asymmetry, and ex post moral hazard according to Stiglitz and Weiss (1981). For the fisherman, it is a question of not informing the PPEP on the real quantity of the fish harvested, of the damaged equipment, the environmental impacts caused... The fisherman can also decide to use the PPEP equipment for other purposes, he this is an efficient and inefficient allocation of investment. For example transporting travelers with PPEP equipment, renting fishing equipment to other fishermen, selling fish to people other than those indicated in the blue contract.... This situation is reflected according to Mishkin (1999). ) as an ex ante moral hazard. To reduce this informational asymmetry an incentive mechanism for the members of the fisherman's crew is set up, it is actually two moles who do not know each other that they do the same work for the PPEP (an

amount of five hundred thousand FCFA is allocated to two members of the crew who report to the PPEP all the real information on the progress of the fishery. This money is unofficially deducted when the earnings are shared in the PPEP share).

Indeed, Agency costs that need to be reduced can then be broken down as follows: Monitoring costs can be costs of infiltrating moles into the fisherman's crew. The main one assumes these costs to reduce the opportunistic behaviors of the agent (fisherman). The commitment costs are seen here as the risk that the agent takes during the covid-19 period. It's about the costs of non-confinement, the costs of complying with barrier measures in the fisherman's crew. It is the latter who assumes these costs. Residual costs can be the difference between very high gains obtained by PPEPs and fishermen by harvesting fish from atypical and wild methods that do not meet sustainable fishing standards, with enormous consequences for future generations and the environment. environmental pollution and the sustainable gains obtained from harvesting fish from the appropriate methods.

As regards the criteria for sharing the gains between the PPEP and the fisherman, these are divided into four categories in all the fishing areas studied. Before the covid-19 period, net revenues are distributed as follows: 1/3 for equipment, 1/3 for PPEP, 1/6 for the fisherman, 1/6 for the fisherman's crew. In addition, the PPEP is required to reduce its share by 500,000 CFA francs to increase the share of the fisherman's crew as a control mechanism. This situation of profit sharing is a corollary to the speculative risk therefore normal; the principal (PPEP) receives a higher gain than that of the agent (fisher) on the investment made. In a pure risk situation, i.e., after the covid-19 period, the net revenues are distributed as follows: 1/3 for equipment, 1/4 for the PPEP, 1/4 for the fisherman, 1/6 for the fisherman's crew. In addition, the PPEP is required to reduce its share by 500,000 CFA francs to increase the share of the fisherman's crew as a control mechanism. This new sharing is due to the pure risks borne by the fisherman and his crew (costs of non-containment, costs of barrier measures, costs of sustainability of marine products) leading to high agency costs at the PPEP. This situation of profit sharing is corollary to the high risk therefore pure, the gain received by the principal (PPEP) is low, therefore the gain received by the agent (fisher) is high on the investment made.

### **Main contributions of the study**

The contribution of the study focuses on the information deficit hypothesis, proposals for risk sharing mechanisms and control mechanisms.

The information gap hypothesis shows that most PPEPs have no experience of fishing and in addition, covid-19 has upset all partnerships with banks, customers, and suppliers. Fishermen master their rivers, fishing techniques, members of their crews, areas where they can have a lot of fish... During the covid-19 period, fishermen are only afraid of death. Information asymmetry is in favor of fishermen. Thus, the creation of a fishermen's corporation reduces agency costs, the need to involve fishermen in the participation of the EP by granting them the co-signing of debts with banks, creditors, and suppliers will help reduce agency costs using growing debt and creditors' protection clauses, finally, a revaluation of the sharing criterion will also help reduce agency costs.

In this case, the risk-sharing mechanism is perceived at two levels: a guarantee deposit provided by a corporation of professional fishermen, a clause of co-signing of debts and receivables during the drafting of the contract and a revaluation of the sharing criterion. As for the security bond, the state should require fishermen to be trained to organize a corporation of professional fishermen. This corporation will have to guarantee a deposit on the reputation of the fisherman. The corporation runs the risk of being indebted to the PPEP if the fisherman (the agent) is in default. In addition, this guarantee of the corporation will be ensured, so the fisherman can be led to reduce his contribution and to manage carelessly, Gadrey J. (1994.b).

Regarding to the use of growing debt, Jensen (1986), fishermen are forced to make good use of co-contracted debt, which will strengthen their position with PPEP. The use of creditors' protection clauses is necessary for investors, the protection clause is based on collateral guarantees (for example: surety on the equipment of the PPEP). The risk of dilution of creditors' rights also contributes to the reduction of agency costs, the prejudice for creditors of not being reimbursed or of being among the priorities (in this case all creditors will first be reimbursed before distributing the earnings of the PPEP and the fishermen). Contractual agreements can be considered to protect PPEP equipment, creditors, and the earnings of different economic actors. These include the various obligations in terms of third-party information, Navatte (1998). The use of the so-called Notice to Third Party Holders (ATD) clause encourages fishermen to settle short-term debts on a regular basis, particularly taxes and social debts.

On the other hand, the revaluation of the profit-sharing criterion is a mechanism which guarantees risk sharing. The post-covid-19 compensation should be the same for the PPEP and the fisher. For the principal, this new distribution makes it possible to guarantee the repayment of these debts to creditors, to ensure the amortization of its equipment, to ensure its credibility

with these customers. This investment strategy is a form of inducement that motivates the agent to risk "death from covid-19." For the agent, although it is a "poisoned" gain, the surplus of the gain constitutes a risk premium which benefits him and his family in case the "worst" arises. In this perspective, the agent will be rewarded for his risk.

The control mechanism is perceptible through the implementation of the blue contract, control is exercised at two levels: an ex-ante control which concerns the selection of fishermen and an ex-post control which concerns the activities of fishing exploitation. during the contract and at the end of the contract. Ex ante control must be based on making available to PPEPs, a directory of professional fishermen, ie fishermen that the corporation can guarantee and who respect sustainable fishing standards. By relying on a repertoire of professional fishermen, PPEPs in some way reduce the risk of adverse selection asymmetry. The main thing is therefore on the information provided by the corporation because the selected fisherman is subject to a deposit. The ex-post control is carried out through the intermediary of the moles which provide the PPEP with information on the fisherman's deviations, moral hazard ex ante, Mishkin (1999) and which inform the PPEP on the real productivity of fish, moral hazard ex post, Jensen and Meckling (1976), and Stiglitz and Weiss (1981). This work is compensated through an incentive package for members of the fisherman's crew recruited for PPEP.

## **Conclusion**

The objective of this study is to improve the maximization of gains during the covid-19 period, while considering the sustainability of fish through a better investment strategy. To meet this objective, we focused in the first part on the analysis of risk sharing through agency theory and risk in investment. The second part addressed the methodology based on 33 PPEP in the oceans that cross the districts of Manoka and Mouanko in the littoral region of Cameroon. The results of the risk-sharing investment strategy show that the net results generated by pirogue have significantly decreased in the period before covid-19 or the risk is speculative and known with low agency costs in the period after covid-19. 19 or the risk is pure and irregular resulting in high agency costs. The post-covid-19 situation raises divergent interests accentuated by the difference in risks faced by PPEPs and fishermen. To reduce the information asymmetry due to the opportunistic behavior of fishermen, the PPEPs have set up incentive systems which entail agency costs such as the costs of infiltrating moles into the fisherman's crew, costs of non-containment, costs of compliance with barrier measures in the fisherman's crew and costs of compliance with durational measures...Thus, three parameters are identified to reduce

agency costs to maximize the investment strategy. These are the guaranteed bond provided by a corporation of professional fishermen, recourse to debt and creditors protection clauses and a revaluation of the sharing criterion.

The control mechanisms could also be exercised at two levels: an ex-ante control which concerns the selection of fishermen and an ex-post control which concerns the activities of fishing exploitation during the contract and at the end of the contract. The state must get involved to safeguard the EP. Among other things, cleaning up the crooked fishermen sector, raising awareness and restructuring this sector through legal corporations of professional fishermen. Is the existence of such corporations in artisanal fisheries sufficient to maximize the gains of PPEPs? African States must adopt an appropriate legislative framework that would consider the risk-sharing mechanisms in the blue contracts.

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## Pandemic and its Impact on Micro Enterprises in the Coastal Districts of Karnataka

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### Abstract

Micro Enterprises are the business models which invest small amount of capital, employ minimum number of employees and utilize local resources. Micro enterprises are the catalyst for the socio-economic development of the nation; these enterprises are providing the jobs especially for the unskilled and semiskilled people and instrumental in sustainable development. There are many challenges which micro enterprises are facing. They are using traditional technology; they are facing competition from the organized sectors. The pandemic has created huge problems for these micro enterprises. The lockdown caused liquidity crunch, unemployment, under-utilization of resources both men and materials. Covid-19 also caused interruption in supply chain, production. The entrepreneurs unable to reach the target market; the poor promotional strategy has reduced the customer base of the marketer. Pandemic created the shortage of raw materials and migration of workers disturbed the production. The marketer could not supply the products on time. Entrepreneurs need know various ways to reach the customers. Pandemic created opportunity for the manufacturer to reach the customers through online mode. The entrepreneurs need to know the innovative methods to reach the audience. The Study was conducted to know the impact of Covid on micro enterprises in the coastal districts of Karnataka. The sample size was 100. Primary data was collected through interview schedule. The convenience sampling method was used to collect the information.

**Keywords:** *Pandemic, micro enterprise, lockdown, supply chain, liquidity crunch.*

**Introduction:** Micro enterprise is a small business activity which utilizes the local resources, indigenous skills and small amount of capital. A very small business model formed by the entrepreneurs through their limited capital to generate income and also to demonstrate their leadership qualities.

**Importance:**

Entrepreneurs are contributing to the household income and also generate employment which will develop the economy. Entrepreneurs are contributing to the development of the economy and also to reduce the poverty of the country.

**Objectives of the study**

1. To study the various challenges faced by the micro entrepreneurs in the Coastal Karnataka.
2. To examine the role and importance of entrepreneurs in developing the rural economy.
3. To suggest the suitable remedies to face the pandemic

**Methodology:**

Primary data were collected from the three districts- Dakshina Kannada, Udupi and North Canara. The sample size was 100. The sample includes Home industries who prepares pickle, papad, masala powders, beauty parlours, tailors, agro-entrepreneurs, caterers, decorators, event organizers. Information was gathered using the convenience sampling method through interview schedule.

**Review of literature:**

Indrakumar<sup>1</sup> (2020) in his research identified the ill effects of Covid 19. The pandemic created uncertainty, unemployment, reduction in the output and the loss of business for the entrepreneurs. Minaketan Behera<sup>2</sup>(2021) has mentioned the problems caused by the Covid 19. There are problems like migration of labourers, problems in the supply chain, cash crunch, reduction in the profits. The entrepreneurs are not in a position to make the payment on time.

Micro entrepreneurs are facing numerous problems. The pandemic adversely affected their business. The following are the major factors which has the negative impact on the earnings of the entrepreneurs.

**Distribution:** The pandemic has disturbed the distribution system of the micro entrepreneurs. The rural micro entrepreneurs depend mainly on public transportation system. They use buses and vans etc, to distribute their products to the final consumers. Unfortunately these public transport systems were not operating due to the lockdown effect. Though the entrepreneurs had demand for their products but they were unable to reach the retailers and final consumers. The entrepreneurs find difficult to purchase the vehicles for distributing their products. They need

invest huge money to purchase vehicles; instead of these they are interested to invest their money to expand their business.

**Procurement:** Manufacturer need raw materials to produce their final products. Suppose the entrepreneur is producing the pickle, papad or masala powder, they may require many raw materials. It could be tender mango, chilies, coconut oil, dal etc. These raw materials are available in different places. The entrepreneurs or the manufacturers had the primary knowledge regarding the sources. The entrepreneur directly visit the place, he will check the quality of raw material, and also visit the other vendors to get best deal. But the covid has restricted the movement of the entrepreneur. There is great demand for pickle called Appi midi pickle, the ingredient which used for this pickle is sourced from Sirsi, Ripponpet and other areas. The entrepreneur get these Appi midi (a type of tender mango) paying visit to these places. Entrepreneur visit these areas where they collect raw materials at reasonable price. The pandemic affected the procurement of these raw materials. The manufacturer could not visit the locality because there was restriction for public transport.

The raw materials were available in jatras, mela or weekly markets, due to the pandemic there is complete restriction for weekly markets, jatras etc. These mandis, jatras, weekly market provides the wonderful opportunities for micro entrepreneurs. There is gathering and it provides markets for final products of the entrepreneurs. In this market he also gather the raw materials. There was no weekly markets, jatras etc, The agro products are very perishable in nature, the marketer is having poor storage facility, the final product has to be sold immediately. The pandemic caused severe problems to agro entrepreneurs.

**Income:** There was lockdown and restrictions for the movement of people. The entrepreneurs had tough time for procuring the raw materials as there was lockdown. The entrepreneurs can visit only the limited customers and the retailers. These customers are scattered in wide geographical area, there was no public transportation. They need to arrange their own vehicles to reach the customers. The customers were also restricted their movements, they used to visit the shops only for necessities. There were time restrictions for customers and for the retailers. It was from morning 6 to 10. In this time the entrepreneurs can visit the limited customers. Earlier the entrepreneurs can use his entire day for visiting and customers and he can prepare his schedule for the entire day. But the pandemic restricted the entrepreneurs to meet more number of customers.

There were restrictions by the government for public gathering, ceremonies, parties, marriages etc. There was a great demand for jasmine; it was used in temple and marriage function. The agro entrepreneurs had huge orders for their jasmine and it provides handsome revenue for the growers. The pandemic killed the demand for the flowers and growers had suffered huge losses.

The income of tailors, beauty parlor owners, caterer, event managers and decorators mainly depends on the ceremonies like birthday program, reception, wedding, housewarming etc, .There was restriction for public gathering, it has adversely affected the income generation of these micro entrepreneurs. Micro entrepreneurs badly affected by the pandemic, it has reduced the cash flow of the entrepreneurs as there was lockdown adding to this there was shortage of labour, which disturbed the production schedule of the entrepreneurs. It was very challenging for the entrepreneurs to produce the goods without the sufficient workforce. Pandemic resulted in reduction in sales of the products; entrepreneurs were unable to make the payments to the banks or financial institutions where they had taken loans. There were fixed expenses which the entrepreneurs supposed to pay. There were expenses like rent for the building, wages, phone bills, electricity bills etc.

**Competition:** The healthy completion among the entrepreneurs are beneficial to the consumers, healthy competition leads quality production, improved distribution, better services and also better offers. Healthy competition provides opportunities for innovation, research and development. Rural entrepreneurs try to satisfy the customers by providing the quality products at affordable prices. The Covid 19 created the shortage of certain raw materials. The products which produced by the rural entrepreneurs are unbranded and fails to attract the customers. But the branded the products are available in attractive packages, which attract the masses. Brand products are known to the customers because attractive promotion. Rural entrepreneurs are not a position to attract the customers through innovative packaging and promotion. There is huge investments are need to promote the product. Pandemic reduced the income of entrepreneur and could not invest in promoting the products.

**Labour issues:** Entrepreneurs need human resources for production and distribution of the products. The entrepreneurs depends more on human resources than machines. There are various processes in the manufacturing, people need to carry the raw materials, distribute the products to the retailers or customers. There are an agro entrepreneurs, who uses manpower. For e.g. the jasmine growers need to collect the followers, pineapple growers need people to collect the fruits. The entrepreneurs having poultry farm need people to look after the livestock.

There was huge migration of the laborers due to pandemic. The people who are belong to North Karnataka returned to their native places. These laborers were available at low wages and the pandemic created labour shortage for the entrepreneurs and it affected the production of the goods.

**Strategies:** Pandemic adversely effected the business of the micro entrepreneurs. It is very difficult to suggest the best strategies to face the challenges or the problems created by the pandemic. But the entrepreneurs can use the following strategies to increase their revenues.

1. **Online Transaction:** It was very difficult for the entrepreneurs to reach all their customers in the covid time, but they can have contact with their customers through online. Entrepreneuers can develop their own apps, though they can collect the orders and reach the maximum customers. It will remove the middlemen. Entrepreneuers can also contact the customers through contacting them regularly. They should develop the strong database. They can identify their regular customers and can call them and collect the orders.
2. **Promotion:** Today branded products are very popular. Companies are investing huge amount for advertising their products, they use brand ambassadors to reach the customers. There are various media to reach the customers. They use print media, televisions, FM and presently they are using the social media like Face Book, You Tube etc,. These social media are very effective to reach the audience especially the youth population. The rural entrepreneurs should be given proper training regarding how to develop the messages to reach the audience through social media. They should give training regarding the use of mobile phones.
3. **Home delivery:** There was restriction for the movement of people in the time of pandemic. The time was fixed by the government for the movement of people. It was very difficult for the customers to get all their requirements in the limited time. The entrepreneurs can reach the maximum number of customers through home delivery system. This will help the customers. The customers can order the products through apps or directly calling the suppliers. In the pandemic time the food suppliers used this strategy.

**Conclusion:** Business is always challenging game; every entrepreneurs should be ready for all kinds of challenges. It may be legal issues, economic issues, political issues or any other issues.

Pandemic has impacted the business of entrepreneurs. Every entrepreneur should learn the lesson from every situation. It is the situation of perform or perish. The performers will always be the winners.

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**Is the future of the blue entrepreneurs still blue after the dark era of COVID 19?**

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**Abstract**

The paper investigates the impact of COVID-19 on micro, small and medium sized enterprises operating in the blue economy sector in the small island of Mauritius. Being highly dependent on its ocean, the Mauritian economic activities are very much directed towards its blue economy sector, whereby ocean activities like fishing, cruise tourism, aquaculture to name a few have been highly affected by the pandemic. Using a survey of 102 enterprises operating in the blue economy sector, this study analyses the effects of the COVID-19 pandemic on the performance and probability of closure among the blue economy entrepreneurs. The paper further probes into the internal strategies adopted by enterprises to survive the health and economic crisis as well as recovery and support measures set out by the authorities to mitigate the economic consequences of the pandemic. Our results show that micro enterprises in the blue economy sector have been the hardest with the outbreak of the virus. Sales, investment and cash flows have been significantly affected followed by a reduction in workforce. The findings reveal however that digital trade seems to act as an important buffer to the crisis and represent some major strategy adopted by firms to survive and reduce their vulnerability to COVID-19.

**Keywords:**

**COVID-19 pandemic, Economic and Health Crisis, Blue Economy, MSMEs, Digital Trade, Small Island Economy**

## Introduction

The marine and coastal environments constitute key resources for the global tourism industry, supporting all aspects of the tourism development cycle, from infrastructure and the familiar “sun, sand and sea” formula to the diverse and expanding domain of eco-tourism. With globalization, economic growth, and technological innovation, there has been a substantial increase in the usage of the oceans for economic purposes. The concept of “Blue Economy” or “Ocean economy” focusing on the utilisation of ocean resources for human benefit in a manner that sustains the overall ocean resource base into perpetuity is playing an important role in the development pathway of small island economies, in particular. The blue economy seeks to promote economic growth, social inclusion, and the preservation of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. Through fisheries, aquaculture, coastal and marine tourism, ports, shipping, marine renewable energy and many other activities, the general blue economy generates a global value added of over USD1.5 trillion - a figure that is projected to double by 2030. While the ocean economy was projected to double by 2030, its growth potential has been curbed by the pandemic (Richens and Koehring, 2020).

Small island economies, in particular, depend heavily on the blue economy as the ocean has more developmental potential for small islands. Many small islands are highly dependent on tourism for foreign exchange, jobs and income and in many cases, tourism remains the most important pillar of their economy. For two out of three Small Island Developing States (SIDS), tourism accounts for 20% of GDP or more (OECD, 2018). Reliance on the tourism sector is particularly high in Antigua and Barbuda, Belize, Cabo Verde, Grenada, Maldives, Saint Lucia, Seychelles and Fiji where the total contribution of tourism to GDP exceeds 40%; while it reaches 65% in the Seychelles. On average, the tourism sector accounts for almost 30% of the GDP of SIDS (WTTC 2020). This share is over 50% for the Maldives, Seychelles, St. Kitts and Nevis and Grenada. Overall, travel and tourism in the SIDS generates approximately \$30 billion per year. According to the latest issue of the UNWTO World Tourism Barometer, international tourist arrivals (overnight visitors) fell by 72% in January-October 2020 compared to the same period in 2019, curbed by virus containment measures, low traveler confidence and important restrictions on travels still in place, due to the COVID-19 pandemic. While SIDS have so far been able to contain the health consequences of the COVID-19 pandemic, they are among the worst with an average GDP drop of 6.9% versus 4.8% in all

other developing countries in 2020. This drop is attributed to the global contractions in two ocean economy sectors that are key to many SIDS - coastal tourism and fisheries. The global tourism industry plunged in 2020 with the COVID-19 pandemic. Of the economic, social and environmental impacts, one of the most severe effects have been in employment where an estimated 100–120 million direct tourism and hospitality jobs have been threatened by the crisis (UNWTO, 2020). Although SIDS suffered the health impacts from the COVID-19 pandemic, they are among the worst hit countries by the associated economic effects.

The blue economy sectors such as travel, tourism, maritime transport, fisheries, and seafood production have also been heavily affected by the COVID-19 pandemic. Disruption of supply side capacity, such as transport routes, limited access to ports and closures, falling demand, and increased number of sanitary and regulatory measures, are undermining these sectors. While some blue economy sectors in affected countries are subject to full closure or running at less than half their capacity, others continue to deliver essential goods and services (UNCTAD, 2020). It is expected that for many SIDS, the COVID-19 pandemic will directly result in record amount of revenue losses without the alternative sources of foreign exchange revenues necessary to service external debt and pay for imports (UNCTAD, 2021). Jobs and sectors in the ocean economy and already vulnerable coastal communities have been hard hit by the COVID-19 crisis with significant revenue losses felt across coastal and marine tourism, fisheries and aquaculture, and the shipping industry. SIDS that have faced the largest blow from the pandemic are those where the shares of tourism to GDP are largest. These include Commonwealth small states such as Antigua and Barbuda (7.2% GDP loss), Maldives (6.9% GDP loss) and Grenada (5.5% GDP loss) (Johnson, 2020).

Mauritius is no exception to the effects of the pandemic on its blue economy activities. The island economy is facing the same challenges as other developing countries, if not more than others. The sanitary measures imposed during the pandemic entailed a very high cost for the economy. According to the African Development Bank, Mauritius lost 18 percent points of growth in 2020, largely due to the disruption to tourism and hospitality industry in the country (ADB, 2021). While the economy recovered in 2021, the risk remains if new waves of COVID-19 lead to another temporary interruption of air links between Mauritius and the rest of the world. Enterprises in the blue economy sector has been highly affected by the effects of the pandemic and to the best of our knowledge there has been no study focusing specifically on the impacts of COVID-19 on blue economy activities in Mauritius. This study therefore fills

in an important gap in the literature by addressing the vulnerability of the blue economy sector to the effects of the pandemic.

The objective of the paper is to investigate into the impact of COVID-19 on micro, small and medium size enterprises operating in the blue economy sector in Mauritius. The study probes into the effects of the pandemic on their activities and performance of the businesses in the blue economy. We further probe into possibilities of closure and / or the reduction in workforce across these enterprises due to health containment measures put in place to curb the spread of the virus as well as the overall decline in demand. Finally, the study probes into the measures put in place by the enterprises as well as support measures set out by the Government to mitigate the effects of the pandemic. One of the measures which is analysed in the paper is the use of e-commerce as a potential strategy to mitigate the negative effects of COVID-19 on firm's activities. Our methodology rests on a quantitative survey of 102 firms across different activities in the blue economy sector namely fisheries, aquaculture, tourism, food and accommodation services, travel agencies and shipping amongst others.

The paper is structured as follows: Section 2 reviews the existing literature on the impact of COVID-19 on firms in the blue economy, while section 3 provides a situational analysis of the importance of MSMEs for small island economies like Mauritius. Section 4 sets out the data and methodology used. Section 5 discusses the findings and we finally conclude with relevant policy options in section 6.

### **COVID-19: Impacts on Blue Economy across SIDs: A Literature Review**

The COVID-19 pandemic has caused unprecedented health crisis across countries, leading to significant loss of human life. In addition to being a public health crisis, it has also severely affected the global economy. Emergency measures introduced to curb the spread of the virus have resulted to severe restrictions of mobility, economic activities and services, affecting varied economic sectors, leading to widespread unemployment and affecting the livelihoods, wellbeing and health of many (Xu and Joyce 2020). The mitigation measures taken to deal with the pandemic has affected those in the blue economy the most. Travel and tourism alike are among the most affected sectors with airplanes banned; hotels shut, and travel prohibition measures laid down almost in all countries around the world. There have been serious economic and social disruptions with significant reductions in income, an increase in

unemployment, recession in the travel and hospitality industry, and disruptions across sectors. While the whole world remains susceptible to the impacts of the pandemic, the SIDS are among the most vulnerable countries. The COVID-19 pandemic is posing a peculiar health and economic crisis for small island economies not only because of their high dependency on the tourism sector, but also because of their difficulties in managing any crisis of such magnitude.

The impacts of COVID-19 on SIDS among other countries can be seen in terms of economic, social and environmental effects. The economic impact of COVID-19 has been noted across nations in terms of loss of output, jobs, revenue, future investment targets and productivity of ocean-based sectors (UNCTAD 2020b). Ocean economy sectors such as tourism and fisheries have been severely hit in SIDS with the tourism sector acting as a major transmission channel of the COVID-19 crisis (OECD, 2021). With a decline in tourist arrivals, the coastal tourism sector has seen a drop in revenue, putting a huge number of direct tourism jobs at risks, reduced appetite for future investment as well as the seafood sectors namely fisheries and aquaculture being highly impacted by a fall in aggregate demand for seafood due to closure of restaurants and supply chain disruptions (FAO, 2002b; UNCTAD, 2020b). Slowed demand had also impacted negatively marine shipping, the cruise sector and ship building (OECD, 2021). Further, there are strong linkages between ocean sectors and land-based economies so much that fisheries and aquaculture for instance generate employment to communities and represent an important source of food security for both coastal and inland communities. Due to these interconnectedness across sectors, COVID-19 has amplified negative effects for the entire economy with the transmission of these impacts across ocean and non-ocean based activities. For instance, disruptions in port services had negative consequences for the seafood agriculture, energy, and health and tourism sectors so much that delays for fishing vessels in ports are linked to increased risks of higher seafood waste (Saumweber et al., 2020). Similarly, the aquaculture sector and its ancillary business supply chains have faced setbacks because of international trade delays, closures of restaurants and hotels and a reduction in fishing efforts as a result of the pandemic.

The social effects have been mainly felt across vulnerable segments of the population such as women, workers in the informal sector, young people, migrant workers and coastal communities highly dependent on the ocean economy. Poorer communities have faced higher health risks due to limited access to health care treatment in small islands but also because of job losses and loss of livelihoods. Many women across SIDS tend to operate in temporary,

part-time jobs, and are often in low paid jobs. When operating in the blue economy sector, they are primarily small fishers or owners of small businesses. The figures show that women represent the majority of the workforce in the ocean economy sectors with around 50% of them operating in the seafood sector, 70% in aquaculture and 80-90% in the post-harvest sector of small scale fishers and 54% in tourism (Holmyard, 2020; UNWTO, 2019). Similarly, a large proportion of young workers are employed in tourism which remains the hardest hit by the pandemic. The reduced demand, limited accessibility of markets and collapsed prices of fisheries have curtailed small-scale fishers' ability to pursue their livelihoods. As business confidence and performance go down, women are more likely to be laid off as they tend to be disproportionately represented in temporary and casual jobs which are easier to cut back on. Other systemic barriers are gender based violence, lack of access to finance and credit, loss of livelihoods and poverty, higher burden of unpaid care and domestic work with working from home and caring for elderly, the sick and children, to name a few. An increase in domestic violence and conflict within households have seen to increase food insecurity among vulnerable groups (Farrell et al., 2020). Many of those who depend on the blue economy sector across islands operate informally. Hence, the pandemic has made them more vulnerable, as these workers lack the right to social protection benefits and schemes. The combination of a decline in economic activity and lack of social protection has worsened the livelihoods of these ocean workers and their families.

The environmental impact of the pandemic has been analysed in terms of the benefits and harms to the ocean economy. With COVID-19, there has been a reduced intensity of ocean-based economic activities, changes in societal behaviours like increase use of e-commerce shipping or disposal personal protective equipment and single use plastics as well as reduction in private sector funding for conservation amongst others. The decline in ocean based activities like fishing and ocean-based tourism has in essence offered temporary relief to the marine ecosystems but increased food insecurity, economic recession, loss of jobs and reduced livelihoods may offset the environmental benefits of reduced commercial maritime activities from being fully realised (Torgler et al., 2020).

The existing empirical work assessing the impact of COVID-19 on MSMEs in the blue economy sector is rather scant. Among the few studies, Gourinchas et al. (2020) estimate the impact of COVID-19 on business failures among SMEs in 17 countries and find that there is a large increase in failure rate of nearly 9 percentage point of SMEs under the COVID-19 pandemic. Accommodation and food services along with arts, entertainment, and recreation

were amongst the most affected sectors. The jobs at risk related to SME business failures arising from the pandemic was estimated to be around 3.1% of private sector employment. Their study also probe into the costs and effectiveness of different policy interventions and it was observed that the fiscal cost of an intervention that narrowly targets at risk firms was around 0.54% of GDP while non-targeted subsidies were more expensive, that is around 1.82% of GDP. Likewise, Senaratne (2020) provides evidence of the negative economic impacts of the COVID-19 outbreak on Seychelles' blue economy. Already faced with the costs of changes in climatic conditions, Seychelles experienced drastic effects of the pandemic, which reveal that small island economies like Seychelles are not prepared for the magnitude of such pandemic. The Seychelles' emerging blue economy entrepreneurial ecosystem has experienced significant losses. However, the study argues that measures taken by the authorities such as the development of a resilient and sustainable blue economy are effective and can be potentially applied to climate change agenda in a post-COVID-19 situation. Avtar et al. (2021) analyse the impact of COVID-19 in the small-scale fisheries sector in India and their results reveal that during the peak of the lockdown; fishing boats near the docks and those parked on the land have increased drastically across three major harbours. A quarter of the annual production of fish is estimated to have been lost due to the lockdown. After the lockdown, regular fishing activities have been re-established in all three locations. The blue economy and especially the small-scale fisheries sector in India have dwindled due to disruptions in the fish catch, market, and supply chain. Similarly Adriani et al. (2021) assess the impact of COVID-19 on MSMES in Indonesia in the food sector. Using 87 MSMES in food products, their results reveal that product innovation, their sales method and technology represent important factors in helping MSMEs to sustain their business activities.

Other empirical work has focused on the impact of COVID-19 on the tourism sector only. For instance, Skare et al. (2021) was among the first studies to measure the potential effects of the pandemic on the tourism industry across various countries. Using data for 185 countries, they show that the COVID-19 impact is different compared to past pandemic crises in the sense that recovery of the tourism industry worldwide will take longer than the average expected recovery period of 10 months. In fact, it is argued that the COVID-19 pandemic outbreak has a larger destructive effect on the travel and tourism industry so much that both private and public policy support measures play an important role in sustaining and reviving the sector. Country specific study like Deb and Nafi (2020) measure the effect of COVID-19 on the tourism industry in Bangladesh and note that the outbreak of the virus has impacted adversely on inbound and

outbound tourism. Both international and domestic tourists have cancelled their bookings in Bangladesh and outbound tourism activities were also banned. With airlines cancelling their flights, hotels and travel agencies have faced significant economic losses and reduction in their workforce. Further, Tandrayen-Ragoobur et al. (2022) assess the impact of COVID-19 on a survey of 100 Mauritian enterprises operating in the tourism sector. There is evidence that COVID-19 together with the containment measures put in place by the authorities had significant negative effects on the performance and activities of cruises, accommodation houses, hotels, and restaurants, travel agencies along with other small and medium enterprises operating in the tourism industry. Firm's performance in terms of revenue, sales, investment and employment levels have declined considerably despite support measures put in place by the authorities. The recovery measures and assistance schemes set out by the Government do not seem to have helped them in mitigating the effects of the pandemic.

The severity of the consequences of the pandemic varies across SIDS, due to the differences in their degree of dependence on the blue economy sector. Some SIDS face higher economic risks compared to others based on the structure of their economy as well as their social and environmental characteristics. These SIDS have smaller economic base, greater degree of openness and extreme dependence on the economic performance of developed countries (UN, 2020a; WTTC, 2020). Further policies adopted by the authorities to mitigate the impact of the pandemic also differ across countries. MSMEs operating in the blue economy sector across SIDS have been facing the brunt of the health and economic crisis and many have either failed or attempted to survive through a number of strategies and restructuring measures.

### **Situational Analysis of MSMEs and Development in Mauritius**

Mauritius being a small island surrounded by a vast maritime zone of 2.3 million square kilometers and an additional sea area of 396 000 square kilometers co managed with Seychelles depends extensively on its ocean. The Blue Economy represents over 10.5% of the national GDP of Mauritius, with total direct employment estimated at over 20,000 excluding coastal tourism. (Economic Development Board, 2019). The blue economy covers activities like coastal tourism, fishing, seafood processing and seaport activities that are also considered as traditional ocean activities. With the pursuit of doubling the contribution of the Blue Economy to GDP by 2025, Mauritius has made the “Blue Economy” a pillar of its economic development

strategy. The aim is to exploit the economic potential of the ocean, while at the same time protecting ocean resources and ensure its use in a sustainable manner.

MSMEs operating in the blue economy play an important role in the development pathway of the island in terms of job creation, generating output and higher productivity, improving the livelihoods of those dependent on the ocean. MSMEs in the blue economy sector also act as a catalysts for restructuring and diversifying the productive base of the economy. In 2019, the overall contribution of MSMEs to Gross Value Added (GVA) amounted to 35.7% (Ministry of Finance, Economic Planning and Development, 2020). In addition, SMEs have been viewed as an employment generator engine in many countries and Mauritius is no exception. SMEs are contributing nearly 50% of employment creation. Furthermore, SMEs account for around 12% of total exports (Ministry of Finance, Economic Planning and Development, 2020). As per the 10-Year Master Plan for the SME Sector, exports of SMEs are forecasted to increase to around 18% by 2026. MSMEs in Mauritius are classified as per Table 1 below, where micro, small and medium enterprises are classified in terms of turnover. Our analysis is based on this categorization of MSMEs.

**Table 1: Category of MSMEs**

Type	SME Act 2017	Statistics Mauritius Definition	
	Turnover	Turnover	Employment
Micro enterprises	<Rs 2 million	<Rs 2 million	>=1 <=5
Small enterprises	>Rs 2 million <= Rs 10 million	>Rs 2 million <= Rs 10 million	
Medium enterprises	>Rs 10 million <= Rs 50 million	>Rs 10 million <= Rs 50 million	

Source: (Ministry of Finance, Economic Planning and Development (2020))

Mauritius has been no exception to the effects of the COVID-19 pandemic. Mauritius registered its first three cases of COVID-19 on 18<sup>th</sup> March 2020 and the island was under "sanitary" lockdown for two weeks. On 24 March 2020, the country went under complete lockdown until 31 March 2020 with only essential services such as police, hospitals, dispensaries, private clinics, firefighters and banks being open. There were no other activities during the curfew period including the closures of supermarkets, shops and bakeries. This lockdown was extended for the first time until April 15, a second time on May 4 and finally a third time on June 1 with a gradual opening of certain economic sectors as from 15 May 2020. The lockdown was lifted entirely on 15 June 2020. Mauritius became COVID-19 free with no

local cases since 26 April 2020. In a health curfew for more than two months, Mauritius had a contamination rate below the WHO forecasts. Mauritius has been considered as COVID-19 safe destination since May 2020 and this has been attributed mainly to a series of precautionary and control measures adopted by the authorities (De Melo et al., 2020). The country's last local COVID-19 case was in April 2020 and it had only one additional local case in November 2020. However, the inability to promote Mauritius as a COVID-free destination on the international scene, the failure to establish a coherent and comprehensive protocol for the tourism industry, along with uncertainty around the timing of full removal of travel restrictions were significant challenges surrounding the tourism industry during 2020 (Tandrayen-Ragoobur et al., 2022). To make it worse, Mauritius faced a second wave of COVID-19 in early March 2021, with a second lockdown of one month. Since then, the number of cases have been rising exponentially. As such, Mauritius is experiencing the negative impacts of the crisis on tourist arrivals and other indicators relevant to the blue economy sector. On 01st October 2021, all travel restrictions were removed. Mauritius has been developing action plans and measures to ensure recovery of the sector and in tandem minimise the health effects of the pandemic. However, the number of tourists coming to the island from October to December 2021 amounted to only 170,320. This is due to the rising number of COVID-19 cases in Mauritius as well as new variants of the virus such as Omicron in the major source countries namely in South Africa, La Reunion, France and UK. As at 05 February 2022, Mauritius has 70,862 COVID-19 cases, with an average of 200 cases per day. The fatality rate for Mauritius has been rather high with a total number of deaths of 786 (Our World in Data, 2022).

### **Survey Data and Methodology**

The study adopts a firm-level survey on 102 Micro, Small and Medium Enterprises (MSMEs) across the Mauritian blue economy industry. These firms are located in different regions of the island and operate in various activities like travel agencies, hotels, guesthouses, restaurants, car rentals, food service outlets and villa locations, amongst others. The survey was a one-off data collection process, which took place over the period September to November 2021 via face-to-face interviews. The study ensures a representative sample in the short span of time as with the rising COVID-19 cases since September 2021, we had to deal with sanitary restrictions imposed by the authorities.

The survey instrument is a quantitative questionnaire with various dimensions to capture the impact of COVID-19 on the firm's activities in the blue economy sector. The first section of the questionnaire analyses the profile of enterprises surveyed. The second section probes into the firm's performance in terms of its operation prior to COVID-19 and in the midst of the pandemic. Performance is gauged in terms of revenues, cash flows, investment and operating costs. The next section of the questionnaire analyses the employment level of firms with respect to the dismissal or reskilling of workers. The fourth section examines the challenges faced by MSMES in terms of access to finance and other support schemes. The strategies adopted to adapt to the pandemic such as work from home amongst others are next analysed. Lastly, the questionnaire evaluates the adoption of digital trade/ e-commerce by firms in the blue economy sector.

Analysing the profile of MSMES in the blue economy sector (see Table 2) in the survey, it can be observed that 44.1% operate in the fisheries industry, 33.3% in arts, entertainment and recreation related to tourist activities, 15.7% in accommodation and food services while the remaining 7% are in transport activities. The majority of firms surveyed (around 65%) have been in business for more than 10 years. In terms of ownership, 57.8% of enterprises surveyed were male headed business compared to 42.2% are owned by women. Firms also reported on the legal status of their business, and it can be noted that the majority were sole proprietor (44.1%) followed by 19.6% being cooperatives and 18.6% being in a partnership.

Further, in terms of employment, around 45% have less or around 10 employees and prior to COVID-19, around 35.3% were having an annual revenue in the range of Rs 500,001 to Rs 1,000,000 while 34.3% had a yearly revenue of less than Rs 500,000. The firms also reported on their trade, and it can be noted that most firms produce for the domestic market. Around 59.4% of firms interviewed buy and sell within Mauritius only while the remaining percentage either export or import or both. The figures further reveal that only 34.3% of enterprises surveyed engage in global supply chains.

**Table 2: Profile of MSMEs in the Blue Economy Sector in Mauritius**

Sector	%	Business trade	%
Fishing	44.1%	Buy and sell within Mauritius only	59.4%
Accommodation and food service activities	15.7%	Export and import	15.6%
Arts, entertainment and recreation	33.3%	Export but do not import	8.3%
Transportation	6.9%	Import but do not export	16.7%
No. of years in operation	%	Legal status of business	%
0 – 5	22.1%	Cooperative	19.6%
5 -10	12.6%	Limited Private Co	11.8%
more than 10	65.3%	Others	2.9%
No. of employees	%	Partnership	18.6%
10 or less	45.1%	Society	2.9%
11 to 50	27.5%	Sole Proprietorship	44.1%
51 to 100	2.9%	Head of enterprise	%
101 to 300	17.6%	Female	42.2%
more than 300	6.9%	Male	57.8%
Provide goods/services in global supply chains	%	Annual Revenue : Blue Economy (Prior COVID-19) in 2019	%
No	65.7%	Less than Rs 500,000	34.3%
Yes	34.3%	Rs 500,001 to Rs 1,000,000	35.3%
		Rs 1,000,001 to Rs 5,000,000	15.7%
		Rs 5,000,001 to Rs 10,000,000	6.9%
		More than Rs 10,000,000 but less than Rs 50,000,000	7.8%

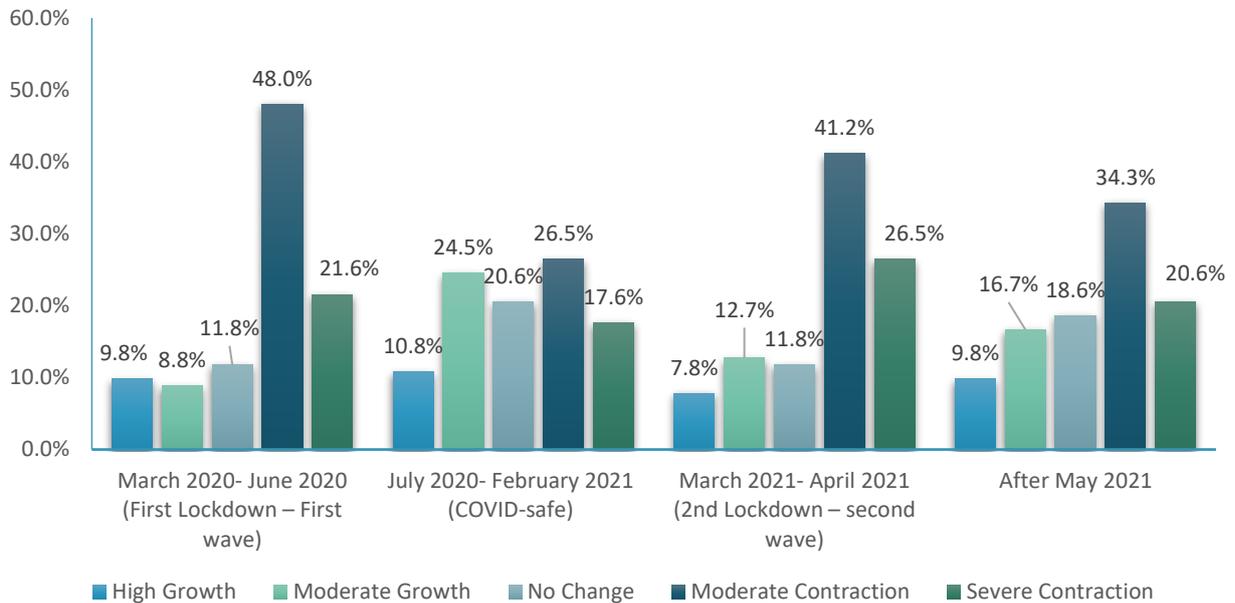
Source: Authors' Compilation from Survey Data, 2021

## Findings

### 5.1 COVID-19 Impact on Performance of Enterprises in the Blue Economy Sector

We first assess the impact of COVID-19 on the overall performance of enterprises in the blue economy sector at different stages of the COVID-19 pandemic in Mauritius (see Figure 1).

**Figure 1: Impact of COVID-19 on Overall Performance of Enterprises in the Blue Economy Sector**



Source: Authors’ Compilation from Survey Data, 2021

During the first lockdown of around 3 months from March to June 2020, 48% of firms experienced a moderate contraction while around 22% faced a severe contraction in their activities. With Mauritius being COVID-safe from July 2020 to February 2021 with no local COVID-19 cases, around 25% of entrepreneurs registered a moderate growth despite the fact that borders were still closed. Around 18% and 27% of firms reported severe and moderate contraction, respectively in their overall performance during that period. A second wave of the virus hit Mauritius in March 2021 with a lockdown of one month and it can be noted from the data that around 41.2% of firms faced a moderate contraction in performance followed by 26.5% of firms facing a severe contraction. After May 2021, many mobility restrictions were gradually removed and borders were fully opened at the start of October 2021, but still 54.9% of firms reported that their activities contracted after the second lockdown.

The overall performance of the firms was further analysed in terms of sales, production capacity, cash flows, access to raw materials, local and foreign investment, payment of salaries and other operating expenses and costs of production. The data shows that the majority of firms in the blue economy sector reported no change in production costs (31.5%) and payment of salaries and other operating expenses (29.5%) (see table 3). In fact, firms in the blue economy sector continued to benefit from the wage assistance scheme provided by the

authorities so that firms could retain their workforce and pay their salaries. However, contraction has been noted across production capacity, cash flows, access to raw materials, local and foreign investment as well as sales. A large percentage of firms have experienced either a moderate (34.3%) or severe (33.3%) contraction in their sales. Around 37% noted a decline in production capacity and cash flows. Access to raw materials was also difficult for 41% of firms which encountered a moderate contraction due to disruptions in the transport system.

Moderate and high growth in sales and cash flows as well as local and foreign investment have also been noted across firms in the sector. Around 10% of businesses registered a high growth in sales while 8% reported a moderate growth in sales. A better cash flow situation was observed for 12.1% of enterprises benefitting from a high expansion in cash flows whilst 13.1% stated a moderate improvement in their cash flows.

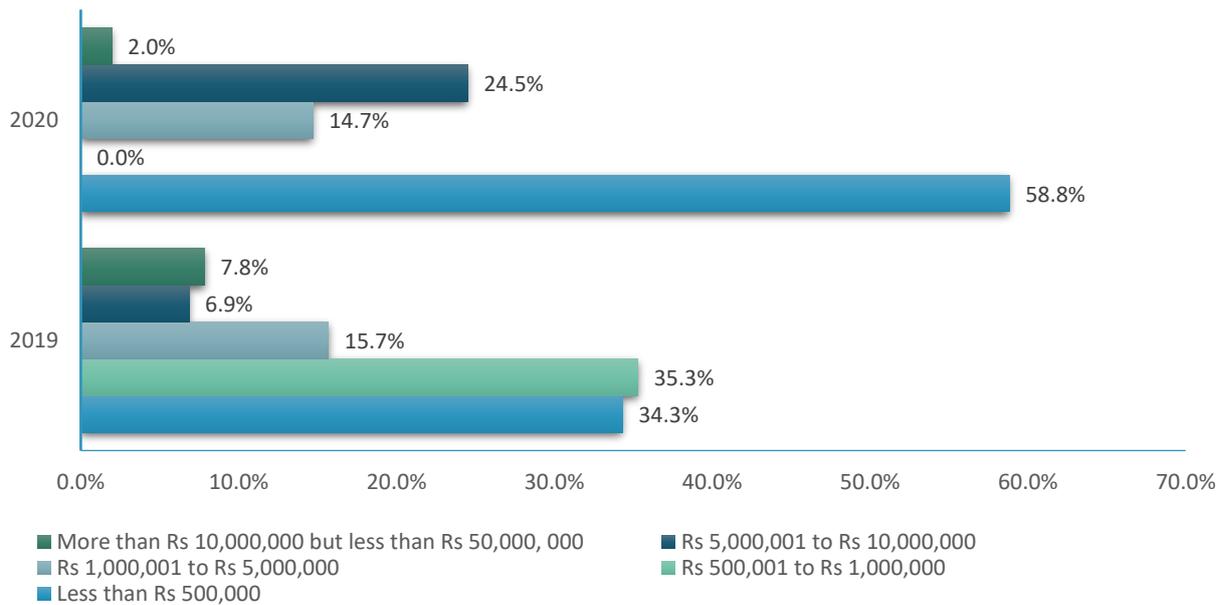
**Table 3: Assessing Impact of COVID-19 on Different Firm Performance Indicators**

%	Sales	Production capacity	Cash flows	Access to raw materials	Local investment	Foreign investment	Payment of salaries and other expenses	Production Costs
High Growth	9.8	20.4	12.1	7.4	12.6	9.8	10.5	15.2
Moderate Growth	7.8	15.1	13.1	9.5	15.8	9.8	10.5	12.0
No Change	14.7	10.8	15.2	14.7	11.6	16.4	<b>29.5</b>	<b>31.5</b>
Moderate Contraction	<b>34.3</b>	<b>37.6</b>	<b>37.4</b>	<b>41.1</b>	<b>30.5</b>	<b>21.3</b>	27.4	27.2
Severe Contraction	<b>33.3</b>	16.1	22.2	27.4	29.5	42.6	22.1	14.1

Source: Authors’ Compilation from Survey Data, 2021

Probing deeper into annual revenue in 2019 (prior to COVID-19) and in 2020 (in the midst of the pandemic), it can be observed that annual sales revenue of a vast majority of firms in the blue economy sector has declined significantly as shown in Figure 2. The data shows that prior to the pandemic around 7.8% of firms had an annual revenue in the range of Rs 10 million to Rs 50 million but in 2020, this percentage has declined to only 2.0%. We can also note a higher percentage of enterprises having an annual revenue of less than Rs 500,000 (the lowest level) with the figure rising from 34.3% in 2019 to 58.8% in 2020. This confirms the negative impact of the pandemic on annual revenue of firms surveyed.

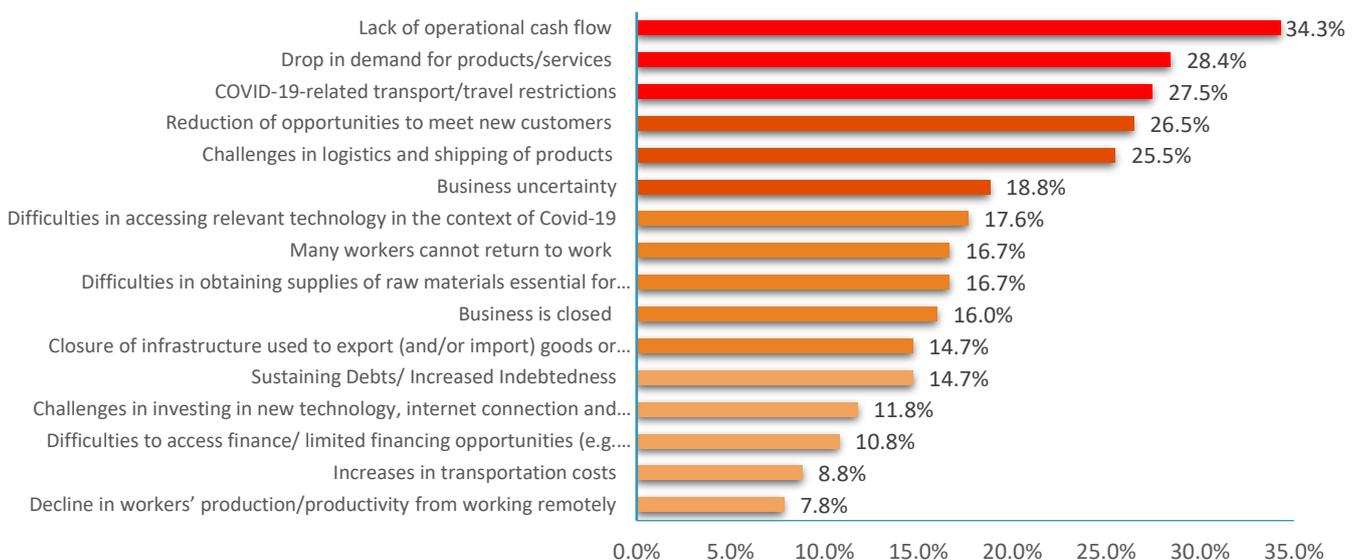
**Figure 2: Firms’ Annual Revenue Pre COVID-19 and in the Midst of the Pandemic**



Source: Authors’ Compilation from Survey Data, 2021

In addition, to a drop in overall performance, firms reported to have faced a number of challenges in the midst of COVID-19 pandemic. These related mainly to travel restrictions and transport problems, challenges in logistics and shipping of products, difficulties in accessing relevant technology for their production technique, closure of infrastructure used to export or import their products, increase in transportation costs as well as challenges in investing in IT and internet connectivity. This can be depicted by the following Figure 3.

**Figure 3: Additional Challenges Experienced by Enterprises in the Midst of the Pandemic**



Source: Authors’ Compilation from Survey Data, 2021

### COVID-19 Effects on Firm Performance by Size

Since the survey covers micro, small and medium sized firms, the study probes into the impact of COVID-19 on performance of enterprises in relation to their size. Performance is assessed across different variables namely production capacity, cash flows, local and foreign investment, as well as payment of salaries and other operating expenses. Table 4 indicates that micro firms especially those have 10 or less workers, tend to be most affected across all indicators with the exception of foreign investment. A higher percentage of micro enterprises registered a severe contraction in production capacity (42.6%), while around 48% faced a severe reduction in cash flows, and 38% encountered a drastic contraction in local investment. It can also be observed that local investment has been falling across all firms irrespective of size. The decline in foreign investment has also been very much pronounced across all firm size, with the exception of micro enterprises.

**Table 4: Impact of COVID-19 on Performance Indicators by Firm Size**

Impact on company's production capacity	10 or less	11 to 50	51 to 100	101 to 300	more than 300
High Growth	1.1%	23.4%	25.0%	22.0%	35.5%
Moderate Growth	5.1%	11.7%	37.5%	23.7%	12.9%
No Change	23.3%	14.3%	37.5%	13.6%	12.9%
Moderate Contraction	27.8%	28.6%	0.0%	23.7%	25.8%
Severe Contraction	<b>42.6%</b>	22.1%	0.0%	16.9%	12.9%
Impact on cash flows	10 or less	11 to 50	51 to 100	101 to 300	more than 300
High Growth	1.6%	24.7%	37.5%	25.4%	22.6%
Moderate Growth	6.8%	11.7%	0.0%	13.6%	22.6%
No Change	8.4%	14.3%	62.5%	13.6%	9.7%
Moderate Contraction	35.3%	29.9%	0.0%	22.0%	29.0%
Severe Contraction	<b>47.9%</b>	19.5%	0.0%	25.4%	16.1%
Impact on local investment	10 or less	11 to 50	51 to 100	101 to 300	more than 300
High Growth	1.6%	11.7%	0.0%	20.3%	9.7%
Moderate Growth	11.0%	18.2%	12.5%	10.2%	25.8%
No Change	22.0%	<b>27.3%</b>	25.0%	<b>23.7%</b>	19.4%
Moderate Contraction	27.5%	22.1%	12.5%	<b>23.7%</b>	<b>29.0%</b>
Severe Contraction	<b>37.9%</b>	20.8%	<b>50.0%</b>	22.0%	16.1%
Impact on foreign investment	10 or less	11 to 50	51 to 100	101 to 300	more than 300
High Growth	1.1%	14.3%	0.0%	16.9%	16.1%
Moderate Growth	12.6%	24.3%	12.5%	20.3%	9.7%
No Change	<b>50.6%</b>	18.6%	25.0%	15.3%	19.4%

Moderate Contraction	20.7%	8.6%	12.5%	18.6%	12.9%
Severe Contraction	14.9%	<b>34.3%</b>	<b>50.0%</b>	<b>28.8%</b>	<b>41.9%</b>
<b>Impact on payments of salaries and other operating expenses</b>	<b>10 or less</b>	<b>11 to 50</b>	<b>51 to 100</b>	<b>101 to 300</b>	<b>more than 300</b>
High Growth	3.4%	16.9%	0.0%	18.6%	6.5%
Moderate Growth	1.7%	19.5%	12.5%	<b>23.7%</b>	25.8%
No Change	33.9%	13.0%	<b>75.0%</b>	15.3%	19.4%
Moderate Contraction	26.4%	<b>26.0%</b>	0.0%	18.6%	<b>29.0%</b>
Severe Contraction	<b>34.5%</b>	24.7%	12.5%	<b>23.7%</b>	19.4%

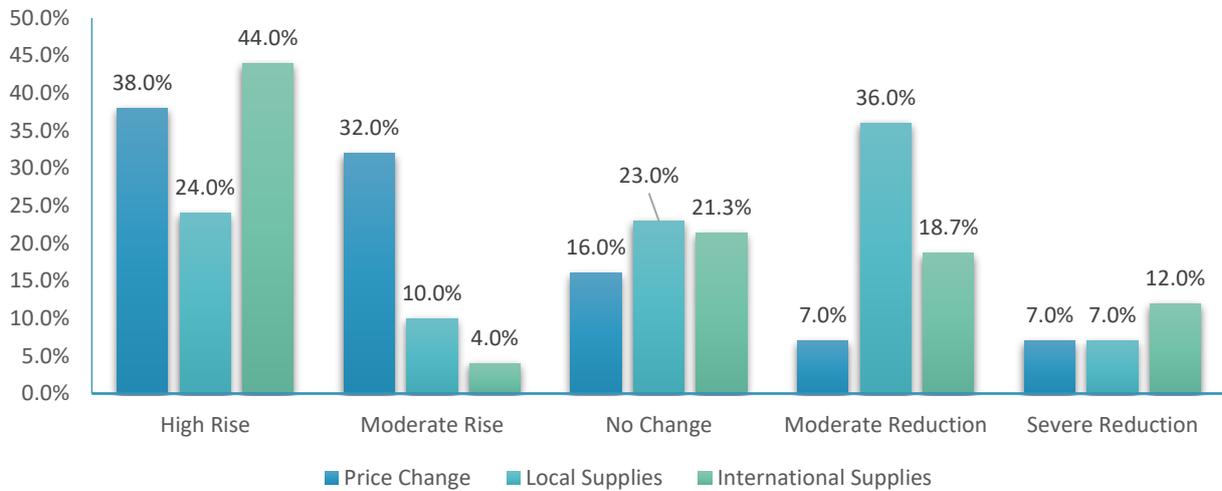
Source: Authors' Compilation from Survey Data, 2021

### Impact of COVID-19 on Trade and Global Supply Chain

Though, the majority of firms surveyed tend to produce for the domestic market (59.4%), the remaining 40.6% encountered various difficulties during the COVID-19 outbreak and have seen a decline in their exports. Across all firms engaged in international trade, 27.1% faced a moderate contraction in exports while for 18.6% of enterprises, their exports dropped drastically.

To mitigate the impact of the pandemic on trade, many enterprises had to undergo changes in their business supply chain. Figure 4 shows that 44% of businesses experienced a high rise in international supplies while 18.7% and 12% registered a moderate and severe reduction in foreign supplies, respectively. The reduction in local supplies seem to be more pronounced with 36% of firms facing a moderate contraction in local supplies whilst 7% encountered a severe reduction.

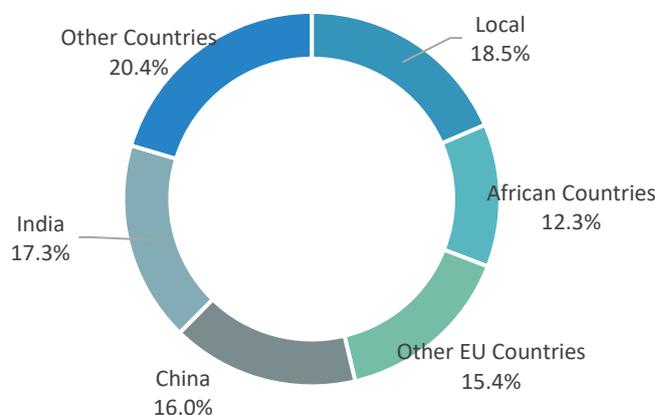
**Figure 4: Change in the Business Supply Chain since the COVID-19 Outbreak**



Source: Authors’ Compilation from Survey Data, 2021

In fact, 76.5% of firms surveyed reported having switched to alternative sources of supplies due to the pandemic. They had to look for alternative markets or businesses which could supply them with the necessary inputs or raw materials. It should be noted that there was an important disruption in local supplies especially with the two different lockdowns that impacted the activities of local enterprises in Mauritius. Figure 5 indicates that 20.4% of firms shifted to alternative sources of supply from other countries, 18.5% used other local suppliers, 17.3% and 16.0% of firms shifted to Indian and Chinese suppliers, respectively while 15.4% directed their orders to other countries within the European Union and lastly 12.3% used African suppliers.

**Figure 5: Changes in Sources of Supplies because of COVID-19 Pandemic**

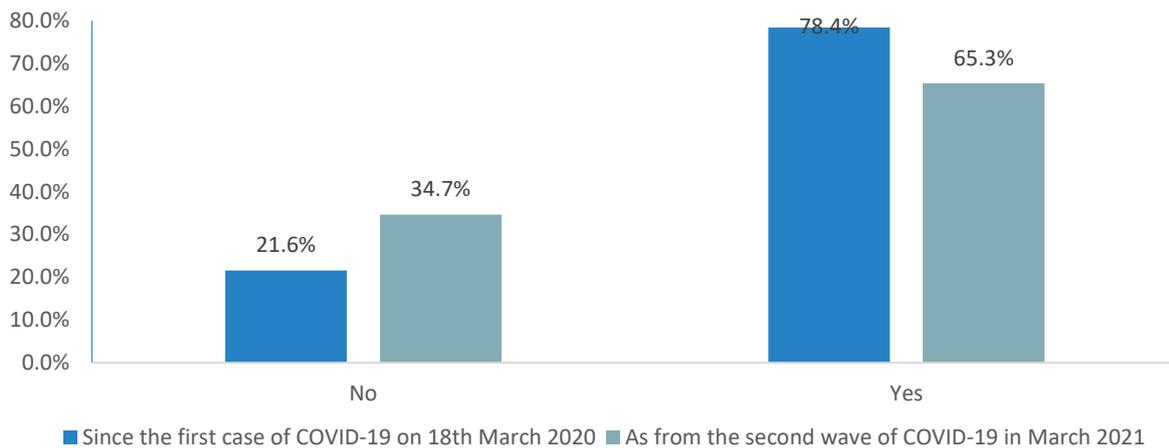


Source: Authors’ Compilation from Survey Data, 2021

### Probability and Expected Period of Closure

One of the major consequences of the pandemic rests on the possibility of closure of firms in the blue economy sector. As the pandemic was accompanied by its health containment measures in terms of travel restrictions, lockdowns and closure of borders, many enterprises had to stop their operations. The survey probed into the operation of the enterprises during the two waves of the virus and the two lockdowns which occurred from March 2020 to June 2020 and from March 2021 to April 2021. It can be depicted in Figure 6 that 78.4% of enterprises stopped their activities during the first lockdown compared to 65.3% during the second lockdown. The latter was shorter and work access permits were provided by the authorities to allow movement of people to their place of work. Despite these, firms had to stop their activities and this has impacted significantly on their performance.

**Figure 6: Firms in Blue Economy that Stopped their Operations due to COVID-19**



Source: Authors' Compilation from Survey Data, 2021

In effect, the survey further gauged into the duration of closure of businesses (see Figure 7). Since the first lockdown, 44.8% of enterprises stated that they closed for 3 months or less, while 44.8% have stopped their activities for around 4 to 6 months. Since the second lockdown, a larger percentage of firms (64.2%) reported to have closed down for about 3 months. The data supports the view that the first lockdown seems to have been more difficult for the majority of enterprises surveyed. The data also reveals that 4.5% of firms have stopped their activities for more than 12 months since the first lockdown and 5.7% have also closed down for a year since the second lockdown.

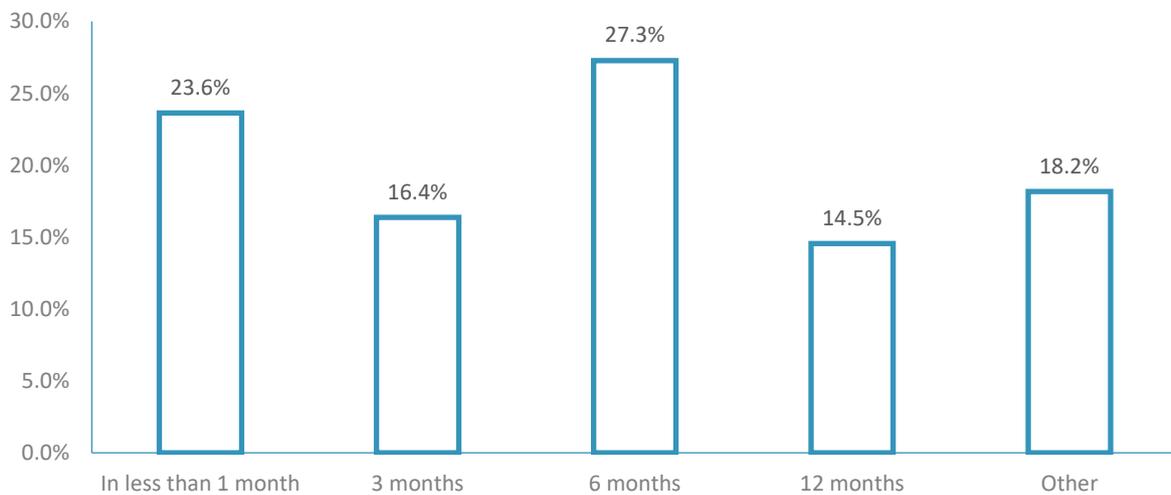
**Figure 7: Duration of Closure since COVID-19**



Source: Authors' Compilation from Survey Data, 2021

In addition, around 28.7% of entrepreneurs may face the risk of closing their business activities in the near future. In fact, 24% expect to close in less than 1 month while 27.3% are anticipating closure in 6 months. In fact, the two lockdowns and consequent border closures have put the blue economy sector in a very difficult position (see Figure 8).

**Figure 8: Expected Closure due to COVID-19**

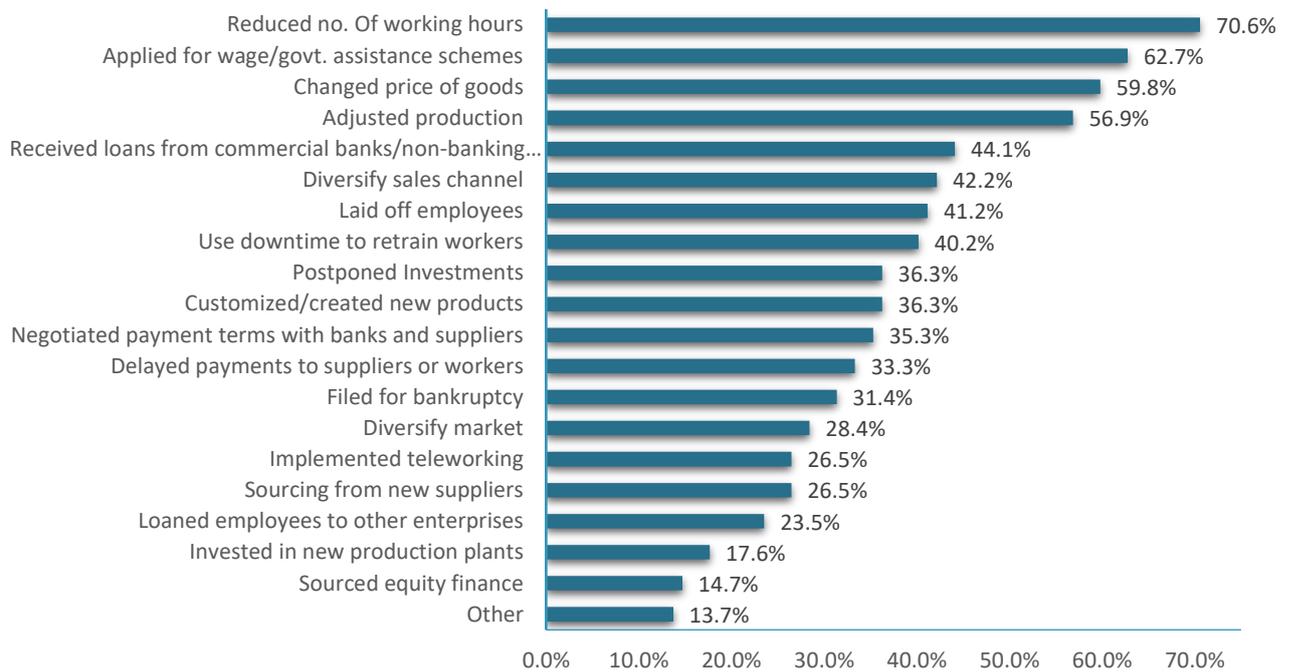


Source: Authors' Compilation from Survey Data, 2021

### 5.5 Strategies Adopted by Firms – Is Digital Trade a Potential Mitigating Factor?

The analysis above clearly reflects the impact of the pandemic on performance of firms in terms of sales, revenue, exports, access to raw materials, local and foreign investment as well as the possibility of closure. To mitigate the drastic consequences of the pandemic, firms have adopted internal measures to cope and survive the crisis. The survey gauges into the different strategies implemented as shown by Figure 9.

**Figure 9: Strategies Implemented to Circumvent the Consequences of COVID-19**



Source: Authors’ Compilation from Survey Data, 2021

Among the main measures implemented, a reduction in the working hours appear to be the most common measure for 71% of enterprises surveyed. This is followed by 62.7% of firms having applied and used the wage assistance scheme provided by the authorities to retain workers. Other important measures related to the change in the price of their product (for 59.8% of firms), adjustment in production (56.9% of enterprises), taking loans from banking and non-banking institutions (44.1% of firms) as well as the diversification of sales channel (42.2% of businesses). There are many firms (around 41.2%) which had to lay off workers. A reduction in workforce has been another strategy adopted by firms in the blue economy sector despite the provision of the wage assistance scheme.

In addition to the above measures, we noted that firms surveyed in the blue economy sector were able to survive especially because of the use of ecommerce. Around 54% engaged in online sales and with COVID-19, 41.2% of enterprises reported having no choice than to use digital trade to mitigate the consequences of the pandemic. Table 5 shows that 35.3% of firms were already using ecommerce prior to the first lockdown in March 2020, but with the outbreak of the virus, increasingly more firms in the sector engaged in ecommerce activities. The second lockdown saw a rise in the percentage of enterprises (29.4%) using digital trade. The type of ecommerce engagement was essentially on a business to consumer type (B2C) for 46% of enterprises while 42% engaged mainly in business to government online activities (B2G).

**Table 5: Ecommerce Activities of Blue Economy Enterprises in the Outbreak of COVID-19**

<b>Debut of ecommerce activities</b>	<b>%</b>
Before the first COVID-19 lockdown (March 2020)	35.3%
After the first COVID-19 lockdown (after May 2020)	17.6%
During the second COVID-19 lockdown (March 2021)	17.6%
After the second COVID-19 lockdown (after April 2021)	29.4%
<b>Type of ecommerce engagement</b>	<b>%</b>
Business-to-Business (B2B)	12.0%
Business-to-Consumer (B2C)	46.0%
Business-to-Government (B2G)	42.0%

Source: Authors' Compilation from Survey Data, 2021

Among those enterprises using ecommerce, 42.6% reported a moderate growth in their online sales while 12.8% registered a high growth in online sales (see Table 6). A moderate contraction in online sales was noted across 27.7% of enterprises compared to a high contraction for 8.5% of businesses. Online sales has shown a rise for most firms and this is in line with other studies where the pandemic has accelerated the shift towards a more digital world and triggered changes in online shopping behaviours that are likely to have lasting effects on different economic sectors.

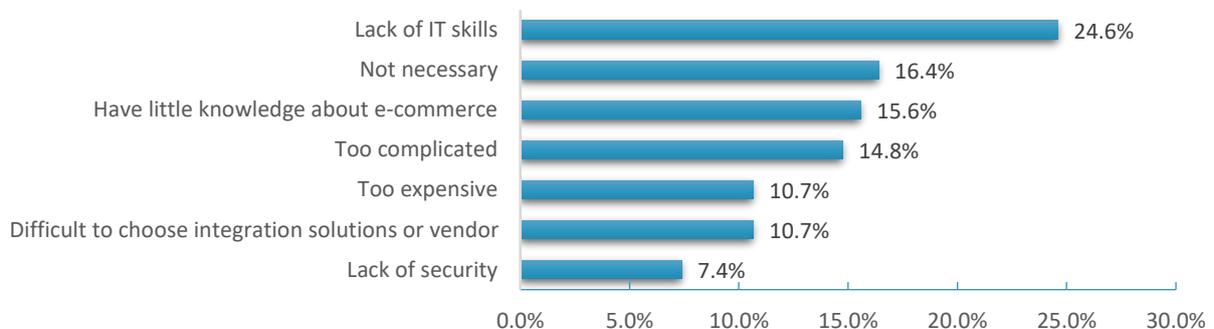
**Table 6: Impact of COVID on Online Sales and Profits of Enterprises Engaging in Ecommerce**

Impact of COVID on enterprises in the blue economy engaging in ecommerce online sales	Online sales	Profits
High Growth	12.8%	10.6%
Moderate Growth	42.6%	25.5%
No change	8.5%	17.0%
Moderate Contraction	27.7%	12.8%
High Contraction	8.5%	34.0%

Source: Authors’ Compilation from Survey Data, 2021

Among those not using ecommerce, despite the fact that there was a huge willingness to go online, they lack the capacity to do so. The main challenges faced to use digital trade are outlined in Figure 10 below. Around 25% of enterprises reported that they lack the relevant IT skills to be involved in ecommerce while 15.6% have little knowledge about this new way of trading. In addition, 14.8% stated that it was too complicated and 10.7% believed it is too expensive.

**Figure 10: Difficulties to Adopt Ecommerce as One Strategy to Mitigate the Effects of COVID-19**

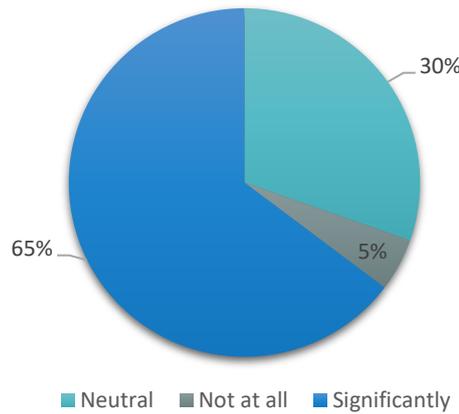


Source: Authors’ Compilation from Survey Data, 2021

**Recovery and Support Measures by Government**

With the opening of the Mauritian borders in October 2021, there has been hope from enterprises in the blue economy sector to resume their activities and as such to maximize the coming opportunities of increased tourist arrivals, rising demand for leisure activities and higher demand for their ocean products. In the survey, 65% of enterprises stated that the opening of borders to tourists will help their activities (see Figure 11).

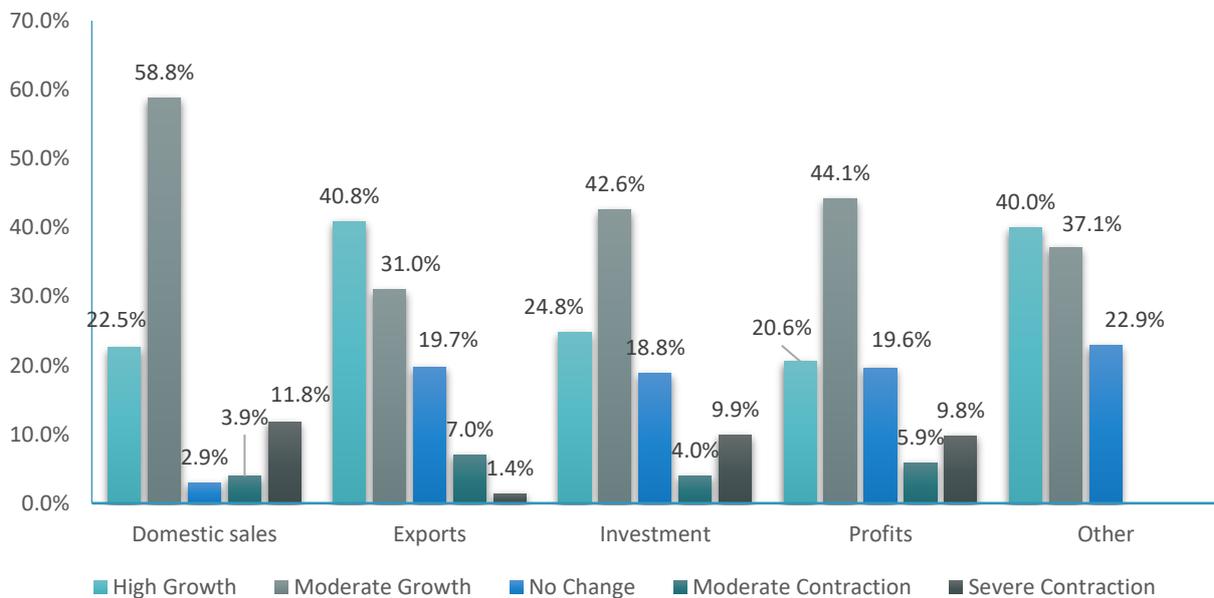
**Figure 11: Opening of Borders: Impact on Activities of Firms in the Blue Economy Sector**



Source: Authors' Compilation from Survey Data, 2021

Hence, many expect their business performance to improve in 2021/ 2022, with 58.8% forecasting a moderate growth in domestic sales while 22.5% expecting a high growth in local demand. High and moderate growth are also expected by the majority of firms in exports, investment and profits (see Figure 12).

**Figure 12: Expected Business Performance in 2021/2022**



Source: Authors' Compilation from Survey Data, 2021

Together with the existing measures set out by the authorities to support MSMES, additional Government support was requested among the sample of firms surveyed. Around 45% of firms claimed that price control of critical goods is important whilst 42.2% of enterprises asked for access to short term finance. The wage assistance schemes were still being needed by 40.2% of firms in order to prevent a reduction in workforce. In terms of finance, loans on better terms was one of the support needed by 36.3% of firms. Other support measures requested were the deferred payments of utilities, easy access to internet and a reduction in internet costs, as well as temporary tax breaks and rent subsidies (see Table 7).

**Table 7: Additional Government Support Needed to Recover from the COVID-19 Pandemic**

<b>Additional Government Support Needed</b>	<b>%</b>
Price control of critical goods	45.1%
Access to cash/short-term finance	42.2%
Wage assistance programmes	40.2%
Loans on better terms	36.3%
Deferred payments of utilities	35.3%
Legal advice on application of labour laws and regulations	29.4%
Facilitated access to the internet/lower internet costs	29.4%
Temporary tax breaks	28.4%
Rent subsidies	28.4%
Improvements to the business environment	27.5%
Programmes to develop capacities and skills to improve digitalisation	25.5%
Financial programmes	23.5%
Other	18.1%

Source: Authors' Compilation from Survey Data, 2021

### **Conclusion and Policy Implications**

The paper assessed the impact of COVID-19 on MSMEs in the blue economy sector in the small island economy of Mauritius which is highly dependent on its ocean. Using a sample of 102 firms across varied activities in the blue economy ranging from fisheries, aquaculture, tourism, shipping amongst many others, the results reveal a significant negative impact of the pandemic on the performance of enterprises surveyed. Performance indicators like sales, cash flows, exports, local and foreign investment have all experienced a downward trend. The decline has been much larger during the first wave of the pandemic that is during the first lockdown since the second lockdown was much shorter with reduced mobility restrictions. From the data, it can also be noted that micro enterprises were the most affected compared to

small and medium sized firms. They were more vulnerable across all performance indicators, with the exception of foreign investment. The study also probes into the future probability of closure of blue economy enterprises. Around 28.7% of entrepreneurs may face the risk of closing their business activities in the near future. In fact, 24% expect to close in less than 1 month while 27.3% are anticipating closure in 6 months. In fact, the two lockdowns and consequent border closures have put the blue economy sector in a very difficult position. MSMES in the sector have experienced significant losses while trying to remain afloat with greatly diminished or non-existent revenue and cash flows.

The critical situation of the blue economy sector is expected to improve with the opening of borders as well as support measures designed by the authorities to protect the sector against the different waves of the pandemic and the difficult economic situation from our traditional tourist contributing markets in Europe, Asia and from Australia. In addition to support measures, many MSMES have designed their own internal strategies to face the effects of the pandemic. Ecommerce has been a major tool used by businesses to generate sales and revenue. Restructuring and diversification are also other measures put in place to mitigate the consequences of COVID-19 on their blue economy activities. Digital trade needs to be further promoted among MSMES and to do so training is required in different areas like the marketing of products online, finance, budgeting and accounting practices, online payment system as well as IT skills like web design, amongst others. There is also a need for MSMES to propose new products and services that would meet the changing market needs. Training in financial literacy to help unblock new capital is crucial for MSMES. The blue economy is crucial for the development and future growth prospects of the island so the importance of MSMEs along the supply chain is well needed. From boat owners to diving clubs to compressor services, to hotels, guest houses, tour operators and fishers, all are faced with the same financial pressure and negative effects of the pandemic, so they have to shape a new, sustainable and long term model of survival and growth. The inclusion and contribution of MSMES in this development process will depend on an early recovery planning of the sector with the appropriate support measures and diversification strategies.

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## **COVID-19 and Digitalisation**

## Driving Digital Trade amid COVID-19 pandemic: Lessons from African MSMEs

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### Introduction

Prior to the COVID-19 pandemic, adoption of relatively simple digital tools, such as webpages and social media, remains relatively low among the Micro, Small to Medium-sized enterprises (MSMEs) in Africa, thus constraining their potentials for digital trade. The COVID-19 pandemic has fundamentally impacted choices and decisions across households, firms, communities, and economies such that entrepreneurs need to continually adapt to survive (Odularu 2020). As ‘physical distancing’ and ‘lockdowns’ became the new normal, MSMEs increasingly adopted digital technologies in their business operations. However, previous research shows that despite the ubiquitous benefits of digitalisation in the current COVID 19 world, MSMEs lag behind in digital transformation in terms of their use of mobile technology, mobile money, digital trade and artificial intelligence among others. The largest gaps are in the digitalisation of the Small to Medium-sized enterprises (SMEs), which constitutes majority of the entrepreneurs. This article elucidates the relevance of digital trade to MSMEs, assess some of the challenges faced by MSMEs in embracing digitalisation, and examine new opportunities that COVID 19 presents for African MSMEs to accelerate their participation in digital trade.

### Objectives.

This study is focused on three objectives which are (i) assess COVID-19 enabling opportunities for digital trade among MSMEs (ii) analyse the challenges faced by MSMEs in embracing digital trade amid COVID-19 (iii) employ a novel paradigm – the new equation – to provide novel perspectives for fostering MSMEs post-COVID-19 resilience and economic recovery through digital trade.

**Methods:** The study used the Technology–Organization–Environment (T-O-E) framework as the theoretical basis to assess MSMEs digital readiness and to examine the critical factors that influence MSMEs adoption of digital trade. This is based on detailed review of previous empirical literature focused on factors that drive MSMEs adoption of technology. Mixed method (in-person and virtual) focus group discussions and key informant interviews were conducted with selected MSMEs across different sectors in Africa. About 400 MSMEs operating in Democratic republic of Congo (DRC), Cote D'Ivoire, Kenya, Mozambique, Nigeria and South Africa were analysed. The MSMEs operate within the key sectors of services, manufacturing, and agriculture.

**Results and discussions:** Several themes were developed from the qualitative data analysis, which include (i) Adoption of Internet (ii) Online marketplaces (iii) Digital logistics services (iv) Reduce transaction costs. The result shows that 78% of the surveyed MSMEs engaged in internet-based business activities more often since the onset of the COVID-19 pandemic. This implies an increased adoption of internet among MSMEs as a means of building resilience and building business back better.

Another outstanding COVID-19 enabling opportunity for digital trade identified from the data analysis is the adoption of online marketplaces. The pandemic has altered the traditional bricks-and-mortar marketplace of most MSMEs in Africa. Many MSMEs now have accounts in one or more social media platforms with which they explore new markets and engage with existing/new customers. Results of the analysis show that the use of Facebook and Instagram among MSMEs is on the increase.

Furthermore, the use of digital logistics among MSMEs has been accelerated by the pandemic. Firms that had always relied on traditional delivery system involving human contact are gradually switching over to digital delivery. Adoption of digital ordering and digital payment among entrepreneurs is also increasing. While 45% of the enterprises adopted digital ordering amid the pandemic, 48% adopted digital payment system. Our findings concur with the findings of UNCTAD (2021) which shows that global and local market have experienced accelerated growth in terms of digital payment due to COVID 19.

Despite the opportunities for business growth amid COVID-19, there are associated challenges limiting MSMEs from maximizing their potentials for growth. Given pre-existing challenges such as poor knowledge of digital technologies, unaffordable internet, poor connectivity, unreliable power, insufficient digital content in local languages, cyber insecurity and low

broadband internet access, digital trade will remain out of reach for many MSMEs particularly in rural areas of Africa.

Many of the firm owners and managers are not well informed on how to access the internet, benefits and costs of digitalization. About 36% of the entrepreneurs interviewed do not know how to access internet on a mobile phone, while 47% of the respondents identified reading/writing difficulties as a top barrier to internet adoption

### **Conclusion and recommendations**

COVID 19 pandemic has served as an accelerator of digital trade among MSMEs in Africa. The increased use of digital ordering and payment system implies increased efficiency. However, smaller firms are less likely to adopt digital trade compared to the larger firms due to their operational capacity. Targeting economic growth for MSMEs should be a critical component of policy interventions in Africa. These interventions should include a range of fiscal and monetary policies, as well as critical initiatives that promotes digitalisation.

### **NOTE**

The complete article will be published as a book chapter with the Pretoria University Law Press.

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## The 4<sup>th</sup> Industrial Revolution and Covid-19: The Increase in Digital Trade in Cameroon

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### Abstract

Covid-19 situates itself at an important exciting and challenging times in the history of global enterprise powered by new technologies. In this context of confinement, only enterprising economies, built on inventions and innovation are well placed to benefit from this fourth industrial revolution. The Third industrial revolution used electronics and information technology to automate production, which brought mainframe computers, personal computing and the internet. The Fourth Industrial Revolution is building on the third, which is the digital revolution. This revolution gave birth to digital trade, which Nigel Cory, defines it as cross border transfer of data, products, or service by electronic means, usually the internet.

In Cameroon this revolution in today's digital technologies including the cloud and digitisation, Internet of things, digital currencies such as Bitcoin, and blockchain ledgers for peer-to-peer (P2P) transactions in supply chain management, are disrupting traditional patterns of trade and investment. While the overall economic impact of the outbreak of covid19 is still unfolding in Cameroon, it is highly likely that from the smallest informal trade to a major supply agreement, trade contracts are progressively more transacted online; whether via email, e-commerce store, or digital platform.

In this paper, we examined the situation in Cameroon before covid19, as we discovered that from the 2000s, the country increasingly entered the global market as buyers and sellers of ICTs goods and services, from bandwidth usage, to Internet Service Provider (ISP) services, platform services such as payment gateways as well as trade portals and communications networks. While the definition of 'ICTs services' is services that are ICTs themselves is now clearer, trade also has begun taking place in 'ICTs-enabled services' all part of digital trade. With covid-19, these services are also now well defined as that which could potentially have

a mode of delivery that is not ICTs-based, such as call centre services, software development services, other ‘offshored’ services and media services, but which benefit greatly from the trade mode offered by ICTs; especially the internet.

The case studies of digital start-ups acknowledged the increase in consumer participation in the digitisation of trade. Formal trade now relies on the internet for implementation, as we discovered that financing, documentation and logistics are digitally driven, and becoming more and more so. Whether it is an emailed order, an online purchase, or merely the financial arrangements behind the transaction, the internet is increasingly being inevitably used in conducting international trade. Examples cited also include moto bikes and taxi services gotten through online platforms. Video conferences have taken the lead even within the Cameroon administration. Digital goods; for example, the viewing of videos online, such as that for home workouts and cooking and online services such as e-learning are rampant during confinement.

The problems raised in the existing literature are in the likeness of the ones documented in this study. The lessons reveal that Cameroon is having a weak innovation system, which its unable to build.

In our recommendations, we anticipated the insight generated by the study, created awareness of the issues raised, especially how e-trade projects and trainings should be executed to close the digital divide, for purposes to identify appropriate policy approaches for effective program development and policy design. It is therefore crucial for Cameroon to reinforce its commitments to design recovery packages with a strong component of financial support to innovation-intensive activities and infrastructure around the digital economy.

## **Introduction**

### **Focus and objective of the study**

This study seeks to explore an area that is neglected in the analysis of the impact of Covid-19 in the Cameroonian economy; the increase in digital trade during the pandemic. Covid-19 situates itself at an important, exciting and challenging times in the history of global enterprise powered by new technologies known as the fourth industrial revolution technologies. Remarkably, only enterprising economies built on inventions and innovation are well placed to benefit from the advantages of the revolution in the midst of confinement and imposed social distancing. Contrary to expectations, the economy of Cameroon is transforming due to the rapid

evolution and growing use of Information and Communications Technologies (ICTs), as access to data and the ability to transform data into digital intelligence have become crucial for the competitiveness of companies including SMEs. How this has progressed is interesting to examine within the context where the government took measures of confinement but allowed cargo to flow freely. In that perspective, while the government takes measures to curb covid-19, it aims also to facilitate the movement of essential goods and services within and across borders to ensure continuity of supply chains.

In general, the fourth industrial revolution in today's digital technologies including the cloud, Internet of Everything, digital currencies such as Bitcoin, and blockchain ledgers for peer-to-peer transactions in supply chain management, are disrupting traditional patterns of trade and investment (UK Industrial Strategy 2017). While the overall economic impact of the outbreak of covid-19 is still unfolding in Cameroon, it is highly likely that from the smallest informal trade to a major supply agreement, contracts are progressively more transacted online; whether via email, e-commerce store, virtual mall or digital platform (Tralac 2020).

From the first to the fourth industrial revolution, the demarcations become flawless in their connotations. The First Industrial Revolution used water and steam power to mechanize production (Klaus 2016). It brought mechanical innovations such as the steam engine, cotton spinning and railroads. The Second Industrial Revolution used electric power to create mass production (ibid). This brought mass production through assembly lines and electrification. The Third industrial revolution used electronics and information technology to automate production (ibid). This brought mainframe computers, personal computing and the internet. Now a Fourth Industrial Revolution is building on the Third; which is the digital revolution. This revolution has been occurring since the middle of the last century (ibid). According to Cory et al. (2020) the interplay between fields like nanotechnology, brain research, 3d printing, mobile networks and computing is creating realities that were previously inconceivable. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres (Tralac 2020). Klaus (2016) argues that quick and cheap diagnosis and decision making is transforming industries and administrations. They now possess velocity, scope, and systems impact, which has no historical precedent. Billions of people for example can be connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge.

The 4<sup>th</sup> industrial revolution gave birth to digital trade. Nigel Cory, for *RealClearPolicy* defines digital trade as cross border transfer of data, products, or service by electronic means, usually the internet. The data amongst other goods and services are transferred within the national territory and across borders to improve operations, the internet is used to find and access digital goods such as music, news or soft wear, physical goods in e-commerce delivered packages and services such as video telephony, cloud storage and data analytics services. Digital trade includes also e-services of all types, forms or modes; e-learning, video conferences and ‘ICTs-enabled services’, such as call centre services and software development services.

Certainly because of its advantages, this 4<sup>th</sup> Industrial revolution has facilitated life during covid-19, given the necessity of confinement, social distancing and the need to continue living or especially carry out certain important businesses (Cory et al. 2020). This can be perceived in the push to digitisation and increase in digital trade in Cameroon.

### **Research questions and associated hypothesis**

The research questions addressed in the study are:

- How are the fourth industrial revolution technologies changing the Cameroonian mentality?
- What are the relationships between digital trade and the measures to prevent the spread of covid19, such as confinement and social distancing?
- Could this be an occasion to develop digital trade by taking measures to overcome it’s the difficulties of an emerging sector?

The idea offered for consideration here, which is the hypothesis, is that ‘the measures to prevent the spread of covid19, such as confinement and social distancing, have positively affected digital trade in Cameroon’.

The study addresses these questions, firstly by examining the situation in Cameroon before covid19. It seeks to discover the gradual inception of new technologies in to trade from the 2000s. The evolution is analysed alongside the progress in overcoming the bulwarks. It then surveys the case studies of digital businesses and start-ups acknowledged in the increase in consumer participation in the digitisation of trade. It then examines the problems and challenges in the sector. Finally, the paper propounded solutions making a case for increasing Science, Technology and Innovation (STI) budgets during the COVID-19 crisis and its aftermath. The recommendations anticipate the insight generated by the study, creating

awareness of the issues raised, especially how e-trade projects and trainings should be executed to close the digital divide, for purposes to identify appropriate policy approaches for effective program development and trade policy design.

### **An overview of the research methodology**

This refers to the process used to collect data and information to establish the relationship between digital trade and the measures to prevent the spread of covid19. The key objectives of the study are to diagnose the positive effects of the measures to prevent the spread of covid19, such as confinement and social distancing on the increase in digital trade. How can such an experiment be undertaken? By increasing the use of fourth industrial revolution technologies and measuring the effects on digital trade. The experiment is the case before and after the ‘stimulus’ i.e. the digitisation of trade and verifying the impact within the period of covid19. The study seeks to verify the technological revolution whose scale, scope, and complexity has started altering the way we live, work, and relate to one another, a transformation unlike anything humankind has experienced before (Klaus 2016). The transactions in trade do not require physical displacement of consumers. The direct influence of the measures to prevent the spread of Covid-19, such as confinement and social distancing, will be established alongside the indirect effect.

This study employs a quasi-experimental research design which is desktop based, drawing on secondary data available from the Ministry of Trade Cameroon, the Ministry of Post and Telecommunications, Cameroon Telecommunications Company and the Cameroon Postal Services, e-commerce players and digital trade platforms in Cameroon. The study is also based on literature from renowned writers on the subject and international organisations such as the United Nations Conference on Trade and Development, Trade law Centre and the Cameroonian media.

### **I-THE DIGITAL ECOSYSTEM IN CAMEROON BEFORE COVID-19 AND THE GRADUAL INCEPTION OF NEW TECHNOLOGIES IN TRADE FROM THE 2000s**

The evolution of digitisation in Cameroon has been slow but nonetheless promising. Before we get to the reasons for its slowness, it is good to consider the positive aspects of the evolution. According to Tralac (2020), the wheels of international trade in sub-Saharan Africa, including Cameroon are gradually being powered by the internet. The research also reveal that financing, documentation and logistics are not left out, for they are all digitally driven, and

becoming more and more so. According to the African Development Bank cited in Tralac (2020), 73 in 100 inhabitants of the Economic Community for Central African States, where Cameroon belongs, have access to a mobile telephone.

To benefit from the Fourth Industrial Revolution technologies and accelerate its business development, the Cameroon government in 2014 announced that by 2015, businesses will be online. Consequently, there was an explosive growth in digital trade, which saw the transformation of traditional practices of doing business into modern, money transfer agencies using internet to send and receive money rapidly and e-banking services seen in commercial banks. The increase in competition among banks led to the increase in new market technologies, companies are now advertising their products online, via websites and social media such as Facebook and Twitter (Nganfen 2014). According to Kaymu (2019), an e-commerce website in Cameroon, the landscape of e-commerce after being concentrated on classified websites such as Kerawa or Sellamquick, the business has evolved with the arrival of Wandashops. Wandashops went beyond simply connecting buyers and sellers to selling their own products and including home and/or office delivery in their offer. International companies such as Africa Internet Group or Casino Group came in, offering a wider variety of e-business services and in a more scalable way with marketplaces, online retail, hotel reservation, real estate and so much more. According to research, the number of visitors on e-platforms in Cameroon increased from 869.750 in 2016 to 1.077.373 in 2017, visiting newly developed platforms such as JUMIA, SOPPGO, SELLAMVIP, SELL KAKO, AFRICA-SHOPS, AFRIMARKET, AFRISHOP24, ARISTMARKET, BOOGOS, CKOMSA and KAYMU. According to Invest in Cameroon (2020), Cameroon's money supply also increased by 14% between February 2019 and 2020, driven in particular by its external assets.

In its 2018 report on the e-commerce index in Africa, document released during the African E-commerce Week, which took place in Nairobi (Kenya) from 10 to 14 December 2018, the United Nations Conference for Trade and Development (UNCTAD) reveals that Cameroon is now the 10th African market for electronic commerce. The only Central African country to appear in the top 10, Cameroon owes its ranking to scores all above the African average on the four criteria around which the elaboration of this ranking is based (UNCTAD 2018) and these are: the number of online buyers, the level of server security, ease of payment and ease of delivery. According to experts, through this ranking, Cameroon is reaping the fruit of the strong penetration of smartphones among the population. Indeed, according to a study by French Mediamétrie, the penetration rate of smartphones in Cameroon rose from 68% in 2013 to 72% in 2016. According to Mbodiam(2018), this reality has helped boost electronic

commerce, to the extent that, as revealed in a study from by Jumia, 65% of online orders in Cameroon are made from mobile phones.

At the origin of the rank that Cameroon occupies in the African e-commerce hit parade in 2018, is also the meteoric progression of the Internet penetration rate in the country in recent years (from 2% to about 23% in the past 10 years). As proof, we learn, 23% of Cameroonians use the Internet, while three quarters of the population of Africa do not yet have access to this tool. The dynamics observed in e-commerce in the country is such that the Cameroonian government wants to make it a source of public revenue. It will be interesting to find out what obtains with the outbreak of the corona virus.

## **II-THE FOURTH INDUSTRIAL REVOLUTION TECHNOLOGIES AND DIGITAL TRADE IS MAKING PROGRESS WITH THE OUTBREAK OF COVID -19**

The Fourth Industrial Revolution just as the revolutions that preceded it has the potential to raise global income levels and also to improve the quality of life for populations, particularly for vulnerable groups such as youths and women. During this period of covid-19, businesses as well as consumers have gained where they are able to afford and access the digital world, for there is a growing demand for ICT services (Cory et al. 2020).

According to Tralac (2020) this begins with being aware of how technology has made possible new products and services such as ordering taxis, or bikes via internet platforms, buying products, making payments, listening to music, watching films, playing games or receiving other e-services such as e-learning or online training during confinement. According to UNCTAD's Director of Technology and Logistics, the corona virus crisis has accelerated the uptake of digital solutions, tools and services. UNCTAD (2020) indicate that there is a global increase in e-commerce transactions.

### **A- The impact of the fourth industrial revolution on mentalities in general and the digital ecosystem in Cameroon.**

It is worth to mention that as noticed during confinement due to covid-19, the Fourth Industrial Revolution is changing not only what we do but also who we are (Banka 2020), as Klaus (2016) put it, affecting our identity, the multiplier effect is found in all the issues associated with it. This has to do with our sense of privacy, our notions of ownership, and our

consumption patterns, including the time we devote to work and leisure, and how we develop our careers and cultivate skills. This goes as far as affecting the way we do business and nurture relationships.

According to research at the level of CEOs and senior executives of companies dealing in ICT services in Africa south of the Sahara, many industries are seeing the introduction of new technologies that create entirely new ways of serving existing needs or solving problems and significantly disrupting existing industry value chains (Klaus 2016, Banka 2020). There are major shifts in consumer engagement seen in new patterns of behaviour, as consumption is built upon access to mobile networks and data (Klaus 2016, Stuart 2020, Banka 2020). Consequently, in such a situation, Klaus (2016) argues that companies are forced to adapt to the new ways to design, market, and deliver products and services.

It is in this perspective and considering the increase in online purchases that a tender was launched in April 2020 by the Ministry of Trade of Cameroon to create a national platform on e-commerce. Considering the proliferation of digital platforms amongst which there are fake ones, this national platform aims at integrating all Cameroonian digital trade platforms of good reputation. This is to fight cyber criminality and provide enough security for consumer confidence.

Stuart (2020), looking at the benefits for consumers, holds that whether consumers or businesses, customers are increasingly at the epicenter of the digital economy. The truth is that as customers become a priority, it improves the way they are served. In that light, it is worth to mention that the Cameroon Telecommunications company (Camtel) is now certified to ISO 9001/2015 standard in its wholesale segment. Concretely, according to ISO, the world certification body, the quality management system of Camtel is demonstrated in its ability to constantly provide products and services that meet customer requirements, standards and applicable legal and regulatory requirements.

According to Klaus (2016) new technologies and platforms increasingly allow citizens and businesses to dialogue with governments, express their opinions and coordinate their efforts. This can be seen today in complains coming to the Telecommunications Regulatory Board (TRB) in Cameroon. In one response, the Telecom regulator recommended operators in Cameroon to cut costs at the outbreak of the Coronavirus pandemic. The good news is that in the context of the Covid-19, the board started consultations with operators in

the sector, with a view to get lower service costs. It was revealed in a press release signed on March 30, 2020 by the Director General of TRB that the two main operators of mobile telephony MTN and Orange had already announced a partial reduction or simply the abolition of fees on financial transactions carried out via their mobile payment services. The operators now offer a diverse range of promotions and other packages, which offer customers a range of choices aimed at spending less to benefit from these services facilitated by digitization. These improved the digital ecosystem to facilitate payments in e-trade.

Moreover, Camtel obtained three new concessions to become the 4th mobile operator in Cameroon besides others such as MTN, ORANGE or NEXTTEL, increasing competition which according to Stuart (2020) works for the benefit of consumers. On March 12, 2020, the Cameroon Minister of Post and Telecommunications, Minette Libom Li Likeng officially handed over three concession agreements granted by the State to the company Camtel. The minister declared at the ceremony that, the granting of concessions to Camtel aims to strengthen the productivity of the national historic operator, with a view to improving the supply of quality electronic telecommunications services, at affordable costs. Concretely, we learned, the three new concessions granted to the operator are related to the establishment and operation of a mobile electronic communications network, with national coverage, open to the public, linked to 2G, 3G and 4G access technologies.

### **B-Online payments and money transfers**

With the coronavirus pandemic (COVID-19) hitting Cameroon, more people are becoming dependent on emergency funds. At this time many people around the world need to send and receive money quickly, at an affordable cost. According to Banka (2020), systems that allow instant access to funds called fast payment systems were already revolutionizing retail payments before this crisis. Their role in this process is now more important than before. Banka (2020) affirms that two key aspects characterize rapid payments: the transmission of the payment message and the availability of funds to the recipient in real time. In addition, the service must be available continuously. Since payments can be made over the internet, mobile phone networks and through Quick Response (QR) codes, they provide a convenient and user-friendly experience that is even more beneficial, now that millions of people have to comply with the requirements of social distancing (ibid). Since, the service must be available continuously, the Monetary Authorities in Cameroon, have launched campaigns with banks to promote the use of fast-payment system for individual and business payments. Traders can

accept quick payments remotely and can instantly access funds in their transaction accounts, just as they would with cash. This is particularly useful for owners of micro and small businesses, who can then pay suppliers on time and fulfill other urgent payment obligations mostly without displacement. As it is for the case of Cameroon, Banka (2020) argues that emergency funds from governments to individuals and businesses can also arrive quickly. In Cameroon, users can send payment requests and initiate payments using identifiers such as phone numbers. Indeed, systems are capable of supporting overlay services via Application Programming Interfaces (APIs) programming code that queries data, parses responses, and sends instructions between one software platform and another. Cameroon inaugurated the National Switch for Electronic Payments, managed by CAMPOST to promote, through a single gateway, the interoperability of the various services offered by operators using the National Electronic Communication Network. According to the Ministry of Post and Telecommunications (2020), this is to place the public postal operator at the heart of the development of the digital economy, the materialization of an important decision during a crisis period of covid-19. This national switch determines the conditions and rules for using the Unstructured Supplementary Service Data (USSD) code for access to the National Electronic Communications aggregation platform.

The platform aims in particular to guarantee fair conditions of interconnection, reduce the costs of mobile financial transactions and promote financial inclusion. In addition, it allows access to mobile financial services by a unique code for those having accounts in accredited banks such as Afriland First Bank.

### **C-Video conferencing, teleworking and webinars in businesses, organisations and the administration**

New digital technologies and services such as video conferencing and teleworking are playing their role to support countries and organizations to adapt to the Covid-19 coronavirus outbreak. According to Businesswire (2020), video conferencing as an ultimate solution to connect with remote workers, customers, and employees at the same time, is preventing direct contact with the people to implement social distancing. They argue that the outbreak of the coronavirus has impacted the video conferencing market positively given the ban on travel and confinement imposed by many countries. The government of Cameroun increased the use of these technologies in communication such as ZOOM; used to bring the maximum together and teleworking. According to CRTV (2020), ZOOM is reaching about 100 people for a single

conference. It is worth mentioning that teleworking solved the problem of confinement while working at home and requiring to communicate with office by phone or email, or using the internet. In addition, the use of webinars is also widely spread for workshops and seminars in companies, organisations and public administrations. Participants in a webinar belonging to a group, organisation or structure go on the internet at the same time to research and discuss pertinent issues. Sometimes they are viewed by third parties.

#### **D-The glaring increase in online trade**

According to Sorel Mouafo CEO of Mynetshop, a digital platform for the sale of products made in Cameroon, Covid-19 has accelerated the use of new technologies in e-commerce. The health crisis has changed the consumption habits and has also forced brands to reinvent themselves, adapt and above all to innovate so as not to cease to exist. As the abovementioned technologies are facilitated by digital services, the Fourth Industrial Revolution has a profound impact on the way we trade. Data flows and digital services delivery, are playing a critical role in the COVID-19 pandemic response (Cory et al. 2020).

E-commerce was positively affected in some countries in Sub-Saharan Africa, highly remarkable in the top 10 e-commerce countries in Africa; Mauritius, Nigeria, South Africa, Tunisia, Morocco, Ghana, Kenya, Uganda, Botswana, Cameroon (UNCTAD 2020).

According to Le Point Afrique (2020), delivery companies are on the rise on the African continent including Cameroon, as the confinement imposed by the Covid-19 has multiplied their markets. Meal delivery and home shopping companies are making a splash. As far as online commerce is concerned, testimonies collected by Le Point Afrique (2020) and other local media from economic operators suggest that e-commerce home delivery is making its revolution; Cameroon included. KONE (2020) suggest that E-commerce remains one of the rare sectors not to have suffered the wrath of the health crisis. Forced to remain confined to their homes, consumers have seen their habits change and activities that rely on the internet to operate have proven to be the luckiest. Thanks to the internet, you no longer have to go out shopping at the supermarkets and shops in Cameroon, you just have to order and have it delivered to your home.

As confirmed by Francis Dufay, CEO Jumia Côte d'Ivoire, they are tempted to say that Covid-19 is like a breath of fresh air for a sector like e-commerce which was experiencing difficulties mainly in French-speaking Africa. The CEO declared that with an unforeseen

global health crisis, they had to react quickly and adapt by working appropriately. The appropriate working measures were strictly applied by e-commerce players in Cameroon. Deliverers and delivery point agents were trained and equipped to comply with good hygiene and sanitation practices as recommended by the World Health Organization and the Cameroon government.

On the change in the buying behaviour during the crisis in Cameroon, in view of the measures taken by authorities relating to distancing and confinement, to the closure of restaurants and supermarkets, the populations reviewed their habits. Increasingly, they were buying online from e-commerce platforms on computer, mobile website and mobile application. The e-commerce players cover not only the main cities but also some rural areas, making sure that everywhere they deliver, their collaborators, sellers and partners respect the strictest sanitary standards. By delivering them to homes, they prevent people from having to go to high-concentration areas where the virus can be contracted. Kitio Arsène Alex, the young CEO of Balloon specialised in insurance in Cameroon declares they have seen more people avoiding crowds by doing their insurance subscriptions online.

According to Kenfack Hervé the CEO of klapeers.com, an online selling platform, there is a considerable increase in online transactions during the covid-19, even though statistics are not yet available. This is the same story for other digital platforms such as Wallam, Vusur, Glotelho, Wissbuy, Iziway, balloon easyweb Afribobo, Regis Market, Trem Market, Beegroup and Afoup-distribution. They are declaring that commands have tripled. It is worth to mention that during this period ecommerce platforms were born, such as Brand Spark and Sparkafrik.

### **E-Improvement in e-learning**

The Chinese telecom firm Huawei has deployed the platform «Learn On» to ensure the continuation of its certification programs in Cameroon. This was revealed during a videoconference on May 26, 2020. Medra Oku Mulango, a 3rd-year student in telecommunications engineering at the National School of Post, Telecom and ICT (Sup'ptic), one of the four partners of Huawei ICT Academy in Cameroon, affirms that thanks to this platform, there is exchange of knowledge as courses are done online with weekly assessments, as if students were in their normal classroom. At the University of Douala, Huawei ICT Academy's other partner, «Learn On», is also used. Joseph Mvogo Ngonu, Head of the Information Systems Division at the University of Douala affirms that during this period of

Covid-19, they have effectively migrated to online training with the support of Huawei. According to the Chinese telecom giant, since the launch of the Huawei ICT Academy in Cameroon, 236 teachers have been certified while 659 students have been trained in ICT, and 35 of the students have successfully passed various certifications out of the 40 candidates who took the tests.

Meanwhile Sup'ptic has a new platform, created during the suspension of classes due to covid-19. They created a platform of distance learning where students received courses and evaluations online. Presented to the public in June 2020, Sup'ptic in collaboration with MTN Cameroon alongside MINPOSTEL provided a collaborative platform and teleworking. A fruit of the partnership between MTN and MINPOSTEL, the e-learning tool is also being experimented at the National School of Administration and Magistracy (ENAM). The application integrates the systems to reduce the cost of internet and include tax privilege to be afforded them.

In the same light, a student has created an app to ease knowledge exchange. The platform to facilitate exchanges among users is a panacea for confinement and social distancing obligations especially for secondary school students. It targets those in examination classes. The 18-year old Mba Javis said the 'TheNetork' as it is called, came to his mind out of the quest for knowledge and the inability to have information from a library. Information for students is published online and it also connects students to share knowledge. According to Pauline Okwen ateacher GBHS Bamenda, the app is very useful.

Another platform in that light was created by some young Cameroonians for e-learning known as Retymee. It was created in the month of May 2020 and launched in June 2020 for the purpose of online lectures during Covid-19. The University of Yaounde 1 have their lectures posted online on their websites, including assignments which students do within the margins of the online research and only present themselves to submit.

## **F- Government e-services**

In Cameroon there exists the online registration of candidates for public service examination and other services, which is now possible due to covid-19. Candidates can apply through the platform [concouronlin.minfopra.gov.cm](http://concouronlin.minfopra.gov.cm). This website for candidates wishing to apply for any competitive examinations organised by the Cameroon Ministry of Public service

and Administrative Reforms effectively became operational on June 8 2020. The platform enables the digital submission of required documents to be attached to the application. Filling of an online registration form and obtaining a clearance from the administration for the payment of examination fees. The platform systematically communicates to candidates, practical information on the organisation of the competitive examination they applied for, such as the dates of examination, the centres and rooms as well as results of the written part and final results. The integration of digital technology in the functioning of the public service is facilitated by the youth centres created in all the regions of Cameroon with internet connection, computers and scanners. The National Youth Observatory created 437 of such centres.

### **G-Innovations and inventions to fight against the pandemic**

In the month of June 2020, the University Institute of Technology of Douala in the fight against Covid-19 produced their Thermo-flashes for the measurement of temperatures. It works with infrared technology which takes temperature from a distance. The temperature varies between -50 degrees and 300 degrees, which makes it useful not only for humans but also for objects.

Similarly, a digitally controlled machine was invented by a group known as AUITechno during Covid-19 to disinfect clients at the entrance of the user structure. This automatic portico machine installed at the main entrance of any structure requires the user as he enters the portico to presents his hands in a box and the disinfectant liquid will be sprayed on his hand and body from the head to the toes.

### **III- Problems and challenges in the digital sector.**

Digital trade is progressing significantly in Cameroon while remaining far from what it represents elsewhere in the world. While E-commerce in Africa attracts investors during Covid-19, research holds that considerable obstacles needs to be overcome such as less access to the Internet (Stuart 2020), limited purchasing power of the middle class, poor infrastructure and mistrust of online payments. According to Kenfack Hervé the CEO of klapeers.com, with the shortcomings in the naming of the streets, transporting the goods to their destination is a challenge. Stuart (2020) argues that Africa still has the most expensive internet in the world, which according to the alliance for affordable internet, the average cost of 1 GP of data is nearly four times more than what they consider affordable. A webinar was organised in Yaounde on the 19<sup>th</sup> of June 2020 which saw the participation of the main stake holders of e-commerce in

Cameroon, who used the occasion to raise some of the above-mentioned problems amongst others. They insisted on the risks involved in digital transactions with cyber criminality. Participants raised the issue of the lack of a dispute resolution mechanism to address concerns, such as when a payment is accidentally made to the wrong recipient.

A group of African Business Forum staff and other financial experts in 2013 produced certain statistics on Cameroon which is still an issue today. The findings show that 55% of the SMEs complain of the problem of the internet penetration. SMEs today still complain of lack of ICT skills, poor ICT infrastructure, low availability of credit cards, inadequate knowledge about the laws governing online financial transactions and thus scepticism to risk money online. SMEs still complain of delivery services for goods purchased online.

ABISOYE Odejide, a Commonwealth consultant presented the Review of the e-commerce policy report of Cameroon in 2018 which are the same as those propounded by Hope (2020). In the analysis, the major Challenges identified are expensive and poor ICT infrastructure, poor logistics and trade facilitation, insufficient security and low adoption of online transactions, under developed E-payment platforms and lack of awareness.

Female owned start-ups have peculiar problems having to do with Societal prejudice (Mbipan 2019). The marital obligations make them uncertain about their professional opportunities when the challenge in juggling work responsibilities and household responsibilities surge. Those who though offer services online, which normally should permit them to take care of their children while at home; these same children however lead them into errors that cause them huge financial loss. According to Mbipan (2019) this occurs when pertinent mistakes are made because one child needed help in one thing or another. Financial difficulties and lack of training make some to be backward in skills such as digital marketing.

MYNETSHOP, built by Sorel MOUAFO and SELECTRI owned by Sulamite revealed that since they have to make their services known by internet users, because non internet users are not potential clients, the Search Engine Optimisation (SEO) is advisable. The negligence or ignorance of this marketing search engine, SEO, the techniques that permit you to optimise the visibility of your web page in the search engine makes digital investors loose its benefits. With SEO your webpage is easily seen, when the internet users do research, for you receive qualified visitors who can buy online. This stage is most often avoided by these start-ups in favour of advertisement through social media.

Broken web links that waste time are making online customers angry in Cameroon. According to A54 Marketing Group (2017) fancy and unnecessary pages, heavy files and widgets increase page load time.

## **VI- Solutions during the COVID-19 crisis and its aftermath**

According to Tralac (2020), the digital economy offers great opportunities for young people, but skills and education will be essential to profit from the advantages. They argue that there is need to first accelerate e-commerce trade preparedness to benefit small businesses and developing economies. There is also need to support the international functionality of payment systems and related supply chain information flow.

During this period of confinement users should be able to get into web sites easily and quickly, find their products, easily pay for it and get convenient delivery options. Since broken web links make customers angry, lighter web platforms and making the checkout process simple is the right option. According to A54 Marketing Group (2017), lighter websites are better, including simpler image format to reduce down load time. This makes users to surf through websites thereby improving the user experience and reduce bounce rate. They argue that fancy and unnecessary pages, heavy files and widgets that could increase the page load time should be avoided. Consequently, regular improvements and maintenance is required; which requires adapted training.

According to A54 Marketing Group (2017) since transport and delivery network is a blockage, creative solutions such as establishing partnerships with local shops to serve as pick up points, creating a physical store in some strategic locations, investing more in their transport and delivery network will be of help.

In all of these measures, it is compelling for the government to support the digital sector with quality internet, provide logistics and finance training and sensitisation or awareness campaigns on the advantages of e-commerce during Covid-19. The important role of Government centres on providing the necessary access to the internet at a cheaper, faster and reliable rate (NGANFEN 2014). According to Stuart (2020) competition will reduce the cost of internet when there are a multitude of internet providers. Government policy should align e-commerce policy implementation as concerns its strategy with Developmental Goals, with focus on encouraging the participation of female start-ups. The Sustainable Development Goal n° 5 aims to achieve gender equality and empower all women and girls, and calls for enhanced use of enabling technology (new technologies in the ICT sector in particular), to promote the

empowerment of women (Mbipan 2020). Hope (2020) holds that trade rules cannot solve the problem of digital divide if governments do not direct resources to addressing the digital divide.

The researcher also propounds that there is need to engage with the international trade agenda on e-commerce to integrate into the global digital economy. To reduce skeptics in terms of security amongst potential consumers, the government needs to strengthen the Legal and Regulatory Framework. Moreover, the government should also boost the development of e-commerce Online Payment Solutions (Mbipan2019). Innovative payment solutions from start-ups should be highly encouraged (Ibid).

Overall, the inexorable shift from simple digitization to innovation based on combinations of technologies characterised the situation before Covid-19, forcing companies even to re-examine the way they do business. We sought to discover the gradual inception of new technologies in Cameroon digital trade from the 2000s, the evolution alongside the progress in overcoming the obstacles. Business leaders and senior executives need to understand their changing environment, challenge the assumptions of their operations considering the need innovate. The paper then surveyed the case studies of digital businesses and start-ups acknowledged in the increase in consumer participation in the digitisation of trade. It then examined the problems and challenges in the sector. Solutions considered the need for increasing science, technology and innovation (STI) budgets during the COVID-19 crisis and its aftermath. It is certain that continued investments in STI will be critical to the achievement of the 2030 Agenda for Sustainable Development. The recommendations anticipated the insight generated by the study, creating awareness of the issues raised, especially how digital trade projects and trainings should be executed to close the digital divide, for purposes to identify appropriate policy approaches for effective program development and trade policy design.

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## COVID-19: ERPnext, A Case Study

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### ABSTRACT

Small and Medium Enterprises (SMEs) have been challenged by the unprecedented disruptions and uncertainty caused by the COVID-19 global pandemic. Apart from the economic, political, social, and psychological impact, the pandemic had more severe consequences on human health. The measures taken by countries to slow down the pandemic have led to lockdowns, reductions in consumption, the closure of communities, and the elimination of businesses. Many companies are succumbing to the effects of the coronavirus.

With limited financial resources and expertise, SMEs require new strategic approaches in order to overcome the impact of the pandemic. During the period earlier than the COVID-19 era, SMEs were very reluctant to adopt digital technologies for improving efficiency, but after the lock-down SMEs are conscious of the importance of digital technologies to avoid a total shutdown of their economic activities. Like large businesses, SMEs have to handle a multitude of complex functions such as customer relationship management, accounting, tax payment, payroll, time management, quality improvement, inventory management and human resource management. Large businesses invest in advanced data systems for efficient business management. In contrast, SMEs struggle to manage their business efficiently and often tend to use a mix of applications such as spreadsheets and other accounting software.

One solution among others is to implement an Enterprise Resource Planning (ERP) software so as to integrate data and the business processes into a single system and help the company get a competitive advantage. An ERP essentially provides ease of access to data and ensures efficient work flow. ERP systems consist of multiple software modules linked together by a single database. ERPNext is an opensource software which has gained momentum among above 5000 SMEs worldwide. Developed by Web Notes Technologies Pvt Ltd, ERPNext

consists of an MySQL database system with a Python (software) based server-side framework. SMEs can benefit from ERPNext as it is an open source software which can be accessible as a ‘Software As A Service(SAAS)’ on the internet. The purpose of this research paper is to analyse a case study for a pilot project which consists of the customisation process of ERPNext as a solution for an SME to be able to work anywhere and anytime as well as to assist an SME to overcome issues when operating on mix-applications. The ERPNext has also software modules to generate relevant reports to assist the Senior Management Staff in day-to-day decision making.

A local SME in Mauritius is used as a case study to customise the ERPNext software on a pilot basis. The pilot case will adopt an iterative implementation method consisting of four phases: OBSERVE, ADAPT, TEST, TRAIN and ACCEPT, based on the Deming Cycle, PLAN-DO-CHECK-ACT. The implementation method is repeated for each module of ERPNext at the level of the SME. The first step - OBSERVE - consists of an in-depth analysis of one specific workflow at the level of SME. The matching module from ERPNext is then ‘ADAPTED’ to reflect the workflow. After successful TESTING, key staff of the SME is TRAINED on a sample of data until the module is ‘ACCEPTed’ for day-to-day use. The modules of the ERPnext for testing at the pilot site are sales, purchase, inventory, CRM and manufacturing.

Different issues such as data availability, lengthy process flows, inadequate staff and time are encountered while bringing change in the workflow of any company. However, it is believed that updated information shared with all departments ensures increased productivity at all levels and a well-designed and properly integrated ERPNext system has a positive impact on lowering cost and reducing time within inter-processes. Indeed, many factors have to be taken into consideration during the customisation phase so that the deployment results into real competitive advantage for SMEs. In events such as the COVID-19 pandemic, ERPNext is useful in getting the whole team involved to work online anytime and anywhere.

**Keywords:** COVID-19, ERPNext, SMEs, Pilot Case Study, Implementation.

## 1. Introduction

The COVID-19 global pandemic forced Small and Medium Enterprises (SMEs) to realise that the need for digitization of key operations once considered a “nice to have” to “critical to have” to survive in a completely uncertain business environment (Akpan, et al., 2020). Apart from

the economic, political, social, and psychological impact, the pandemic had more severe consequences on the human health, forcing many countries to periodical lockdowns (Bretas & Alon, 2020). Many countries faced reductions in consumption, the closure of communities, and the elimination of businesses. Irrespective of their size, various companies are “succumbing to the effects of the coronavirus” (Akpan, et al., 2020). In an increasingly uncertain environment, SMEs are even more challenged to be integrated, streamlined, responsive and agile (Venkatraman & Fahd, 2016). With limited financial resources and expertise, SMEs require new strategic approaches in order to overcome the impact of the pandemic (Islam, et al., 2020). The three dimensions of entrepreneurial challenges to be addressed by SMEs are: (1) They are more credit constrained than larger businesses (2) They have been severely impacted by lockdowns and have an urgent need to address various transformation drivers (3) As compared to the period earlier than the COVID-19 era, when SMEs were very reluctant to adopt digital technologies for improving efficiency, now SMEs are considering adoption of digital technologies to avoid a total shut down of economic activities (Gregurec, et al., 2021).

Like large businesses, SMEs have to handle a multitude of complex functions such as customer relationship management, accounting, tax payment, payroll, time management, quality improvement, inventory management and human resource management. Large businesses invest in advanced data systems for efficient business management. In contrast, SMEs struggle to manage efficiently their business and often tend to use a mix of applications such as spreadsheets, accounting software, web CRM (Deshmukh, et al., 2016).

Interestingly, in the past decade, Enterprise Resource Planning (ERP) systems have been developed by vendors so that businesses can successfully provide the right information at the right time and remain competitive in the market (Haddara & Zach, 2012). An ERP essentially provides ease of access to data and ensures efficient work flow. ERP systems consist of multiple software modules linked together by a single database. ERP vendors are customising their systems to meet the SME’s budget and time constraints. A range of ERP systems available are pre-configured to be simple, economical and easy to install or simply use directly as cloud-based system. However, SMEs tend to resist the ERP opportunities as perceived by vendors. The reluctance for adoption is often due to the non-alignment between the SME’s business strategy and the vendor’s standard ERP system along with other factors and constraints (Van Beijsterveld & Van Groenendaal, 2015).

The National Productivity and Competitiveness Council (NPCC), as a government body, has a strong SME client base benefiting from various productivity improvement initiatives. The NPCC also promotes open-source software as a strategy to low-cost information systems. In order to boost the resilience of SMEs in the context of COVID-19 the NPCC has selected ERPNext as an integrated solution (Frappe, 2008). ERPNext is an opensource software which has gained momentum among above 5000 SMEs worldwide. Developed by Web Notes Technologies Pvt Ltd, ERPNext consists of a MySQL database system with a Python (software) based server-side framework. SMEs can benefit from ERPNext as it is an opensource software which can be accessible as a ‘Software As A Service (SAAS)’ on the internet. This paper gives an overview of the pilot case study initiated to gauge the constraints and success factors in customising ERPNext for an SME in the manufacturing sector.

## **Literature Review**

### **Enterprise Resource Planning (ERP)**

The Enterprise Resource Planning systems have been in the market since the 1980s and are now viewed as a powerful information technology solution for SMEs in a quest to remain competitive in the global knowledge-based business (Deshmukh, et al., 2015). Several authors have defined ERP system, for instance, in a study by (Arrahmane & Abdellah, 2016), an ERP system is defined as standardized packaged software designed to integrate an organization’s entire value chain.

Similarly, (Stefanou, 2012) described ERP as an enterprise-wide software package that provide fully integrated business processes using a common database and offering data visibility and information from various viewpoints. (Nazemi, et al., 2012) argued that the term ERP can be coined both as a concept and system. As a concept, the ERP systems involve the integration of business processes within an organization, with enhanced order management and control, precise and up to date information on inventory, improved workflow, and SCM, and better standardization in terms of business and best practices. As a system, ERP has been described as “technological infrastructure designed to provide the required functional capability required to turn the ERP concept into a reality” (Nazemi, et al., 2012). Thus, the ERP system is typically an enterprise-wide software platform based on an integrated database providing full pack solutions. In line with Akkermans, *et al* (2003), ERP can be defined from different perspectives such as functional, technical, or from business perspective that provides strategic value encompassing the entire organizations. In the same vein, Tarantilis, et al., (2008) defined

ERP as a system that integrates traditional accounting, manufacturing, sales, management, and other management products to offer an “all-in-one” solution that deals with all business management aspects of organizations.

### **ERPNext**

ERPNext is a free and open-source integrated Enterprise Resource Planning (ERP) software developed by Frappé Technologies Pvt. Ltd. and is built on MariaDB database system using a Python based server-side framework. It is a generic ERP software used by manufacturers, distributors and services companies. It consists of modules namely accounting, CRM, sales, purchasing, website, e-commerce, point of sale, manufacturing, warehouse, project management, inventory, and services. The ERPNext system has also domain specific modules such as healthcare, agriculture, non-profit amongst others (Frappe, 2008).

### **Benefits of using an ERP system**

For a company, the adoption of any complex software solution, along with infrastructural resources, it is important to evaluate the benefits and disadvantages. Filofteia (2012) listed the following advantages that an enterprise can identify in the adoption of ERP solutions:

- a) covers functionally the activity of all departments and ensure a unique collaborative platform
- b) the system manages one centralized data warehouse, which allows an easier definition of unique policies of data security;
- c) the system modularity, allows for configuration of a customized system according to the company’s requirements
- d) reduces the costs of purchasing separate applications owing to the ERP being an integrated system
- e) provides functionality capabilities on web platform, in order to expand the activities towards e-commerce
- f) allows the distribution of information to the units that are geographically dispersed;
- g) provides user interfaces and friendly, suggestive and easy to use dashboards;

In their survey based on respondents’ opinions, Antoniadis, *et al.*, (2015), identified the following key benefits of ERP utilization in the SMEs: data integration from different departments, reliability of information, saving time by automating procedures, controlling activities and flexible decision making. In their research study, (Deshmukh, et al., 2016) listed

the following benefits of ERPNext over traditional accounting software, namely: (1) ERPNext more functionalities than just accounting, inventory management, billing, quotations, human resource management and so on (2) with a high level of security, all data is in one place thus reducing the need to verify different spreadsheets stored on different computers. (3) being cloud-based, ERPNext is accessible to all users as well as the updated data (4) there is no repetitive work as all the forms can be printed and can be sent by email directly from ERPNext. There is no need of a word processor to draft the email and include the data. Everything is integrated in one system. (5) ERPNext can easily keep track of all the changes made to all the documents. The entire history of the transaction with a client is available and can be traced back.

### **Drawbacks of using an ERP system**

Among the disadvantages, Filofteia (2012) listed the following:

- a) high purchasing and implementation costs for the necessary infrastructure;
- b) lengthy and laborious implementation resulting into time consuming implementation
- c) difficult and lengthy customisation of the system for the company's operational processes;
- d) complexity of ERP systems renders operations to be difficult to understand and requires intensive training of end-users
- e) loading in the central database through migration of data from the old systems, also represents a lengthy and laborious process;
- f) upgrade and update costs are considerably high.

However, Deshmukh, *et al.*, (2016), didn't mention any drawbacks of ERPNext in their paper but instead argued that if well implemented, then ERPNext is very beneficial for small and midsized scale industries.

### **Use of ERPnext in SMEs**

According to Kiran and Reddy (2019), SMEs have been playing vital role in the economy of countries in the world. They contribute substantially to the national economy and also employment (Alshawi, et al., 2004; Seethamraju, 2015; Kiran & Reddy, 2019) argued for the growth in business, ERP systems can drive home productivity and efficiency in operations of SMEs. Increasingly, vendors have customised ERP systems to meet the size and scales of

operations in different organizations. In the study of Hustad & Olsen (2014), highlighted that though most large organizations have implemented an ERP system in one form or another, in recent years, suppliers of ERP systems have started to pay attention to smaller businesses, which led to the changing character of the ERP market. In line with this, there is a growing research interest on ERP implementation in SMEs (Haddara & Zach, 2011).

In recent years, the research on the implementation of ERP system in SMEs has got much attention. Arrahmane and Abdellah (2016) explored the opportunities that SMEs can benefit from opensource ERP. The authors further argued that the SME market is being rediscovered to benefit from the emerging ERP systems available to smaller businesses. While Osman, *et al.* (2006) carried research for Malaysian SMEs and identified ten important issues for the success of ERP implementation, namely: (1) top management support, (2) clear goals and objectives, (3) communication, (4) effective project management, (5) business process reengineering, (6) data accuracy and integrity, (7) suitability of software and hardware, (8) vendor support, (9) education and training, and (10) user involvement. The authors concluded that “Top management support” and “Clear goals and objectives” are very important factors for ERP implementation in Malaysia. Upadhyay, *et al.*, (2011) carried out research study for Indian SME organizations having already completed the process of adopting an ERP system and revealed that project execution competency; product and vendor perspective; organizational climate; and technical perspective are the most critical factors for positive implementation of ERP system. Malhotra and Temponi (2010) concluded that for successful implementation of ERP in SMEs, a detailed study of the needs and business processes of the enterprise must be carried out.

### **Challenges to ERP Implementation in SMEs**

The business context and the operating nature of the SMEs often results in the slow ERP adoption (Venkatraman & Fahd, 2016). The authors argued that SMEs operate in a dynamic environment whereby the changes in the external and internal requirements such as customer preference, government policies, technology advancement among others, represent constraints reducing the adaptability of SMEs. They recommend that the implementation of an ERP at the level of an SME should not force a rigid structure but instead increase their flexibility in the business operations. Among the various ERP implementation and maintenance challenges faced by SMEs, issues related to ERP customization, business process reengineering and the

required training have been reported to be the top barriers. The key influencing factors that form barriers to the successful adoption of ERP by SMEs are summarized in Figure 24 below.



Figure 24 - Challenges for Implementation of an ERP – Source: (Venkatraman & Fahd, 2016)

**Research methods**

The research methodology for this study is both exploratory and qualitative in nature. The literature review highlights both the benefits and the constraints for implementation of an ERP system at the level of SMEs. The questions driving this research are

- A. How can an SME customise ERPNext as a solution to work anywhere and anytime in the context of a new normal due to the Covid-19 pandemic?
- B. In the quest of business resilience, what are the key constraints faced by an SME to integrate a digital solution in its daily transactions?

Yin (1994) argues that a case study method is preferred to examine a research question in its natural settings. Furthermore, with an action research approach, the researcher as a participant in the implementation of the system can get in-depth and first-hand understanding (Benbasat, et al., 1987) to evaluate the process of intervention. However, the weakness is the potential lack of objectivity resulting from the stake of the researchers in achieving successful outcome for the SME. The literature emphasises on the evolution of the implementation method offered by vendors. The focus is increasing on a fast-track execution so as to reduce the effort, time and expenses of SMEs (Venkatraman & Fahd, 2016). The process for implementing an ERP is basically a variation of the Deming PDCA quality management cycle (Deep, et al., 2008; Chien & Tseng, 2009; Carvalho & Marques, 2019).

## The Pilot Case Study

A leading SME, XYZ Ltd, manufacturer of wooden furniture in Mauritius, is considered as a case study to customise the ERPNext software on a pilot basis. XYZ Ltd employs 40 Bangladeshis specialized in cutting, drilling, edging, mounting and finishing processes both in-plant and in-house of customers. The SME engages in both Made To Order (MTO) and Made To Store (MTS) approaches for its business. The company manufactures furniture as per customised design or sample provided by the customer and also designs and manufactures a series of products for its showroom. The company is in the process of implementing ISO 9001-2015 certification and also has participated in a series of productivity improvement activities organised by the National Productivity and Competitiveness Council (NPCC).

The Owner-Director of XYZ Ltd volunteered for the pilot project with the aim of having an ERP system to integrate its whole value chain as well as an agile decision support system. Though the SME is in its growth stage, the existing information system consists of mix applications including stand-alone systems such as QuickBooks, spreadsheet-based software and other file-based applications. The owner is the only person who manages the whole business operations taking all decisions taken based on judgement rather than information available on the different systems. Overall, the following challenges were identified during the first visit at the SME:

- the SME lacked real time information about the business performance and in periods such as the COVID-19 pandemic when the orders were low, information was scattered in different applications and was not available to inform business strategy.
- the cost for system maintenance was high due to applications being on different platforms.
- difficulty to follow up on customer order as the information was buried inside different sheets of the spreadsheet application
- Low turnover of inventory in spite of regular inventory control. Raw materials were purchased without verification of existing stock resulting in huge capital being tied up in inventory.
- Waiting for information is the major loss in human resource productivity.

Following discussions with the owner, it was clear that the SME required ERPNext to overcome the above issues. With ERPNext it is envisaged to manage customer service,

inventory and manufacturing operations such that senior managers can have a real-time view of every aspect of the business.

The method for ERPNext implementation at the pilot case study is based on the Deming PDCA quality management cycle, that is, PLAN-DO-CHECK-ACT.

- (a) In the PLAN phase, the most important activity is to OBSERVE the operations of the SME and analyse the difference between the internal workflow with the standard workflow available on ERPNext
- (b) The gap identify in (a) will serve as input to the ‘DO’phase, that is; ADAPTING the ERPNext modules
- (c) For the CHECK phase, rigorous TESTING of the adapted module is required until it meets the requirements of the owner
- (d) Finally, the ACT phase will require first of all, TRAINING the end-user at the level of the SME to use the adapted module on ERPNext. After the training, often the employees prefer to keep their own method of working. Tactics are required to get the end users to ACCEPT the adapted module process can take very long.
- (e)

The method can be illustrated as follows:

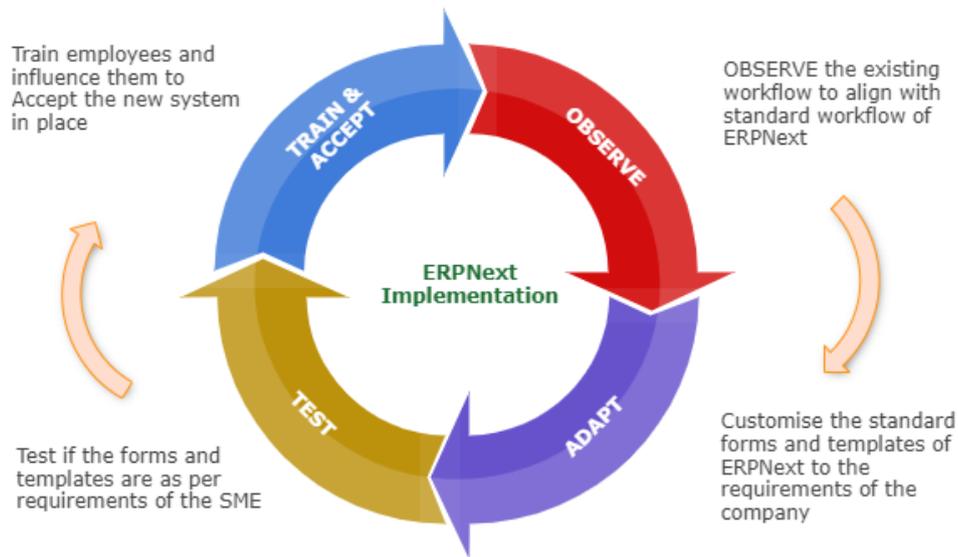


Figure 25 – Implementation Method for ERPNext

### **Feasibility Study for ERPNext Implementation**

ERPNext is among one of the best rated open-source enterprise resource planning software that integrates and manages all business areas. Accessible on the web, mobile devices and as a desktop application, ERPNext is available in different options, namely, as downloadable open-source application, as a cloud-based managed hosting application as well as an enterprise solution with server monitoring, security updates, product warranty and professional support. For the pilot case study, the opensource option is used to reduce the overall cost per user. The modules available include Financial Accounting, Customer Relationship Management, CRM, Inventory, Sales, Purchasing, Projects, Manufacturing, Education, Healthcare, E-commerce, Website and Support.

The SME chose to work with the Sales, Purchasing, Inventory and Manufacturing module for the pilot study and then integrate CRM, Project and Website modules. The ERPNext application was hosted on a cloud-based server and configured for the SME as a manufacturing ERP system aligned with the existing business model. With the cloud-based hosting, XYZ Ltd can access the ERPNext anywhere and anytime. During the Covid-19 pandemic, the feasibility study was conducted online. The cloud-based tools enabled accessibility on smart mobile devices such that the owner was able to verify the migration of the chart of accounts, existing customer database, the product list and raw materials lists. The updated inventory lists in excel files were successfully uploaded. New customer details along with their orders were tested on the system. ERPNext facilitates the capture of data and sharing of information and knowledge. With the range of online functionalities and reporting tools, ERPNext provided better operational performance, greater access and better decision making and reporting capabilities.

### **Target Success Factors of the ERPNext Implementation**

The objectives and justification for implementing the ERP system influences the key success factors for adoption of an ERP system (Law & Ngai, 2007). The main objective of implementing ERPNext at XYZ Ltd is to have a sustainable platform for managing inventory and manufacturing costs. Following interviews, discussions and observation in-plant at the level of the SME, the following target success factors have been identified:

- (1) Alignment of business processes with the ERPNext system
- (2) Meeting customer and stakeholder needs
- (3) Reducing recurring and maintenance costs

- (4) Improved access to real-time data to all departments
- (5) Reduced conversion time between issue of quotation and sales orders for customer orders

During the discussions on the success factors, it was agreed that for any improvement system to be successful, the three basic requirements are:

- I. management commitment
- II. management commitment and
- III. management commitment

The owner confirmed her full commitment for the implementation of the ERPNext.

### Implementation Process - Best Practices

#### STEP 1. OBSERVE

An overview of the ERPNext software and the objectives of the pilot project were shared with all employees. It required discussions with the owner on where to host the ERPNext software. In order to align the business processes with ERPNext, the researcher OBSERVED the existing system with a view to analyse requirements of the key processes for customer service, inventory management and manufacturing. Following an analysis of the information requirements from the ERPNext, the actual workflow of the SME was mapped on with the standard workflow on the system. The output at this phase is a process flow chart for the workflow at the level of the SMEs as depicted in Figure 26. Data from various sources were gathered and imported into the ERPNext hosted on the cloud for the SME. The OBSERVE phase was conducted during the period May - June 2021.

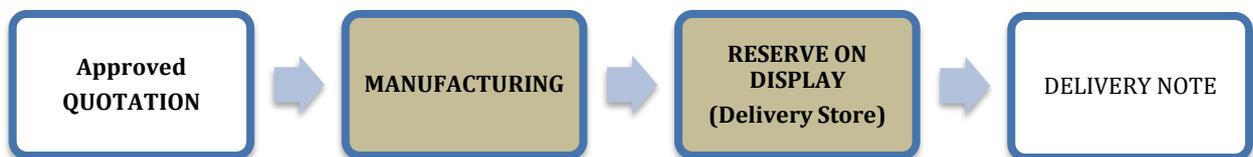


Figure 26 - Flow diagram of the workflow at the SME

The corresponding module for this workflow on ERPNext is the ‘selling’ module with standard flow shared by the ERPNext vendor as shown in Figure 27.

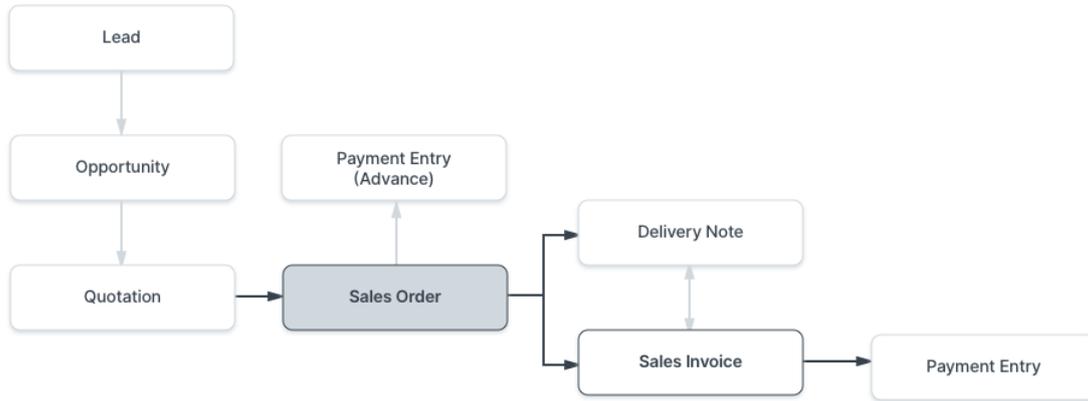


Figure 27 - Standard workflow for 'selling' module. -

Source: <https://docs.erpnext.com/docs/v13/user/manual/en/selling/sales-order>

In order to align the workflows in Figure 26 and Figure 27, the manufacturing and stock module were treated separately so that the selling module could be adapted and deployed.

**STEP 2. ADAPT**

The quotation form and the quotation print template were customised for XYZ Ltd along with the sales order form and the delivery note to align both the workflows. The simplified workflow for XYZ for implementation of the selling module is illustrated in Figure 28.



Figure 28 - Aligned Workflow for SME

**STEP 3. TEST**

The quotation, sales order and delivery note functions were TESTed for at least ten customers taking into consideration different type of tax payment as required legally. All requirements and issues shared during testing phase are recorded in the log as per

Table 4 shown below:

Table 4 - Requirements/Issues log during TEST phase

Date	REQUIREMENTS/ISSUES	Assigned To	SOLUTIONS	Date Implemented
	<b>Quotation =&gt; review details regarding VAT + Add Ref + Add image</b>		Quotation Reformatted	
2 July	VAT Calculations - Individual. Customer	NPCC staff	VAT Incl. OK	8 July
2 July	VAT Calculations - Government Customer	NPCC staff	VAT Govt	8 July
2 July	ADD XYZ REF + System to control quotations and delivery notes	NPCC staff	XYZ QUO REF added	8 July
2 July	ADD IMAGE	NPCC staff	Upload image in ITEM first	15 July

The log was shared to the owner of the SME every month so that progress of the project could be tracked at both organisations.

#### STEP 4. TRAIN

A list of instructions was drafted (Table 5) and sent over to the staff of XYZ limited and they were TRAINed online to use the system on their own for at least five customers. Sample of instructions:

Table 5 - Instructions for training of employees

Step 1:	Login at
Step 2:	Module - Selling - Customer: Verify if customer is on database - if no - create first -- check list and check Customer Group
Step 3:	Module - Selling - Item: Verify if item is on database - if no, then create - check list and check Item Group
Step 4:	Module - Selling - Quotation - List - New
	a. Select Quotation Reference
	b. Insert Customer
	c. Insert Item
	d. Select Sales Taxes and Charges Template - Mauritius - Tax - XYZ for VAT Incl. or Government VAT - XYZ for Government
	e. Insert XYZ Reference for Quotation Tracking
	f. Save
	g. Submit
Step 5	Print - Select XYZ Quotation Template
Step 6	Email - Change Subject
Step 7	Call customer and verify if email is well received

**Step 5 - ACCEPT**

Monitor the use of the selling module online for two weeks to verify the transactions by the employees of XYZ Ltd. Energy Points for Employees is the feedback mechanism in place in ERPNext for motivating employees to use the system. A sample email sent is as follows:



*Figure 29 - Feedback to employees to ensure the ERPNext is ACCEPTed as part of business activities*

The sample daily report for quotations is also shared in *Figure 30*, showing how easily management can track the performance of sales persons at the company.

Report: Quotation

Menu Refresh New

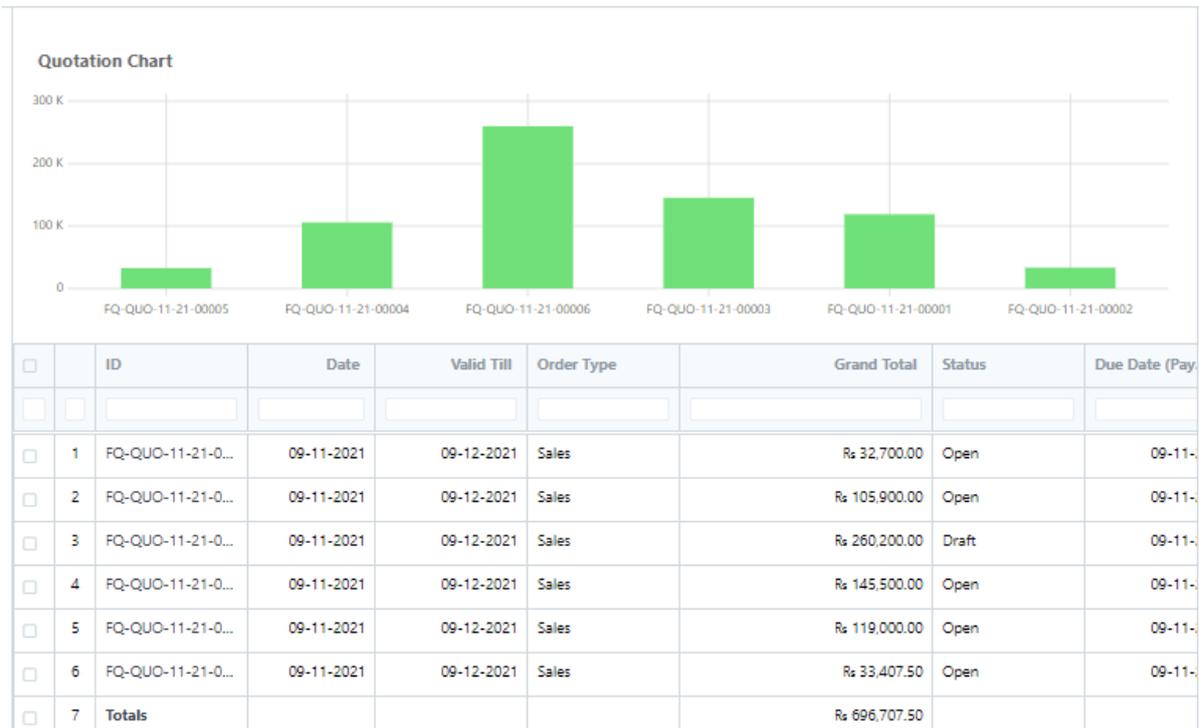


Figure 30 Sample Daily Report for Quotation

**Overall lessons learned**

The implementation method developed (OBSERVE-ADAPT-TEST-TRAIN-ACCEPT) were applied for the inventory management (Stock Module) and manufacturing module of ERPNext for the SMEs. Reports are generated based on requirements of the owner. The overall outcome as listed in Table 6. Even in the situation of COVID-19, alignment of the requested module with the business workflow has resulted into an early adoption of the module and feedback from the customers of the SME has helped to improve the system. ERPNext is being used at a minimum cost incurred both at the level of XYZ Ltd and the NPCC.

The data required to manage the business is readily available to all departments as ERPNext is hosted on a cloud-based system and is accessible to all employees as well as to the staff of the NPCC. Issues are reported online and resolved within 24 hours. The reports generated give better feedbacks to the owner-Director about the status of the business at the end of the day. The owner has more time to see that quotations sent to potential customers are converted into sales and that the sales are increasing in spite of the COVID-19 pandemic.

Further use of the different functionalities available on the ERPNext will indeed give the SME a competitive edge. The intention to integrate the remaining modules of the ERPNext clearly

indicates that even though there have been many constraints, the end users are already enjoying the benefits of having an information system managing the whole organisation.

*Table 6 - Outcome of ERPNext installation*

Target Success Factors	Outcome of pilot project
Alignment of business processes with the ERPNext system	The implementation method of selling module has also successfully ensured the alignment of the business processes for inventory and manufacturing management. The SME want to further customise other functionalities available on the ERPNext system
Meeting customer and stakeholder needs	ERPNext system customised to the needs of owner/customer & suppliers
Reducing recurring and maintenance costs	The ERPNext system is cloud-based and the pilot case study is being conducted free of charge for the SME. The average hosting cost per month is minimal compared to the actual cost of an ERP system. Maintenance cost is absorbed under collaboration with the NPCC
Improved access to real-time data to all departments	3 consultants, 5 employees have access to the cloud-based ERPNext system
Reduced conversion time between issue of quotation and sales orders for customer orders	Tracking on-going - data available on the ERPNext system

### **Discussion**

The implementation of ERPNext on a pilot basis is being successfully implemented mainly due to the software being available as an opensource application without any vendor lock and that the NPCC is a support institution having experience in productivity improvement and therefore could provide hand holding to the SME.

The literature review shows that adopters of ERP experience different conditions, namely, the time frame and budget are often exceeded (Soja, 2008). Lack of financial resources, lack of internal expertise, lack of consensus among employees involved, resistance to change and inaccurate reports are major constraints for effective ERP implementation (Kim, et al., 2005; Maditinos, et al., 2011). The constraints faced by the XYZ Ltd was in the same line and the NPCC had to review the goals and implementation plan continuously with the management until the desired actions were taken at the SME level and the objectives set were achieved.

ERPNext as an information management system has not increased the sales of XYZ Ltd directly but has provided timely information about the daily quotations sent to customers by the sales team. The system easily provides management a list of customers to follow up. Other benefits provided by ERPNext to the SME include:

- Tracking all invoices and payments.
- Monitoring the quantity of products and raw materials in stock.
- Reviewing key performance indicators (KPIs).
- Making the supply chain lean and keeping track of customer queries.
- Managing employee payroll.
- Assigning tasks and follow up on them to each user
- Maintaining a database of all customers, suppliers, and contacts.
- Preparing quotations.
- Real time overview of budgets and spending.
- Determining effective selling price based on the actual raw material, machinery and effort cost.
- Getting reminders on maintenance schedules.
- Publishing the website of the company

The outcome of the case study at XYZ Ltd clearly shows that ERPNext improves the efficiency of Management by making information available readily through various reports, automating key administrative tasks such Accounting Ledger/Stock Ledger to ensure real time Accounting Statement are available and providing a holistic view of the whole business and its management. In spite of the constraints encountered, ERPNext is an important improvement in the process of digitalisation of SMEs.

### **Limitations**

The implementation of the pilot case study had many limitations. SMEs often outsource accounting tasks to a third-party company therefore, data is not readily available to import into ERPNext. The owner had to request several times for the required data. Freelance consultants, in turn, are not available to wait for SMEs to provide data for the implementation of the ERPNext. Furthermore, the leadership style of the owner will influence the consistency of the internal processes. In the pilot case, the leader is well-versed in management and

administration, and therefore data collection points were available in the system, but not necessarily true for all SMEs.

Another internal factor influencing the adoption of the ERPNext system is that SMEs in the manufacturing sector rarely employ specialised professionals in IT, either due to lack of availability on the market or simply because they don't have the means to bear the cost of hiring. The few people employed by SMEs are busy working on the day-to-day business and therefore they have difficulty to focus on implementing and monitoring the system. The pilot case also demonstrated that the process of ERPNext implementation is lengthy and SMEs are not willing to be patient to have results. They are reluctant to invest in terms of hosting costs and customisation costs. SMEs should be encouraged to experiment with ERPNext so as to gauge the benefits. As the adage goes, resistance to change is always a big challenge when implementing a new system.

## **Conclusion**

The case study at XYZ limited demonstrated that by overcoming constraints faced due to the COVID-19 pandemic and also during the integration of a digital solution in its daily transactions, an SME can become more resilient in an uncertain context. By collecting the SME's shared transactional data from multiple sources, ERPNext has eliminated data duplication and has provided data integrity at a single point. ERPNext helped to improve productivity at the level of the SME by eliminating or entering the same line of data into different forms. It has enabled the generation of reports to take decisions much easier. In fact, with delegation of duties, the owner has more time to do more thoughtful work, thus increasing the company's productivity, efficiency, competitiveness and profitability

In events such as the COVID-19 pandemic, ERPNext proved to be useful in getting the whole team at XYZ Ltd and NPCC involved to work online anytime and anywhere. ERPNext proved to be a complete suite including enterprise performance management, software that helps plan, budget, predict, and report on an organization's financial results. It ties together a multitude of business processes and enable the flow of data between them. The implementation method developed based on the PDCA Deming quality management cycle proved to be successful for the implementation of ERPNext using a modular approached. As SMEs have limited internal human resources proficient in information technology as well as many other constraints, using

the ERPNext implementation method ensured adoption of the ERP system. It is believed that any internal IT professional or consultant hired for the implementation can easily customise ERPNext as a solution for an SME to work anywhere and anytime in the context of a new normal due to the Covid-19 pandemic.

For future research, the scope of the study will be broadened as the NPCC is considering to test the opensource software with other enterprises in manufacturing or other industries, for example, the tourism, financial, real estate industry using the same methodology tested in this pilot case study.

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## Business Resilience of Small Enterprises in Mauritius in a COVID-19 context

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### Abstract

The purpose of this research paper was to assess the resilience of small businesses in Mauritius in a COVID-19 context. The study focused on forty small businesses located in three selected sectors, namely food and retail, information technology and clothing. Descriptive research was conducted with questionnaires and interviews with targeted respondents. The initial argument showed that COVID-19 was affecting all sectors in terms of financial income, loss of staff and slowdown in activities. Second, the sudden development of digital commerce has become imperative during and after the pandemic but has particularly favoured ICT and clothing apparel companies. Additionally, relationship marketing has proven to be a contributing factor in the growth and resilience of small businesses. When it comes to growth and resilience strategies, promotion and discounts were found to be preferred in food and retail businesses, customer retention in ICT businesses and online business in clothing companies. The resilience of small businesses to growth was also questioned and these relied mainly on the use of digital technologies for their survival in a post-pandemic context.

**Key words:** Small Enterprises, Resilience, strategies, markets, digital trade, COVID-19.

### Introduction

Since the double lockdown caused by the COVID-19 pandemic, micro, small and medium-sized enterprises (MSMEs) have faced significant difficulties in carrying out their normal activities. This was due to the fact that all physical activities were temporarily banned, preventing companies from operating at their normal capacity between March and May 2021. To respond to the crisis, companies and government authorities immediately started using digital technologies to communicate with your customers. Bullough and Renko (2013) state

that although companies in general, and entrepreneurs in particular, have shown a high degree of business resilience, economic shocks derived from lockdowns affect SMEs more and produce unequal impacts depending on the sector. SMEs may have less resilience and flexibility to deal with the costs that such shocks entail (OECD, 2020). MSMEs experienced reduced labor supply, restrictions on human mobility, self-isolation, marked reduction in capacity utilization and disruption in supply chains. It was believed that such infrastructure would be a palliative for the next problems that MSMEs will face in this period. It was observed that some organizations adopted digital technologies to continue their business during that period and maintained them later. The purpose of this article is to address the strategic option of MSMEs after the second blockade, when restrictions were partially waived.

### **Problem Statement**

The COVID-19 pandemic has affected businesses in all known sectors in Mauritius since its onset at the end of November 2019. Large businesses have been partially assisted by a compensation system provided by the government during this period. There was also a significant disbursement from the new Mauritius Incorporated Company (MIC) to meet the financial needs of large companies during this period. The creation of the MIC is fully in line with the mandate of the Bank of Mauritius, which is to ensure orderly and balanced economic development of the country as well as to safeguard the stability and soundness of the financial system (MIC, 2021). Small businesses had less room to manoeuvre and many had to shut down or slowdown in the hope of obtaining financial assistance to keep their businesses afloat.

There are around 175,000 active MSMEs operating in different sectors of the economy, ranging from local street vendors to high-end freelance programmers working for foreign clients and export-oriented companies (Defimedia, 2021).

According to the latest estimates from Statistics Mauritius, the number of micro, small and medium enterprises stood at 138,553, of which 81% are estimated to be micro enterprises, 18% are small enterprises and 1% are medium enterprises (Statistics Mauritius, 2021). Of these 138,553 companies, only 21% are registered with the SME Registration Unit as small businesses, generally limited to 50 employees and normally registered for VAT. Basically, these small businesses with a budget ranging from Rs 1 to 5 MUR per year had rudimentary Information and Communications Technology (ICT) infrastructure to manage. In Mauritius, MSMEs produce around 40% of the gross domestic product (GDP) and employ 50% of the workforce.

During such a period, activities were suspended because small businesses could not effectively take the right measures for their survival. Business owners had to turn to various informal activities to survive in the beginning.

After the two lockdowns, the first in March 2020 and the second in March 2021, there has been a certain resilience regarding the maintenance of business activities. Since digital communication has developed as an alternative to combat the inertia of small businesses, they have looked for ways to communicate with their customers and keep their business going.

Little research has been undertaken at the small business level because it is quite complex to first understand what a micro-business means in Mauritius. In addition, there are many sectors in which they are involved and which remain very much differentiated. The basic survival instinct was to reopen businesses after closures and expect customers to come back. It was understood that the purchasing power of customers was declining during the pandemic as well as the threat of job loss that could undermine the activities of micro-enterprises.

This research paper aims to find out how some selected companies operating in three distinct industries might adjust their strategy to survive in the post-pandemic period. Clearly, the outlook looks better from October 2021, when most activities should return to normal after eighteen months constrained by their activities.

### **Literature Review**

Oyewale et al (2020) argue that closure and travel restriction policies adopted by governments in many countries have severely affected MSMEs, slowing their operations, weakening their financial position and exposing them to funding. Adam and Alarifi (2021) comment that, since its emergence in late 2019, the COVID-19 epidemic has had negative effects on countries' economies. Hasanat et al (2020) claim that the repercussions of the COVID-19 pandemic have been felt in all economic sectors and institutions, including small and medium enterprises.

This problem coincided with a decrease in consumer spending due to declining consumer incomes and a general feeling of uncertainty (Gurría, 2020). As a result, many MSMEs found themselves unable to cope with the pandemic (Ozili, 2020). Some companies ceased their activities and closed in the first months of the epidemic (Bartik et al., 2020).

To protect MSMEs from failure due to the COVID-19 crisis, government and non-governmental organisations (NGOs) have provided various forms of support to MSMEs. Ahmad et al (2020) comment that governments have adopted several policies that will mitigate

the negative effects of this crisis, while Song (2020) argue that MSMEs have received some financial support from NGOs and local financial institutions and international organisations during the COVID-19 crisis, Thorgren and Williams (2020) argue that MSME owners have adopted a range of practices and strategies to deal with the consequences of the crisis. At the onset of the pandemic, the researchers expected MSMEs' responses and practices to focus on reducing financial expenditure by exploring digital technology (Guo et al., 2020).

Regarding the use of digital technology, Guo et al. (2020) found that this strategy helps MSMEs survive and cope with the consequences of the pandemic. Their findings underscore the importance of information technology in helping MSMEs meet the challenges created by the COVID-19 crisis.

A limited number of studies have focused on MSME survival practices after the outbreak of the COVID-19 pandemic. Omar et al. (2020) reported that MSMEs used financial and marketing strategies to survive the fallout from the COVID-19 crisis. Their findings are important because they focused on the long-term performance of MSMEs rather than the short term. However, the impact of these strategic responses on the long-term performance of SMEs and their potential for efficiency requires further study.

Papadopoulos et al (2020) suggest that after COVID-19, MSMEs should rethink how to revitalise their strategies by integrating crisis scenarios and business continuity plans while seeking to increase their revenues by using additional sales channels. As a result, keeping customers virtually is not an easy task and providing inferior service will irreversibly harm businesses.

### **Research Methodology**

A descriptive survey was carried out comprising 40 small businesses in Mauritius located in the nine districts of the country based on the fact that they are geographically located in strategic locations, namely the towns and large villages of the island. The main towns were Port Louis and the urban areas of Plaines Wilhems comprising locations like Rose-Hill, Quatre-Bornes and Curepipe. The villages in the research framework were: Triolet, Rivière du Rempart, Lallmatie, Saint Pierre, Chemin Grenier and Tamarin. The main observation was that small enterprises conducted activities within commercial clusters of each region. They followed suit of medium enterprises but remained less visible due to the dominance of established companies. Small enterprises had branches in such locations and these were limited to three or four.

The sectors analysed were food and retail, information technology and clothing apparel. The sample distribution was fourteen, twelve and fourteen respectively. The focus was limited to three areas due to the fact that such sectors could appropriately use digital technology for commerce during the COVID pandemic. Data were obtained both from sample surveys using online questionnaires and from local trade publications. The three sectors including their characteristics are presented in Table 1 below.

<b>Industry/Characteristics</b>	<b>Type of business</b>	<b>Main activity</b>
Food and Retail	Supermarkets [8] Grocery stores [6]	Sales of foodstuffs and varied goods Spices, locally processed food
Information Technology	IT shops [4] Mobile phone service shops [4] Customer survey companies [4]	Computer spare parts and repairs Repairs of smart phones, sales of spare parts and maintenance Development of online services, customer sales support activities
Clothing Apparel	Prêt-a-porter shops [6] Local branded shops [4] Speciality shops [4]	Fashion clothes, imported products from India, China Fashion clothes made in Mauritius with low brand equity Shoes, pants and varied clothing

**Table 1: Sample of small businesses and their characteristics.**

### **Statement of confidentiality**

For the research purpose, the names of the companies were not disclosed nor the owner of such enterprises. The objective was to ensure that confidential information would not be divulged because the company owners preferred to answer openly if the identity of the business and themselves was kept secret. They claimed that this would allow them answer more responsively to the questions and such practice was assumed regarding other interventions that they had either from students or research-led organisations.

### **Key research questions**

A sample of key research questions was analysed from the survey. They are as follows:

To what extent did COVID-19 affect the growth of small enterprises?

How did digital technology support small enterprises during the lockdown?

What the effectiveness of relationship marketing during the pandemic?

Was there a strategy for growth and sustenance of small companies during and post-COVID time?

How might small enterprises be resilient after the COVID pandemic?

**Main findings**

**The extent to which COVID-19 affected the growth of small enterprises**

The first question related to the extent to which COVID-19 affected the growth of small enterprises in Mauritius. Basically growth factors were sales turnover, workforce, customer base and loyalty regarding small enterprises. Three scales in dotted form were used to determine the extent of activity affected. ● represented a low extent ●● represented a reasonable extent and ●●● represented a very high extent. The findings are represented in Table 2 below.

Industry/Activity	Sales Turnover	Workforce	Customer base	Customer loyalty
Food and Retail	●●	●●	●●	●
Information Technology	●●	●	●	●
Clothing Apparel	●●●	●●●	●●●	●●

**Table 2: Extent to which selected small enterprises were affected by COVID-19.**

The assessment was based on rating scales provided by the respondents and these were averaged. The industry most affected in the study was clothing and apparel, as customers did not find it important during COVID-19 to purchase products that were not essential to their survival. Fashion retailers will need to proactively approach the coming months and effectively manage inventory as sales decline and consumers prioritise essential items (Sender, 2021). In such an industry, all activities like sales, customer base and loyalty have been affected. Information technology was the least affected as queries and issues could be resolved online during the pandemic. Sales were more affected than other variables like labour force or customer loyalty. When it came to food and retail, there was quite a bit of competition due to informal vendors in all parts of the island. Employers in the formal food and retail sector complained of lower turnover as consumers turned to basic necessities over other types of food. Manpower had to be squeezed in a few cases and the customer base declined. Customer loyalty was the least weakly affected in such a case.

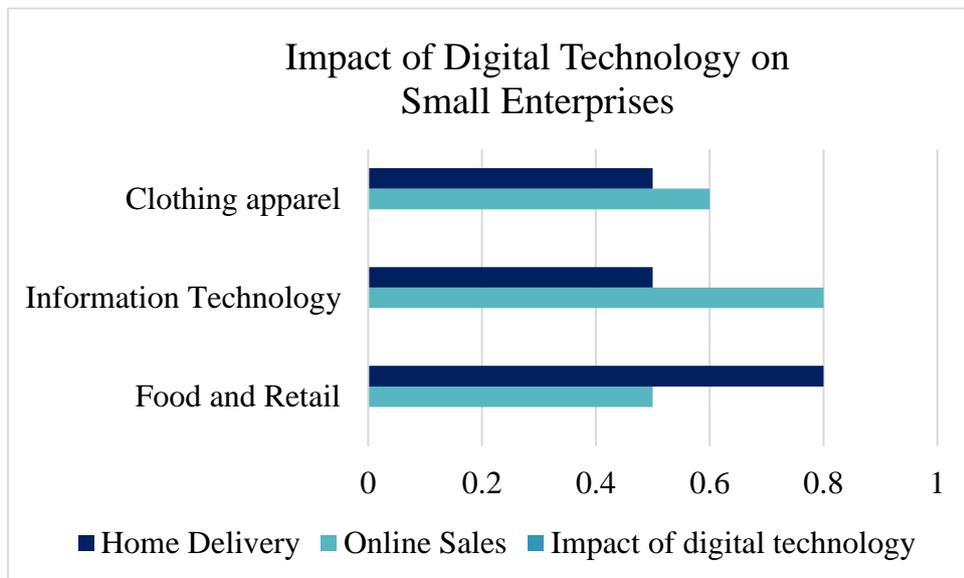
Due to the changing living conditions of people and the restrictions imposed on the out-of-home catering sector, the majority of people will have consumed all their meals at home, whereas previously they could have gone to cafes, pubs or restaurants for some snacks and meals (Public Health England, 2021).

**The support of digital technology to small enterprises during the lockdown**

The second question aimed at assessing how digital technology impacted the growth of small enterprises during the pandemic. Some observations emerge from the analysis carried out. First, ICT industry organisations were the first to adopt digital technologies for communication and business, as they were able to communicate effectively online with their customers. Clothing and apparel companies wanted to get their products online by promoting sales to attract customers and eventually distribute their products through home delivery. Food companies and retailers were able to inform customers about their products and develop home delivery. This was quite pronounced during the lockdown, but dampened a lot once the lockdown ended.

The main observation from the study was that digital technology was an important lever for growth and sustainability of small firms during the pandemic. Once the lockdown was over, there was lesser demand for digital technologies.

The figure below analyses areas where digital technology was most effective regarding the growth of small firms.



**Figure 1: Impact of digital technology on small enterprises.**

As the table shows, digital technology is seen to have had an impact on the growth and resilience of small businesses during the COVID-19 pandemic. Home delivery was the most popular since established companies like Winner's or Jumbo initiated such a practice by ordering online. Small businesses were using less sophisticated technology in the form of Facebook and WhatsApp. Intelligence Node (2021) says online demand for food and groceries that has skyrocketed amid COVID-19 has stepped up survival tactics needed to acquire and retain customers. Keeping up with the ever-changing needs of buyer's online shopping behaviour requires rapid and accurate analysis of demand patterns, purchase history, and purchasing trends to understand and forecast demand. However, a report by the International Labour Organisation (2020) noted that the hardest hit would be small and medium-sized food retailers, which have no other delivery and sales mechanisms such as e-commerce, unlike large retailers.

IT organisations and clothing companies were better able to use their websites, including social media platforms like Facebook, to communicate with their customers. Short message services (SMS) were considered a convenient means of communication at this time. Hamstra (2021) said text-based marketing and commerce has seen an increase thanks to consumers' growing reliance on purchases through their smartphones during the pandemic.

### **The impact of relationship marketing for small businesses**

The next argument concerned the relationship that could be established between the small organisation and the customer. Berry (2002) defines the concept of relationship marketing as a form of marketing developed from direct response marketing campaigns that emphasises customer loyalty and satisfaction rather than sales transactions. It differs from other forms of marketing in that it recognises the long-term value of customer relationships and extends communication beyond sales advertising messages (Palmatier, 2008). With the growth of the internet and mobile platforms, relationship marketing has continued to evolve as technology opens up more collaborative and social communication channels such as customer relationship management tools that go beyond collecting demographic and customer service data.

ICT organisations were able to create effective relationships through after-sales service to customers, while clothing and apparel companies struggled a bit to win the loyalty of their customers. A loyalty card was alternately proposed. As for food and retail companies, this

relationship was maintained through communications via WhatsApp. Some selected insights from the different respondents in their respective fields are stated below.

Food and retail companies

*“We proposed a loyalty card as we do have a customer base in the Northern part of Mauritius. This allowed customers to collect points and benefit from discounts in their future purchases.”*

*“Since we are decentralised and although we belong to Grandes Surfaces Réunies (GSR), we tried to keep as far as we could our customers who wanted to benefit from reasonable prices although that was quite tough during the pandemic.”*

IT-based organisations

*“Customer relationship was important as we used the conventional communication tools to communicate with our customers. We constantly shared messages through SMS to address the problems faced by our customers.”*

*“We kept our business open as we were online during the pandemic. Although business growth was weak, we considered the relevance of customer relationships.”*

Clothing apparel companies

*“Customer retention was difficult for us during the lockdown and eased a little after it. We had to bet on festive occasions to attract customers. Loyalty was there but was not strong enough as in previous times.”*

*“We had loyalty cards but these did not much affect our growth during the pandemic period. Nevertheless, loyal customers kept purchasing from us and that was essential for our survival.”*

### **Strategies for growth and resilience during and past-COVID-19 pandemic**

Another key research argument focused on strategies for growth and survival during and after the pandemic. It had to do with using particular strategies as a way to drive sales and growth. The sustainability of digital commerce with small businesses was researched as a selected strategy. Food and distribution companies were the first to benefit with the ability to use promotions to attract customers, usually at the end of the month and it was a recurring practice.

Clothing and apparel companies have insisted that digital commerce be used in conjunction with direct point-of-sale sales to maintain or grow their customer base of the younger generation (20-35 years old). Lay (2018) insisted that becoming a digital cutting edge brand

can no longer be seen as a separate business. Instead, it will be increasingly fundamental to organisations and the entire consumer-brand relationship. There are no more typical consumer segments, no more geographic areas and no more universal solutions.

Smaller ICT companies found the option useful as they could offer new products and services that could be related to their field, but were concerned that larger competitors could easily grab their market share. Smaje (2021) said winning companies invest in technology, data, processes, and people to accelerate through better decisions and faster course corrections based on what they learn.

The table below identifies and summaries key strategic concepts for growth and resilience by small companies.

Industry	Strategy adopted	Benefits
Food and Retail	Promotional strategy with important discounts. Discounts on fast moving consumer goods and locally-manufactured products.	The promotions attracted customers to spend and buy larger quantities of products as a means of preparing them against any forthcoming scarcity.
Information Technology	Customer loyalty was sought but there was more emphasis on the development of smartphone related technology especially for students learning online. New applications aligned with the Internet were developed and targeted to customers.	The smart phone was considered as a cheaper mode of selling digital products compared to conventional laptops and computers. This represented an alternate strategy for survival for ICT companies.
Clothing Apparel	Digital communications were developed both online and at point-of-sales outlets to offer interesting discounts to young customers.	There was apparently a revival of online sales and marketing that was too latent prior to COVID-19 but got a

		significant boost during that period.
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**Table 3: Strategies for growth and resilience during and past-COVID-19 pandemic.**

**Resilience of small companies in a post-pandemic period**

The overarching question was about the resilience of small businesses in a post-pandemic period. Clearly, the effects of the COVID-19 pandemic are still being felt by all businesses, including small businesses. Sustainability and resilience must become an integral part of any emergency plan (Blatt, 2009). Small businesses are managing fairly well since they are recovering from the shutdown since the two lockdowns and their customer base remains limited while remaining loyal. This is one of the key arguments of small businesses, which base their success on the proximity and relationship they have developed with their customers.

Small businesses, as research results show, have embraced digital technology, including platforms, as a means of survival. Digital transformation is defined as the initiative of companies to use new capabilities by leveraging digital technologies to transform organizational strategies and operations (Li, 2018). This infrastructure varies from one sector to another but remains a key argument for promoting or strengthening business opportunities. It has been found that ICT companies and clothing companies have developed the potential to retain customers by communicating with them through online platforms. Gupta and Bose (2019) argue that digital technologies can transform the core value offered to customers, making new business models more relevant to the emerging business environment. Zeidy (2021) suggests that small businesses could use digital and new technologies to improve their reach and efficiency at lower cost, thus overcoming their disadvantage of scale compared to large players. MSMEs can focus on key areas of competitiveness in their value chain, product and / or operations and identify the best technological levers to improve their competitiveness.

There is an interesting point regarding digital support whereby under the Technology and Innovation Scheme Support (TINNS), SME Mauritius provides small organisations with support regarding Website design and development, the development of mobile application and social media integration and advertising (SME Mauritius, 2021).

The development of relationship marketing was important in all three cases because it was a major opportunity for small businesses to retain and even grow their customer base. The

practice of communicating effectively while trying to meet customer needs was important. Handriana (2016) commented that SMEs can optimise their relationships with their customers by observing variables that influence trust and relationship engagement. Customer trust and relational commitment were important elements in maintaining the relationship between MSMEs and customers. It was at this level that small businesses could maintain their activity while having a constant turnover thanks to a stable customer base. A few techniques within relationship marketing were customer retention, long term relationships, quality of service, and value to be provided to customers. Percy et al (2020) supported the view that well-designed and well-managed strategies, combined with the willingness to invest in relationship building, could provide managers of small and medium-sized service companies with the momentum progressive necessary to achieve a sustainable competitive advantage.

### **Limitations of the Paper**

The limitations of the article lie mainly in the area of accessing detailed data on small businesses, limiting the scope of MSMEs to a few areas and allowing time to conduct a survey. With over 100,000 MSMEs in Mauritius, this paper has selected three areas when there could be many more. However, this initial research idea could serve as a way to appreciate the efforts and tangible benefits of MSMEs during and after the pandemic.

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## **COVID-19 and MSMEs Finance**

## Assessing the impact of COVID-19 on the IPO Indices: An Event Study Approach

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### Abstract

The rapid spread of SARS and COVID 19 affected the global economy in unimaginable ways. The stock markets across the world were initially hit adversely. The business houses, irrespective of the size of the business - micro, small, medium, and established corporations were affected. Some businesses failed and some flourished. The time period also marked the difficulties faced by the entrepreneurs in accessing the finances for running their businesses. To understand the impact of the spread of COVID 19 on the availability of finance for businesses, both Small, Medium Enterprises and companies, we have considered the indices that are related to IPOs (Initial Public Offering). These indices include the companies that are going public for the first time, to raise funds for their businesses. To understand the availability of finance for businesses and compare the same with large corporations to that of small and medium enterprises, the Bombay Stock Exchange's IPO index (constituting 54 companies) and Bombay Stock Exchange's Small and Medium Enterprises IPO Index (constituting 25 companies) are considered for this study. The study attempts to examine the influence of lockdown on newly listed companies and freshly listed SMEs during the four phases of lockdown in India. The panel data across four lockdowns are used to measure the impact on the indices, S&P BSE IPO and S&P BSE SME IPO. The data for the same has been collected

from BSE's website. The data has been taken for the time period of over 4 lockdowns, 10-13 days pre and post of all four lockdowns. A market-based event study model is used, coupled with the CAAR test. To understand the abnormal returns an ARR test along with panel data regression is done. Further to examine the short-term response of the indices, the impulse response is used. The observations under the study ranges from March 03, 2020, to June 5, 2020, for the event study. This will help us not just understand the behavioral pattern of the IPO indices during the various lockdown periods but also the response of one index to that of the other over four time periods; four lockdowns imposed in India. The study indicates the availability of finance for reputed, already set up huge corporations and SME's are not limited due to lockdown.

The results indicate that during the 1<sup>st</sup> lockdown, the indices were extremely volatile in nature. The effect of SME IPO Index on the IPO Index was there in the post lockdown announcement window when compared to the pre lockdown window.

The results show that the impact of the indices on each other during the 2<sup>nd</sup> lockdown were similar to the 1<sup>st</sup> lockdown, but with a lesser impact. As we progress towards the 3<sup>rd</sup> and 4<sup>th</sup> lockdown, the impact the indices have on each other is reducing. The results obtained infer that the SME's planning to get raise funds during such turbulent economic condition, should be cautious with respect to the volatility of their market prices. The prospective investors shall be diligent in their investment approach during such time period as market corrections happen when considered a short time period. It is also noticed that the BSE SME IPO index seem is more volatile than BSE IPO index in the post window. Further, the interdependence or relationship found between the two indices will help understand and predict better the indices movement in case of another lockdown with the hit of the 3<sup>rd</sup> wave and subsequent waves if any. It has been hypothesized that there would be several waves with variation in the virus strength and strain, in countries like China, US, India etc. Thus, understanding the relationship or movement of these indices will help predict the same better in the coming months and years.

**Impact of access to finance on the performance of Micro, Small, and Medium Enterprises: Does the COVID-19 pandemic make a difference?**

**N. Bhowoniah**

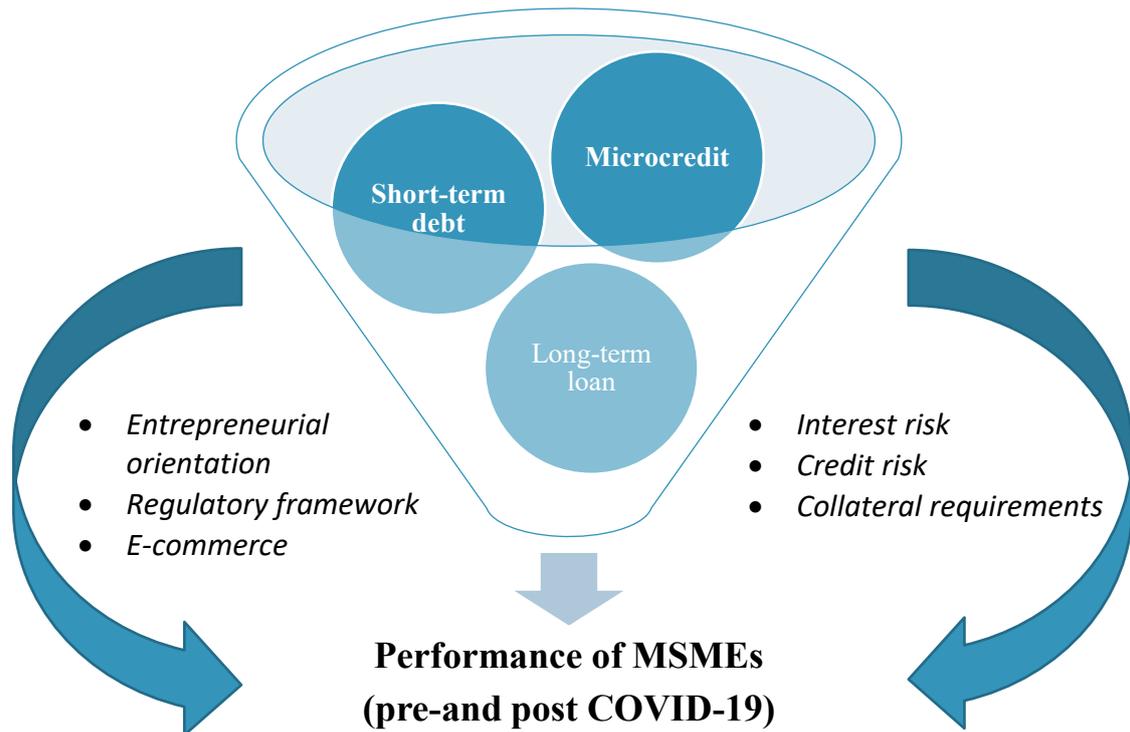
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**Abstract**

While statistics show that credit availability is getting better and are on the up, Micro, Small, and Medium Enterprises (MSMEs) are still facing a credit crunch. This is the paradox of the MSME industry.

The essence of this paper is to analyse the relationship between access to finance and the performance of MSMEs, in terms of financial and non-financial aspects. As such, this paper applies a meta-regression analysis to the empirical literature of 40 studies - spanning from 2000 to 2021, in which financial performance is based on Tobin's Q, income, growth, profit, and sales, while non-financial performance is measured via innovative measures and by employment in MSMEs. Besides, the inclusion of a dummy variable 'COVID-19' primarily compares and assesses the various aspects of pre-and post-COVID-19 period.

*Figure 1: The mechanism linking access finance and the performance of MSME players*



Through a breakdown of MSME finance (as illustrated in Figure 1 above), namely; (i) microcredit, (ii) short-term debt, and (iii) long-term loans, the OLS results find considerable variation in the degree to which the various types of MSME finance impact performance - ranging from being statistically positive to having negligible effects.

Interestingly, evidence suggest that even pre-pandemic, MSMEs were particularly concerned with the impact of indebtedness, along with the effects of interest and credit risk. However, exceptions can be made for policy responses, especially for those MSME players receiving government-supported financing and tax incentives in the weeks after the Covid-19 crisis - which is relatively positive but weak. With one eye on the promise of the future, and one eye on the common good, the COVID-19 crisis further reveals that the use of digital technologies to meet MSMEs’ financing gap in the West African region and in South-East Asia appear poised to begin a new chapter.

Though the results show the existence of an overall authentic effect beyond publication bias, its size is very small and does not yield overwhelming evidence. With regards to potential sources of heterogeneity in reported estimates, this paper also finds that differences in primary studies affect reported effect size. For this reason, 52 control variables which account for the

source of heterogeneity are revealed and classified as; (i) the impact of distinct geographical specifications, (ii) data determinants, (iii) policy proxies, (iv) authors' modelling strategies samples, and (v) publication characteristics. Given the variety of methodologies, samples and measurements, a weighted least squares (WLS) approach has been applied to verify the robustness of the estimated influences on the effect size and to adjust for potential heteroscedasticity.

All in all, the MRA evidence of the pronounced heterogeneity of the findings may be instructive for policy-makers in devising strategic decisions by: (i) establishing that the effect of access to finance on MSMEs' performance is sufficiently robust to generalize across countries; and (ii) suggesting the importance of entrepreneurial orientation in contributing towards business sustainability.

## Small Firms amidst COVID-19: Financial Constraints and Role of Government Support

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### Abstract

The COVID-19 has severely affected the SMEs, which are more financially constrained. Therefore, various countries employed several policies to support SMEs. Using rich firm-level data from 34 countries, We explore the impact of the pandemic-led crisis on cash-strapped SMEs and the role of governments in offsetting this issue. Our results suggest that i) financially constrained firms are more likely to shut down their operations; ii) government support programmes are more inclusive as they target mostly financially constrained firms; iii) financially constrained firms are more likely to sack workers; iv) and there is clear evidence of gender bias in layoffs.

Keywords: SMEs; Financial Constraints; Government Support; COVID-19; Shutdown; Employment

**JEL: D25 G38 M51**

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## **1. Introduction**

The coronavirus epidemic that erupted in February 2019 has significantly impacted the world economy. Governments across countries at all income levels resorted to several measures that curb economic activities, with remarkable consistency (Carnap et al., 2020). This economic shock on both the demand and supply sides affected global production and services. In particular, the intensity of the adverse effect fell severely on the small and medium enterprises (SMEs), which are more financially constrained (Cao and Leung, 2020; Baldwin and Mauro, 2020). Realizing the unfolding crisis, policy makers across the globe relied on various forms of short-run and long-run policies to support SMEs (see Humphries et al., 2020). Given the backdrop, this paper explores the impact of the pandemic-led crisis on financially constrained SMEs and the role of government support to offset the perils of the economic crisis.

We first investigate the importance of access to finance on the survival of SMEs during the pandemic time. A plethora of previous studies have shown that small firms are financially more constrained than large firms (Beck and Demirguc-Kunt, 2006; Kuntchev *et al.* 2012), and the presence of financial constraints pose a negative impact on the growth and survival of small firms (Oliveira and Fortunato 2006). For example, one study estimates that the presence of financial constraints is associated with a 10 percentage point reduction in the growth of small firms (Beck *et al.* 2008). The COVID-19 pandemic has added to the existing woes of small firms that are already reeling under enormous financial constraints. Our empirical analysis indicates that financially constrained firms are 22 percent more likely to shut down their operations. Since SMEs are considered as the engine of production and employment (Acs and Audretsch 1988), our results would indicate that any financial constraints they face could severely impact millions of jobs and affect development goals.

One way to address the issue of firm closure is by providing adequate support to SMEs through various programs (Acharya, 2020; Drechsel and Kalemli-Ozcan, 2020). The need for financial support for small firms becomes imperative during the time of crisis (OECD, 2020). Governments all over the world implemented various measures to support small firms including access to new credit, cash transfers, deferral of payments, fiscal exemptions and wage subsidies (see, Dell’Ariccia et al., 2020; Ilzetzi, 2020; Garicano, 2020). In this regard, one of the pertinent questions is whether these support measures have really targeted financially vulnerable enterprises. We take up this question in the paper and find robust evidence suggesting that financially constrained firms are more likely to receive government support. Our computations show that financially constrained firms have a 15 percent higher chance of obtaining support from the government. We further extend our analysis to examine how the

firms have adjusted their production and services in response to the pandemic. We show that those firms which have received government support are more likely to alter their business activities during the time of COVID-19 outbreak; and the effect is more pronounced in the case of manufacturing sector.

Further, our study examines whether financially constrained firms resize their workforce in response to the pandemic. There is a growing consensus that financial constraints lead to the layoff of workers (Bentolila et al., 2018; Berton et al., 2018). This relationship gets stronger during the crisis period (Fernandes and Ferreira, 2017; Popov and Rocholl, 2018). Our findings lend credence to this argument and suggest that financially constrained firms are more likely to layoff both permanent and temporary workers. This phenomenon is equally evident for both the manufacturing and services sector. Lastly, we explore the gender bias in layoffs during the pandemic period. We find clear evidence indicating that female workers are facing the brunt of Covid-19 with more job cuts, thereby confirming a clear gender bias in layoffs.

The main challenge in undertaking a study on the economic impact of the pandemic is the dearth of firm-level information. However, the recently released firm-level survey data for selected countries by the World Bank during the pandemic enables us to overcome this lacuna. More specifically, we use the firm-level information from the World Bank's recently released COVID-19 Follow-up Enterprise Survey (CFES) for 34 countries. The CFES is a follow-up survey on the same firms included in the previous rounds of World Bank Enterprise Survey (WBES). The advantage of this dataset is that we have specific information on whether the firms closed their operation or laid-off employees due to the COVID-19. Our study utilizes the information on the financial position, status, support from government and employee lay-off of the firms due to COVID-19 from the CFES and merges with other firm characteristics available in the WBES.

This paper contributes to the existing literature on SMEs in the following ways. *First*, our study links firm survival with financial constraints during the recent COVID-19 crisis. Existing studies on firm survival during the time of economic crisis largely focus on innovation, intangible assets, skill developments and macroeconomic shocks (Landini et al., 2018; Cefis and Marsili, 2019; Guerzoni et al., 2020; Bartoloni et al., 2020). We highlight the relevance of access to finance for the survival of SMEs during the current crisis period. *Second*, previous studies investigate the impact of government support on innovation, finance, and productivity (Mateut, 2018; Lim et al., 2018; Vu and Tran, 2020). Unlike these studies, we examine whether the government support measures are channelized to financially constrained firms. This analysis helps to unravel whether the support is targeted to those firms that required it most. In

addition, we also present evidence for the importance of government support to manage or adjust production and service during the time of the crisis. *Finally*, we address the issue of employee layoffs during the time of crisis. In that way, our study is a contribution to the literature that addresses employment during the time of economic crisis (Fernandes and Ferreira, 2017; Popov and Rocholl, 2018).

The rest of the paper is organized as follows. Section 2 provides a brief about the economy during the time of pandemic and the review of literature. Section 3 explains the data and variables used in the study. Section 4 examines the relationship between firm closure and financial constraints. Section 5 investigates whether government supports have targeted financially vulnerable firms. Section 6 explores the role of government support to cope with the pandemic. Section 7 studies the nexus between financial constraint and employment. Section 8 concludes the study.

## **2. Background and related literature**

### **2.1. Economy in the peril of COVID-19**

The COVID-19 induced shock turned out to be a leading factor for the current economic recession, which affected firms globally from both the demand and supply sides (Baldwin and Mauro, 2020). The supply chain disruption due to the pandemic led firms to shut down their operations and worker layoffs, which further accelerated the intensity of the crisis. The current economic shock has led to a contraction in global GDP, shutting down of businesses, disrupted millions of lives and jeopardized decades of development progress.

Envisaging the deepest global recession in eight decades, World Bank predicted a 5.2 percent contraction in global GDP in 2020 (World Bank, 2020). According to the IMF, the global economy will see a contraction in size over 3 percent, and is expected to experience the sharpest slowdown since the Great Depression of the 1930s. MSMEs, which make up the majority of businesses around the world, especially in emerging and developing economies are likely to face the brunt of the widespread disruption. Such sudden and prolonged lockdown is likely lead to a widespread exit of small firms since they are typically more financially constrained, heavily reliant on internal funds and informal sources of finance (Cao and Leung, 2020). Realizing this, policy makers across the globe resorted to varied forms of intervention to support small firms. The policy measures include short-run measures like income and profit tax deferrals, loan guarantees and direct lending, and wage subsidies to long-term policy measures such as new alternative markets, teleworking and digitalization, innovation and training of the workers.

## 2.2. Review of literature

This study belongs to the broad strand of literature on the impact of financial constraints on the economic activities of small firms. As mentioned, COVID-19 induced economic distress is likely to create dire consequences for the firms across developing and developed economies. The current crisis led to deep disruptions in both the demand and supply sides across the globe. There are mounting concerns about firm closures across countries especially SMEs. Firm closures are likely due to the uncertainty created by the economic crisis and financial constraints of the firms. Unlike large firms, smaller firms are less likely to have sufficient internal funds to withstand pandemic shock (Beck and Demirguc-Kunt, 2006). Therefore, financial constraints are likely to determine the survival of even productive SMEs. During an economic downturn, lenders are more likely to deny loans to small firms given the risky nature of such entities (Bakhtiari et al., 2020). In the context of the UK, North et al. (2013) show that small firms encountered extreme difficulty in obtaining loans during the 2008 financial crisis.

The studies on the impact of epidemiological shocks on the firm survival in the context of Ebola, Sars was mainly macroeconomic in nature (World Bank 2020). However, in the case of the COVID-19 pandemic, we find few studies examining the exit of SMEs. Bosio et al. (2020) using data from the World Bank's Enterprise Survey show that the median survival times vary from 6 to 2. 8 weeks. Hong et al. (2020) using monthly data of Japanese firms document a 16 percent increase in the firm exit due to the COVID-19 pandemic. This study adds to the group of studies which examined the initial impact of the pandemic on small enterprises. In the case of the United States, Bartik et al. (2020) based on a survey carried out in the month of March 2020 report that 43 percent of the SMEs are temporarily closed with many of the respondents reported to have less than one month of cash on hand. Farile (2020) using the Current Population Survey finds that the active business owners in the United States fell from 15 million to 11.7 million during February to April 2020. However, these studies failed to take into account the role of financial constraints in the firm exit. Since SMEs have limited financial resources and the capability to tackle a crisis of enormous magnitude, many of them are likely to face closure. Sufficient government support may prevent SMEs from going bankrupt and shutting down. Therefore, this study examines the role of government policies to mitigate the financial constraints, which increases their odds of survival.

### **3. Data and Variables**

#### **3.1 Data**

Data for this study are drawn from multiple sources. Our main data source is the firm-level data collected by the World Bank through their COVID-19 Follow-up Enterprise Survey (CFES) conducted during May-December 2020. The CFES provides information on 25,114 firms belongs to 34 countries during the pandemic period.<sup>77</sup> It is a telephonic survey of firms included under the sample frame of the recently concluded WBES for the same countries. The sample firms in the database belong to the manufacturing and services sector. The survey collected information pertaining to sales, employment, input purchases, financial and liquidity position, and government supports during the time of pandemic. In our study, we mainly use the information on operating status, financial issues, government supports, employment and adjustments in production/services from the CFES. We merge this dataset with WBES to obtain information on other firm-level characteristics. The WBES provides information pertaining to basic characteristics such as age, location and international exposure that are relevant in the context of the present study. We were able to match 23,486 firms in this process (93.5% of CFES firms are merged with WBES). As explained above, our analysis focus only on Small and Medium Enterprises (SMEs). We use World Bank size classification to identify SMEs, i.e., firms which have less than or equal to 99 employees.

We merge the CFES and WBES datasets using a unique identifier “*idstd*”. In the regression analysis, we omit those observations with missing values for any of the variables (main variables and control variables) under consideration. Our final sample includes information for 12,867 firms. However, the number of firms in a different set of analyses varies due to the unavailability of key variables required for that analysis. Table A1 (Appendix) reports the information related to the number of firms by country. The sector-wise breakdown of the data is presented in Table A2 (Appendix). Besides, we draw on a number of sources for data on measures of institutional quality and stringency of lockdown. For data on institutional quality, we rely on World Governance Indicators (WGI) and for the stringency of lockdown, we rely on Our World in Data (<https://ourworldindata.org/grapher/covid-stringency-index>). Furthermore, the WBES recently started a second round of COVID-19 surveys (mostly) on the same firms. However, the survey is completed only for few countries.<sup>78</sup> Nevertheless, to check the consistency of our result, we conducted a panel data analysis for these countries. The results

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<sup>77</sup>As on 28<sup>th</sup> January 2021.

<sup>78</sup> Panel data is available only for Bulgaria, Cyprus, Georgia, Greece, Italy, Moldova, Poland and Slovenia.

are presented in Table A3 (Appendix).

### 3.2 Variables

This subsection discusses the construction of variables employed in the empirical analysis. Most of the responses in the CFES are either binary (yes/no) or ordinal variables (increase/same/decrease). Therefore, most of our main variables are either binary or ordinal variables. In order to analyze the relationship between firm closure and financial constraints, we use the following variables.

*Shutdown:* to capture the operating status of the firms, we use the survey question “*Did this establishment close temporarily (suspended services or production) due to the COVID-19 outbreak? (COVb1a)*”. From this information, we construct a dummy variable that takes value 1 if the firm temporarily closed due to the pandemic; zero otherwise.<sup>79</sup>

*Cashflow:* since the financial constraint of firms are not able to observe directly, we construct a proxy using firm’s cashflow information (Fazzari et al., 1988). More specifically, we utilize the survey question “*...has/have this establishment’s liquidity or cash flow increased, remained the same, or decreased? (COVe1a)*”. Based on this information, we construct an ordinal variable that measures the financial constraints of the firm. This variable takes the value 1 if a firm reports that its cash flow decreased, value 2 if the cash flow remained the same, and assign value 3 if the cash flow has increased.<sup>80</sup>

Our second set analysis investigates whether the government supports have targeted financially vulnerable firms. To do this, we construct the following variables.

*Govt Support:* The information on government support is obtained from the survey question “*...has this establishment received any national or local government support in response to the COVID-19 crisis? (COVf1)*”. We construct a dummy variable that

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<sup>79</sup> Both the central and state governments had their own rules and policies to control the spread of the virus. So, it is a possible that firms to answer “yes” to this question due to strict instruction by government to shut their operations temporarily. In that case, employing this measure alone does not help to understand the nexus between firm shutdown and financial constraints. To solve this issue, we introduce both country and state (region) dummies into our estimation model.

<sup>80</sup> In addition to this measure, we break it into dummies and estimate one effect for drop (Cashflow\_Decrease) and one effect for increase in cash flow (Cashflow\_Increase). This analysis helps to understand the marginal change in the probability of temporary shutdown depending on change in cash flow. The results presented in Table A3 (appendix).

takes value 1 if the firm received any support from the government or expect to receive within 3 months; zero otherwise. In our data, only 6% of the firms report that they are expecting to get government support within 3 months. We also carried out an analysis after excluding those firms from the support-received category. However, this approach does not change the main findings of our study.

We further use segregated information to explore the effect of different government measures such as access to new credit (*New Credit*), cash transfers for businesses (*Cash Transfer*), deferral of credit payments, rent or mortgage, suspension of interest payments, or rollover of debt (*Deferral*), fiscal exemptions or reductions (*Fiscal Measures*), wage subsidies (*Wage Subsidies*) and support in other forms (*Other Supports*). These variables are constructed as follows:

*New Credit*: a dummy variable constructed based on the survey question “COVf2c” that takes value 1 if the firm reports that it had access to new credit; zero otherwise.

*Cash Transfer*: a dummy variable constructed based on the survey question “COVf2a” that takes value 1 if the firm reports that it obtained cash transfer for business; zero otherwise.

*Deferral*: a dummy variable constructed based on the survey question “COVf2b” that takes value 1 if the firm reports that it received any support in terms of deferral of any payments; zero otherwise.

*Fiscal Measures*: a dummy variable constructed based on the survey question “COVf2d” that takes value 1 if the firm reports that it obtained any fiscal exemption or reduction; zero otherwise.

*Wage Subsidies*: a dummy variable constructed based on the survey question “COVf2e” that takes value 1 if the firm reports that it received wage subsidies; zero otherwise.

*Other Support*: a dummy variable constructed based on the survey question “COVf2f” that takes value 1 if the firm reports that it received government support other than the ones mentioned above; zero otherwise.

To analyze whether the government supports help the firms to cope with the pandemic, we

construct the following variable.

*Coping with Pandemic*: a dummy variable constructed based on the survey question “*Has this establishment adjusted or converted, partially or fully, its production or the services it offers in response to the COVID-19 outbreak? (COVc3)*” which takes value 1 if the firm adjusted its production or services due to the pandemic; zero otherwise.

For the final set of analyses, i.e., to understand the nexus between financial constraints and employee layoffs during the crisis period, we construct the following measures:

*Permanent worker layoff*: an ordinal variable constructed based on the survey question “*Has the number of permanent workers remained the same? (COVd3a)*”. It takes the value of 1 if the firm reports the number of permanent workers has increased, the value of 2 if it has remained the same and the value of 3 if it has decreased.

*Temporary Worker Layoff*: an ordinal variable constructed based on the survey question “*Has the number of temporary workers remained the same? (COVd3b)*” that takes the value of 1, if the firm reports the number of permanent workers increased, the value of 2 if it remained the same and 3 if it has decreased.

*Total Layoff*: This variable stands for the logarithm of total number of employees laid-off and is constructed from the survey question “*...how many workers have been laid off due to the COVID-19 outbreak? (COVd6)*”.

*Female-to-male layoff ratio*: This variable denotes the ratio of the number of female to male employees laid off. This variable is based on the question “*Number of female workers laid off (COVd7)*” and *Total Layoff*.

As control variables, we use age of the firm (*Age*), size of the firm (*Size*), international exposure (*Export*), ownership status (*Ownership*) and location of the firm (*Location*). *Age* is measured as the logarithm of number of years since the firm began its operation. *Size* is measured as the logarithm of number of employees. *Export* is a dummy variable that takes the value 1, if the firm participates in the export market; zero otherwise, *Ownership* is a dummy variable that takes the value 1 if the firm is part of a large organization; zero otherwise, and *Location* is a dummy variable that takes the value 1, if the firm is located in the capital city; zero otherwise.

### 3.3. Descriptive analysis

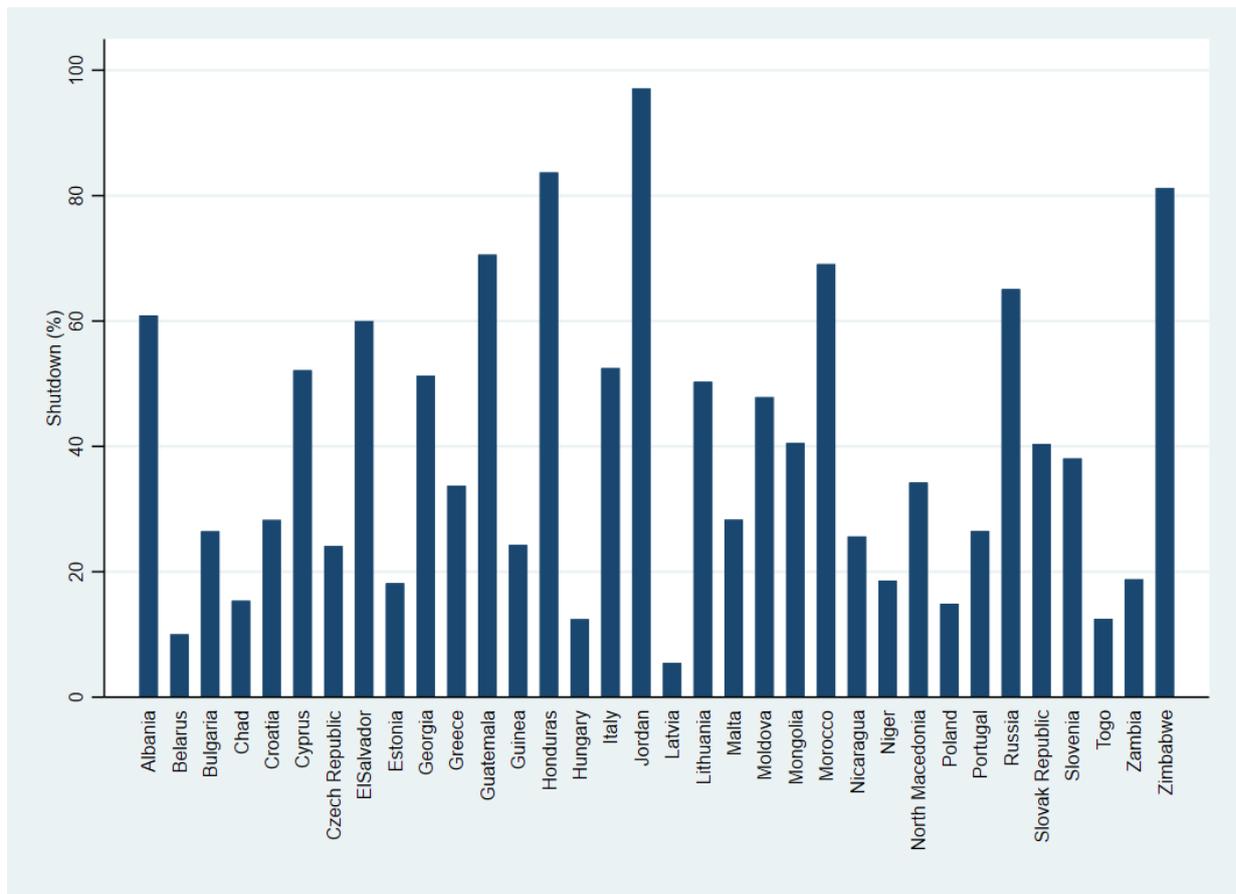
Table 1 presents the descriptive statistics of the variables used in the empirical analysis. It shows that nearly 40 percent of our sample firms temporarily stopped their operation during the time of the pandemic. The mean value of our cash flow measure lies below 2 which indicates that most of the firms faced liquidity shortages during the study period. It is also visible that only less than half of the firms received support from the national or local government. Further, most of the supports received are in the form of wage subsidies, followed by cash transfer. It is also evident from the table that around 1/3<sup>rd</sup> of the sample firms managed to adjust their production or services in the light of new developments. In the case of employee layoff both permanent and temporary, the mean value of permanent layoff and temporary layoff lies above 2, which indicates most of the firms resorted to worker layoffs during the COVID-19 crisis. Table 3A reports the correlation matrix of the main variables.

**Table 1: Descriptive statistics**

Variable	Mean	Std.Dev.	Min	Max
Shut down	0.395	0.489	0.000	1.000
Cashflow	1.368	0.588	1.000	3.000
Govt Support	0.409	0.492	0.000	1.000
New Credit	0.211	0.408	0.000	1.000
Cash Transfer	0.428	0.495	0.000	1.000
Deferral	0.333	0.471	0.000	1.000
Fiscal Measures	0.372	0.483	0.000	1.000
Wage Subsidy	0.677	0.468	0.000	1.000
Other Supports	0.085	0.278	0.000	1.000
Cope with Pandemic	0.350	0.477	0.000	1.000
Permanent Layoff	2.179	0.583	1.000	3.000
Temporary Layoff	2.191	0.475	1.000	3.000
Total Layoff	0.523	0.917	0.000	5.303
Female-to-Male				
Layoff Ratio	0.764	1.845	0.000	27.000
Age	2.821	0.686	0.693	5.313
Size	2.817	0.794	0.693	4.605
Exports	0.270	0.444	0.000	1.000
Ownership	0.125	0.330	0.000	1.000
Location	0.201	0.401	0.000	1.000
Stringency Index	53.451	19.012	16.670	96.300
Regulatory Quality	0.074	0.797	-1.584	1.123

Source: Authors' estimates.

**Figure 1: Firm closure by country (in percent)**



Source: Authors' construction.

Figure 1 illustrates the percentage of firms that have shut down their operations in each country. There exists significant variation in firm closure across the sample countries. The highest proportion of firm closure in our data is reported in Jordan, followed by Honduras and Zimbabwe. In Figure 2, we present the percentage of firms that are financially constrained in the sample countries. More than half of the firms reported to have been facing financial constraints in these countries. The proportion of financially constrained firms are the highest in Guinea (95.71%), followed by Niger (93.02%), Chad (92.31%), Jordan (90.84%) and Togo (90.63%). Countries with the highest percentage of firms that report no change in financial position from before are Poland, Latvia and Slovak Republic. Across countries, we find very few firms reporting improvement in cash flow during the pandemic, exceptions being Latvia, Albania and Greece, where about 13-25 percent of firms reported to have witnessed an improvement in cash flow during this period. Table 2 provides detailed information on government support by each country. As evident from the table, firms in Poland, Cyprus, Slovenia, Greece and Malta received the highest proportion of government support

programmes, while in the case of Nicaragua, Zambia, Zimbabwe and Latvia, governmental support has been minimal. Therefore, we observe substantial variation across countries in terms of the proportion of firms that received government support.

**Figure 2: Financially constrained and unconstrained firms by country (in percent)**



Note: *Decreased*, *Same* and *Increased* indicate that cashflow of the firms decreased, remain same and increased, respectively. Source: Authors' construction.

**Table 2: Government support during the pandemic period (in percent)**

Country	Govt Support		New Credit	Cash Transfer	Deferral	Fiscal Measures	Wage Subsidies	Other Supports
	Not received	Received						
Albania	56.13	43.87	20.91	9.01	20.37	8.33	86.49	0
Belarus	95.71	4.29	0	0	62.5	25	12.5	6.25
Bulgaria	71.75	28.25	1.57	84.29	6.19	6.77	66.35	1.41
Chad	92.47	7.53	57.14	0	0	100	0	0
Croatia	36.4	63.6	7.24	14.47	13.82	28.95	88.82	0
Cyprus	25.26	74.74	14.81	36.36	35.26	34.88	94.37	1.99
Czech Republic	38.94	61.06	4.86	64.32	10.81	5.41	31.89	0
El Salvador	87.38	12.62	68.42	59.46	42.11	37.84	37.84	27.03
Estonia	55.98	44.02	1.94	0	17.48	11.65	95.15	9.71
Georgia	56.05	43.95	6.44	13.91	46.77	48.99	42.86	4.2
Greece	28.06	71.94	32.39	45.94	56.67	72.4	72.6	11.06
Guatemala	69.44	30.56	15.91	15.91	31.82	11.36	63.64	11.36
Guinea	97	3	0	0	0	66.67	0	33.33
Honduras	79.86	20.14	21.43	21.43	35.71	39.29	17.86	7.14
Hungary	72.67	27.33	7.25	7.25	4.35	2.17	92.75	2.17
Italy	37.4	62.6	29.89	63.59	42.9	26.15	56.68	2.14
Jordan	71.26	28.74	12.64	0	9.64	10.23	71.43	13.54
Latvia	97.59	2.41	25	0	25	75	66.67	25
Lithuania	35.58	64.42	9.52	70	13.59	0	84.47	22.77
Malta	29.76	70.24	6.78	15.25	13.56	17.8	90.68	0
Moldova	94.66	5.34	5.56	15.79	11.11	40	26.32	10
Mongolia	63.9	36.1	26.44	31.03	25.29	54.65	51.76	0
Morocco	70.91	29.09	22.67	40.67	46.98	60.26	84.77	0
Nicaragua	100	0	0	0	0	0	0	0
Niger	87.5	12.5	14.29	14.29	0	50	16.67	0
North Macedonia	57.92	42.08	32.26	15.22	22.58	0	93.55	0
Poland	22.67	77.33	33.73	72.85	42.42	55.21	65.27	24.89
Portugal	68.93	31.07	26.78	43.72	21.86	18.58	50.27	0
Russia	73.95	26.05	27.75	10.53	60.51	66.67	30.16	0
Slovak Republic	49.2	50.8	12.6	18.11	14.17	12.6	85.04	0
Slovenia	26.72	73.28	5.29	3.98	10.78	16.74	94.33	8.11
Togo	87.8	12.2	20	20	60	40	0	20
Zambia	98.39	1.61	0	28.57	28.57	14.29	0	0
Zimbabwe	97.94	2.06	77.78	66.67	55.56	33.33	0	44.44

Note: This table provides the percentage of firms received government supports.

#### **4. Firm closure and financial constraints**

The determinants of firm failure and exit have received much attention both in the economic and management literature (Balcaen et al., 2012; Åstebro and Winter 2012; Wennberg et al. 2010). Among them, financial constraint is considered as a key factor in explaining firm exit (Lambrecht, 2001). In the case of SMEs, this adverse effect will be much more severe, especially during the time of an economic crisis. Therefore, our first set of analyses attempt to probe this relationship and explore the nexus between financial constraints and firm closure during the COVID-19 period. To do this, we begin our analysis by estimating the following probit model:

$$\begin{aligned} Pr(Shutdown_{i,c} = 1) \\ = \phi(\alpha + \beta Cashflow_{i,c} + Firm\ Controls_{i,c} + Country\ Dummies \\ + Region\ Dummies + \varepsilon_{i,c}) \quad (1) \end{aligned}$$

where *Shutdown* variable capture whether the firm temporarily closed their operations or not. In this estimation, our main variable of our interest is the *Cashflow*, which represents the financial constraints of the firm. The coefficient of financial constraint measure ( $\beta$ ), provides the likelihood of a financially constrained firm shutting down its operations. *Firm Controls* is a vector of firm-level controls. Our sample includes many countries with varying macroeconomic and institutional characteristics, which can be correlated with our main explanatory variables. We control for any such bias by adding country-fixed effects to our regressions (*Country Dummies*). In addition, the inclusion of the country fixed effects helps to account for the unobserved country-specific factors such as government decisions to lockdown the country that might influence our dependent variable (omitted variable bias). In addition, several region-specific policies implemented within a country to cope with the pandemic are also likely to influence our core findings. To control for its influence, we include region-specific dummy variables in our model (*Region Dummies*). Since our dependent variable is binary, we use probit estimation with clustered standard errors (where the clusters are the countries).

##### **4.1. Main findings**

Panel A of Table 3 reports the probit estimation results of equation (1). We estimate the model specification for the entire sample and by sector: manufacturing and services. We report both coefficients (Coeff) and marginal effects (ME) of the respective models in Table 3. In all the estimations, the standard errors are clustered at the country-level to account for the bias

from correlation between all observations within each country. In the case of the whole sample, the coefficient of the *Cashflow* variable is negative and statistically significant, which indicates that the firms with increased cash flow have a lower chance of closing down their operations. To state it differently, firms that experience greater financial constraints during the pandemic exhibit a higher probability of shutting down their operations. In order to determine the magnitude of the effect, we turn our attention to marginal effects. The marginal effects show that as the financial conditions of the firms improve (change in *Cashflow* from 1 to 2 or 2 to 3)- there is, on average, a 22% less chance for firms to shut down their operations. Our findings have significant economic relevance. Since 90% of business operations and 50% of global employment is centered on small firms, the financial vulnerability of these firms can pull down the global economic growth drastically. The control variables wherever they are significant come up with the expected sign, consistent with the available evidence in the existing literature. Older firms in our sample are less likely to shut down their operations. Similarly, the probability of firm closure decreases with firm size.

Our subsample analysis by broad sectors namely, manufacturing and services, also corroborate the negative impact of financial constraints on firm closure. The finding that firm closure is more evident among financially constrained firms holds for both manufacturing and services subsamples. In terms of the magnitude of the coefficients, we find a striking similarity across sectors and between the subsamples and for the full sample.

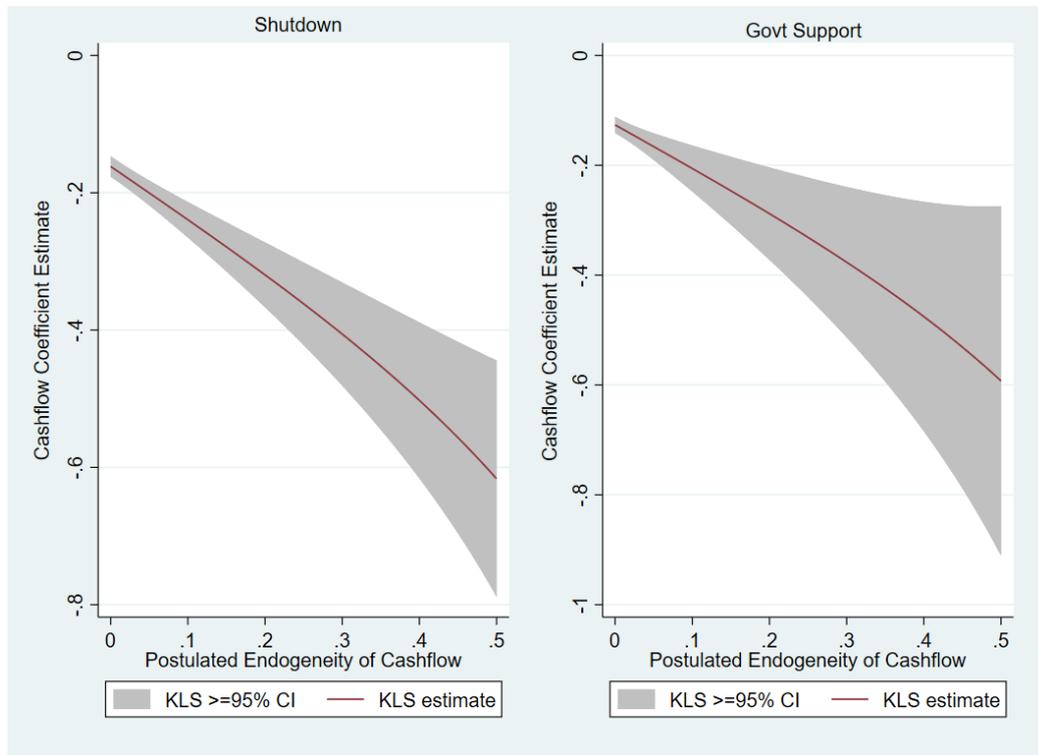
#### 4.2. Endogeneity issue

An important econometric issue associated while estimating equation (1) is the endogeneity problem. Since our study is conducted in a crisis period, there may be several unobserved factors that might explain firm closure. For instance, the ability or skill of the manager or owner to handle this unexpected crisis might exert a significant influence on the firm's closure. The failure to account for such factors in our model may lead to an endogeneity issue due to omitted variable bias. We use two methods to address this issue. First, we use Kinky Least Squares (KLS) estimation technique (Kiviet, 2020a, 2020b). Second, we introduce a valid instrument and re-estimate equation (1) using the instrumental variable probit model (IV-Probit).

The KLS is a recent technique to offset endogeneity bias even in the absence of valid instruments. Rather, it analytically corrects the bias in OLS estimates for the range of postulated endogeneity. The postulated endogeneity ( $\rho$ ) is the correlation between error terms

and explanatory variables. Another advantage is that it generally has a narrow confidence interval as compared to the 2SLS method, particularly if instruments are weak. Although the real value of  $\rho$  is unknown, we suspect, in our case, a mild positive correlation between *Cashflow* and omitted variables such as managerial capabilities. We estimate the KLS model for  $\rho$ s within the range of 0 to +0.5. The left side of Figure 3 presents the coefficient estimates of *Cashflow* for different values of  $\rho$ s. The coefficient of *GSVI\_Covid* is negative for any range of  $\rho$  under consideration.

**Figure 3 KLS estimates**



To estimate IV-Probit techniques, we need a valid instrument that satisfies two conditions- relevance and exogeneity condition. We use the degree of financial obstacle (*FinObs*) the firm faced during the previous survey round as an instrument in our model. Our conjecture is that the firms that encountered a higher obstacle to obtain finance in the previous period are more likely to experience a higher financial crunch during the crisis period. Therefore, we believe that our instrument is highly correlated with our financial constraint measure and satisfies the relevance condition. The exogeneity condition implies that the instrument does not have a direct role in the model, or it should not be correlated with our dependent variable. Since our dependent variable is constructed based on a survey question

that specifically asks *whether the shutdown is due to COVID-19*, it is easy to infer that our instrument has no direct role in our model. Results of our IV-probit estimations are reported in Panel B of Table 3. The coefficients of the financial constraint measures are negative and statistically significant in all the specifications, which validate our main findings.

**Table 3: Firm closure and financial constraints**

Variables	Panel A: Probit						Panel B: IV-Probit
	Full Sample		Manufacturing sector		Services sector		Full Sample
	Coeff	ME	Coeff	ME	Coeff	ME	Coeff
Cashflow	-	-0.219***	-	-0.223***	-	-0.235***	-1.164**
	0.572***		0.601***		0.594***		
	(0.061)	(0.0230)	(0.084)	(0.0306)	(0.054)	(0.0212)	(0.530)
Age	-	-	-0.027	-0.0101	-	-	-0.073***
	0.066***	0.0254***			0.093***	0.0368***	
	(0.024)	(0.00907)	(0.039)	(0.0143)	(0.034)	(0.0136)	(0.023)
Size	-	-	-	-	-	-	-0.100*
	0.139***	0.0534***	0.191***	0.0711***	0.098***	0.0388***	
	(0.023)	(0.00895)	(0.027)	(0.00994)	(0.038)	(0.0150)	(0.054)
Export	-0.068	-0.0260	0.106*	0.0394*	-0.160**	-0.0626**	-0.077
	(0.048)	(0.0183)	(0.055)	(0.0207)	(0.068)	(0.0261)	(0.048)
Ownership	-0.004	-0.00136	-0.040	-0.0147	-0.023	-0.00893	0.031
	(0.079)	(0.0303)	(0.082)	(0.0303)	(0.093)	(0.0365)	(0.069)
Location	0.131*	0.0506*	0.086	0.0325	0.105	0.0417	0.121*
	(0.067)	(0.0263)	(0.102)	(0.0387)	(0.095)	(0.0377)	(0.066)
Obs.	9226		4271		4802		9226
Country dummies	Yes		Yes		Yes		Yes
Region dummies	Yes		Yes		Yes		Yes

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: Authors' estimates.

### 4.3. Robustness Check

To check the consistency of our main findings, we conduct two robustness checks. First, we use an alternative measure of firm closure or shutdown. Using the survey question “*For how many weeks has this establishment been closed (or was closed) due to the COVID-19 outbreak? (COVb1b)*”, we construct another variable that captures the log of number of weeks

elapsed since the closure of the establishment (*LnShutdown*) as an alternative to firm closure. We run a regression of *LnShutdown* on financial constraints along with other control variables. Results from the estimation of this new model specification are presented in Panel A of Table 4. Our findings are qualitatively similar to our main findings, i.e., financially constrained firms, on average, shut down their operations for a longer period than unconstrained firms. Second, we augment the model specification with variables that control for the differences in the macroeconomic environment across countries. We believe that the differences in institutional quality across countries are likely to influence the impact of financial constraint measures on firm closure. The governments across the world had reacted differently to the pandemic. To make sure that these factors are not influencing our core findings, we control for their influence in our regression specification. To be specific, we introduce ‘Government Response Stringency Index’<sup>81</sup> and ‘Regulatory Quality’ as separate variables into the model replacing country dummies. Panel B of Table 4 reports the estimation result with macroeconomic variables and finds that the introduction of these measures does not alter our main results. Our panel data estimation result, in Column 1 of Table 3A (Appendix) also confirms this result. Additionally, we use two dummies variables for an increase in cashflow and a decrease in cashflow. This helps to understand the marginal effect for the increase and drop in the cashflow separately. The result in Table 4A (Appendix) remain qualitatively similar to our main findings.

---

<sup>81</sup> Government Response Stringency Index measure the stringency of government responses (such as school closures, workplace closures, and travel bans) to COVID-19. The value of the index lies between 0 and 100, where higher values means more stringent measure.

**Table 4: Robustness check: firm closure and financial constraints**

Variables	Panel A: Alternative measure of firm closure			Panel B: With macroeconomic variables		
	Full Sample	Manufacturing	Services	Full Sample	Manufacturing	Services
Cashflow	-1.216*** (0.208)	-1.152*** (0.253)	-1.159*** (0.292)	-0.436*** (0.0792)	-0.371*** (0.102)	-0.507*** (0.0945)
Age	-0.295** (0.111)	-0.066 (0.180)	-0.393** (0.187)	-0.0491* (0.0272)	0.0195 (0.0821)	-0.0777* (0.0445)
Size	-0.434*** (0.096)	-0.730*** (0.200)	-0.168 (0.120)	-0.135** (0.0608)	-0.238*** (0.0631)	-0.0909 (0.0810)
Export	-0.181 (0.254)	-0.245 (0.273)	0.324 (0.401)	-0.162 (0.101)	-0.0473 (0.101)	-0.240** (0.115)
Ownership	-0.187 (0.291)	-0.453 (0.376)	-0.125 (0.362)	-0.125 (0.158)	-0.105 (0.171)	-0.154 (0.169)
Location	-0.078 (0.382)	-0.397 (0.381)	-0.237 (0.466)	0.0478 (0.0772)	-0.0251 (0.138)	0.0279 (0.0794)
Stringency Index				-0.00397 (0.00518)	0.0105 (0.00644)	-0.0120* (0.00715)
Regulatory Quality				-0.0259 (0.118)	0.0869 (0.192)	-0.185 (0.220)
Obs.	4611	1979	2632	2,449	950	1,469
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: Authors’ estimates.

### **5. Does Government support target financially constrained firms**

In the previous section, we find robust evidence for the closure of financially constrained firms during the time of COVID-19 pandemic. One way to minimize the pandemic-induced crisis is by providing fiscal and monetary support to the firms. As mentioned, even during normal times, SMEs are less likely to obtain finance from formal sources and often rely heavily on internal funds. Lenders are reluctant to provide funds to SMEs, since they perceive them as risky, having high transaction costs as compared to large firms. Under these circumstances, government assistance can provide relief to the SMEs to improve their cash flow situation and firm performance. Therefore, Governments across countries unveiled a special economic package to help the SMEs. Previous studies observed the importance of

government support during the time of economic crisis (Bonomo et al., 2015; Grigolon et al., 2016; Heim et al., 2017). However, it is possible that some of these funds also may be usurped by firms with political connections (Ruziev 2017). Therefore, firms which are in real need of funds may face difficulty in obtaining finance in the absence of political connections. This section is devoted to investigate whether these policy measures have benefitted financially constrained firms. We examine this by estimating the following probit model:

$$\begin{aligned} Pr(Govt\ Support_{i,c} = 1) \\ = \phi(\alpha + \beta Cashflow_{i,c} + Firm\ Controls_{i,c} + Country\ Dummies \\ + Region\ Dummies + \varepsilon_{i,c}) \quad (2) \end{aligned}$$

where *Govt Support* represents firms that received or expected to receive government supports during the time of the crisis. The rest of the control variables are similar to equation (1). To investigate the impact of government support on financially constrained firms, we test the coefficient of *Cashflow* ( $\beta$ ) under the null hypothesis that financially constrained firms do not receive government support. A negative and statistically significant  $\beta$  imply channelizing funds for the financially constrained firms, while a positive and significant coefficient question the effectiveness of government support in helping financially constrained firms.

### 5.1. Main findings

Panel A of Table 5 reports the probit estimation of equation 2. We find a negative and significant coefficient for *Cashflow* in all the specifications. It implies that financially constrained (sound) firms are more (less) likely to obtain government support. In our full sample, we observe that financially constrained firms have a 15% more chance of obtaining government support. Results presented in Table 5 also show that this finding holds for our two subsamples of manufacturing and services sector firms as well. However, the likelihood of obtaining government support is marginally higher for a financially constrained firm in the services sector (16 percent) as compared to a similar firm in the manufacturing sector (15 percent).

Further, to overcome the potential endogeneity bias associated with our cash flow variable, we perform both KLS and an IV-Probit estimation with the cash flow variable being instrumented with *FinObs*. The right side of Figure 3 presents the coefficient of *Cashflow* for  $\rho$ s between 0 and 0.5. The result remains quantitatively similar to our main findings. Panel B of Table 5 presents the results related to this empirical analysis, and our IV results clearly

endorse the findings from the probit estimation. The consistency of this result is also tested using panel data (see Column 2 in Table A3) and further in Table A4. Overall, our findings unambiguously suggest that financially constrained firms are more likely to obtain government support. One can also infer that the government supports are in the right direction that targets financially constrained firms, which is crucial for firm survival.

**Table 5: Government support to financially constrained firms**

Variable	Panel A: Probit						Panel B: IV-Probit
	Full Sample		Manufacturing sector		Services sector		Full sample
	Coeff	ME	Coeff	ME	Coeff	ME	Coeff
Cashflow	-	-	-0.404***	-	-	-	-1.373***
	0.432***	0.153***		0.150***	0.470***	0.163***	
	(0.057)	(0.0199)	(0.057)	(0.0210)	(0.081)	(0.0278)	(0.358)
Age	0.010	0.00368	0.044	0.0162	-0.023	-0.00804	-0.00429
	(0.023)	(0.00824)	(0.041)	(0.0153)	(0.032)	(0.0112)	(0.0260)
Size	0.063*	0.0224*	0.090*	0.0337*	0.042	0.0147	0.1000***
	(0.038)	(0.0136)	(0.052)	(0.0193)	(0.039)	(0.0137)	(0.0331)
Export	0.069*	0.0247*	0.088	0.0330	0.057	0.0200	0.0355
	(0.042)	(0.0150)	(0.059)	(0.0223)	(0.057)	(0.0202)	(0.0461)
Ownership	0.123**	0.0444**	0.094	0.0353	0.146**	0.0518**	0.167***
	(0.051)	(0.0189)	(0.062)	(0.0237)	(0.072)	(0.0263)	(0.0445)
Location	0.176**	0.0637**	0.353**	0.136**	0.106	0.0372	0.135
	(0.082)	(0.0304)	(0.140)	(0.0551)	(0.073)	(0.0261)	(0.0846)
Obs.	9663		4425		5026		9,662
Country dummies	Yes		Yes		Yes		Yes
Region dummies	Yes		Yes		Yes		Yes

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors’ estimates.

## 5.2. Types of government support

The above analysis shows that financially constrained firms are more likely to receive government support. We discussed that the support measures are not homogenous and come in various forms in different countries. Therefore, this subsection extends our analysis by analyzing the impact of different types of government support on financially constrained firms. That is, we link financial constraints with different government support in terms of new credit, cash transfers, deferral of payments, fiscal measures, wage subsidies and other support

measures.

Table 6 presents our estimation results. Among the various specifications, our measure of financial constraint is statistically significant for the full sample and sub-sample in the case of deferral of payments. In other words, financially constrained firms are more likely to get government support in the form of deferral of credit payments, rent or mortgage, suspension of interest payments, or rollover of debt. Furthermore, we also find significant nexus between wage subsidies and cashflow in manufacturing sector. Our results using panel data remain consistent with our main findings (Column 3-8 of Table 3A). In addition, our panel data results highlight the significance of wage subsidies. We also find that young manufacturing firms are more likely to receive support in terms of new credit, cash transfers for business, fiscal exemptions or reductions, and other supports. Small firms are more likely to get cash transfer benefits and other support, while large firms have a higher probability of benefitting from payment deferrals and fiscal measures. The coefficient of export is negative and statistically significant for service sector firms in the case of cash transfers; and positive and significant for manufacturing firms in the case of new credit and other support. Our ownership dummy indicates that the enterprises which are part of large establishments are more likely to get new credit in the case of manufacturing sector.

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Table 6: Different government supports for financially constrained firms

Variables	Access to new credit						Cash transfers			Deferral			Fiscal Measures			Wage Subsidies			Other Supports								
	Full Sample			Manufacturing sector			Services sector			Full Sample			Manufacturing sector			Services sector			Full Sample			Manufacturing sector			Services sector		
	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing sector	Services sector						
Cashflow	-0.018	0.019	-0.064	-0.012	0.054	-0.109	-	-0.287***	-0.209**	-0.005	-0.034	0.014	-	-0.202***	-0.095	-0.016	0.064	-0.060									
							0.223***						0.154***														
	(0.054)	(0.093)	(0.094)	(0.079)	(0.087)	(0.108)	(0.061)	(0.079)	(0.084)	(0.078)	(0.114)	(0.075)	(0.040)	(0.053)	(0.066)	(0.052)	(0.126)	(0.122)									
Age	-0.083*	-0.108**	-0.093	-0.084**	-0.105*	-0.067	-0.059	-0.063	-0.069	-	-0.186***	-0.036	-0.036	-0.095	-0.012	0.120	0.277*	0.090									
										0.088***																	
	(0.047)	(0.049)	(0.078)	(0.039)	(0.057)	(0.059)	(0.047)	(0.053)	(0.063)	(0.031)	(0.049)	(0.057)	(0.067)	(0.082)	(0.080)	(0.125)	(0.161)	(0.122)									
Size	0.058	0.086	0.008	-	-0.108**	-	0.089***	0.192***	0.031	0.067**	0.076	0.071	0.047	0.023	0.080	-	-0.091	-0.218**									
				0.150***		0.214***										0.167**											
	(0.053)	(0.080)	(0.060)	(0.049)	(0.054)	(0.078)	(0.029)	(0.045)	(0.041)	(0.031)	(0.050)	(0.056)	(0.037)	(0.058)	(0.060)	(0.078)	(0.112)	(0.099)									
Export	0.160*	0.249*	0.050	-0.015	0.156	-0.257*	-0.009	0.082	-0.110	-0.053	0.010	-0.079	-0.067	-0.090	-0.074	0.262*	0.431***	0.174									
	(0.092)	(0.134)	(0.119)	(0.091)	(0.113)	(0.138)	(0.060)	(0.088)	(0.089)	(0.071)	(0.094)	(0.109)	(0.064)	(0.079)	(0.124)	(0.156)	(0.123)	(0.228)									
Ownership	0.144**	0.278**	0.031	-0.067	-0.149	-0.010	0.069	0.159	0.020	0.019	-0.003	0.017	0.028	0.032	-0.002	0.073	0.083	0.088									
	(0.065)	(0.129)	(0.111)	(0.119)	(0.093)	(0.171)	(0.083)	(0.104)	(0.143)	(0.082)	(0.149)	(0.136)	(0.098)	(0.108)	(0.155)	(0.214)	(0.191)	(0.319)									
Location	0.323***	0.230	0.427***	0.000	-0.025	0.027	0.030	0.012	0.054	-0.028	-0.181	0.107	-0.015	-0.075	-0.016	-0.050	-0.360	-0.002									
	(0.072)	(0.149)	(0.130)	(0.099)	(0.139)	(0.144)	(0.064)	(0.145)	(0.139)	(0.075)	(0.138)	(0.108)	(0.084)	(0.127)	(0.146)	(0.179)	(0.226)	(0.245)									
Obs.	3261	1459	1566	3042	1417	1469	3325	1573	1619	3120	1481	1524	3389	1608	1611	2090	713	932									
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors' estimates.

## **6. Coping with the pandemic and government support**

Since the COVID-19 led crisis is more devastating than the 2008 financial crisis, several firms may exit or struggle to manage their business activities. Many firms will have to re-orient their operations in wake of the uncertainty induced by the pandemic. During this time, government support might help the SMEs to adjust their production or service activities. To investigate this possibility after the onset of COVID-19 pandemic, we estimate the following probit model:

$$\begin{aligned} Pr(\text{Coping with Pandemic}_{i,c} = 1) \\ = \phi(\alpha + \beta \text{Govt Support}_{i,c} + \text{Firm Controls}_{i,c} + \text{Country Dummies} \\ + \text{Region Dummies} + \varepsilon_{i,c}) \quad (3) \end{aligned}$$

where *Coping with Pandemic* captures whether the firm adjusted its production or services in the light of the pandemic. A positive and significant coefficient for *Govt Support* implies that government support helps the firms in coping with the pandemic by adjusting their operations.

Table 7 presents the estimation results of equation (3). Though the *Govt Support* variable yields a positive sign in all specifications, it returns a statistically significant coefficient only in the case of manufacturing firms. For manufacturing sector, the probability of a firm coping with the Covid-19 pandemic increases by 6 percent if the firm receives government support. This result highlights the importance of government support for firms during the time of economic crisis. Our result also indicates that those firms which are part of a large organization are more likely to cope with the pandemic than their counterparts. We also explore the importance of each individual component of government support and report the results in Table 8. The results indicate that access to new credit, cash transfer and deferral of payments, and wage subsidies are the important government support measures that help firms to adjust their production or services during the time of the pandemic for both the sectors.

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Table 7: Coping with the pandemic and government support

Variables	Full Sample		Manufacturing sector		Services sector	
	Coeff	ME	Coeff	ME	Coeff	ME
Govt Support	0.185*** (0.049)	0.0663*** (0.0178)	0.228*** (0.061)	0.0798*** (0.0215)	0.156*** (0.059)	0.0571*** (0.0217)
Age	-0.074*** (0.024)	-0.0263*** (0.00847)	-0.057 (0.043)	-0.0200 (0.0151)	-0.082** (0.035)	-0.0297** (0.0126)
Size	0.035* (0.021)	0.0125* (0.00746)	0.033 (0.023)	0.0114 (0.00813)	0.039 (0.028)	0.0142 (0.0100)
Export	0.057 (0.060)	0.0206 (0.0216)	0.140*** (0.049)	0.0493*** (0.0172)	0.024 (0.096)	0.00891 (0.0350)
Ownership	0.193*** (0.049)	0.0709*** (0.0184)	0.177*** (0.060)	0.0637*** (0.0223)	0.162** (0.082)	0.0603* (0.0310)
Location	0.080 (0.061)	0.0289 (0.0223)	0.071 (0.092)	0.0249 (0.0328)	0.075 (0.066)	0.0275 (0.0245)
Obs.	12,867		6200		6619	
Country dummies	Yes		Yes		Yes	
Region dummies	Yes		Yes		Yes	

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors' estimates.

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Table 8: Coping with the pandemic and different government supports

Variables	Full Sample	Manufacturing sector	Services sector	Full Sample	Manufacturing Sector	Services sector	Full Sample	Manufacturing sector	Services sector	Full sample	Manufacturing sector	Services sector	Full Sample	Manufacturing Sector	Services sector	Full Sample	Manufacturing sector	Services sector
Access to new credit	0.276***	0.291**	0.269**															
	(0.100)	(0.116)	(0.106)															
Cash Transfer				0.151**	0.106*	0.196**												
				(0.059)	(0.057)	(0.094)												
Deferral							0.290***	0.352***	0.241**									
							(0.091)	(0.107)	(0.098)									
Fiscal Exempt										0.227**	0.353***	0.093						
										(0.100)	(0.110)	(0.086)						
Wage Subsidy													0.257***	0.224***	0.330***			
													(0.054)	(0.046)	(0.090)			
Other Supports																0.228**	0.317***	0.172
																(0.090)	(0.059)	(0.209)
Age	-	-0.133***	-0.077*	-	-0.144***	-	-	-0.140***	-0.084*	-	-0.129***	-0.094*	-	-0.129***	-0.087*	-	-0.158***	-0.105**
	0.109***			0.118***		0.089**	0.114***			0.119***			0.112***			0.135***		
	(0.033)	(0.036)	(0.046)	(0.029)	(0.032)	(0.042)	(0.031)	(0.033)	(0.047)	(0.033)	(0.038)	(0.048)	(0.036)	(0.046)	(0.048)	(0.031)	(0.035)	(0.050)
Size	0.040	0.037	0.064	0.057	0.047	0.089*	0.033	0.015	0.061	0.045	0.022	0.079*	0.038	0.020	0.068*	0.066**	0.049	0.100***
	(0.033)	(0.040)	(0.041)	(0.035)	(0.044)	(0.046)	(0.032)	(0.042)	(0.038)	(0.030)	(0.037)	(0.040)	(0.027)	(0.036)	(0.035)	(0.029)	(0.037)	(0.036)
Export	0.040	0.124	-0.030	0.047	0.132	-0.020	0.045	0.123	-0.025	0.044	0.130	-0.041	0.017	0.121	-0.075	0.026	0.092	-0.005
	(0.098)	(0.126)	(0.132)	(0.094)	(0.119)	(0.133)	(0.096)	(0.125)	(0.137)	(0.102)	(0.130)	(0.138)	(0.103)	(0.118)	(0.145)	(0.083)	(0.121)	(0.126)
Ownership	0.104**	0.241***	-0.010	0.114**	0.264***	-0.009	0.110**	0.235***	0.007	0.121**	0.259***	0.006	0.115**	0.246***	0.008	0.100*	0.239***	-0.015
	(0.050)	(0.083)	(0.069)	(0.052)	(0.072)	(0.070)	(0.054)	(0.084)	(0.077)	(0.054)	(0.071)	(0.072)	(0.053)	(0.080)	(0.074)	(0.052)	(0.082)	(0.063)
Location	0.037	-0.006	0.039	0.059	-0.005	0.076	0.061	0.031	0.055	0.085	0.034	0.103	0.077	0.041	0.076	0.080	0.045	0.079
	(0.101)	(0.159)	(0.105)	(0.081)	(0.130)	(0.093)	(0.095)	(0.151)	(0.100)	(0.094)	(0.121)	(0.109)	(0.110)	(0.158)	(0.113)	(0.096)	(0.151)	(0.102)
Obs.	4570	2287	2206	4694	2366	2256	4663	2339	2247	4650	2346	2226	4851	2436	2344	4593	2250	2265
Country dummies	Yes	Yes	Yes															
Region dummies	Yes	Yes	Yes															

Note: Standard errors are in parenthesis are clustered at the country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors' estimates.

## **7. Layoff and financial constraints**

During the pandemic period, the unemployment rates have increased drastically across countries (see Mayhew and Anand, 2020). We hypothesize cashflow constraint as one of the reasons for this phenomenon. To investigate this relationship, our final set of analyses examines whether financial constraint matters for the employee layoff. To evaluate the impact of cashflow constraints on layoffs, we estimate the following model:

$$y_{i,c} = f(\text{Cashflow}_{i,c}, \text{Firm Controls}_{i,c}, \text{Country Dummies}, \text{Region Dummies}) \quad (4)$$

where  $y$  stands for various measures of layoff measures and *Cashflow* captures the financial constraints. We expect a negative relationship between employee layoffs and the financial soundness of the firms.

Table 9 reports our findings. We first explore the relationship between permanent workers' layoffs and financial constraints. For that, we use an ordinal variable that accounts for layoff of permanent workers (*Permanent Worker Layoff*) and estimate equation (4) using the ordinal probit (OProbit) method. Results presented in Panel A of Table 9 shows that financially sound firms are less likely to lay off their permanent employees. This finding applies to both manufacturing and service sectors. The result also indicates that the young manufacturing firms and the service sector firms that are part of large organizations are less likely to layoff permanent workers. Panel B in Table 9 reports probit estimation result of equation (4) using layoff of temporary workers as the dependent variable (*Temporary Worker Layoff*). As is the case with permanent workers financially sound firms are less likely to layoff temporary workers in both manufacturing and service sectors.

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**Table 9: Employee layoff, financial constraints, and gender bias (Ordered Probit)**

Variables	Panel A: Permanent Workers Layoff			Panel B: Temporary Workers Layoff			Panel C: Total layoff			Panel D: Female-to-Male Layoff Ratio		
	Full Sample	Manufacturing	Services	Full Sample	Manufacturing	Services	Full Sample	Manufacturing	Services	Full Sample	Manufacturing	Services
Cashflow	-0.426*** (0.043)	-0.523*** (0.056)	-0.343*** (0.043)	-0.508*** (0.061)	-0.553*** (0.077)	-0.490*** (0.075)	-0.185*** (0.042)	-0.160*** (0.036)	-0.188*** (0.060)	-0.102 (0.215)	0.481 (0.573)	-0.476*** (0.151)
Age	-0.003 (0.024)	-0.002 (0.031)	0.001 (0.030)	-0.005 (0.025)	0.008 (0.039)	-0.014 (0.030)	-0.071*** (0.022)	-0.066* (0.034)	-0.079** (0.034)	0.052 (0.093)	0.078 (0.151)	0.081 (0.182)
Size	0.044* (0.024)	0.057* (0.031)	0.023 (0.025)	0.005 (0.022)	-0.018 (0.027)	0.017 (0.029)	0.172*** (0.024)	0.164*** (0.033)	0.177*** (0.033)	-0.055 (0.079)	-0.159 (0.181)	-0.059 (0.127)
Export	-0.036 (0.045)	-0.073 (0.047)	-0.064 (0.083)	-0.029 (0.042)	-0.027 (0.049)	-0.033 (0.073)	-0.033 (0.035)	-0.049 (0.044)	-0.014 (0.063)	0.160 (0.212)	0.064 (0.291)	-0.057 (0.263)
Ownership	-0.090** (0.041)	-0.180*** (0.066)	-0.043 (0.052)	-0.042 (0.043)	0.013 (0.066)	-0.067 (0.065)	0.023 (0.039)	0.029 (0.056)	0.026 (0.057)	0.032 (0.168)	-0.659 (0.665)	0.261 (0.171)
Location	0.100* (0.053)	0.034 (0.071)	0.164** (0.078)	0.082 (0.087)	0.099 (0.121)	0.088 (0.106)	-0.019 (0.056)	-0.076 (0.096)	-0.004 (0.093)	0.031 (0.075)	0.061 (0.244)	0.124 (0.218)
Obs.	9968	4678	5290	9679	4566	5113	3730	1667	2063	824	394	430
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors' estimates.

To check the consistency of the result, we introduce (log of) total number of workers laid off (*Total Layoff*) as a dependent variable in our analysis. Panel C reports the OLS estimation result of equation 4 using the new measure of layoff. The result indicates that the coefficient of the *Cashflow* is negative in all specifications and statistically significant for manufacturing firms. In other words, we find that the layoffs of financially sound firms in the manufacturing sector are 19% less likely than constrained firms. We re-iterate the nexus between cashflow and layoff in Table A4 as well.

Lastly, we study gender bias in the layoff of workers. Existing studies provide evidence for labour market inequality during the crisis period (Perugini et al., 2019). To investigate the gender bias, we use the ratio of female-to-male layoff (*Female-to-Male Layoff Ratio*) as a dependent variable in our OLS model. Panel D reports the result and indicates that the bias is predominantly evident in services sector.

## 8. Conclusion

The objectives of this study are four-fold: firstly, to investigate the relationship between financial constraint and SME shutdown during the COVID-19 period. Secondly, this study examines whether government support targeted financially vulnerable firms. Thirdly, it explores the role of government support in managing or adjusting the production or services of SMEs in response to the pandemic. Finally, the study investigates the relationship between employee layoffs and financial constraints. Using rich firm-level data from 34 countries, we find that financially constrained firms are more likely to shut down their operations. The results are robust to concerns arising from endogeneity of financial constraints and also to alternative measures of firm closure and specifications. We also find that government support programmes are more inclusive as they target mostly financially constrained firms. Further, we find this support is significant for SMEs to cope with the pandemic. Our final set of analyses reveals that financially constrained firms are more likely to sack workers; and there is clear evidence of gender bias in layoffs.

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**Table A1: Number of firms in each analysis by country**

Country	Shutdown and financial constraints	Govt supports and financial constraints	New credit and financial constraints	Cash transfer and financial constraints	Deferral and financial constraints	Fiscal measures and financial constraint	Wage subsidies and financial constraint	Other subsidies and financial constraint	Coping with pandemic and government	Permanent worker layoff and financial constraints	Temporary worker layoff and financial constraints	Total layoff and financial constraints	Female to male layoff ratio and	Total
Albania	225	254	110	111	108	108	111	0	253	252	217	143	13	1905
Belarus	369	335	0	0	7	10	4	0	373	373	367	91	5	1934
Bulgaria	378	386	12	82	67	43	81	0	754	387	385	111	47	2733
Chad	13	93	7	0	0	0	0	0	93	93	93	47	19	458
Croatia	237	239	152	152	152	152	152	0	239	239	239	40	9	2002
Cyprus	140	145	105	102	106	106	107	107	293	144	145	29	1	1530
Czech Republic	303	303	185	185	185	185	185	0	303	303	303	72	17	2529
El Salvador	220	302	38	37	38	37	30	37	301	297	292	184	15	1828
Estonia	231	231	58	0	103	103	103	103	234	226	226	71	9	1698
Georgia	310	412	141	141	142	139	141	413	801	413	359	158	27	3597
Greece	403	413	273	271	271	272	272	268	834	413	410	99	3	4202
Guatemala	119	144	44	44	44	44	44	44	144	141	140	111	33	1096
Guinea	70	99	0	0	0	3	0	3	100	95	97	68	11	546
Honduras	92	138	28	28	28	28	28	28	139	139	137	94	25	932
Hungary	442	505	115	106	55	54	115	59	505	505	505	116	47	3129
Italy	282	324	163	162	164	160	166	127	639	326	311	50	6	2880
Jordan	382	391	99	0	89	100	104	104	334	399	225	141	22	2390
Latvia	164	163	0	0	0	2	2	0	166	150	169	101	11	928
Lebanon	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	161	161	104	99	102	0	102	100	163	149	130	61	10	1342
Malta	166	168	118	118	118	118	118	0	168	168	168	49	13	1490
Moldova	186	217	8	8	8	8	8	0	431	219	175	33	2	1303
Mongolia	217	242	87	87	87	86	85	0	241	242	243	139	37	1793
Morocco	469	519	150	150	149	151	151	0	519	519	519	176	45	3517
Nicaragua	156	0	0	0	0	0	0	0	163	162	161	108	20	770
Niger	43	55	6	0	0	5	5	0	56	50	55	29	3	307
North Macedonia	219	221	93	92	93	0	93	0	221	188	221	209	14	1664
Poland	691	736	535	537	538	537	535	542	1491	683	707	130	46	7708
Portugal	589	590	184	183	184	184	184	0	589	596	596	120	34	4033
Russia	725	763	160	130	194	194	188	0	764	767	731	308	66	4990
Slovak Republic	250	249	126	126	126	126	126	0	250	250	251	74	18	1972
Slovenia	197	199	149	77	149	149	149	146	393	199	199	79	26	2111
Togo	32	40	4	0	4	4	0	4	41	39	41	29	1	239
Zambia	356	192	0	7	7	7	0	0	436	411	432	223	107	2178
Zimbabwe	389	434	7	7	7	5	0	5	436	431	430	237	62	2450
Total	9226	9663	3261	3042	3325	3120	3389	2090	12867	9968	9679	3730	824	

**Table A2 Number of firms in each sector by country**

	Manufacturing	Services	Total
Albania	69	184	253
Belarus	195	178	373
Bulgaria	425	329	754
Chad	50	43	93
Croatia	84	155	239
Cyprus	110	183	293
Czech Republic	164	139	303
El Salvador	152	149	301
Estonia	79	155	234
Georgia	281	520	801
Greece	413	421	834
Guatemala	50	94	144
Guinea	17	83	100
Honduras	46	93	139
Hungary	293	212	505
Italy	379	260	639
Jordan	146	188	334
Latvia	50	116	166
Lithuania	47	116	163
Malta	59	109	168
Moldova	148	283	431
Mongolia	81	160	241
Morocco	198	321	519
Nicaragua	60	103	163
Niger	18	38	56
North Macedonia	67	154	221
Poland	1,065	426	1,491
Portugal	438	151	589
Russia	467	297	764
Slovak Republic	100	150	250
Slovenia	131	262	393
Togo	11	30	41
Zambia	111	325	436
Zimbabwe	197	239	436
Total	6,201	6666	12,867

**Table A3 Correlation Matrix**

	Shutdown	Govt Support	Cashflow	Cope with pandemic	Age	Size	Export	Ownership	Location
Shutdown	1								
Govt Support	0.0918	1							
Cashflow	-0.2648	-0.0882	1						
Cope with pandemic	0.042	0.0141	-0.0286	1					
Age	-0.0898	0.0502	0.0328	-0.0539	1				
Size	-0.0842	0.0282	0.0978	0.0347	0.232	1			
Export	-0.0953	0.0868	0.063	0.0033	0.1423	0.3464	1		
Ownership	-0.004	-0.0241	0.0438	0.0522	0.0777	0.1676	0.0382	1	
Location	0.0304	-0.0767	-0.0602	0.0676	-0.0087	0.0182	-0.0598	0.0728	1

Source: Authors' estimates.

**Table A4 Panel data analysis**

VARIABLES	(1) Shutdown	(2) Govt Supports	(3) Access to new credit	(4) Cash transfer	(5) Deferral	(6) Fiscal exempt	(7) Wage subsidy
Cashflow	-0.662*** (0.0875)	-0.554*** (0.131)	-0.0617 (0.0455)	-0.0590 (0.121)	-0.311*** (0.0285)	0.142** (0.0708)	-0.189** (0.0785)
	-0.473*** (0.0645)	-0.194 (0.185)	-2.059*** (0.205)	1.138*** (0.0932)	-2.181*** (0.238)	-1.734*** (0.160)	1.027*** (0.0906)
Constant	-0.662*** (0.0875)	-0.554*** (0.131)	-0.0617 (0.0455)	-0.0590 (0.121)	-0.311*** (0.0285)	0.142** (0.0708)	-0.189** (0.0785)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,074	5,408	2,437	2,724	2,675	2,582	2,872

Note: This table presents panel data probit model estimation results. Standard errors are in parenthesis are clustered at country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A5 Cashflow increase and decrease dummies**

VARIABLES	Shutdown	Shutdown	Govt Support	Govt Support	Total Layoff	Total Layoff
Cashflow_Increase	-0.776*** (0.137)		-0.551*** (0.158)		-0.162 (0.0978)	
Cashflow_Decrease		0.717*** (0.0653)		0.549*** (0.060)		0.267*** (0.0466)
Constant	1.146*** (0.0923)	0.471*** (0.0817)	-0.0904 (0.120)	-0.638 (0.106)	0.122 (0.0951)	-0.109 (0.108)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,226	9,226	9,663	9,663	3,730	3,730

Note: Cashflow\_Increase is a dummy variable that takes value 1 if the cashflow of the firm increases; zero otherwise. Cashflow\_Decrease is a dummy variable that takes value 1 if the cashflow of the firm decreases; zero otherwise. Note: Standard errors are in parenthesis are clustered at the country-level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Authors' estimates.

**Macroeconomic impact of Covid-19 on two selected economies in Southern Africa: The role of foreign direct investment**

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**Abstract**

The objective of this study is therefore to investigate the effect of a reduction in foreign direct investment due to Covid-19 on the economies of two selected Southern African countries, Namibia and Eswatini. A simple macro-econometric model economy is developed and estimated. This model has several behavioural equations, identities and definitions. A policy shock was imposed by reducing foreign direct investment. The results indicate that domestic investment, tax revenue, government expenditure, consumer prices, household consumption and GDP respond negatively to a reduction in foreign direct investment. The results suggest that foreign direct investment is very important to the economies of Namibia and Eswatini. These economies should come up with policies that attract foreign direct investment inflows in their countries. This will help to boost domestic investment, tax revenue and enable increase in government expenditure, reduce consumer prices, encourage consumption and accelerate economic growth.

**Keywords:** foreign direct investment; macro-econometric model; Covid-19; cointegration; Namibia; Eswatini

**JEL Classification:** C52; C53; E00; I10; I15

## **COVID-19 and Women Entrepreneurs**

## Impact of COVID 19 on Women-Owned Microenterprises in Mauritius

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### Abstract

Since the outbreak of the Covid-19, most enterprises have not been able to operate under normal conditions and they have adopted specific measures to fight the pandemic. Several studies have highlighted that small businesses have been more affected than large businesses (Dua et al., 2020; Belitski et al., 2021). This scourge has not only hit developed countries but developing countries as well. Mauritius is one of the developing countries affected by the pandemic. In many countries, particularly in developing countries, an important part of the workforce is employed in small and medium enterprises (SMEs) (Adian et al., 2020). In Mauritius, it has been estimated that SMEs constitute around 55% of employment (SME report, 2017).

The purpose of this study is to investigate the impact of COVID- 19 on microenterprises managed by women in Mauritius. To undertake the study, a purposive sample of women entrepreneurs from different operational sectors was chosen and an interview was conducted on twenty women entrepreneurs. The questions aimed at ascertaining the extent to which microenterprises have been affected since the outbreak of the pandemic. Subsequently, the study consisted in assessing if the measures and policies implemented have been helpful and allowed the enterprises to be resilient vis-à-vis the new conditions created by the pandemic. Firstly if the policies and schemes implemented by the Government were effective in assisting the microenterprises. Secondly, if the companies themselves have undertaken restructurations or adopted innovative measures to counteract the hassles caused by the pandemic, for example,

several studies have underlined the use of technology by SMEs to maintain and promote their activities (Guo et al., 2020; Caballero-Morales, 2021; Gregurec et al., 2021). The data collected was analyzed by using a thematic analysis approach. The sample contained enterprises from different sectors and all were affected by the pandemic, although to different extents. A main finding of the study was that most women entrepreneurs opted for an internal restructuring to enable the subsistence of their enterprises. They also adopted a more prudent approach by working on smaller margins, without trying to burden themselves with loans or other measures which could become cumbersome for them in the future if the performance of their enterprises did not improve.

**KEYWORDS:** microenterprises, Covid-19, women, resilience, policies, restructuration/innovation

### **Introduction**

On 30 January 2020, the World Health Organisation (WHO) has declared the Covid-19 as a global public health emergency of international concern (WHO, 2020; Sonobe *et al.* 2021). The pandemic of the Covid-19 has drastically afflicted the economy and SMEs' actual business performance in numerous countries worldwide. Governments from all countries implemented rapid policy responses involving support for vulnerable groups of micro, small and medium enterprises (Sonobe *et al.* 2021; Felipe and Fullwiler, 2020). Meanwhile, despite the introduction of these policies and regulations for growth in the economy, there is a major challenge that is reported due to the reason for this pandemic situation in the previous year that has influenced negatively the performance of small and medium enterprises (SMEs).

SMEs are considered as one of the most vital stakeholders that contribute to economic growth and support to the national production of the economy taking into consideration Gross Domestic Product and Gross National Product. It enhances trade openness and creates employment opportunities with the assistance of technological innovation, offerings and improving business functions and actions (Waiho *et al.* 2020; Sun *et al.* 2021). Hence, all countries are alert and responsive to the SMEs performance that assists them in expanding business performance to establish positive economic estimates. Small and medium enterprises (SMEs) are an essential part of the Mauritian economy, through their job creation capacity and enabling economic growth. Around 50% of job creation is undertaken through small and medium enterprises.

According to a census conducted in 2018, there are around 138,553 SMEs in Mauritius, out of which 81% are micro-enterprises, 18% are small, and the remaining medium enterprises (Handbook on Schemes & Incentives for MSMEs & Entrepreneurs, 2020).

Mauritius had its first three Covid- 19 cases on 18 March 2020 and the island was under "sanitary" lockdown for two weeks. From 24<sup>th</sup> March 2020 till the 1<sup>st</sup> June 2020, Mauritius went under complete lockdown with only essential services being opened. Gradually, the reopening of some economic sectors started on 15<sup>th</sup> May 2020 and the lockdown was entirely removed on 15<sup>th</sup> June (Seetanah et al. 2021). In short, Mauritius had recorded only 332 covid-19 confirmed cases, all recovered and 10 deaths which were less than the WHO forecasts. Mauritius has been Covid-19 free with no local cases since 26 April 2020. However, the island had only one local case in November 2020. By the beginning of the Pandemic, Mauritius has experienced an annual growth to fall to -15.3% in 2020 (World Economic, 2021).

However, on 22<sup>nd</sup> March 2021, the second wave of the COVID-19 pandemic with 198 additional local cases, totaling 829 cases has been declared. On the other hand, the lockdown was gradually lifted from the 1st May 2021 with the opening of some business activities. This time, the lockdown was entirely removed on the 1<sup>st</sup> of August 2021. Presently, as of 20<sup>th</sup> October 2021, there are 1047 confirmed cases of covid-19 and 148 deaths (WHO, 2021).

Nonetheless, during the COVID-19 pandemic, the Government came up with the first strategy to restrict travel and implement sanitary measures to contain the spread of the virus. In addition, major economic and social policies to assist businesses, employees in the private sector as well as informal workers were introduced (Seetanah et al. 2021). These strategies are aimed at reinforcing the island's resilience to the crisis and protecting businesses as well as workers. However, according to OECD (2020), 25% to 36% of businesses in Mauritius are expected to close down.

In the present study, the focus is on microenterprises that generate an annual turnover of Rs2 million or below. The purpose of the study is to investigate the impact of Covid-19 on microenterprises that are run by women in Mauritius. Microenterprises given their small sizes are more prone to be negatively affected by the pandemic, simultaneously women manage microenterprises found in more affected sectors. The aforementioned reasons justify why women-led microenterprises might be more influenced by the covid-19 outbreak. By employing a thematic analysis approach, the research examines the major disruptions that Mauritian microenterprises have come across during the pandemic period.

Hence, the study is subdivided into three parts. The first part focuses on an assessment of the pandemic on the enterprises operating in different sectors to determine which economic sector/s and the extent to which they have been affected by this scourge. In addition, the timing of the thematic analysis helps to understand how businesses have been able to adjust themselves during this period. By considering the proactive measures undertaken by the microenterprises and whether these were effective in enabling them to survive through the pandemic. Finally, it is important to ascertain whether the policies provided by the Government have been of great assistance to the microenterprises and helped them in maintaining their activities under uncertain times.

### **Literature Review**

Studies have been analyzing whether SMEs have survived the COVID-19 outbreak and what proactive measures were undertaken to help the firms to sustain their activities. Depending upon the study contexts and/or sector/s being studied, different measures and levels of resilience have been observed. Studies have mainly focused upon the efficiency of policies and innovative measures in enabling SMEs to survive and enhance their performance, since the onset of the covid-19 pandemic.

Some studies aimed at evaluating the financial sustainability of firms, following the outbreak of the covid-19, and whether the measures set up for SMEs were effective in allowing them to sustain their activities. In general, studies have been focusing upon the policy measures set up as a response to the pandemic, whilst assessing the appropriateness of the measures in enabling SMEs to overcome the difficult situation. In the US context, around 50% of workers are employed by SMEs. Bartik et al., (2020) studied 5800 US SMEs in April 2020, they found that around 43% of businesses had closed temporarily and employment had reduced by 40%. Availability of cash on hand in the near future was the main issue for most of the firms studied and around 38% among them deemed that they would not be able to survive till the end of 2020. Among the firms surveyed, the main findings were that around 13% found it is quite complicated to apply for financial assistance schemes. Firms in particular sectors such as restaurants, tourism, or public services forecasted that if the crisis lasted above 4 months they might close down. It was estimated that the charge for the payment of those applying for loans under assistance schemes was relatively significant.

Studying the Russian context, Razumovskaia et al., (2020) concluded that to enable SMEs to overcome the negative effects of the pandemic particular policies should be set up. The implementation of government policies in Russia was assessed, the SMEs benefitted from tax deductions or administrative facilities or other banking/ financial supports (facilitation of loan/grants), and according to the study in the longer term, such measures should enable the SMEs to sustain their activities.

Juergensen et al., (2020) found that the uncertainties generated by the pandemic on different industries, as well as their short and long-term effects on SMEs might not be the same. It is concluded that the same policy responses cannot be adopted across all the SMEs. It is also suggested that different measures be adopted over time, an initial phase (short term) was dedicated to the survival of firms through providing financial assistance. Then in the longer term, the SMEs should be adopting innovative technologies, using networking and internationalization to enhance their performance.

The Irish SMEs were studied by Kren et al., (2021) using survey analysis. The authors tried to find how the revenues of the companies were affected by the pandemic, how they maintained their cost base, and the policies adopted by the companies. Findings showed that around 40% of firms cut their spending. Further, around 30% of firms made losses and around 30% of firms reached a breakeven point. The measures adopted by the firms were as follows: 61% obtained wage subsidies, 20% used tax initiatives, and around 6% contracted loans. It is noted that the smallest firms were less likely to adopt policy measures. Studying the Asian SMEs and using a survey approach, Sonobe et al., (2021) found that the pandemic had led to a decrease in sales revenues. The countries being surveyed were influenced to different extents, some firms had to temporarily close down, and around one-third to two-thirds of companies faced cash shortages. Such shortages were found to be more pronounced in low-income countries. Another consequence of the pandemic was job reduction, with non-permanent employees bearing higher job losses as compared to permanent employees. It was also depicted that an expansion of online sales by the firms had led to job creation.

Using a structural equation modeling approach, Sun et al., (2021) studied SMEs in China using a survey questionnaire of 330 participants. They found that the covid-19 pandemic had a significantly negative influence on turnovers. They suggested that policies should be set up at different levels of the organization to be proactive and to tackle such uncertain situations in the future.

As highlighted by Dai et al., (2021) who studied SMEs in China, the removal of the lockdown after having the pandemic under control, resolved the supply issues of SMEs. Nonetheless the decrease in demand both local and global led to further performance issues for the SMEs. Targeted policies to promote the demand for goods/services offered by SMEs should allow the survival of the firms.

In several studies, the importance of innovations has been highlighted as a means of promoting the performance of SMEs following the emergence of the pandemic. For example, digital technologies have been considered as a means of allowing policies/measures to maintain the operation of SMEs. In the Chinese context, Guo et al., (2020) surveyed a sample of 518 SMEs on the use of digital technologies. The study found that digitalization had allowed the firms to survive and enhanced their performance following the uncertain conditions generated by the covid-19 pandemic. Gregurec et al., (2021) used a sample of 85 research articles and used a content analysis framework to find if digital technologies (such as media platforms and mobile technologies) have helped in safeguarding the operations of SMEs. The companies under study were from the services industry. According to the study, it is important to rethink the operational mode of the SMEs following the pandemic to allow the survival and also enhancement of the activities within such enterprises. Studying a sample of 259 Saudi Arabian SMEs, Adam and Alarifi (2021) used a structural equation modeling approach and detected that innovative measures put in place during the COVID-19 pandemic improved the performance and allowed the survival of the SMEs. Caballero-Morales (2021) undertook their study on SMEs in emerging economies and focused on the manufacturing sector. They highlighted the importance of innovation, specifically digital technologies in helping SMEs sustain and promote their activities during and post the covid-19 outburst.

## **Methodology**

The purpose of the study is to investigate the impact of Covid-19 on microenterprises and assess if through the adoption of proactive measures the businesses were able to survive. A qualitative approach was adopted to conduct the study (Saunders et al., 2012). A total of 20 in-depth interviews were done, among which some were carried out face-to-face and some through telephone. A purposeful sampling technique was used to choose the women entrepreneurs. Emphasis was also laid on the fact that the sample should be representative and include entrepreneurs from different sectors.

The interview with each entrepreneur lasted around 30 – 40 minutes. Whilst conducting the interviews, a saturation point was reached when interviewing the twentieth person.

A thematic analysis technique was used to analyze the data collected through the interviews. The main themes identified were relative to the difficulties faced by the microenterprises as a consequence of the outbreak of the pandemic. Simultaneously, the other themes identified related to the internal and external measures adopted by the microenterprises to maintain their operations.

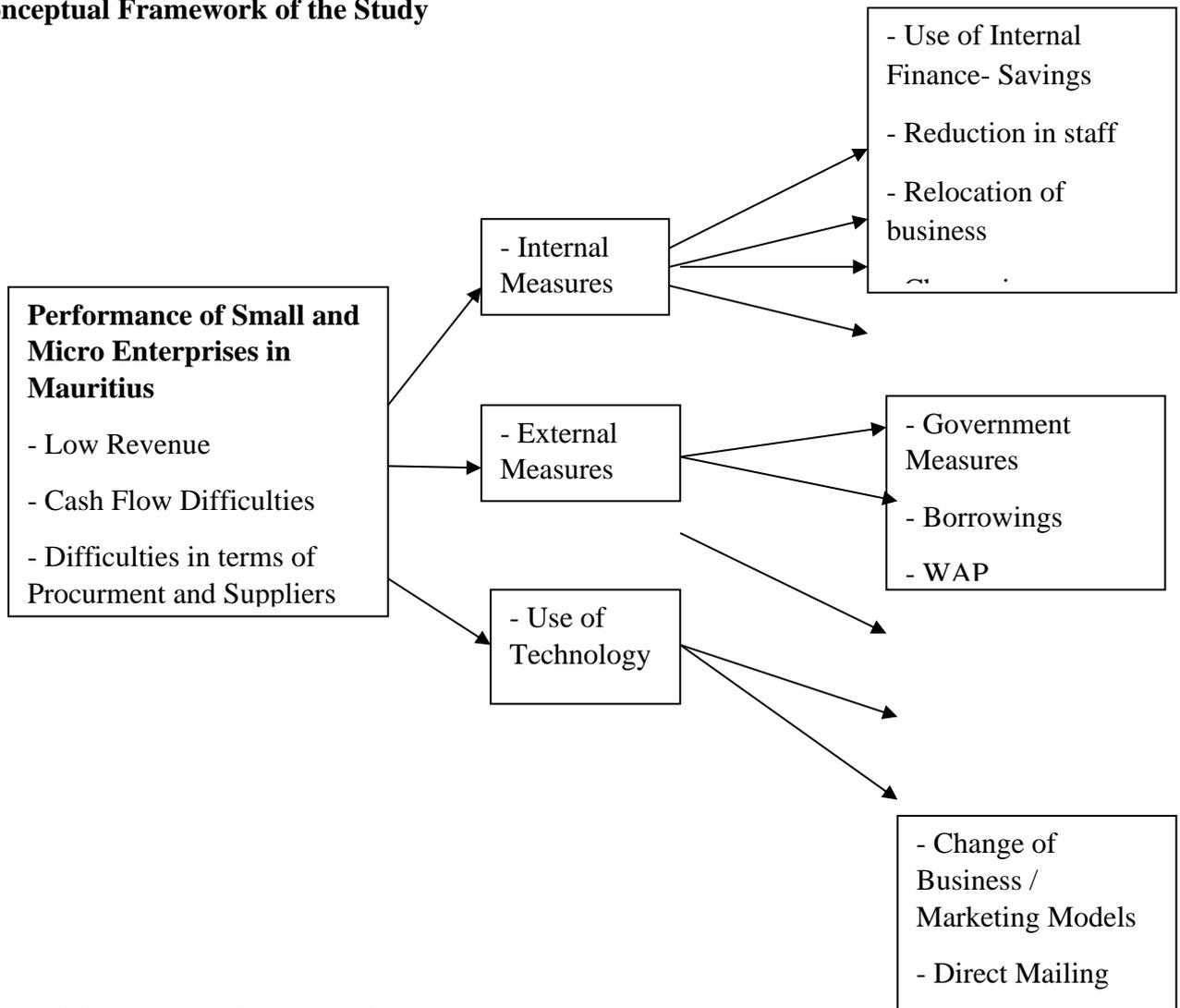
### Description of Population

Purposive sampling was used to choose the sample of individuals to be interviewed and the women entrepreneurs were selected from different operational sectors. The list of women entrepreneurs interviewed is given in table 1 and to keep them anonymous, we have used the term Lady 1 to Lady 20 to describe the 20 respondents participating in the interviews.

**Table 1. Interview Participant Profiles**

Alias	Sector
Lady 1	Hairdresser
Lady 2	Confectioner
Lady 3	Rental of Real Estate
Lady 4	Fruit Seller
Lady 5	Manufacturing
Lady 6	Tourism
Lady 7	Catering
Lady 8	Technology
Lady 9	Hairdresser
Lady 10	Rental of Real Estate
Lady 11	Tourism
Lady 12	Jewelry
Lady 13	Jewelry
Lady 14	Confectioner
Lady 15	Technology
Lady 16	Hair Dresser
Lady 17	Manufacturing
Lady 18	Tourism
Lady 19	Aquarium
Lady 20	Fruit Seller

**Conceptual Framework of the Study**



**Figure 1 Conceptual Framework of the Study**

**Results and Discussion**

An analysis of the influence of Covid-19 on the micro-enterprises managed by women entrepreneurs is undertaken. Subsequently, the measures adopted by the micro-enterprises to counter the negative impacts of the pandemic and enable them to sustain their activities were considered.

***Impact of Covid-19 on microenterprises in Mauritius***

In Mauritius, there were two confinement periods since the outbreak of the pandemic, the first one in March 2020 and the second one in February 2021, and both of these had important consequences on the operations and incomes of micro-enterprises. The women entrepreneurs who were interviewed all acknowledged that the pandemic had a profound and negative effect

on their enterprises. Measures implemented by the Government such as the necessity to have a work access permit to operate also reduced the capacity of certain micro-enterprises to undertake their activities normally during the confinement periods.

The extent to which the micro-enterprises have been impacted also depends upon the industry in which they are situated. It has been found that women who operate micro-enterprises are essentially found in the services sector, for example, retail, hospitality, and in general consumer-facing sectors and these are the sectors that have been most affected by the pandemic (Kevane et al., 2021). For instance, the manufacturing sector, jewelry sector, hairdressing sector, tourism sector, and other services sectors were severely afflicted. Other sectors such as retailing shops, catering or food sector were affected to a lesser extent (Sun. et al., 2021; Sonobe et al., 2021). In Mauritius, it is noted that several of the aforementioned sectors tend to be set up and managed by women. Mauritius being a tourism-dependent country was quite affected by the confinement periods, including travel restrictions. Several micro-enterprises specializing in the rental of real estate (Lady 3 and Lady 10) to tourists have been quite severely impacted. Some of the women entrepreneurs operating within this sector have affirmed the acute difficulties encountered in maintaining their businesses.

The most significant issue faced by most of the micro-enterprises was financial. The micro-enterprises saw a reduction in revenue or a significant reduction in sales. Simultaneously in many instances, they still had rental payments, loan obligations, and staff wages, among other expenses to be effectuated. The lack of cash inflows and sustained expenses had a consequential effect on the enterprises. For example, several of the businesses highlighted the fact that the payments of rent and utilities which represent a significant part of the expenses had become very burdensome, since the outbreak of the pandemic. The two microenterprises maintaining good performances post the advent of the pandemic are Lady 8 and Lady 15, both of them are found in the technology sector. In general with people working from home and children having online classes, the use of technological devices has increased.

Irrespective of the industry in which they operate most of the micro-enterprises have faced a sharp rise in the cost of materials. There has been a depreciation of the Mauritian rupee since the outbreak of the pandemic and due to that prices of goods, in general, have been increasing, for example, in March 2020 a core inflation estimate stood at 1.3% whilst in March 2021 it had

increased to 3% (from Statistics Mauritius). As a consequence of the pandemic, some businesses encountered additional costs for maintaining sanitary precautionary measures, for example at the hairdressers (Lady 1 and Lady 9) more disinfection was undertaken and fewer clients were being allowed at one point in time in the saloons. Further, microenterprises were also affected by difficulties in terms of procurement and distribution of raw materials, as well as other goods used by the micro-enterprises was another factor impeding the activities of the institutions. For example, enterprises importing raw materials from foreign countries had to change their suppliers and focus on local suppliers and Mauritian partners.

### ***Measures Undertaken by Microenterprises in Mauritius***

#### ***Internal Measures***

Most of the microenterprises interviewed have highlighted the cash-flow difficulties encountered during the pandemic period. Many of these enterprises were unable to operate during the confinement period and saw their income level significantly reduced, whilst their expenses remained almost the same. For example, a real estate rental company (Lady 3) that had foreign workers making bookings and deposits found itself in a situation where it had to make repayments. Following the outbreak of the pandemic and the cancellation of the workers' displacement, the repayments led to cash outflows for the company. Rental companies had no bookings during the confinement period, hence no income, but they still had to bear operating costs. Post the confinement, although businesses were allowed to reopen, people's apprehension and only a local clientele with closed borders, led to a lower level of income.

Most of the women entrepreneurs interviewed have acknowledged that they essentially had recourse to internal measures to be able to maintain their activities. An important measure consisted in drawing from the business and personal savings. Other enterprises had to lower the number of staff and depend upon their family members to continue operations at a reduced capacity thereby diminishing staff wages. Moreover, some business owners had no other option than to change their location to another more affordable one (Lady 1); other businesses (Lady 2 and Lady 7) underwent a restructuring for example by reducing the building space being rented, thus decreasing their costs. Additionally, the procurement facility has been amended by favoring Mauritian supplies instead of foreign brands. Those enterprises (Lady 6 and Lady 11) that had been more tourist geared tried to modify their products and adapt to local clients, to subsist.

Most of the women entrepreneurs were reluctant to have recourse to a loan from an external institution, given the uncertainty surrounding the actual situation and the ongoing pandemic. Some entrepreneurs (Lady 3) had recourse to loans from current shareholders and injected their savings to allow continuity in business operations.

### ***External Measures***

One of the principal measures established by the government during both confinement periods is a wage assistance scheme. Several businesses that have an income ranging below Rs50000 have attested that the wage assistance schemes set up by the government turned out to be very useful to allow the survival of their businesses. Cash inflows have been low or null over the confinement period as some businesses could not operate and the help of the government has allowed them to pay the employees. Others, for example, Lady 1 found that the subsequent repayment of the assistance scheme provided was more of a hassle than help for her.

Several other schemes are available specifically designed for SMEs, but these are not commonly used by microenterprises. Either, as they are unaware of the schemes or others could not get access to the schemes. For example, Lady 3 mentioned that she could not use the schemes due to the mode of payment that she was using for making the payments of raw materials used in her business.

Another measure set up by the government was the work access permit (WAP), allowing particular businesses to operate during the confinement period. Most importantly, the WAP has been one of the measures that have enabled enterprises to start their operations again even though at lower capacity production.

### ***Use of Technology***

The use of technology was inevitably one of the main assistance that has enabled some businesses for instance the jewelry sector, manufacturing, and food sector, among others, to continue their operations even during the confinement period. These sectors have opted to change their business models by employing more digital marketing strategies to promote the sale of their products online. The use of social media such as Facebook, Instagram, business websites, online public relations, direct mailing, and blogs has altered the entire course of their business. Some have stipulated that their business has increased in size in a short time compared to before the Covid-19 period. Other applications were also of assistance namely

videoconferencing. In other words, the use of technology has supported businesses in particular sectors to maintain their activities.

### **Conclusion**

This study has focused upon microenterprises run by women entrepreneurs. The Mauritian economy is highly dependent upon tourism and this sector has been significantly affected by the outbreak of the covid-19 pandemic. Many women entrepreneurs operate in the services sector, linked to the tourism industry and the turnovers of these businesses have been drastically reduced. In general, most microenterprises have found a substantial decrease in their income

In general most of the women entrepreneurs have agreed to bring down their standard of living, that is subsist with a lower income and sustain their business operations. They have decreased profit margins upon which they conduct their activities, for example, a lady who has a bakery found the costs of raw materials rising but she has kept the prices of her products almost the same, to maintain her clientele. The businesses of Lady 2 and Lady 3 were set up in the year 2019 before the covid-19 pandemic, they had initially planned to take employees and expand their businesses, but since the outbreak of the pandemic, none of this has been possible.

### **Recommendations**

Some of the women entrepreneurs have a particular permit, allowing them to operate in particular regions. For example, Lady 4 and Lady 20 who sell fruits can do so only in specific regions, and in those regions, there has been a fall in the number of clients. They believe that if the permit could be extended to other regions, this could allow them to enhance their activities.

The growing importance of technology for certain microenterprises, for example, the transition from a coffee shop to online sales by Lady 2, illustrates the importance of providing technological facilities to women entrepreneurs. A sensibilization campaign on the use of technological resources in undertaking businesses should be conducted for women entrepreneurs, they should be made aware of all the online business possibilities available for them. They should also be given grants or subsidies to help them do a transition from a physical business place to an online one.

It has been highlighted that one of the main difficulties faced by women entrepreneurs is that they need to dedicate much time to family duties and the absence or reduced availability of childcare since the outbreak of covid-19 has seen their domestic responsibilities increasing. This has led many women entrepreneurs to shut down their businesses. The use of technology and working from home could help women entrepreneurs to better manage domestic and professional responsibilities (APEC and USAID 2020).

At the moment that the interviews were being conducted, the women entrepreneurs were very concerned, as the recent detection of the delta variant in Mauritius was already having a negative consequence upon their businesses as well as their income level.

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## **The socio-economic impact of Covid-19 Pandemic on the lifestyle of the Elderly women in the informal sector in Mauritius.**

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### **Introduction and Background of the Study**

Primarily discovered in Wuhan, China in December 2019, by March 2020, the World Health Organization declared the Covid-19 a global pandemic, (WHO, 2020). Since the outbreak, as of the 3<sup>rd</sup> January 2021, the WHO (2021) recorded 83,326,479 Covid-19 infections and 1,831,703 people have lost their battle against the virus. The Covid-19 has been disastrous to humanity and it has drastically changed the lives of one and all over the world, (Lebrasseur et al, 2021).

The ravaging effects of the pandemic have already been felt in all countries, including Mauritius. It is a fact that almost everyone believes that elderly people across the globe are at a higher risk of getting contaminated and die from the virus, (Centers for Disease Control and Prevention, 2020; Van Dorn et al., 2020).

Moreover, many elderly individuals are facing economic hardship on a day-to-day basis. Semega et al (2019) affirm that Americans aged 65 years and above live-in poverty and have less money to make ends meet (Mutchler et al., 2019). This situation is particularly applicable in Mauritius where quite a number of the elderly people live in a relatively vulnerable situation. A lot of old people depend solely on the social security benefits (Dushi et al., 2017). Despite the availability of the basic retirement pension, they face difficulties to live decently (Mutchler et al., 2018).

The Covid-19 pandemic has exacerbated abysmal economic disparities leaving people living at the bottom of the social ladder embittered. As the pandemic hit Mauritius, many older adults had to bear their own medical expenses as they could not go to the government hospitals due to fear of contamination, (Cubanski et al., 2014). With the rapid spread of the infection, food price went up, forcing people to stretch their already limited resources. The Government of Mauritius ensured that all retirees were paid their pension money on time. On the other hand,

the Ministry of Health and Wellness has vaccinated almost all the elderly people against the flu through mobile caravans across the Island.

Baker et al (2019) attest that the elderly women are more at risk of financial instability as compared to older men. Hence, many older women turn towards the informal sector to be able to sustain themselves and their livelihood. Such is the case for Mauritius where many elderly women are found in the informal sector to maintain a decent lifestyle for themselves and for their families.

### **Rationale behind the study**

There is a paucity of research on repercussions of the Covid-19 pandemic on the lifestyle of elderly people, more unequivocally on the lifestyle of elderly Mauritian women working in the informal sector. Through this research, we intend to bring forward the experiences of older entrepreneurs during the pandemic. The information received will make some contribution, however little it may seem to be, to the body of knowledge pertaining to the socio-economic impact of Covid-19 Pandemic on the lifestyle of the elderly women in the informal sector. Besides, the new information and knowledge received will help the authorities to devise new policies aiming to improve the quality of life of the older women entrepreneurs of the informal sector.

### **Purpose of study**

The aim of this study is to take stock of the socio-economic impact of the Covid-19 pandemic on the lifestyle of the elderly women in the informal sector. The objectives are to understand the problems encountered by the elderly women during the Covid-19 pandemic, the challenges they face and how they coped with them. The research study also lays emphasis on the expectations of the elderly women entrepreneurs from the government authorities to remedy their situation and also how they develop resilience during the pandemic era.

### **Women in the informal sector in Mauritius**

An important study done by Tandrayen-Ragoobur et al, (2020) in collaboration with the Economic Development Board on the 'Impact of Covid-19 on Trade, FDI and Employment in Mauritius' demonstrates the negative economic impact of the Covid-19 on the Mauritian economy. Based on this study, we can understand that even the elderly women of the informal sector had to bear the disastrous impact on their small scale business activities. Kasseeah et al (2014) in their paper, "Women in the informal sector in Mauritius: a survival mode", state that unemployment is a major factor that pushes people towards the informal economy. For women,

in order to generate a source of income, they tend to work as street vendors, hawkers or home workers, which consequently put them at high financial, social and health risks. When applied to the older people, we find that a number of older women are found working as vegetable sellers, merchants, vendors in markets, dealers in small clothing businesses and fruits selling activities, amongst others.

### **Socio-economic impact of the Covid-19 pandemic**

While the lockdown has saved countless of lives, it had caused relentless economic damage. Yet, despite of this worldwide economic downturn, the Covid-19 pandemic also had a profound social impact on people in the world. Many studies have directed their focus on the impact of social disconnectedness and isolation among older adults, (Chemen and Gopalla 2021). Valtorta and Hanratty (2012) describe social isolation as “the lack of contact or physical separation from family and other social networks as well as the lack of involvement in social activities”. When the pandemic hit, many countries have strictly imposed lockdowns and quarantines to stop the transmission of the virus. This has generated a situation where older adults have lost their closed social support networks.

Many have not been able to engage in their regular social activities. Chemen and Gopalla (2021) attest that this lockdown may have an enduring impact on the social life of older adults.

The elderly people are extremely vulnerable to Covid-19 virus. Qiu et al (2020) assert that the pandemic has augmented psychological distress among the old. In addition to, such social disconnectedness is harmful to the health and wellbeing of the elderly, (Santini, Jose, & Cornwell, 2020). Morley and Vellas (2020) argue that people living in social isolation are more at risk to develop depression, cognitive dysfunction, disability, cardiovascular disease and increased likelihood of death.

### **Methodology**

The researcher opted for a qualitative approach with in-depth interview to understand the socio-economic impact of Covid-19 on the lifestyle of 18 elderly Mauritian women entrepreneurs in the informal sector. The author tried to comprehend the meaning behind these experiences from the elderly women’s point of view. The research interviews started in July 2021 and ended in October 2021.

The author made use of a blend of two types of sampling methods: convenience and snowball sampling. The participants were recruited based on 2 main criteria: They are retired and

belonged to the age group category of 60 to 75 years old and despite being retired they are still economically active in the informal sector.

The researcher opted for an in-depth narrative approach through face to face in 14 cases and telephone conversation in 4 cases. The respondents were gently asked to describe the challenges that they faced during the Covid-19 pandemic, how they coped with the difficulties and how they mitigated them, how they developed resiliency and what were their expectations from the authorities in order to have a better livelihood. Most of the interviews were audio-recorded with the consent of participants. The researcher also took notes during the interview. Each interview lasted for about 30 minutes to an hour. The interviews were conducted in Creole language and translated into English for analysis purposes. Some of the Creole elements have been kept to ensure that no meaning was lost during the transcription process. In many cases, the researcher had to probe in order to get deeper information.

### **Research Findings**

The data received from the 18 respondents have been classified under three themes: 1) *life story*. This part deals with the background information of the respondents. 2) *How the respondent dealt with the pandemic?* This section contains information on how the elderly women coped with the pandemic; what challenges they encountered; and lastly how they tried to mitigate the impact of covid-19 on their livelihood. 3) *Expectations and Aspirations*. This part deals with what they think the authority should do to help elderly women entrepreneurs during the pandemic.

### **Classification of the responses of the 18 elderly women under three themes:**

#### **1. Stella**

##### ***Life story: background***

Stella has become a gardener after retiring from the public service 3 years back. She was a school caretaker for almost 40 years. Stella spent her life caring for her siblings. To devote most of her care to her siblings, she chose not to get married.

##### ***How she dealt with the pandemic?***

When the pandemic first hit China, Stella argues that she was absolutely clueless about the disease. When it hit the Mauritian soil, she was extremely panicked. She stated, “*Ayoo mama*.

*Kan nou in koner ki sa corona la kav touye dimoune aussi vite kumsa, mo bane frere et ser dir moi pa sorti ditou. Moi aussi mone extra per. Mo ress extra pres r mo l frere. Kuman lin koner ki ki bane problems bane chinois p fer face, et ki vitesse sa maladie la p faner, lin fini aster extra beaucoup manger pour moi.”*

Stella implies that her brother bought a stockpile of food for her so she did not have to leave her house. The only challenge that she had to face was to find ways to be active during lockdown. She was afraid to go to the garden which was nearby. She was so scared of the virus; she did not even go into her yard. Staying in lockdown had a negative impact on her mental health. She missed going out and talking with her friends. Stella feels grateful for her mobile phone. Every day, she used WhatsApp to video call her friends and family members.

However, she was happy that she could donate most of the vegetables she planted to her friends in the neighborhoods. She called a few and gave them the permission to pick up vegetables from her garden. She shared that during such a difficult time she could not see others without food.

### ***Expectations and aspirations***

Stella was happy that the government paid her pension money at home. She suggested that it would have been better if the government could set up a free hotline to enable the older people to voice out their needs especially for those who live alone or those who have been rejected by their family members.

### ***Indrawtee***

#### ***Life story: background***

Indrawtee is a widow and she avers that she became a cake seller after the death of her husband few years ago.

#### ***How she dealt with the pandemic?***

For Indrawtee, the pandemic took her life downhill. In her words, “*Avan Covid mo ti p travaille. Mo ti ena assez cash pour mo aster mange e osi banne materiaux pou fer gato. Kan in gagne confinement Maurice, mone bizin servi tout mo ti l’economie pour aster mange e medicine. Mo pension pas assez. Avec sa pandemie lah mo business fine tombe net e mo retrouve moi en pauvrete”*

She implies that before the lockdown she had enough money to make both ends meet and buy raw materials for her cakes. When the pandemic hit, she had to use her savings to buy medicines. Her pension money was not enough.

She had to rely on the financial help from some relatives during the pandemic period. She stressed on the importance of maintaining good social relationships with the neighborhood.

### ***Expectations and aspirations***

She wants the Government to increase the basic retirement pension.

### ***Naziah***

#### ***Life story: background***

Before she got married, Naziah was working as a shop assistant. After retirement, she started babysitting small children in her neighborhood. During pre-pandemic times, she used to look after 4 small children. During pandemic, she stopped receiving children at her place. Her income went down and she felt stressed as she could no more stay active.

#### ***How she dealt with the pandemic?***

Naziah was really sad. She was so depressed and never left her room. Her husband brought a puppy at home. Now, she is with her puppy and she feels her happiness coming back again.

### ***Expectations and aspirations***

She does not have much expectation from the authority. However, she wants the government to help the elderly entrepreneurs in the informal sector with a scheme where they can get some money to compensate their loss of income. She was happy that government came with few schemes but she could not benefit from it as she was a pensioner.

### ***Lee Yan***

#### ***Life story: background***

Lee Yan's husband passed away 2 years ago. Ever since, she works in her shop.

#### ***How she dealt with the pandemic?***

When asked how Lee Yan dealt with the pandemic, she replied "it was the most stressful time of my life." The way she operated her shop changed drastically. She attests, "*Sak fois clients vin kot laporte la boutique, mo per. Mo ress plis loin ki mo kav r dimoune la. Et sak 3 heures temps mo ale baigner et change tou mo linz. Mo senti moi une personne differente net. Aussi*

*chance mo ena la boutique, mo in resi furni mo la famille manger kan pa ti p kav ale supermarcher. Mone fer beaucoup donation manger durant sa period la. Et mo sure ki mo misier Christophe p get moi depi le ciel et li content ki mo p fer.”*

She implies that each time clients were at her door, she felt scared and tried her level best to practice social distancing. Every 3 hours, she takes a shower to sanitize. She feels like a completely different person. Lee Yan feels grateful that she has been able to provide food supplies to all her family, especially during times when it was difficult to go to supermarkets. She also gave a lot of food donations. She is certain that her late husband is proud of her.

She had some regrets when she could not go to Port-louis to take the perishable products which she imported from Malaysia. The lockdown was announced and she could not leave her place to travel. The loss caused her a lot of stress.

### ***Expectations and aspirations***

Lee Yan claims that the government needs to conduct more research on the life of elderly women entrepreneurs. The elderly women have a lot to offer to the population and the government needs to ensure that they live well after this pandemic.

### ***Christabelle***

#### ***Life story: background***

Christabelle has been a street vendor, selling all types of clothes and fantasy jewelries. She puts forward that she lives in constant fear of catching the virus since the outbreak of the Covid-19 virus.

#### ***How she dealt with the pandemic?***

She claims, *“Zis Jesus koner comier mizer mone passer aköz covid. Mo frere, soeur et toute la famille koter mo mama in gagne covid. Mo ti dans 1 situation extra compliker. I koter mo pa ti p gagne travaille aköz pa gagne droit a dehor. Depi covid, mo fer boucou plis lapriere e Bon dieu aide moi gagne courage e lenergy pou combat tout problem.*

She means that only Jesus is aware of her miseries that she went through due to Covid-19 pandemic. Her whole family got infected with the virus. She was in a terrible situation as her sale fell down. She spent most of her time praying to God to give her strength so that she can overcome this difficult phase. Fortunately her faith in God is helpful as she gets a lot of courage

and energy to cope with the unbearable situation. She also shared as to how the Police Officers often forbid her to do her business at the Flacq market during Sundays.

***Expectations and aspirations***

Christabelle wants the Government to give her the right to operate freely as they do not cause any problem to the society. Instead she says, she sells the product at reasonable prices and her customers are always happy. She likes to stay active and work but the police officers often cause disturbances which affect her psychologically.

***Nathali***

***Life story: background***

Nathali describes how poverty forced her to start operating as a street hawker and also planting some vegetables at home for both consumption and selling the surplus. The pension money is not sufficient for her to look after her family. She has a child who needs constant care because of a permanent disability.

***How she dealt with the pandemic?***

Nathali claims that she is a forward-looking person. Whenever she goes to the supermarket, she shops a maximum amount of food items. When the pandemic hit, she was not that scared. She already made provision for an additional month of food supply. However, she faced the challenge of buying medicine for her child. During the confinement, certain medicines were not available and the prices of most drugs were increased tremendously. Given that she was no more able to get additional revenue as her work was affected, she faced a lot of financial constraint to care for her child properly. Fortunately, the neighbours helped her to deal with the difficult situation.

***Expectations and aspirations***

Nathali's expectation is simple. She wants the Government to increase the pension and also allowing the elderly women entrepreneurs to work without any interference from the authority.

***Dina***

***Life story: background***

Dina did not speak much on her life. She lost her husband last year during the pandemic due to the Covid-19. Ever since the death of her husband, she has faced considerable amount of stress.

***How she dealt with the pandemic?***

She is still in shock that her husband passed away. She spent most of her time crying and praying. Their small business of selling pastries and juice have been affected as she did not have the courage to continue the work. However, her faith in prayer and in God has given her the courage to keep the business going despite the fall in sale.

***Expectations and aspirations***

Dina expects the authority to write the loan that her husband took to improve the business two years back. She got notice to pay back the loan or else she would be sued. She has also received a notice from the MRA department to settle an amount due.

***Jessica***

***Life story: background***

Jessica works with her husband. Together they own a restaurant. Her husband is a cook. She assists him in the kitchen.

***How she dealt with the pandemic?***

During the pandemic, she had to throw a lot of raw materials to prepare food for the customers as the restaurants was closed for months. Besides, the spices that she imported from India perished as she could not collect them back on time due to the lockdown.

Sadly, she had to fire two of her workers as the restaurant could not make provision for their payment in time. Keeping the workers would have put a lot of financial strain on the restaurant.

***Expectations and aspirations***

She has been complaining about all the miseries that she had to face and she knows that many other elderly women are suffering from the negative impact of covid-19. She would be happy if the Government could conduct research on them and implement new policies to ease their livelihoods.

## ***Meera***

### ***Life story: background***

Meera describes herself as the ‘friendly neighborhood grandma’. She runs a hair salon in the town. Her husband is fully supportive and helps her clean her salon every day.

### ***How she dealt with the pandemic?***

Meera disclosed that prior to the pandemic, she never used to save money. She and her husband lived a rather comfortable life. During the pandemic, she had to close her salon for months. This resulted in some economic hardship. Fortunately, her children helped them financially and provided them with the basic necessities. Nevertheless, she said that the pandemic period has disturbed her pleasant lifestyle. Now she lives in distress and has become a victim of regular mental illness. She finds it difficult to face the challenges of living decently with this covid-19 pandemic. Although the children help her yet she feels completely discouraged in life.

Her level of anxiety causes her a lot of problem to get back stability in life. She found it very discouraging when she was refused the wage assistance scheme as she is already a pensioner.

### ***Expectations and aspirations***

Meera believes that the government has put interesting financial schemes to help entrepreneurs but such schemes do not take into consideration genuine cases of informal elderly entrepreneurs who cannot claim for any money when the revenue of their businesses fall. She believes that the authority has to make the necessary amendment to the schemes enabling all elderly entrepreneur to benefit during difficult times like the Covid-19 pandemic.

## ***Kamlawtee***

### ***Life story: background***

Kamlawtee is a cake seller. She sells fried cakes such as ‘samoussa’, ‘bhajia’, ‘gato piment’ in front of a bakery in her locality.

### ***How she dealt with the pandemic?***

She argues that the pandemic has caused a lot of stress to her. Her children are frontliners and, she lives in constant fears.

She prays a lot for the safety of her family. Although her small business was affected, she did not face much economic hardships. Her children provided her with everything she needed.

### ***Expectations and aspirations***

She expects that the authority needs to implement some courses on how to use the computer and the smart phones, enabling the informal elderly women to continue their business like home delivery through online contact.

#### ***Shalini***

##### ***Life story: background***

Shalini defines herself as a woman entrepreneur. She has an enterprise where she makes and sells pickles. She has employed 5 women in her business.

##### ***How she dealt with the pandemic?***

The pandemic has been damaging for her enterprise. During lockdown, a very important machinery had stopped functioning. She experienced a lot of financial loss during the pandemic. Fortunately, she had some money saved to pay her workers for two months.

She had to take loan from the Development Bank of Mauritius to purchase new machineries and equipment to continue her business. She added, “*mone priyer beaucoup*”. It means that she prayed a lot. Her faith in God kept her going.

### ***Expectations and aspirations***

She wants the authority to help the elderly informal entrepreneurs market their products more effectively.

#### ***Suzanne***

##### ***Life story: background***

Suzanne was very brief about her life. She works as a goat breeder. She had 5 adult goats and 6 baby goats.

##### ***How she dealt with the pandemic?***

She attests that she lives in a very close-knit community where her neighbors are her relatives. She added, “*nou tou in passe dans 1 period extra difficile kot arriv tento pas koner ki pou manger. Mo remercie Bondieu pour mo bane famille. Sans zot, nou ti pou vive sans manger. Nou tou in maryer piker ensam dans sa pandemie la. Saken p partage bane lesgumes et fruits ki zot ena dans zot jardin. Nou tout ti bien souder. Sa covid la in renforci nou lamitier entre famille. Covid in montrer nou l'importance famille.*”

She implies that she and her family went through an extremely difficult phase during the pandemic where they did not know what to eat for dinner. She thanks God that she lives in a good family where there is a lot of cooperation and social solidarity. The pandemic has strengthened the ties between her and her other family members. Covid-19 has taught her the importance of family members.

The only challenge she had to face was to find feed for her goats. Besides, she was shocked when 4 of her goats died due to improper nutrition and sudden illness. She could not reach the veterinary during the pandemic. She suffered a lot after the death of her beloved animals.

### ***Expectations and aspirations***

She wants the government to put a hotline where an entrepreneur like her could call and get the necessary assistance.

### ***Hima***

#### ***Life story: background***

Hima started her masala-making business at home in her small kitchen. As her business grew, she employed 3 other women.

#### ***How she dealt with the pandemic?***

When asked how she dealt with the pandemic, she said, “*mo ti telman stresser ki mone tombe dans depression. Nous business ti p aide nou beaucoup. Kan in gagne pandemie, nou ti fini prepare 1 extra grand stock masala pour livrer. Tou in ress kumsa mem. Mo atelier trouve dans 1 l’endroit extra humide. Tou masala in gater. Noune bizin zet tou.*”

Hima stated that she was very stressed out and was feeling depressed during the pandemic. Before the pandemic hit Mauritius, she had already prepared a large amount of ‘masala’ to sell. She could not sell anything. Her small factory is situated in a very humid area. During the lockdown, all of the ‘masala’ got spoiled and had to be thrown away. She faced a lot of financial loss. For a few months, she survived the retirement pension. The only challenge that she had to face was to arrange money to pay her workers during lockdown. She had to use the past savings to pay her 3 employees despite the loss of sale.

### ***Expectations and aspirations***

She did not have much expectation from the government. Nevertheless, she would be happy to see if the authority could provide them with some proper storage during such period in the

future. The government could even provide them with appropriate duty free machines enabling them to properly store such perishable products.

### **Mary**

#### ***Life story: background***

After retirement, she started selling dholl puri in the locality.

#### ***How she dealt with the pandemic?***

Mary stated that the pandemic affected her small business as she could not work at during that period. Customers were reluctant to buy street food. Besides, she and her husband were victims of the Covid-19. In the village everyone came to know about it. Although they are completely recovered yet the taboo that that they got the virus still impact on their business. In the village, they lost most of the customers and their business have been negatively impacted.

Mary has suffered from a high level of stress and she has not recovered from such a psychological trauma. She has developed certain fears after contracting the virus. Fortunately, her strong faith in God has helped her to continue facing the challenges.

#### ***Expectations and aspirations***

Mary averred, “*Nou bane vie madame, noune contribuer beaucoup pour development sa pays la. In arriv ler pour ki zot fer kitsoz pu nou aussi.*” She points out that older women have contributed a lot to the development of the country. It is time now for the authorities to do so for us enabling us to continue being active and live a decent working life

### **Lolita**

#### ***Life story: background***

Lolita has a small business where she herself manufactures artisanal jewelries which she sells at the market in Port-Louis.

#### ***How she dealt with the pandemic?***

She puts forward that life was not that easy before Covid-19 and it got worse afterwards. Her business was affected as all the activities had to be stopped. She was really depressed. Her past savings helped her and her family through that bad time. Nevertheless, her constant prayer to God gave her some form of solace that better days would come back soon.

***Expectations and aspirations***

Lolita wanted an additional allowance be offered to the older entrepreneurs facing difficulties during the pandemic period.

***Megan***

***Life story: background***

Megan is a street vendor. She proudly states that she sell hair ties and belts.

***How she dealt with the pandemic?***

Megan found herself in extreme poverty during the pandemic. She did not have enough food to eat on some days. She used her pension money to pay rent. She did not have much money to spend on food. She survived on the bare minimum. She became depressed because of the lockdown. She started to spend most of her time praying.

***Expectations and aspirations***

She simply wants the Government to increase the basic retirement pension.

***Devi***

***Life story: background***

Financial hardship compelled her to become a caregiver. She was providing assistance to an 80 years old lady in her neighborhood before the outbreak of the Covid-19 pandemic.

***How she dealt with the pandemic?***

With the lockdown, she had to stop working. Unfortunately, she got infected with the virus. Her whole world turned upside down when she tested positive. She developed a really bad cough and fever. Despite being sick, she did not lose courage to fight back the illness, she prayed a lot and she had to care for herself during that period as no one was willing to approach her. She proudly says that she learned to be resilient and developed strong self- confidence during the period of loneliness. *“Mo remercie bondieu beaucoup,” that is, she is thankful to God.* Now, she has recovered and she has a strong resilient nature and she is no more afraid to face any difficulty in life. She has decided to take up another entrepreneurial job in the near future.

### ***Expectations and aspiration***

She expects that the Authority comes up with more friendly approaches to register the elderly women entrepreneurs and provide the latter with all skills and information to carry out their entrepreneurial job effectively.

### ***Fang Na***

#### ***Life story: background***

Fang Na did not give much details about her life besides of being a florist.

#### ***How she dealt with the pandemic?***

This pandemic gave her a lot of stress. All of the flowers she had in stock died as no one was willing to purchase them. On top of that, she had to pay money to various suppliers. The lockdown caused a massive financial loss to her. Until now, she has not yet totally recovered from the shock due to the sudden lockdown which made her lose a large amount of her savings.

### ***Expectations and aspirations***

She wishes that the government assists the informal elderly entrepreneurs financially.

## **Analysis and Discussion**

This study explored the lived experiences of elderly Mauritian women in the informal sector, regarding the socio-economic impact of covid-19 pandemic on their lifestyle. The analysis and discussion have been done under the following 4 main themes: 1) *challenges faced by the elderly women* 2) *their coping strategies during the pandemic* 3) *resilience among the old women* and lastly 4) *Policy implications to support the elderly informal workers*.

### **The challenges faced by the elderly women**

Local and international news channels unremitting reports on the novel coronavirus have heightened people's anxiety about the virus's high transmission and mortality rates, (Lin, 2020). Individuals were extremely concerned about their own health and survival as well as the health of their family members, (Brooks et al, 2020; Mertens et al, 2020). The fears of the Covid-19 pandemic were visible in almost all the respondents. The statements provided by respondent Kamlwawtee "*The pandemic stressed me out. My children are frontliners*" and Lee Yan, who mentioned, "*each time I saw clients at my door, I was more scared for my*

*health*”, show clearly the extent to which the older entrepreneurs were concerned about the negative impact on their health and that of their families.

The pandemic also spawned the fears of job loss, unpaid debts and career breakdowns, (Trzebinski et al, 2020). Among the elderly women, Fang Na found herself in an increasingly tough period where she had to pay back many suppliers: *“This pandemic gave me a lot of stress. All of the flowers I had in stock died as no one was willing to purchase them. On top of that, I had to pay back many suppliers. During this bad time, everyone needed money to survive, I had to utilize my small savings to pay them. The lockdown caused a massive financial loss to me”*. She had to face the challenge of meeting the cost despite a fall in her business.

A study by Wang et al (2020) adduced that the women were more stressed, had higher anxiety level and were more depressed during the initial flare-up of the virus. The findings of the research done by Wang et al (2020) can be reflected in Mauritius where many women in the study reported having a higher psychological impact from the lockdown and the virus. Respondent Hima stated that, *“I was stressed out and was feeling depressed”*.

Few elderly entrepreneurs faced the difficulties of making provision for sufficient amount of food during the lockdown. With the fall in revenue, few of the respondents could not afford to purchase food. Fortunately, the government and the people of Mauritius ensured that all the vulnerable people get something to eat. The evidence provided by respondent Christabelle, *“I received food packs from the Government,”* shows that during the pandemic, the Authority acted in a caring way.

### **Their coping strategies during the pandemic**

The research findings show that the informal entrepreneurs had cope with the pandemic and they are still doing their best to come out of the difficult time. Respondent Indrawtee stresses on the importance of maintaining good social relationships with the neighborhood shows clearly that coping in difficult moments requires cooperation and social solidarity. The Mauritian people have a long history of helping each other during difficult times. We have seen such solidarity among the different ethnic groups and social classes during the flash floods where all the population act as good patriots and provide all forms of help to their neighbours. From those research findings, we find the kindness and compassionate nature of several older women entrepreneurs.

Respondent Stella allows the neighbours to take vegetables from her garden and Respondent lee Yan donated food and other materials to both relatives and neighbours to be able to cope

with the problems encountered by people during this pandemic. The older women entrepreneurs have a lot of kindness and compassion and they demonstrated their empathy to all the vulnerable people allowing them to cope with the pandemic.

### **Resilience among the elderly women**

It is a fact that women have inborn caring attitudes. During the lockdown, they had to juggle between various roles. From the research findings, it is evident that elderly entrepreneurs have a high level of resiliency and they could face the unprecedented problems. Research has shown that there is a strong link between spirituality and resilience (Sharma et al, 2017). The argument of Respondent Christabelle demonstrates that spirituality and trust in God are helpful during critical moments of life. *“Only Jesus is aware of the miseries that I went through due to Covid. I spent most of my time praying to God to give me strength so that I can overcome this bad phase”* stated Christabelle.

Le et al, (2019) have found that spirituality has a positive impact on successful ageing where it increases tolerance to psychological and physical stress. The more the person is spiritual, the better she can cope with illnesses and isolation. Developing spiritual resilience can psychologically uplift a person when she is challenged with major life events and in this case the pandemic, (Seiler and Jenewein, 2019). During this difficult period, most participants in this study have demonstrated faith and trust in God to remedy their situations. Their faith in God helped them to deal with the pandemic situation. The statement provided by Meera *“I knew that He would set everything right very soon”* shows the amount of positive thinking she had during such a difficult period. From the findings, we observe that the majority of the respondents turned to God and relied much on prayers to become resilient and develop strong self-confidence to face the pandemic.

### **Policy implications to support the elderly informal workers**

The experiences of elderly women show that their work make genuine contribution to the Gross Domestic Product, but such a socio-economic contribution is overlooked by the Authority. Consequently, appropriate measures need to be undertaken to correct the existing weaknesses in the system and, relevant actions need to be initiated to further improve the livelihoods of the elderly women entrepreneurs of the informal sector. From the research findings, we come to the conclusion that the following measures, if taken by the government, would be helpful and effective for the elderly women entrepreneurs of the informal sector:

1. The setting up of a free hotline by the Government. This hotline could help the old women feel heard, especially those ones who have been rejected by their family members.
2. The Authority needs to have a Desk to capture all information on the number of elderly women in the informal sector. Women should be invited gently to subscribe their names with the legal guarantee that their basic retirement pension will not be touched when they are continuing to work in the informal sector. On the other hand, the government needs to provide such a category with all the facilities and required licenses, free of charge, to continue to operate.
3. The Authority needs to provide psychological and moral support through phone and WhatsApp videos calls to the distress elderly entrepreneurs who suffer from anxiety and other related mental stress due to the on pandemic.
4. The Authority needs to set up appropriate digital course to teach and equip the informal elderly entrepreneurs with information and technological education on how to use the smart phones and computers to continue their businesses and keeping their account more professionally.
5. Research funding be made available to Universities to carry out further in-depth studies on the informal sector to understand the constraints and difficulties encountered by the elderly entrepreneurs. The research findings will serve the purpose of developing effective policies to enhance the livelihoods of the elderly women entrepreneurs.
6. There needs to be exemption of tax on the revenues obtained by those who work in the informal sector in order to enable them to continue being active and making their enormous socio-economic contributions to the family and society.

## **Conclusion**

This study demonstrated various riveting results where the researcher looked for different experiences on how the pandemic socio-economically impacted the lifestyle of the elderly women. It could be observed, amongst others, that the Mauritian elderly women are extremely resilient. The research findings show that the excruciating experiences undergone by the respondents through this pandemic have made them become more self-confident and resilient to cope with unexpected negative consequences in life. The strong social bonds among the population are clearly visible in the survey when the elderly respondents demonstrated their empathy, through distribution of foods and other necessary materials to other most vulnerable

counterparts in the neighborhoods. The study also brings forward the daily struggles of those women in such an unprecedented time. It also demonstrates how fear and stress caused by the covid-19 pandemic led to strengthening the spiritual resilience among the elderly entrepreneurs. This research supports the need for further research on the socio-economic impact of the covid-19 on the lifestyles of elderly women in the informal sector in the whole country. Rather than generalizing older people's lived experiences of the pandemic, this research illustrates how living in a country with a high level of tolerance and stability are beneficial to the population during difficult times. The experiences of these informal workers during their advanced age show clearly that Mauritian women have a likeliness for being active to continue to contribute for the socio-economic progress of the family and the country. Consequently, the authority has to be just to play its role to sustain the livelihoods of the elderly women entrepreneurs in the informal sectors through the development of appropriate and relevant strategies to support them to continue in their endeavors.

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**Empowerment of Mauritian Women Entrepreneurs in the Wake and Beyond the Covid-19 Pandemic: A Critical Investigation of Covid-19 ‘Womenpreneurs’ experience of Covid-19 and the Existing Challenges and Opportunities in a Covid-19 New World Order: The Case of Mauritius**

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**ABSTRACT**

It is now trite knowledge that the Covid-19 pandemic has had an undeniable impact on all sectors of life and the economy, locally, regionally and internationally; at all levels of government; in cross-cutting areas; and that there are signs that we have still not borne the full brunt of the ramifications of such an unprecedented global pandemic. While demands and supply chains have been massively disrupted, airplanes have been grounded to an abrupt halt; the rate of unemployment has drastically shot up not only in Mauritius, but within SIDS, the African continent, and also worldwide. Mauritius women entrepreneurs have undoubtedly been impacted too, but there is scant literature on the magnitude of the challenges they have had and continue to face; the crisis management in terms of juggling their gender-stereotyped role as wives, mothers, daughters and also more importantly as the ones bringing financial revenue home to run the household and support their male counterparts. This research aims to conduct a review of existing literature on the topic at hand, highlight the gap in terms of research in this very crucial component of entrepreneurship within MSMEs in Mauritius, especially from a gender-lens, which is wholly different from the male-centred perspectives. The authors aim to assess critically the measures taken by ‘womenpreneurs’ at the beginning of the pandemic, the challenges they experienced from a financial, social and well-being perspective; and more crucially how they have managed to adapt and be resilient at the height and beyond the Covid-19 pandemic. The authors will also critically assess the fiscal policies and the holistic support which have been developed by the Mauritian authorities (through an overview of the Covid-19

Amendment Act 2020), such as deployment of stimulus packages, flexibility and extension provided to MSMEs led by women, in terms of loan reimbursement. The research methodology which will be used will therefore be the Black Letter Law and the social-legal research method. Finally, the authors will propose recommendations to the Mauritian government, as well as the women-led MSMEs in the identified sectors.

**Keywords:** entrepreneurship, MSMEs, gender empowerment, Covid-19, WTO, impactful, interdisciplinary, SDGs 1, 2, 3, 5, 8, 10, 11, 13, 14, 15, and 17

## **Background**

### **The Economic Implications of the Covid-19 Pandemic**

The Covid-19 pandemic has had unprecedented impacts on all aspects of life throughout the globe, and especially on the economic and social fronts. Maliszewska et al. (2020) identified that the pandemic affected the economy through the following gateways: the direct effect of a reduction in employment; the rise in international transaction costs; the sharp decline in travel, and the dwindling in demand for services requiring proximity between people. Developed and emerging economies both felt the brunt of the Covid-19 crisis, with unmatched disruptions (Baldwin and di Mauro, 2020) in economic activity from March 2020 until now, as countries experience third, fourth and fifth waves of the pandemic. The IMF reported that the fall in the trade of goods and services were much higher than that during the 2007-2008 global economic downturn (IMF, 2020). There was a recorded 3.5% contraction in global trade in the second quarter of 2020, mainly as a result of weak demand and supply. To make matters worse, there was an estimated loss of 300 million full-time jobs in 2020 (IMF, 2020). Elsewhere, the World Travel and Tourism Council (WTTC) (2020) estimated a decline of 25% in global travel in 2020.

At the time of writing, in November 2021, a new variant of Covid-19 has been detected in parts of Southern Africa, Brazil, and Europe: the Omicron variant (CNN, 2021). While borders had started to open up in many parts of the world (New York Magazine, 2021), with travel resuming at a positive pace (WTTC, 2021) and the global demand and supply of goods and services also registering a marked increase (WEF, 2021), the presence of the Omicron variant has created tremors across the world, as countries scramble to close their borders to select countries where the variant has been spotted. This is, in turn leading to further dips in travel, havoc in supply and demand chains, and loss of employment across sectors in many parts of the world.

### **The Rise of Entrepreneurship in the Wake of Covid-19**

What is interesting to note, however, is that in the midst of the above raging and ongoing crisis, and while there has been a marked increase in unemployment in most countries during the pandemic, there has also been resilience in the face of adversity, which has been demonstrated by a new breed of entrepreneurs, who have seen the Covid-19 pandemic as not merely a challenge, but through the lens of opportunity. Entrepreneurship is not only essential in times of crisis as it provides a positive outlook to a new and harsh conditions (Ratten, 2021), but it allows business people to use crises to come out of tough economic situations in the spirit of innovation and resilience. The Covid-19 pandemic has confirmed in many ways, Charles Darwin's theory (Darwin, 1859), which posits that in times of great change and perturbation, only the fittest survives, or the ones which are the most adaptive to change, and this can be applied only too well in the business world. The economic and societal shifts caused by Covid-19 provide opportunities for business people who have the entrepreneurship mindset, allowing them to achieve growth and competitiveness.

With sustained entrepreneurial efforts, Anggadwita et al (2016) suggest that economic growth can be engendered in vibrant but fragile economies and it necessary and required. Since last year, small businesses across the world and in different industries which have been severely impacted by the Covid-19 sanitary crisis, such as tourism, travel, retail and manufacturing (Ratten, 2021), have had to rise up to the challenges brought about by the dire financial implications of the pandemic, displaying business acumen, leadership, foresightedness, resilience and adaptability (Kuckertz, 2020). Government action has quickly followed to provide support to MSMEs, with burgeoning and innovative plans for existing or newly set-up businesses, such as low interest or interest-free loans, re-skilling and re-training opportunities for MSME staff, wage assistance schemes, as well as tax breaks for these type of businesses. In India, for example, new MSME policies have been rolled up by the Government, to assist small businesses struggling in the wake of the Covid-19 pandemic (The Hans India, 2020). These policies have no doubt contributed to re-build the trust of Indian small businesses and start-ups. In the US, there is the availability of government aid to MSMEs through the Coronavirus Aid, Relief, and Economic Security (CARES) Act.

### **The Impact of the Covid-19 Pandemic on Entrepreneurs from MSMEs in Mauritius**

Mauritius had been warned (Daily Maverick, 2020) that in the wake of the Covid-19 pandemic, its business as usual stance would be under threat and that Mauritius would have to prove itself

as being agile in adapting to this new Covid-19 world order. Indeed, while the Mauritian government has been keen in fortifying existing economic sectors, it has also been open to forge niche sectors, and also empower Mauritian entrepreneurs, who have boldly forayed into new business avenues since the pandemic began in 2020. In Mauritius, for example, MSME which had been operating in the manufacturing sector have had to reinvent themselves overnight. One such success story is that of Fancy Dreams Ltd, whose founder and managing director, quickly halted production of party favour designs, office essentials and boxes for festivities, and instead started conceptualizing and fabricating locally manufactured PPEs (face shields and mask buckles). This concept was awarded a grant by the Mauritius Research and Innovation Council, and supported by the Ministry of Information Technology, Communication and Innovation (MBC, 2021). Moreover, MSMEs which were involved in sale of goods and services, changed their way of doing business, by transforming into e-commerce portals overnight (L'Express, 2020). Others, such as [www.deals.mu](http://www.deals.mu), [www.marideal.mu](http://www.marideal.mu), and the like, which were already venturing into e-business well before the pandemic hit, improved their online presence (Deals.mu, 2020, and appealed to hundreds of thousands of Mauritians looking for affordable hotel deals for example, when the first lockdown was lifted at the end of May 2020.

### **The Rise of Womenpreneurs in Mauritius in the Covid-19 Era**

MSMEs are a fundamental engine for economic growth and employ a substantial percentage of the workforce (Ratten, 2021). While there has been much media attention generated on gender inequity during the pandemic, which is a consequence of working from home policies, few studies have focused on how the female population engaged in business activities, especially MSMEs have been impacted by the health crisis since early 2020 till date. This research suggests that the Covid-19 pandemic has seen a rise in community-based and social forms of entrepreneurship, with particular focus on women. Indeed, while a lot of larger businesses have had to close down as an aftermath of the pandemic in Mauritius, MSMEs led by women have thrived during this period. Indeed, even MSMEs which were led by women and whose area of work focused on the most hit economic area in Mauritius, such as manufacturing and tourism& hospitality, and the service sector such as restaurants and food stalls (as a consequence of the two lockdowns and strict sanitary protocols that ensued, and are still in force), found themselves to operate in the spirit of resilience and adaptability. One such example is a woman who was selling clothes before the pandemic hit Mauritius, and promptly converted her business into the production and selling of PPEs (face masks) during the

pandemic ([www.redbubble.com](http://www.redbubble.com)). If someone were to just browse the sale of clothing on the Mauritian website [www.AsterVender.com](http://www.AsterVender.com), one would find a large majority of womenpreneurs showcasing and putting their clothing items for sale during the Covid-19 pandemic.

### **Challenges Faced by Mauritian Womenpreneurs during the Covid-19 Pandemic**

#### **The High Majority of Women-Led MSMEs are labour-intensive**

Being labour-intensive logically mean that women-led MSMEs are more exposed to disruptions. Two lockdowns and the strict sanitary protocols even outside lockdown periods have seriously limited the movement of female workers working or leading in MSMEs. Being labour-intensive has also by default meant that these women could not and continue not to be able to rely on working from home arrangements to make their businesses function, as the latter need to operate machinery and be in the physical presence of plants and production tools. At the same time, women have had to bear the heavier burden of housework, as their male counterparts have not and are not contributing equally to household chores or rearing children (especially during lockdowns, or even presently as schools are closed in Mauritius). This undoubtedly leads to the fact that women leading MSMEs or working for them, have had to make a choice between their work and their family obligations, and in most cases, the latter took priority (Del Boca, 2020). Even for those who can afford to work from home, productivity has witnessed a sharp fall due to limitations in internet-connectivity, poor access to IT tools and training in IT software and hardware for womenpreneurs, and a general distrust of technology by some womenpreneurs in Mauritius.

#### **Thinner Liquidity reserves: limited financial alternatives to support their businesses**

Thinner liquidity reserves mean that these MSMEs have limited financial alternatives to support their businesses, especially during times of crisis, such the Covid-19 pandemic. They therefore also lack assets that can be disposed of or that can be effectively used as collateral for new credit lines, as borrowing becomes vital during the current financial crunch. This also leads to over-reliance on local banks. Moreover, most of them have a tendency to over-rely on government schemes and programmes. At the same time, they are vulnerable and fragile, as they are exposed to liquidity squeeze ((Common Market for Eastern and Southern Africa, 2020)). Indeed, women-led MSMEs are unable to produce and sell their own products due to the pandemic also affecting their existing markets: these businesses rely, on most occasions, on word-of-mouth clientele or even select-clients, which currently they cannot reach due to restrictions in communication and movement generated by the pandemic. With low and

dwindling earnings therefore, and on top of that having to still pay their fixed costs such as rent, salaries, their suppliers and taxes, some women-led MSMEs have been forced to close down at the height of the pandemic, while others are hanging by a thin thread. Additionally, most women-led MSMEs depend heavily on customer service, and the lockdowns and strict sanitary protocols lead to little or no interaction between the womenpreneurs and their clients/customers, which seriously hamper business opportunities and client relationship, affecting business in general.

### **Limitations Government Aid to Female Entrepreneurs in Mauritius**

Many businesses were reluctant to apply for funding through the the numerous schemes offered by the Mauritian government due to about administrative complexity and eligibility. Indeed, there are existing challenges anticipated problems with accessing the aid, such as bureaucratic hassles and difficulties establishing eligibility for MSMEs. Moreover, it is opined that government bodies handing out loans and schemes to MSME entrepreneurs might be less keen to offer assistance to women-lead enterprises. This has however not yet been researched into in Mauritius, and could well be the subject of further research in this area.

### **Recommendations to empower women-led MSMEs**

#### **Government Measures to Empower Female Entrepreneurs**

Apart from the Bank of Mauritius, other public institutions or bodies have had and continue to have a complementary role to assist enterprises, specially MSMEs, e.g. SIC, DBM, SME Mauritius, the Agricultural Marketing Board, etc. This should be further strengthened. Training programmes should be offered to womenpreneurs to make them more adept at using IT tools to work from home, and also become more conversant and skilled at technology-based equipment to be able to work more effectively and seamlessly from home. Government-incentives could be offered to working fathers, for them to shoulder the housework and child-rearing responsibilities equally, so that women may return to work/work from home and take care of their MSMEs.

It is hoped that the Mauritian government could also apply tax payment postponements for female entrepreneurs leading MSMEs, and also provide more capital to them. Additionally, the government could also launch special awards to celebrate womenpreneurs leading thriving, resilient and successful MSMEs, as an incentive for these women to continue investing in their businesses, and taking risks, while expanding their customer reach, and that too, in the midst

of this lingering pandemic. Government agencies, ministries and institutions should organize regular workshops and training sessions for the benefit of womenpreneurs leading and working in MSMEs. This would be a good terrain for sharing of best practices and business tips, among womenpreneurs, as they all cope and adapt in the rapidly changing Covid-19 world.

In order to ease liquidity constraints, the Mauritian government should introduce measure to defer social security payments, debt payments and rent and utility payments for women leading or working in MSMEs in Mauritius. Moreover, the Bank of Mauritius is entreated to introduce, extend or simplified the provision of loan guarantees so as to enable commercial banks to expand lending to female-led MSMEs. Additionally, the Mauritian government should implement schemes to monitor the impact of the crisis on female-led MSMEs and enhance the governance of MSME-related policy responses for women who lead and work in the former. The government, through its Ministry of Commerce and Consumer Protection, as well as its Ministry of Gender Equality, Child Development and Family Welfare should focus on raising awareness among women-led MSMEs on the kind of support, financial or otherwise, which is available to them to help them weather the Covid-19 storm.

It is recommended that the Mauritian government could also work with industries and sectors that are most under threat from COVID-19 to assist in the development of resilience strategies and to help them reimagine their business models going forward, even beyond the Covid-19 pandemic. The government should be at the forefront of encouraging research and development as requisites for innovation and growth in the Covid-19 era and specially aimed at MSME womenpreneurs. For example, the Mauritius Research and Innovation Council could launch funding schemes that take ideas from prospective MSMEs and turn them into successful products and services, through for example Proof of Concept of Business Incubator Schemes.

Moreover, the Mauritian government should start catering for the provision of focused, targeted and sector-specific support for women-led MSMEs now and post crisis. Indeed, there is a great opportunity for governments to work in collaboration with entities created to support women-led MSMEs to provide sector-specific interventions, dedicated and nuanced assistance to help them get back on their feet even beyond the Covid-19 crisis. In this respect, all support mechanisms need to be clearly and rapidly accessible to ensure womenpreneurs do not spend an inordinate amount of time managing financing processes and crises simultaneously in their business.

### **Commercial banks at the aid of MSME womenpreneurs**

More and more womenpreneurs are seen to be approaching private financial institutions for credit facilities, loans or other financial support (COMESA, 2020). Commercial banks are therefore, to a large extent, generally the main financial institution being resorted to by MSMEs and women-led MSMEs. These banks should offer attractive business loan packages to these MSMEs to encourage them to borrow from them, and grow their businesses, especially during this challenging time.

### **Encouraging womenpreneurs leading MSMEs to apply for crowdfunding**

Crowdfunding should also be considered as a non-negligible source of funding for women-led MSMEs. For example, in Mauritius, we have crowdfunding platforms, like AnAngel.com, as well as [www.smallstepmatters.org](http://www.smallstepmatters.org), which are reliable and secure crowdfunding sites which allow small businesses to crowdfund for financial donations.

### **Conclusion**

The fate of MSMEs is intrinsically tied to the resilience and adaptative capacity of the small business ecosystem to the massive economic disruption caused by the pandemic. It is also dependent on the Mauritian government's ability to continue to provide support to these businesses, as the pandemic sees no signs of abatement. While it is believed that MSME womenpreneurs in Mauritius have been, to a large extent, able to shoulder the brunt of the pandemic with agility and innovation, it is also important to remind them not to be overoptimistic about the financial prospects of their businesses: in essence, they should be warned to be wary and not to rest on their current laurels, but plan ahead for the lingering effects of the ongoing crisis. During such times, leadership within MSMEs is key to weather the financial storms engendered by the Covid-19 pandemic. In particular, womenpreneurs should also embrace products and services that are in line with the UN Sustainable Development Goals (SDGs) as the pandemic has demonstrated that we need a healthy, clean and environmentally friendly world, if we are to leave the Earth a better place for future generations. Womenpreneurs leading or working for MSMEs in Mauritius should be encouraged to embrace new technologies in their businesses (for example, female-led MSMEs should be encouraged to become recognized merchants on mobile money applications such as my.t money (([Home | my.t money \(myt.mu\)](http://Home | my.t money (myt.mu))) and Juice by MCB ([MCB](#)) and also be open to changing internal working processes. Moreover, womenpreneurs belonging to the MSME sector should also consider diversifying their product and service offerings, to reach a wider

target of customers, as the Covid-19 pandemic provides opportunities for dabbling in innovation and creativity in various sectors of the economy. Moreover, flat-leadership structures in MSMEs, as well as teamwork, giving feedback to CEOs and lower-level staff, communication, and the willingness to be always open to learning new ways of doing business, are essential if MSME womenpreneurs in Mauritius are envisioning a bright future in this uncertain Covid-19 period, as the road ahead promises to be littered with challenges and roadblocks. The government, in this endeavour, can only be an ally, and not simply a crutch.

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## **COVID-19 and Regulatory Responses**

**Survival of MSMEs in the wake of COVID-19: A Comparative Study of  
Regulatory Responses between Mauritius and UK**

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## **1. INTRODUCTION**

The coronavirus pandemic is not only affecting human health globally but has also generated a major economic crisis with a decline in production, consumption and finance in affected countries as well as the negative responses of stock exchanges due to unprecedented uncertainties. In support of the economic recession triggered by the pandemic, economic forecasts issued by the Organisation for Economic Development and Co-operation (OECD) projected a 7.6% drop in global Gross Domestic Product (GDP) by end of the year 2021 (OECD, 2020). Nevertheless, despite the rapid decline in revenue, businesses still have to meet their financial obligations to creditors, suppliers and cover their operating costs. In this regard, many businesses especially micro, small and medium enterprises (MSMEs) often lack the required collateral to ensure their survival. Consequently, a number of policies are being established by the regulators across the globe including Mauritius, to save MSMEs in difficulty.

As of the end of the year 2020, there are around 124,000 MSMEs operating in Mauritius, contributing to 42% of GDP and 56% of overall employment (Roopchund, 2020). The Mauritius Small and Medium Enterprises Act 2017 defines a micro enterprise as a production

unit operating with one to five persons and a turnover of not more than MUR 2 Million while a small enterprise is defined as one generating an annual gross turnover of not more than MUR 10 Million excluding micro enterprises. A medium enterprise is defined as one generating turnover of an amount of MUR 10 Million to MUR 50 Million. The latest figures show that micro enterprises make up of 47% of the SMEs population in Mauritius (Statistics Mauritius, 2020a). The restricted turnover of micro enterprises makes the sector even more vulnerable to the current pandemic since these businesses rely on debt and bank loans for financing.

While under normal circumstances, liquidity shortages are managed through short term loans, during a health crisis like COVID-19, SMEs' dependence on banks' lending and the inability to raise other sources of funds within a short period of time may entail severe solvency issues which may lead to termination of businesses. This is a primary concern for policymakers since failure of MSMEs implies unemployment, bank losses, balance of payment deficit amongst others.

Being conscious of the difficulties faced by MSMEs during Covid-19, the government of Mauritius has devised various strategies aimed at reducing the risk of MSMEs' failure. The purpose of this research is therefore to assess the adequacy and efficiency of the Mauritius legal and regulatory measures to protect MSMEs in the wake of COVID-19 grouped in terms of fiscal, financial support and structural policies. In order to achieve this research objective, the methodologies for the research are in essence comprised of the black letter approach which will analyse the regulatory and policy measures that have recently been established to minimise the impact of the COVID-19 shock on MSMEs in Mauritius. Also, a comparative analysis will be conducted to find out the corresponding initiatives undertaken by the United Kingdom (UK) government. UK has been selected for the comparison in order to assess how one of the world's most powerful economic powerhouse is dealing with the negative impact of COVID-19 on MSMEs and whether Mauritius may implement some of them in the light of the current crisis caused by the pandemic. Additionally, from the point of view of a historical heritage, the UK has been chosen for the comparative study because after the govern of the France government from 1715 to 1810, the island was placed under the colony of the British from 1810 and up to 1968 when Mauritius obtained its independence. Accordingly, the Mauritian Parliament makes law through the legislative process similar to the UK and as such, the English laws of procedure have had its imprint on the Mauritius legal system while some other laws of Mauritius are

inspired from French laws. Consequently, the related corresponding laws of the UK will be examined for the purpose of this research.

At present, this study will be amongst the first academic writings on the effectiveness of the regulatory initiatives undertaken by the Mauritius government to protect MSMEs in the wake of COVID-19. The study is carried out with the aim of combining a large amount of empirical, theoretical and factual information that can be of use to various stakeholders and not only to academics. While the first part of this paper has introduced the importance of protecting MSMEs, the research objective and methodologies, Part II will review some existing studies regarding the impact of COVID-19 on MSMEs and some general policy responses to empower MSMEs during the pandemic across several countries. Thereafter, Part III will critically assess the regulatory measures undertaken by the Mauritian and Part IV will emphasize on the UK measures established to protect MSMEs. Part V will conduct a comparative analysis of Mauritius measures against that of UK measures and will set out some suggested recommendations which the Mauritian government may adopt in order to enhance the protection mechanisms afforded to MSMEs based on the comparative study conducted. The final part VI will conclude the research.

## **2. COVID-19 IMPACT ON MSMEs**

In addition to its impact on public health where Guo et al. (2020) explained the specificities of the virus transmission alongside the WHO keeping track of the situation globally, the economic impact of Covid-19 cannot be ignored. In fact, Shafi (2020) concluded that the issues faced by MSMEs are financial issues, supply chain disruption, decrease in demand, sales and profit while Bartik et al. (2020) applied a survey to 5800 small businesses in the US to study the impact of Covid-19 and policy changes and hence supported that the risk of small business' closure have a positive direct relationship with the duration of the sanitary crisis.

In this regard, based on data reported by the UNCTAD (2020), trade growth experienced a sharp decline of 8% in 2020 due to the Covid-19 with a 4.5% GDP loss. The OECD (2021) further reported that MSMEs have experienced a significant fall in revenue caused by declining demand at a faster rate than they were able to cut operating costs (Banerjee et al., 2020) while creating pressure on cash flows and liquidity, thereby threatening their survival.

Accordingly, Sharma (2020) reported a cash crunch by workers in Indian MSMEs which were unprepared and ruled by panic while Humphries, Neilson and Ulyssa (2020) conducted a survey to investigate how 8000 MSMEs in the US were impacted by the pandemic and the Coronavirus Aid, Relief and Economic Security Act (CARES) Act, with the findings indicating that 75% of firms had at most 2 months cash in reserve and that many had already laid off their employees.

Additionally, given the fact that MSMEs are considered as vectors for innovation, it has been unfortunately witnessed that new job opportunities were severely impacted with sharp declines in the number of new MSMEs being observed in Portugal, France, Australia and the US (Calvino et al., 2020). This may be due to difficulties in accessing finance according to Segundo (2020) who, using an Regression Discontinuity in Time method, observed a decrease of 73% in firm creation and of 40% in the amount of capital of new firms in Ecuador. Indeed, in the Global Startup Ecosystem Report, Startup Genome (2020) affirmed that Asian countries observed declines in Venture Capital, with China experiencing a decline of around 50%. Accordingly, Zeidy (2020) who surveyed African MSMEs through the United Nations Economic Commission (UNEC), affirmed that small businesses in the African market prefer state loans and even consider crowdfunding.

On the supply side, containment measures, particularly the closure of businesses resulted in massive disruptions in supply chain and international trade, where the Enterprise Europe Network (2021) reported that 74% of European SMEs were negatively impacted. While MSMEs already had weaker capabilities in the global value chains due to their weaker financial backbone as stated by Shafi et al. (2020), weaker inventory levels and supplier networks further reduced their bargaining power hence making them more vulnerable to price increases (World Trade Organisation, 2020). Shortages of materials and intermediate goods negatively affected inventory buffer levels and capacity utilization. As such, Lewis (2020) argued that lockdown and controlled movement were disruptive factors to the supply chain network of MSMEs, especially in the food industry, where panic buying had also been a contributing factor. Furthermore, Ali et al. (2021) exposed that Food SMEs (FSMES) who were forced to disrupt activity because they were not able to work from home since employees are physically needed in the food production (Cappelli & Cini, 2020).

Consequently, in order to address the negative impacts of the pandemic on MSMEs, several countries have undertaken various initiatives in the form of fiscal, financial support and

structural policies to protect MSMEs and enable them continue operation. Additionally, these regulatory incentives are fundamentally crucial for the fulfilment of the United Nations (UN) 2030 Agenda for Sustainable Development Goals (SDG). In particular, while the global community is heavily engaged in taking bold and transformative steps which are needed to shift the world onto a sustainable and resilient path, the Mauritian government has left no stone unturned in fostering the balance between the three dimensions of sustainable development being economic, social and environmental during the wake of the COVID-19. Nevertheless, this paper will look only at the economic endeavours brought forward by the Mauritian government classified in terms of fiscal, financial support and structural policies. Accordingly, these regulatory responses aim at addressing UN SDG1 which is to end poverty by building resilience of those in vulnerable situations such as MSMEs through the development of sound policy frameworks to support investment, UN SDG8 in order promote inclusive and sustainable economic growth by encouraging the growth of MSMEs through enhanced access to finance and UN SDG17 so as to strengthen the means of implementation for sustainable development for instance by strengthening domestic resource mobilisation to improve the domestic capacity for tax and other revenue collection. Hence, the following section will assess the relevant initiatives undertaken by the Mauritian government to empower MSMEs in the wake of Covid-19.

### **3. MAURITIUS POLICIES**

#### **3.1 Fiscal Intervention**

The standard corporate tax and VAT rate in Mauritius is at 15% (though 3% corporate tax applies in some circumstances) and where businesses would file their corporate tax return on a quarterly basis and where VAT may be filed and paid on either a monthly or quarterly basis. In essence, to alleviate bureaucracy burden during the Covid-19 pandemic, the MRA has announced that quarterly tax payments under Advance Payment System (applicable for corporate bodies) and Current Payment System (applicable for self-employed individuals) could be deferred for the year 2020 and that no penalty nor interest will be chargeable pertaining to late filling and repayment under the Deferred Payment Scheme. However, the moratorium provided is for a maximum of 6 months, since business can avoid the third quarter APS and directly submit the annual return, and CPS statements are not required which implies that businesses can pay their tax liabilities when they submit their annual return. Furthermore, instead of CPS and pay tax traditionally, the Presumptive Tax system (PTS) for small enterprises whose gross income is less than RS 10 million was introduced. The PTS provides

that certain businesses engaged in some specific activities such as agriculture, forestry and fishing, may opt for the PTS and pay a tax of 1% of their gross income only. Additionally, the Tax Arrears Settlement System (TASS) was established for MSMEs, whereby these businesses which initially had a tax arrears as at 10 June 2019, have to settle these arrears by 31 March 2020 and these MSMEs will benefit from a 100% waiver on penalties and interest. Furthermore, the waiver initiative under the TASS for MSMEs has now been extended up to 31 December 2021.

Also, since the global sanitary crisis keeps causing disruption to businesses that are currently facing cashflow problems, the Mauritian government has aimed to support businesses further to the enactment of the Finance Act 2021. For example, in order to help MSMEs maintain business activities, the government encouraged larger firms to deal with MSMEs by offering an incentive of 110% tax reduction on products which are purchased from MSMEs.

In parallel, a sum of MUR 5 billion under a special relief fund was set by the Bank of Mauritius in order to help businesses including MSMEs, to improve their cashflow position. Businesses can get access to this fund of 1.5% interest through commercial banks and could benefit from a moratorium of 9 months with a repayment period up to 4 years.

Nonetheless, even if the government is providing these tax incentives, MSMEs' business survival will depend on larger companies which are also disrupted due to the pandemic. To this effect, it can be noted that the duration of the tax deferral is not enough since the economic impact of the pandemic is omnipresent. Therefore, even if the government has established various schemes in order to support MSMEs, many are unenthusiastic about them since they are two faced. For instance, the PTS entails that if small enterprises opt for it, they will not be entitled to claim any deduction, income exemption threshold or any relief or allowance. Rightfully, a survey conducted by the DCDM on 2700 businesses in Mauritius including small and large companies, found that only 22% of the companies applied to the government support measures other than the Government Wage Scheme out of which only 14% got access to the support (DCDM, 2020).

### **3.2 Financial Support**

Financial support measures include the establishment of new loan schemes such as the Covid-19 Loan Scheme and corporate guarantees offered by the Minister of Finance, Economic

Planning and Development to banks. In fact, the COVID-19 Loan Scheme of the Development Bank of Mauritius allows MSMEs to borrow a 3-year loan capped at a maximum of Rs 1M at an interest rate 1.5% in order to increase their working capital. However, as a security for this loan, a floating charge is imposed on the company's assets and in the event of a default repayment, the floating charge will be crystallized into a fixed charge if the creditor serves notice, hence putting the MSMEs' business assets at risk. Accordingly, owners of MSMEs may be reluctant to take up the loan. This opinion is backed by the survey conducted by Business Mauritius which shows that only 6% out of 2704 businesses applied for DBM Loan Schemes (Business Mauritius, 2020).

In addition, financial measures also include the reduction of interest rates on existing schemes. For instance, interest rates on the SME Factoring Scheme, whereby MSMEs can obtain 90% financing on an invoice with a maximum of Rs 10 million capped at Rs 2 million per receivable through debtor factoring, for which the Minister of Finance, Economic Planning and Development will subsidize 50% of factoring fees, were also lowered to 2.5% temporarily. Likewise, debt factoring allows MSMEs to obtain instant finance and bypass the lengthy waiting times of debt repayments hence improving the working capital. However, although 50% of the factoring fee is subsidized, this will still reduce the profits available to the MSME and also puts the latter in short term debt which can be problematic in case of bad debts. Besides, Equity Financing scheme by SME Equity Fund provides up to 49% equity finance with a minimum of Rs 500,000 and a maximum of Rs 25 million.

Nevertheless, equity financing through redeemable preference shares may affect the gearing position and liquidity of the MSMEs. The main issue with the measures provided by the government relates to the timeframe, especially for repayments since much uncertainty revolves around how long the pandemic will last and whether second or third waves will have a much substantial impact on the business environment.

Access to finance during the pandemic can be also quite burdensome given that banks are often reluctant to provide loans due to moratoriums and deferrals as well as increased probability of defaults. Hence, crowdfunding can provide MSMEs with the funds needed as an alternative to bank financing. Consequently, the SME Equity Fund Ltd in collaboration with Fundkiss Technologies Ltd introduced an investment support program through crowd-lending which

provides MSMEs with funds for working capital, capital expenditures and for any other projects at an interest rate of 12%-15% per annum to be repaid in 5 years. However, the interest rate on the crowd lending is quite high, and no moratorium is offered. Additionally, MSMEs which have been operating for less than 2 years cannot benefit from the scheme. Furthermore, although the recent publication of the Financial Services (Crowdfunding) Rules 2021 offers a proper regulatory framework thus making it more secure investors as well as issuers, other rules may make it more difficult for investors to obtain finance due to higher due diligence and limits on how much a retail investor may invest, that is Rs 350,000 over 1 year.

Indeed, disruptions in global supply chains, lockdowns and border restrictions hinged upon international trade where Mauritius saw declines in its exports and imports level of 10.8% and 16.3% respectively. Furthermore, depreciation of the rupee against the major currencies exacerbated the already dire situation, automatically causing prices of raw materials to increase, resulting in a loss of competitiveness for MSMEs, shown by the increase in headline inflation from 0.6% for the 12-months ending January 2020 to 2.5% in 2021 (Statistics Mauritius, 2020b). To support import-oriented MSMEs, the Bank of Mauritius subsequently introduced a USD/MUR swap arrangement for an initial amount of USD 100 million and for another USD 100 million thereafter as well a Special Foreign Currency Line of Credit of USD 300 million with a repayment period of 2 years for businesses dealing in foreign currency, which was available from 24.03.2020 to 30.06.2020.

Additionally, the Inclusiveness and Integration Scheme was implemented by SME Mauritius Ltd where grants of 15% of the value of subcontracted services costs will be provided in order to encourage MSMEs to collaborate amongst themselves which can help them overcome supply chain issues through increased networking, however only 42 SMEs expressed their interests in the scheme (DCDM, 2020).

### **3.3 Structural Policies**

With the outbreak of the pandemic, the Bank of Mauritius introduced a Support Programme containing a series of measures to limit the impact on businesses and households, including MSMEs. The reduction of the Key Repo Rate and the Cash Reserve Ratio to 1.85% and 8% respectively as well as the easing of the Guideline on Credit Impairment Measurement and Income Recognition improves the flow of credit and promotes lending to MSMEs. This led to

an increase in excess liquidity from MUR 11.3 billion in 2019Q4 to MUR 16.3 billion in 2020Q1 (Bank of Mauritius, 2020). Furthermore, around 6-months moratoriums were also provided on the capital repayments of existing loans to reduce cash flow burdens. However, although a moratorium gives MSMEs breathing space allowing them to allay acute liquidity pressures, the measure is only a deferment and not a waiver, which is likely to disproportionately affect MSMEs who avail of it due to the compounding of the deferred interest or capital repayments leading to longer tenure, hence increasing the overall cost of the loan to the borrower.

Undeniably, the economic downturn affects businesses who find themselves in financial difficulties and since MSMEs accounts for 40% of the Mauritian GDP and over 50% of employment (Roopchand, 2020), the government aims at providing support to these businesses in order to avoid mass unemployment. Hence, the government announced the Wage Assistance Scheme (WAS) in order to ensure that employers of private firms are able to pay salary for employees whose wages are at most RS 50,000 and also provided the Self Employed Assistance Scheme (SEAS).

The two schemes were extended for the month of September 2021, however GWAS and SEAS payable for tourism operators will be valid until the opening of borders, where those eligible were receiving a financial support of half a month basic wage up to a cap of RS 12,500 and a support of RS 5,100 respectively. Nevertheless, it is strongly argued that businesses in the tourism industry will not recover immediately since borders have just been reopened and that an alternative to these two schemes should be established as firms may be forced to close down if they face this wage burden all of a sudden. Additionally, alongside the provision of the WAS, the government has introduced in the Covid-19 Act (Act), the payment of a Covid-19 levy. Essentially, Section 111Z(1) of the Act states that every employer who has benefitted from the WAS, shall be liable to pay the Covid-19 levy, that is they are subject to reimburse the WAS that they have benefitted from. The Covid-19 levy shall be declared in the employer's return and under section 111Z(5) of the Act, any failure to comply with this payment, shall be subject to penalty and interest. The levy is payable as the amount of WAS received or 15% of the chargeable income (excluding loss carried forward). Thus, it can be noted that the WAS still imposes a burden on employer and if they cannot bear this costs, they would simply close down and lay off employees.

Besides, digitalization of MSMEs is also a crucial step in ensuring the sustainability of MSMEs especially during Covid-19. In Mauritius, the Technology and Innovation Scheme promotes the creation of technology based integrated MSMEs by facilitating investment in technological and automated production systems through the provision of grants of 80% of the total costs capped at Rs 150,000. However, only 116 MSMEs actually expressed their interest in the scheme (DCDM, 2020).

Distressed MSMEs can also have recourse to the “*Support to Distressed Enterprise*” scheme of the DBM which provides up to 90% financing to a maximum of Rs 10 Million to cover costs of investing in the digitalization of operations including consultancy costs, transferring technology and any other restructuring costs. An interest of 0.5% per annum will be charged on the 7-year loan with a 2-year moratorium period and security will need to be provided. While a number of schemes are available to MSMEs, they are all directed towards financing the adoption of technology and none are geared towards supporting them in implementing or setting up digital systems of operations such as e-commerce platforms. Only recently in July 2021 has a Memorandum of Understanding been signed between SME Division of the Ministry of Industrial Development, SMEs and Cooperatives (MIDSC) and the Mauritius Post Ltd (MPL) for the provision of an e-Commerce Platform for registered MSMEs, where efficient e-commerce solutions and marketing facilities including delivery services will be provided by the MPL to MSMEs, thus allowing them to benefit from increased visibility. This is particularly advantageous to MSMEs as the MPL having recently adopted the Post Global Postal System, and with a network of 114 Post Offices and delivery logistics and shipment facilities to 660,000 access points worldwide can facilitate trade, whether external or internal, and ensure payment electronically.

Furthermore, the Blue Economy in Mauritius which represents 10.5% of the GDP can play a major role in securing employment, attracting foreign currency through exports and ensuring food security in the wake of the pandemic. However, border restrictions greatly affected the tourism industry, where the collapse of the Japanese vessel *Wakashio* which spilled over a 1000 tons of fuel in the Ocean also contributed to the adverse impact on the livelihood of blue entrepreneurs in Mauritius. Hence, in the Budget 2020/2021, the government announced the extension of the Freight Rebate Scheme which provides 25% refund on Ocean Freight Cost subject to terms and conditions, whereby in order to finance the ecosystem and for provision

of resilience schemes, the budget also introduced blue and green bonds through the Mauritius Investment Corporation (MIC). Also, those in the fishing industry in addition to the Covid-19 Loan, may benefit from Rs100,000 interest-free loan for cash flow difficulties and the DBM also propose a Tourism Business continuity loan of 0.5% interest for MSMEs.

Also, being conscious of the importance of sustainable development, the government has allocated an amount of MUR 2.2 Billion (USD 51 Million) towards projects encouraging a green and safer environment such as the rehabilitation of coastlines, strengthening the environmental monitoring framework, cleaning up the country and introducing some alternative means of sustainable energy other than the coal usage. Additionally, Mauritius participated in the COP26 convention where it expressed its interests to lower greenhouse emissions to 40% by 2030 by ensuring that 60% of its energies is produced from renewable energies. In terms of good governance, Mauritian authorities were commended by the UN and the WHO for the measures adopted to mitigate the crisis. For instance, Mauritius which was considered to be one the worst hit countries in Africa in April 2020, was also among the least affected African economies in January 2021 according to WHO epidemiological statistics (WHO, 2021).

This can be attributed to the number of good governance practices adopted by the authorities which helped curtail inefficiencies and misinformation in an attempt to avoid soliciting panic amidst the population. The institution of the High Level Committee even before the first cases were detected followed by the closure of borders and the imposition of the lockdown and curfew as soon as cases were detected to contain the spread of the pandemic, shows the immediate responsiveness of the authorities. Moreover, the establishment of a COVID-19 Monitoring Committee and National Communication Committee provided information via a range of media, especially the daily press allowing information to be disseminated in a harmonised manner thus increasing transparency. A survey by AfroBarometer of 1200 Mauritians in November 2020 thus shows that 94% Mauritians consider themselves “somewhat” or “very” well-informed about the pandemic (AfroBarometer, 2021).

However, the shortage of medical equipment and lack of hospital personnel in Mauritius was also heavily deplored in the news since the beginning of the pandemic and along similar lines, Carpaven (2020) reported poor management in hospitals and flu clinics, with people

complaining about the long waiting hours to get tested or the lack of ventilators and artificial respirators. Accordingly, N-95 masks had to be ordered urgently for medical personnel in March 2020 and more recently, in November 2021, it was announced that oxygen tanks had to be ordered from Reunion Island. Hospital staff that were on vacation leaves had to be urgently called back due to shortages of staff (Defi Media, 2021). It can therefore be seen that although Mauritius has the necessary healthcare infrastructures available, with the increasing number of cases, the Mauritian government needs to cater for greater hospital capacity and medical equipment in a sustainable manner.

The nationwide lockdown from 20<sup>th</sup> March to 30<sup>th</sup> May 2020 and subsequently from 10<sup>th</sup> March to 30<sup>th</sup> April 2021 as well as the constant threat of getting infected forced MSMEs to find alternative ways of operating- thus leading to the implementation of Work-from-Home policies. The Working from Home Regulations 2020, a supplement of the Workers' Rights Act regulates teleworking. It allows employers to require workers to work from home, if a prior notice is given at least 48 hours before.

Moreover, the act also requires the employer to ensure that the employee's environment is safe, covered by the Occupational Safety and Health Act 2005 (OSHA) and conducive to teleworking that is, the latter has all the necessary equipment and technology. In this context, the National Productivity and Competitiveness Council also issued several guidelines under the Enterprise Response to COVID-19 to help businesses adapt to the new normal. For example, the guideline on 'Managing your Human Resources in line with Employment Policies', provides suggestions to businesses based on evidence on how other countries and enterprises around the world implemented their work from home policies. Furthermore, under the MRA's Work from Home Scheme regulated under Section 161A(59) of the Income Tax Act, employers who employ a full time homemaker can deduct from his gross income an amount equivalent to 200% of the emoluments payable to that employee. Additionally, the employer also benefits from a tax credit of 5% on the cost of expenditure incurred on the acquisition of an Information and technology system for the purpose of hiring homeworkers. However, the above provisions were valid only up to 30 June 2022. Considering that according to the survey by DCDM research, only 63% businesses reported having the ability to work-from-home, where only 57% SMEs affirmed likewise (DCDM, 2020). Hence, the above tax incentives should have been extended. Moreover, under the Economic Recovery Programme,

the government will implement the National Training and Reskilling Scheme (NTRS) targeting the training and reskilling of around 9000 jobless persons in different fields- where the trainees will benefit from a stipend of Rs 10,575 every month during their training period (HRDC, 2021).

Eventually, with the introduction of all these fiscal, monetary and structural measures, there are some positive signals of national economic recovery. Furthermore, the massive vaccination campaigns have enabled Mauritius to lift its international travel restrictions with the view of increasing tourist arrivals and hence supporting the recovery process. Accordingly, the IMF in its latest edition of World Economic Outlook report is projecting the global growth to stand at 5.9% in 2021 while for Mauritius specifically, the IMF is expecting the economy to rebound by end of 2021 (+6.6%) and then forecasted Mauritius' growth to stabilise at around 5.2% in 2022 (IMF, 2021).

## **4. UK POLICIES**

### **4.1 Fiscal Intervention**

Normally, UK businesses were required to provide a VAT return and make payment each quarter, however the 2020 budget announced that businesses would be entitled to tax deferral through which, they are to submit their VAT return as normal but they can postpone all their accumulated payments until the end of the 2020-2021 tax year. Accordingly, by virtue of amendments to the Finance Act 2021, Schedule 19 of the UK VAT Act empowers commissioners to allow VAT payment to be deferred until 30 March 2021, in respect of which it was reported that over half a million of businesses took upon the VAT deferral scheme.

Indeed, the deferral scheme has alleviated a financial burden on businesses especially MSMEs whose activities went through higher disruptions (HM Treasury, 2020). Yet, the HMRC stated that 150,000 UK businesses did not do the necessities to repay back their liabilities and noted that certain businesses are still having difficulties to get back to fully operational and that the timeframe set for the scheme might not be the most appropriate. Thus, businesses who were already facing cashflow problems might find themselves in more debt and where they could be forced out of business, leading to increase in unemployment.

On the other hand, the UK Government also introduced a VAT cut on 8 July 2020 to certain supplies relating to hospitality, hotel and holiday accommodation in order to boost demand and help these businesses to stay afloat. In particular, the VAT rate went from 20% to 5% and this relief was extended until the 30 September 2021. It was also announced that the rate would go up to 12.5% from 1 October to 31 March 2022 and would then go back to the standard rate. The UK Chancellor has stated that 2.4 Million of jobs across 150,000 UK businesses were supported through the VAT cut, proving its effectiveness (HMRC, 2020).

#### **4.2 Financial Support**

To prevent the exacerbation of the credit crunch faced by MSMEs since the 2008 financial crisis, the bank rate and the countercyclical capital buffer rate was reduced to 0.25% and 0% respectively to improve the flow of credit towards MSMEs. Additionally, the Coronavirus Business Interruption Loan Schemes (CBILS) and the Bounce Back Loan Scheme (BBLs) introduced by the British Business Bank offer 6-year loans, with the UK government accounting for interest or fees and repayment for the first 12 months. While the BBLs offers 100% state guarantee and covers up to 25% of turnover capped at a maximum of £50,000, the CBILS has only 80% state guarantee but can offer up to £5 million, with personal guarantees required only for loans exceeding £250,000.

Undeniably, state-guaranteed loans improve the working capital position and promote business continuation, investment and employment. However, figures from the HM Treasury (2020) show that out of 251,342 applications, only 109,877 CBILS were granted while for BBLs, 1,560,309 out of 2,094,858 were accepted as at 31 May although applications closed on 31 March, thus showing that around 30% of MSMEs who applied ended up not receiving access to the proposed finance. By delegating the loan acceptance process entirely to lenders, the government failed to consider that existing customers would be prioritised thus, penalising other applicants. Furthermore, although the pandemic is ongoing, the schemes were already closed on 31 March 2021, meaning that businesses still impacted cannot resort to the schemes. Some MSMEs may be reluctant as well due to the risk of defaulting afterwards and also because this will impact on future cash flows, where the future repayments and interest payments will likely impact on profit and liquidity.

In 2020, the UK economy fell by 9.6% compared to 4.1% in 2009 after the global economic recession, where some of its impacts are still being felt across the globe (Clarke, 2018). The impact on smaller firms is higher and the latter are in dire need of support in order to keep their business afloat and to meet their labor costs.

Hence, the UK Coronavirus Act brought amendments to the UK Social Security Contributions and Benefits Act, whereby section 39 entitled employers to claim back their costs in statutory sick pay from the Government since the spread of the virus would undeniably affect employees' attendance. Accordingly, on the 19 May 2020, the UK Government announced that MSMEs can also recover this cost. Furthermore, employers with at most 250 employees are eligible for a rebate scheme, where the Government covers 100% of the costs for 2 weeks per employee.

Under this same section of the UK Coronavirus Act, the HMRC is also empowered to deal with the Coronavirus Job Retention scheme (CJRS) also known as the furlough scheme, in order to help all businesses retain their employees who are at a high risk of losing their job and where unlike larger firms who need to prove that they were impacted, all MSMEs are eligible. In fact, the CJRS allows employees to obtain at least receive a minimum income while they are not working. Originally, the scheme was set for 3 months, starting April 2020 and the UK Government was offering up to 80% of the furloughed employees' wages. However, it was later extended but it gradually fell to 60% as from July 2021, where employers are bound to ensure that the 80% is met. Essentially, the CJRS is known to be the boldest measure by the UK Government where the effectiveness has been proven as the HMRC provided that 11.6 Million jobs have been supported by the scheme (BBC, 2021). Furthermore, the March 2021 Economic and Fiscal Outlook showed unemployment at a peak of 6.5% compared to 7.5% predicted and this was attributed to the extension of the furlough scheme.

### **4.3 Structural Policies**

In fact, MSMEs have a greater exposure to Covid-19 due to their dependence on international trade, their disproportionate presence in sectors particularly affected by containment measures or due to their high integration in Global Value Chains. The food industry being one of the sectors particularly affected due to panic-buying and stockpiling by consumers and of which

MSMEs make up 97.%, was the subject of many governmental policies aiming at combating supply chain disruptions.

The implementation of Sections 25 to 29 in the Coronavirus Act 2020 more or less empowers the UK authorities to require information and enforces compliance leading to enhanced engagement and monitoring with food producers pertaining to supply chain issues. Another important measure taken by the Secretary of State was the relaxation of competition laws under the Competition Act 1998 (Groceries) (Coronavirus) (Public Policy Exclusion) Order 2020, whereby five exclusion orders concerning Groceries, Dairy produce, Solent maritime crossings and Health Services in England and Wales, came into force in March 2020 and were later revoked. These orders allow for commercial information to be exchanged amongst supermarkets, for instance, information on inventory levels, distribution and delivery services, services offered by logistics providers so that businesses can coordinate to share workers and control purchases of particular products by consumers. These measures safeguard the security of supplies, thus making businesses less vulnerable to shortages of important materials and shocks to demand. However, the relaxation does not offer much protection for smaller MSMEs who have weaker supply chain links and hence cannot cooperate with large retailers, who besides, may use this opportunity to collude and take advantage of the market.

Basically, the digital transformation of MSMEs may also help to overcome supply chain issues and temporary closure of MSMEs as well as ensure sustainability. The use of digital technologies allows MSMEs to develop new business models to meet customer demands even during the lockdown periods leading to higher revenue and liquidity, thus promoting business continuity. In this context, the UK Digital Strategy 2021 includes several initiatives, amongst which is the “*Help to Grow*” scheme where £520 million was invested to help MSMEs in the adoption of productivity-enhancing software and training.

Yet, the aforementioned schemes are targeted mostly towards enhancing digital capabilities with a limited number offering financial support from the government although the limited resources of MSMEs is often the prime constraint other than lack of digital skills. Other barriers include cyber risk which will be regulated by the proposed UK Online Harms Bill 2021 and workforce engagement.

Additionally, the UK government slowly started to build its resilience where it acknowledged the impact which Covid-19 would have on the food supply, and accordingly, the Environment, Food and Rural Affairs Committee 7<sup>th</sup> report revealed that EUR170 million were invested in a COVID-19 Winter Grant Scheme, in order to ensure that vulnerable households have access to food during the winter (House of Commons, 2021). Furthermore the UK government made sure that eligible children for free meals at school, would still benefit from it through the provision of a weekly EUR15 voucher. Also, an additional EUR208 million which was supposed primarily to benefit small businesses which were severely affected, was spent in provision of food parcels to clinically vulnerable people. As an alternative to this EUR208 million to small businesses, the UK government allowed for a temporarily relaxation of the competition law in order to allow for food businesses to work together and it enacted even a statutory instrument which is the Competition Act 1998 Order 2020 which eases competition law in the groceries distribution chain (House of Commons, 2021).

Keeping in mind that the pandemic had a positive impact on the carbon dioxide emissions, due to fall in use of fossil fuels as well as a fall in consumption of electricity, UK has been aiming at a greener recovery plan and has brought forth a 2050 net-zero target by bringing amendments to the Climate Change Act 2008. In fact, the Climate Change Act 2008 (2050 Target Amendment) Order 2019 was issued to amend Section 1 of the Climate Change Act to the effect that the minimum percentage by which the net UK carbon account for the year 2050 must be lower than the 1990 baseline, is increased from 80% to 100%.

Indeed, the economic shock of the pandemic severely affected the financial performance of the UK with its GDP falling by 19.5% quarter on quarter. Essentially, these above-mentioned measures taken by the UK government were established in order to keep MSMEs businesses afloat and keep as many people as possible employed. Consequently, the IMF in its latest edition of World Economic Outlook report is projecting a GDP growth of the UK by 6.8% in 2021 and the GDP is expected to be stabilised at 5% in 2022 (IMF, 2021).

## 5. COMPARATIVE ANALYSIS AND RECOMMENDATIONS

Measures	Mauritius	United Kingdom	Comparison
Wage Schemes	<p>Government Wage Assistance Scheme: TO private firms for employees earning, maximum RS 50,000</p> <p>Self Employed Assistance Scheme: Allowance of RS 5,100.</p>	<p>Coronavirus job retention Scheme (Furlough scheme) Statutory Sick pay</p>	<p>UK's Furlough scheme aims at protecting workers from being redundant and to increase workers retention in businesses. On the other hand, Mauritius introduced these schemes to help businesses with operating cashflow problems, with a subsidy.</p>
Loan schemes and guarantees	<p>Covid-19 Loan: An amount of Rs 1M. Repayment period:3 years Interest rate:1.5% Security: Floating charge</p>	<p>CBILS of up to £5 million Repayment period:6 years Moratorium:1 year State Guarantee:80%</p> <p>BBLs Repayment period:6 years Moratorium:1 year State Guarantee: 100%</p>	<p>In Mauritius, the Covid-19 Loan requires a floating charge on assets and charges an interest of 1.5%. In contrast, the UK provided a safer bet as MSMEs are sure to benefit either from 80% or 100% guarantee from government and the higher success rate of BBLs show that this policy was indeed more effective.</p>
Moratoriums	<p>6-month moratorium on existing loans</p>	<p>Moratoriums by private financiers such as Barclays Banks which allowed MSMEs a 12-month holiday on capital repayments on existing loans above £25000</p>	<p>The policy to provide a 6-month moratorium on loans by Mauritius is more likely to temporarily alleviate working capital burdens on MSMEs. While in the UK, this same</p>

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			<p>approach was not imposed on commercial banks which had freedom to do what they think is best for customers, which can however penalise MSMEs in difficulty.</p>
<p>Digitalisation</p>	<p>Technology and Innovation Scheme:  Support to Distressed Enterprise</p>	<p>UK Digital Strategy 2021: Help to Grow scheme.  Business Support Platform. European Regional Development Fund: Grants of £1000-5000 to MSMEs.  Online Harms Bill 2021: Fight against cyber risk.</p>	<p>Policies promoting digitalisation in Mauritius were more geared towards providing MSMEs with finance to adopt digital technologies while in the UK, the focus was more on supporting businesses to implement digital technologies through advice and technical support.</p>
<p>Competition laws</p>	<p>More stringent competition laws by the NPCC</p>	<p>Relaxed competition laws under the Competition Act 1998 (Groceries) (Coronavirus) (Public Policy Exclusion) Order 2020 by granting 5 exclusion orders</p>	<p>A more stringent approach was adopted in Mauritius which sought to protect MSMEs from businesses which would collude at the expense of consumers and even other smaller businesses while the approach by the UK attempted to increase collaboration amongst MSMEs temporarily in order to reduce supply chain issues</p>

Based on a recent AfroBarometer survey on the Mauritian economy, it was noted that the population was rather satisfied with the Government's Covid-19 response (AfroBarometer, 2021). Nonetheless, there are certain areas where the Government failed to provide the best appropriate support. Hence, based on the comparative study conducted in this paper, it is hereby suggested that the existing VAT rate of 15% be reduced to a lower amount like the UK has done, restricted to the supplies of some sectors that have been adversely affected by the pandemic, in particular, MSMEs involved in the hotel and hospitality industry or even in the blue economy. The reduction of the VAT rate will undoubtedly allow vulnerable sectors some breathing space in the light of the dire economic circumstances entailing cash flow or liquidity problems.

Moreover, other loan schemes with a shorter time of approval processes such as the BBLs introduced in the UK, may be presented to Mauritian MSMEs in urgent need of finance and a top-up facility, capped at a specific amount can also be made available in order to increase take-up of the loans and ensure some form of rapid response towards MSMEs.

While more stringent competition laws are necessary for consumer protection against exploitative prices, the Mauritian government can also adopt the same approach as the UK by allowing competing MSMEs or large firms and MSMEs to collaborate to some extent with a view to increase their supply resilience. The Department of International Trade in the UK also provides advice to MSMEs who choose to expand to overseas market where a specific service entitled "*Find a supplier*" helps connect businesses with international buyers. This same system may be established in Mauritius in addition to ensuring that goods produced by MSMEs meet the required international standards.

Furthermore, with regards to digitalisation, other than providing finance, measures should also be aimed at enhancing digital readiness by for instance, conducting digitalization campaigns to sensitize MSME owners on the importance of digitalization, enhancing broadband connectivity, provide advisory and technical support for MSMEs setting up digital platforms, like the Business Support Platform in the UK.

## 6. CONCLUSION

MSMEs play a crucial role in the Mauritian economy and the impact of Covid-19 on their operations and survival were substantial. It is therefore crucial that appropriate policies are designed to protect the latter in the wake of pandemic. This study has, in this respect, conducted a comparative analysis between the regulatory responses of the UK and Mauritius, using the Black Letter Methodology, and assessed the effectiveness and adequacy of policy responses of the Mauritian and UK governments.

The study showed that Mauritius adopted an approach of providing financial support for the immediate and short-term use of businesses. However, the schemes provided do not offer long term moratoriums and there are backup legislations such as the Covid-19 Levy which make businesses comply with reimbursing the wage assistance schemes they benefited from. The measures provided generally covered the financial needs of MSMEs but much remains to be done, such as the provision of public guarantees, enhancing supply resilience and digitalisation policies would offer closer assistance to MSMEs not only in terms of finance but advisory and support.

Therefore, in light of the above for future research, the long-term impact of the Covid-19 responses especially moratoriums and government subsidies, should be studied in order to assess the effects on the future cash flows of MSMEs.

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**Entrepreneurial Digital Technology: Electronic Commerce: a New Relief for MSMEs in the COVID-19 Era?-The Mauritian Approach-**

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**Abstract.** It is trite law that, due to restriction to movement and other civil liberties, commercial and civil contracts become even more difficult for entrepreneurs, investors and other businessmen to negotiate face to face during the Covid-19. It is implied that they would have to negotiate online but would entrepreneurial digital technology be the last relief for online virtual meeting and virtual contract? Therefore, this contextualised paper shed some light on the legal issue of electronic contracts for MSMEs during the Covid-19 in a country which inherited a mixed system. Despite inheriting both French Civil Law (1715-1810) and English Common Law (1810-1968) during its two successive colonisation the Mauritius government started to sign, ratify and adhere to international legal instruments to which it has acceded with a view to ease regional and international trade, business, commerce and investments coupled with local laws, legislations, rules and regulations that the Mauritian Parliament had passed metamorphosing, in the long run, its traditional socio-economic development in textile and manufacturing sector, and exportation of sugar into a very vibrant and powerful country in a new era of, inter alia, finance and technology (fintech) with probably new developments in crypto currency, cross border transactions and transfer pricing, developments in international commercial e-contracts coupled with some local government policies to ensure consumer protection and to enhance electronic contract in a digitalised world in Mauritius. As a result, to enhance development online, the Mauritian legislator brought several amendments when

the Covid -19 (Miscellaneous) Provision Act 2002 was passed encouraging, inter alia, Work From Home and digital technology soon became an area to exploit with e-contract between entrepreneurs, investors and businessmen and major obstacles that they may encounter with legal issues on e-contracts. This contextualised paper enlightens the Mauritian approach reflecting to what extent e-contract would be the new relief for MSMEs during the Covid-19 pandemic disease coupled with clear and relevant legislations, international covenants and precedents.

### **Introduction**

With all these ocean of opportunities in trade and business available in Mauritius, this contextualised paper enlightens, in turn, the Mauritian's milestones and position with respect to new developments in virtual contracting for, *inter alia*, entrepreneurs and investors, with an overview on Mauritian related and relevant international covenants on virtual international contracting (E-commerce, E-signature and E-trade) which have been ratified to enhance business facilities, and the development of MSMEs in Mauritius as a stepping stone to acquire more markets on the African continent. However, due to fraud online, cybercrimes, bribe and swindling, fraud and tax evasion, dishonesty, anti-trust or intellectual property rights (plagiarism) e-contract for MSMEs must be dealt with cautiously. Therefore, with a view to enlighten e-commerce for entrepreneurship, in its legal aspects, the authors will focus on international arbitration and find support on international covenants, and will rely on relevant legislations and precedents to critically analyse the role of the UNCISG and UNCITRAL in the Mauritian legislative landscape on international virtual contracting among entrepreneurs together with its mixed system (as a Common Law and Civil Law country (Gunpath and Jha, 2009) to solve international e-commercial disputes among investors, by way of an arbitration award, at a time where the Covid-19 pandemic disease is encouraging people, despite criminal offences online, to go more and more online irrespective it is in the sphere of, *inter alia*, e-education, e-negotiations or doing e-business through and by means of internet and the web and electronic contracts<sup>82</sup>.

With its cyber and smart cities, the rapid development in entrepreneurial digital technology in Mauritius has been one of the priorities for the Mauritian government. Therefore, Mauritius

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<sup>82</sup> Section 2 of the International Arbitration Act 2008 enacts that: "data message" – (a) means information generated, sent, received or stored by electronic, magnetic, optical or similar means; and (b) includes electronic data interchange (EDI), electronic mail, telegram, telex or telecopy;" and section 2 of the International Arbitration Act 2008 enacts that: " "electronic communication" means any communication between parties by means of a data message;

becomes a tax heaven with unlimited potentials in terms of import, export and trade in the SADC region, and with the Covid-19 pandemic disease some borders are still close with a series of obstacles linked to confinement, lockdown and quarantine during the curfew period. Consequently, it is probable that entrepreneurs, businessmen and investors may look for an alternative relief to negotiate and they would probably rely on virtual international contracting, as a priority, with a view to negotiate online and as an excellent opportunity to face a new world of entrepreneurial digital technology. However the jurists, just like the layman, and entrepreneur and investor are still not very confident with e-contract online as there are uncharted territories in the field of international contracts associated with good faith among parties to an international commercial contract; the sphere of private and commercial e-contracts still remain unexploited both in the legal field of e-business, e-trade or e-investment; and especially in the field of, *inter alia*, reliability, efficiency or jurisdictional issues in the settlement of commercial disputes in international e-contracts that parties and litigants have deliberately and intentionally chosen: it is swift, confidential but probably more expensive and its jurisdictional seat<sup>83</sup> might also be a live issue for MSMEs who want to settle in Mauritius; with a view to solve their disputes by way of an award based on the Mauritian domestic legislations<sup>84</sup> notwithstanding that international virtual contracting is in itself more problematic as it may encourage various criminal offences online and any contracting party may be of bad faith, an important cardinal principle in negotiations, during all its stages by the virtual contracting parties, becomes soon a dilemma (Spagnolo L., 2008).

Therefore, it is time to think twice on international virtual contracting in the economic sphere of, *inter alia*, MSMEs, trade and doing business in Mauritius.

After an Introduction (Part 1), the structure of this paper is six-fold: Part II covers the problem statement on international virtual contracting for MSMEs during the Covid-19 pandemic disease, Part III starts with the Mauritian legal jurisdiction and position on recognition and

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<sup>83</sup> Section 10 of the International Arbitration Act 2008 enacts that: "10. Juridical seat (1) Subject to section 3C(2)(b), unless otherwise agreed by the parties, the juridical seat of the arbitration shall be determined by the arbitral tribunal having regard to the circumstances of the case. (2) Unless otherwise agreed by the parties, and notwithstanding subsection (1), the arbitral tribunal may meet at such geographical location as it considers appropriate for consultation among its members, for hearing witnesses, experts or the parties, or for inspection of goods or other property or documents".

<sup>84</sup> *The International Arbitration Act 2008 (Act 37/2008, or The Foreign Awards (Recognition and Enforcement) Act (Act 35/1961)* which are, in fact, inspired and borrowed from the United Nations (UNCITRAL Model Law, *The United Nations Convention on Contracts for the International Sale of Goods (1980) (CISG 1980)* or *The United Nations Convention on The Recognition and Enforcement of Foreign Arbitral Awards (New York Convention)* and remain among the most important sources of international commercial law in the Mauritian landscape.

enforcement of foreign award irrespective of any country where they have been issued whereas in some countries (India) interim awards are not enforceable if the seat is found outside its borders, Part IV will examine international commercial e-contracts, cross border transactions and the role of UNCITRAL in international virtual contracting and how countries and different courts have interpreted it. Finally, this article will close with Part V on a Conclusion and some Recommendations about foreign legislations that may inspire the Mauritian legislator to improve its digital technology for one and all with Part VI, which provides a list of references to enhance further reach in this emerging field on international virtual contracts.

### **The Problem Statement on International Virtual Contracting for MSMEs in doing Trade and Business During the Covid-19 Pandemic Disease**

E-contract, e-trade and e-investment, in any form of e-business, are a booming industry for most MSMEs, and they need consideration as to its validity and various implications that international virtual contracting may provoke with the channeling of the bulk of goods with virtual shopping malls at the detriment of consumer's rights and their protection for safe electronic transactions (Kaviar H., 2011). In the absence of any clear legislation, the issue of adequate 'consent', an essential condition in any contract, has opened a floodgate of litigation battle with conflicting views. As an illustration, in *Specht v Netscape 306 F.3d 17 (2d Cir.2002)*, it was held that clicking of the download button does not show assent to the license terms of those terms which are not conspicuous whereas in the case of *Pollstar v Gigmania Ltd 170 F.Supp.2d 974 (E.D.Cal.2000)*, it was held that a browse wrap agreement may be enforceable even when terms were published on the interior pages of its website, and the user was alerted to this agreement only by the phrase "use is subject to license agreement" in small gray print on a gray background, and click in on this text did not take the user to the text of the agreement.

Relevant legislations (*International Arbitration Act 2008*) have been passed by the Mauritian Parliament to cater for an arbitration agreement to be in writing. It is important to point out that section 4(2) (b) of the *International Arbitration Act 2008* enacts that: "it is concluded by an electronic communication and the information contained in it is accessible so as to be usable for subsequent reference; or...".

An e-contract is a contract that is made, drafted in any electronic form. Contracts that are agreed with a click 'I Accept' on the software leads to contractual obligations and if they are formed on the web they are international virtual contracting though, sometimes, parties to the contract may be of bad faith (*infra*) or may not have met before due to, *inter alia*, lockdown or

during the curfew. The Mauritius legislator passed the *Information Technology Act* which is basically formulated on the UNCITRAL's guidelines, which are not binding on the ratifying parties, which are framed rules for e-contracting under the *Convention on the Use of Electronic Communications in International Contracts (CUECIC)* provides for contracts which are agreed and formed on the web with written contractual terms.

The UNCITRAL achieved a new milestone in adopting the Model Law on Electronic Commerce and its Articles 15, 16, and 17 on e-contracts<sup>85</sup>, in e-commerce and digital trade, is given full recognition and validity as long as States Members to the Model Law ensure that e-contracts are legally binding on the parties. The World Trade Organisation (WTO) saw a new milestone when most countries adopted the Model Law implementing the same model in their legislations like USA (*Uniform Transactions Act*), India (*The Information Technology Act 2000*) or Mauritius (*International Arbitration Act 2008*) where these legislations provide legal recognition of electronic documents and electronic commercial transaction. Furthermore, the European Union has adopted the E-commerce *Directive 2000/31/EC* to create a stringent and effective law for electronic commerce in the internet market within its 28 State European members.

In addition, an arbitration agreement (which is agreed separately and distinctly from the parent contract, may be made orally under section 4(2) (a) of the *International Arbitration Act 2008*. This pertinent section fully recognises categories of an oral arbitration agreement, similar to the *English Arbitration Act 1996*, or “the contract has been concluded by conduct, or by other means;”, and ‘other means’ would include electronic contract as well with full power given in the *International Arbitration Act 2008*. With all its efforts to deploy digital transformation by the Mauritian government, international virtual contracting arrives at the right time and at the right place where most countries are already ahead with virtual

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<sup>85</sup> Section 4 of the International Arbitration Act 2008 enacts that: “Arbitration agreement (1) An arbitration agreement – (a) may be in the form of an arbitration clause in a contract or other legal instrument or in the form of a separate agreement; and (b) shall be in writing. (2) An arbitration agreement is in writing where – (a) its contents are recorded in any form, whether or not the arbitration agreement or the contract has been concluded orally, by conduct, or by other means; (b) it is concluded by an electronic communication and the information contained in it is accessible so as to be usable for subsequent reference; or (c) it is contained in an exchange of statements of claim and defence in which the existence of an agreement is alleged by one party and not denied by the other. (3) The reference in a contract to a document containing an arbitration clause constitutes an arbitration agreement in writing where the reference is such as to make that clause part of the contract”.

international contracting with Mauritius<sup>86</sup> as an international arbitration jurisdiction<sup>87</sup> of choice to settle disputes by way of international<sup>88</sup> commercial arbitration<sup>89</sup> as an alternative to the traditional WTO dispute mechanisms.

Irrespective, a contract is among the most essential and important element that a human being has ever invented it is time to reflect upon the recognition of the legality of virtual contracting together with important legal issues as to the role of good faith (Sim D., 2014) and fair dealing in international contracts, in particular, in the international law of sale of goods (Bell G. F., 2007), jurisdictional constraints of international contracts in investor State disputes, foreign State immunity in international commercial arbitration<sup>90</sup> with majors or the apex of all legal issues as to whether virtual contracting has legal recognition and to what extent?

The United Nations adopted in 1980 *The United Nations Convention on Contracts for the International Sale of Goods (1980) (CISG 1980)* such that its Article 13 is the relevant enactment to deal with E-Contracts and with the sudden growth of e-contract worldwide the United Nations Commission on International Trade Law (UNCITRAL<sup>91</sup>) reacted promptly as to the validity and the legality of e-commerce with digital signatures mentioned in Article 7 of the Model Law after much debates and discussion but to which the Mauritian legislator has

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<sup>86</sup> Published in 1985, the UNCITRAL Model Law came into operation to harmonise arbitration laws and legislations of various nations to which the small Republic of Mauritius has adopted by implementing substantially most of its provisions making its statutory in the form of *The International Arbitration Act 2008*. Section 2 of the International Arbitration Act 2008 enacts that: “Amended Model Law” means the Model Law on International Commercial Arbitration adopted by UNCITRAL on 21 June 1985, as amended on 7 July 2006

<sup>87</sup> Section 2 of the International Arbitration Act 2008 enacts that: “international arbitration” means any arbitration where – (a) the parties to the arbitration agreement have, at the time of the conclusion of that agreement, their place of business in different States; (b) one of the following places is situated outside the State in which the parties have their place of business – (i) the juridical seat of the arbitration, if determined in, or pursuant to, the arbitration agreement; or (ii) any place where a substantial part of the obligations of the commercial relationship is to be performed or the place with which the subject matter of the dispute is most closely connected; (c) the parties have expressly agreed that the subject matter of the arbitration agreement relates to more than one State or that this Act is to apply to their arbitration; or (d) the arbitration arises under an arbitration clause included in the constitution of a GBL company pursuant to section 3D;”

<sup>88</sup> Section 2C of the International Arbitration Act 2008 enacts that: “Disconnection of international arbitration from domestic arbitration and regime (1) In applying and interpreting this Act and the Convention on the Recognition and Enforcement of Foreign Arbitral Awards Act, and in developing the law applicable to international arbitration in Mauritius, no recourse shall be had to, and no account shall be taken of, the law or procedure relating to domestic arbitration”.

<sup>89</sup> Section 2 of the International Arbitration Act 2008 enacts that: “To promote the use of Mauritius as a jurisdiction of choice in the field of international arbitration, to lay down the rules applicable to such arbitrations and to provide for related matters

<sup>90</sup> Section 2 of the International Arbitration Act 2008 enacts that: “arbitration” means any arbitration, whether or not administered by a permanent arbitral institution;

<sup>91</sup> Section 2 of the International Arbitration Act 2008 enacts that: “UNCITRAL” means the United Nations Commission on International Trade Law

implemented in its domestic legislations<sup>92</sup> after the government of the Republic of Mauritius has signed all relevant conventions<sup>93</sup> and protocols making Mauritius a Model Law jurisdiction<sup>94</sup> in line with international arbitration rules<sup>95</sup> and the *New York Convention*<sup>96</sup> (Part III).

### **Mauritian Position on Recognition and Enforcement of Foreign Award in International Virtual Contracting Among MSMEs During Covid-19**

The Mauritian Supreme Court, as the Apex Court, has exclusive inherent and original jurisdiction in international commercial disputes over any award or interim measures passed by the Arbitration Tribunal. However, a perusal of *The International Arbitration Act 2008* clearly provides of domestic arbitration whereas the Supreme Court<sup>97</sup> is empowered, under section 22(1) of the *International Arbitration Act 2008*, to the recognition and enforcement of interim measures: “(1) An interim measure granted by an arbitral tribunal shall, subject to this section, be recognised as binding and, unless otherwise provided by the arbitral tribunal, enforced on application to the Mauritian Supreme Court, irrespective of the country in which it was issued”. This section opens a gateway to any foreign award and its recognition such that the Mauritian Supreme Court has power to award interim measures “irrespective of the country in which it was issued” in contrast to other countries like India where Part I of the *Indian Arbitration and Conciliation Act 1996* is inapplicable to an arbitration where the seat is outside India, following what has been said and applied in the recent judgment of the Indian Supreme Court and its full bench (five-Judge Bench of the Supreme Court) in the case of *Bharat*

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<sup>92</sup> Section 2 of the International Arbitration Act 2008 enacts that: “International Arbitration Rules” means Rules made under section 198 of the Courts Act for the purposes of this Act and the Convention on the Recognition and Enforcement of Foreign Arbitral Awards Act;

<sup>93</sup> Section 2 of the International Arbitration Act 2008 enacts that: “New York Convention” means the Convention on the Recognition and Enforcement of Foreign Arbitral Awards signed at New York on 10 June 1958;

<sup>94</sup> Section 2 of the International Arbitration Act 2008 enacts that: “Model Law jurisdictions” means jurisdictions which have, or have substantially, adopted the Model Law;

<sup>95</sup> Section 2 of the International Arbitration Act 2008 enacts that: “International Arbitration Rules” means Rules made under section 198 of the Courts Act for the purposes of this Act and the Convention on the Recognition and Enforcement of Foreign Arbitral Awards Act;

<sup>96</sup> Section 2 of the International Arbitration Act 2008 enacts that: “New York Convention” means the Convention on the Recognition and Enforcement of Foreign Arbitral Awards signed at New York on 10 June 1958;

<sup>97</sup> Section 2 of the International Arbitration Act 2008 enacts that: “Court” – (a) means a Court in Mauritius; and (b) includes, where appropriate, a body or organ of the judicial system of a foreign State; but (c) does not include the PCA;

*Aluminum Company and Ors v Kaiser Aluminium Technical Service Inc. and Ors* (2012) 9 SCC 552, and this judgment overruled a set of decisions reached in *Bhatia International v Bulk Training S.A. and Anr.* AIR 2002 SC 1432; *Venture Global Engineering v Satyam Computer Services Ltd* AIR 2008 SC 1061 and *Phulchand Exports Ltd v OOO Patriot* (2011) 10 SCC 300.

The lesson that can be drawn from section 22(1) of the Mauritian *International Arbitration Act 2008* is that a greater number of countries have started considering it an ideal platform for e-investment, e-trade, e-business and e-commerce as an interim measure is enforceable “irrespective of the country in which it was issued” before the Mauritian Supreme Court adding to flexibility and recognition.

These legal obstacles and doubts may be removed with at least the harmonisation of international trade law based on the UNCITRAL Model Law and UNCISG Model Law. Mauritius (*Consumer Protection Act*) and common and civil law countries (*UK Unfair contract Terms Act 1977*, the *UK Unfair Terms in Consumer Contracts Regulations 1999*, *Indian Contract Act 1872*, the *Indian Specific Relief Act 1963* or the *Indian consumer Protection Act 1986*) responded positively to rules and regulations set by these models having them domesticated into an armada of national law and legislations to facilitate trade, finance and business with different local and international dispute mechanism settlement and international arbitration so that investors are reassured that Mauritius is an ideal platform to do business and that there are safeguards that their rights are protected in any commercial suits before and independent and impartial court, and that its arbitration law is robust, reliable and certain.

Having achieved all these milestones in the development of doing business in Mauritius there are some uncertainties towards the recognition and enforcement of foreign arbitral awards as the Supreme Court of Mauritius has unlimited jurisdiction in all civil and criminal proceedings under section 76 of the Constitution 1968 and judges are therefore armed with extremely wide powers and jurisdiction to refuse the recognition of awards on the ground of public policy in the absence of any *Arbitration and Conciliation Act* in Mauritius (while some countries like India has already passed *The Arbitration and Conciliation Act 1996*) but its *International Arbitration Act 2008* is perfectly in line with the spirit of *the New York Convention* and the UNCITRAL Model.

Actually, the Republic of Mauritius is governed by *The International Arbitration Act 2008* (Act 37/2008), as amended, which is *strict sensu* in line with the UNCITRAL Model Law and has signed and ratified *The United Nations Convention on The Recognition and Enforcement of Foreign Arbitral Awards (New York Convention)*, and the Mauritian Parliament has enacted the *Foreign Awards (Recognition and Enforcement) Act* (Act 35/1961) which governed the

recognition and enforcement of foreign arbitral awards dissipating some doubts with respect to enforcement of an award which may be set aside by the Supreme Court on the ground that it is contrary to public policy under section 39(2)(b)(ii) of *The International Arbitration Act 2008*. Irrespective it is international virtual contracting or not investors who fail to solve their dispute amicably may have recourse to international arbitration as agreed<sup>98</sup> between the parties instead of having recourse to traditional courts which is too often slow and there is a lack of confidentiality. Another important feature of Mauritius international arbitration, as an ideal platform for international virtual contracting, is its mixed system with French civil law whereas traditionally common law countries and statutes do not expressly mention the requirement of “good faith” in contracting, with the notable exception of the United States with its Uniform Commercial Code 2002 (paragraphs 1-203). Therefore, in addition to its Civil Code there are relevant provisions in various conventions that the Republic of Mauritius has signed and ratified (*Vienna Convention on International Contracts for the Sales of Goods-CISG*<sup>99</sup>) and which are also expressly available under Mauritian law and legislations in the form of statutes may now be examined (Part IV).

### **International Commercial Contracts, Cross Border Transactions and the Role of UNCITRAL For MSMEs during Covid-19 Pandemic Disease**

In the Mauritius legal system, the Code Napoléon 1804 was imposed on the inhabitants of Isle de France, now Mauritius, and it remains still in force despite the British Empire took the island but the *Capitulation Act 1810* stipulates that the inhabitants of the small island will preserve their laws, religions and traditions. Therefore, in the French Civil Law countries and traditions just like in Roman Law countries, and German Law where there is also an obligation on the seller to deliver spare parts under the duty of good faith, there are various codes and the Code Napoléon 1804, now Code Civil Mauricien (CCM), contain relevant provisions *sui generis* on good faith among parties to a civil and commercial contract (art. 1134 CCM) with courts having construed the elements of “good faith” in its ordinary meaning and as a substantive principle in all stages during the pre-contractual phase, the execution of the performance of the contract and upon termination or breach if any. It is trite law that; in order to avoid *inter alia* fraud, misrepresentation or duress; parties in an international virtual contract

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<sup>98</sup> Section 2A of the International Arbitration Act 2008 enacts that: “Extent of Court intervention. In matters governed by this Act, no Court shall intervene except where so provided in this Act”.

<sup>99</sup>The United Nations Convention on Contracts for the International Sale of Goods (1980) (CISG 1980) (adopted on the 11 April 1980, entered into force on the 1<sup>st</sup> January 1988) 1489 UNTS 3.

shall also be of good faith (Ström, 2011) following principles of Roman Law coupled with relevant international covenants that the government of Mauritius has signed and ratified for a fair deal in the international law of sale of goods especially in e-contracts where it is not necessary that parties know each other or never meet (Gunpath RP and Sornum D., 2013) and the validity of the contract may be an issue. As an illustration, in the *BRI Production*<sup>100</sup> case the seller shipped the goods to a different destination without the knowledge of the buyer, and the court ordered the seller to pay damages, as his actions were contrary to good faith under the CISG.

It is presumed and implied that parties to any contract are of *uberrima fides* (Povrzenic N., 2014) but to what extent? Neither doctrine nor jurisprudence (*infra*) has been useful to enlighten the problematic of “good faith” in international commercial contracts (Powers Paul J., 1999). True is it that good faith shall be construed in its very broad terms but, then, shall negotiators to an international commercial contract include the element of fairness, ethics, reasonableness or decency (Summers, 1968)? The CISG, as opposed to UNIDROIT Principles on International Commercial Contracts<sup>101</sup> (Farnsworth A., 1995), is often assessed and criticised for not having any express provision that embodied an obligation on the contracting parties to act *uberrima fides*, an element of utmost importance especially in virtual contracting and secondly, the CISG does not impose an express obligation of good faith on the contracting parties but this obligation is often construed as a general principle as confirmed in various international arbitration cases on contracts and good faith (*Cowhides case* and the *Rolled Metal Sheets case*).

In fact, Article 7(1) of the CISG is neither of great help here. It stipulates that in the interpretation of this Convention, regard is to be had to its international character and to the need to promote uniformity in its application and the observance of good faith in international trade. In *CPC v Qatari Diar Real Estate Investment Company (2010) EWHC 1535 (Ch.)*, good faith was construed as requiring parties to avoid cynical resort to textual letter of the law, observe reasonable commercial standards of fair dealing, be faithful to the agreed purpose of the contract and act in accordance with the justified expectations of the other party. In *Ontario Inc. v Lloyd's London Non Marine Underwaters 2004 184 DLR (4<sup>th</sup>), 687 Ont.C.A (29)* it was held that “the duty of good faith also requires an insurer to deal with its insured’s claim fairly,

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<sup>100</sup>*BRI Production case, Bonaventure v Pan African Export* <http://cisgw3.law.pace.edu/cases>

<sup>101</sup>International Institute for the Unification of Private Law, Principles of International Commerce Contracts (1994).

good faith is defined as “an expectation of each party to a contract that the other will honestly and fairly perform his duties under the contract in a manner that is acceptable in the trade community””. In the case of *Industrial Equipment Case*, the ICC Court of Arbitration there were claims from the Spanish seller against the German buyer for failure to pay for some deliveries, there were counter claims from the buyer that the seller failed to deliver spare parts the arbitrator held that the provisions of Article 7(1) CISG stipulates only for the interpretation of the Convention but there is no collateral obligation may be derived from the “promotion of good faith” but in the *Granular Plastic*<sup>102</sup> case the court gave the widest possible interpretation to Article 7(1) CISG after having admitted that “The CISG does not contain any provisions concerning the method to be used for interpreting a contract”.

### **Conclusion and Recommendations**

Would it be safe for the contracting parties to contract online without any precise legislation or protocols on international virtual contracting? Parties to any international virtual contracting must deal with e-contract(s) cautiously taking into account the validity of the electronic signature, whether the parties are of good faith (supra) in a world of change and digital transformation, and the relevant jurisdiction to claim for damages which may amount to millions of dollars in addition to trouble and costs for an international arbitration, which would overshadow the traditional WTO’s dispute settlement. There are transfer of money and numerous cases of fraud has been detected and it is always difficult to, *inter alia*, retrace back fictitious transactions and fake bank details, money laundering, bribe or anti-trust among negotiators and swindlers. International virtual contracting has been criticised as there are loopholes in the law and there is no security to protect negotiators online and they are often left at their own risk and perils. With these alarming words an appeal is made to relevant international commissions to come up with safeguards against computer and web and internet crimes. The Mauritian legislator reacted promptly with the promulgation of relevant and important domestic legislations to protect its individuals who are online and penalties to punish violators for cybercrime and cyber-attacks among others.

- International virtual contracting would soon supersede traditional contracting, and the small Republic of Mauritius must be prepared to do “more with less” that is with digital transformation and transformation in the mindset of people, and in terms of people becoming more digitally literate to face competition so that they are more involved in skills, training,

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<sup>102</sup> Granular Plastic case [http://cisgw3.law.pace.edu/cases/95033\\_igi.html](http://cisgw3.law.pace.edu/cases/95033_igi.html)

upskilling of people to be prepared for digitilisation in using new software and new technology in a new world of doing business after the Covid-19 pandemic disease has brought a crisis but crisis also bring new opportunities as more and more people at all levels in all sectors without any exception are going online.

•The Mauritian landscape is bright with relevant legislations that have been passed by Parliament to cater for data protection (*Data Protection Act*) and that would also cater for sustainable development in the country and enhance human capital to adapt to new soft skills making students more employable, to prepare people and the government to go to digital transformation for MSMES to survive or to overcome new challenges in emerging fields (fintech, agro-technology, health technology and e-care and health, e-commerce, e-business, or e-contract) and sectors (e-MSMEs, health and medicine, e-tourism, e-digital economy or e-circular economy) provided there are relevant government policies with the proper digital platform and metrics to measure whether digital transformation or e-contracts are improving or not but e-contracts would certainly bring additional benefits in terms of trade and business in Mauritius.

• And finally, Article 11 of Contract Law of the People's Republic of China recognizes e-contract. Rules of Chinese contract Law are also found in the General Principles of Civil Law (GPCL of 1986). In France, article 1316-1 of the French Civil Code recognises electronic contract. In the United States, the *UC Electronic Signature on Global and National Commerce Act* and the *Electronic Signatures in Global and National Commerce Act (E-sign Act)* also recognise e-contract with model laws such as *The Uniform Computer International Transactions Act (UCITA)* and the *Uniform Electronic Transactions Act (UETA)*. In the year 2013, the OECD has provided for Guidelines for Protecting Consumers from Fraudulent and Deceptive Commercial Practice across Borders.

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**How can the SME Act 2017 and the current institutional and regulatory frameworks in Mauritius promote the contribution of SMEs to the blue economy post COVID-19?**

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### **Introduction**

The COVID-19 pandemic has changed the economic landscape of many countries. In 2020, with the accelerated pace at which the virus was spreading, countries worldwide were obliged to close their borders and impose national lockdowns. The purpose of these national initiatives was to protect human life and health by stopping human interactions and thus reducing the spread of the virus. From a health and sanitary perspective, lockdowns are praised as they prevent the rapid transmission of the virus by limiting human movements and interactions (European Observatory on Health Systems and Policies, 2021). However, national lockdowns have generated various socio-economic challenges for many countries.

As lockdowns were imposed, businesses, schools and other economic sectors had to close for the duration of the lockdowns. As commercial activities were halted in many countries, this had a dire effect on their national economies. According to the World Bank (2020), national lockdowns triggered several socio-economic costs for countries. These costs are: human capital development was disrupted as schools and access to health care facilities were restricted, businesses in various sectors such as tourism and international trade were interrupted resulting in huge economic deficits for some and unemployment for others. The World Bank estimated that there had been a drop of 5.2% in the global economy in 2020.

Mauritius, just like many other economies worldwide, was severely impacted by the economic costs associated with the COVID-19 pandemic. Several pillars of the Mauritian economy, namely the industrial sector and tourism sector, were highly affected by the pandemic. The UNDP in its report on ‘The Socio-Economic Impact Assessment of COVID-19 in Mauritius’,

noted the drastic decline in industrial output in various sectors. For instance, a decline of 65% was noted for the textile industry, a decline of 27.6% for the food processing industry and 46.4% for the manufacturing sector. The tourism sector has been the most heavily affected sector of the Mauritian economy. Earnings from the tourism sector in 2020 was at Rs 18 billion compared to Rs 63 billion in 2019. Pertaining to the labour market, the unemployment rate rose from 7.2% to 10.2% as at May 2020. Finally, the percentage of real GDP growth of the country was -14.9% in 2020 compared to +3.0% in 2019 (Statistics Mauritius, 2020).

Just like Mauritius, post COVID-19, many economies are facing daunting socio-economic challenges. Many governments are implementing measures to help their economies grow. These measures include: stimulus packages, austerity measures and encouraging the creation of small and medium enterprises (SMEs). SMEs are considered as a powerful tool to help countries in recovering from the socio-economic costs of the pandemic. Being able to adapt to the demands of the markets and being a key contributor in creating employment and generating revenue for a country, SMEs are a key asset in helping countries in their economic revival.

For decades, Mauritius has valued the contribution of SMEs for the economic development of the country. Parliament has set up various legislations, frameworks and regulatory bodies to boost the contribution of SMEs in the economic development of the country. The Small and Medium Enterprise (SME) Act 2017, the 10 Year Master Plan for the SME sector in Mauritius and the SME Mauritius Ltd, illustrate the legal and regulatory frameworks which have been enacted to regulate activities of SMEs in the country.

Today, as Mauritius is encouraged to promote the contribution of SMEs in its economic recovery, the country has to further diversify its economic activities and sectors. The blue or ocean economy represents the sector within which Mauritian SMES can prosper. The blue economy offers opportunities for research and investment in fields such as: maritime cyber security, ocean finance and accounting, marine biotechnology along with traditional sectors such as fishing, marine transport and tourism which require service providers. This is where the input of small and medium enterprises are of utmost importance. Mauritian SMEs are encouraged to contribute to these sectors as this will help in creating employment and generate revenue for the country.

The purpose of this paper is to examine how the SME Act 2017, the 10 Year Master Plan and the SME Mauritius Ltd can promote the contribution of Mauritian SMEs in the blue economy context post COVID-19. The paper intends to provide for a critical examination of the SME Act 2017 whereby the strengths and weaknesses of the Act will be highlighted. Furthermore, a SWOT analysis of the 10 Year Master plan and the SME Mauritius Ltd will be conducted to assess their importance. The analysis conducted will illustrate the current legal state of affairs of SMEs in Mauritius. This analysis will also elaborate on how the current legislative and regulatory framework can contribute to the development and success of the blue economy post COVID-19.

The methodologies used to conduct this research are : a black letter analysis whereby an examination of the SME Act 2017 will be carried out. Primary data will be obtained through questionnaires to assess the effectiveness of the 10 YEAR Master Plan and the SME Mauritius Ltd.

The paper is divided into three parts. Part I provides for the background of the blue economy and how SMEs can benefit from this sector post COVID-19 . Part II examines the legal and institutional frameworks regulating SMEs in Mauritius and Part III provides how the regulation of SMEs in Mauritius can enhance their contribution in the blue economy agenda of the country.

### **The blue economy and Small and Medium Enterprises post COVID-19**

The blue economy is a concept which is gaining popularity worldwide. Despite the fact that there is no universally accepted definition of the term ‘blue economy’, several international organisations as well as scholars agree that, to devise a working definition of the concept, the following elements have to be taken into consideration: firstly the oceans should be seen as a pool of resources which countries can exploit for economic purposes, secondly oceans and seas host a rich and varied marine ecosystem which have to be protected and thirdly the oceans contribute to the livelihood of many communities (Smith-Godfrey, 2016).

The World Bank provides for a definition of the blue economy which encompasses these three elements. The World Bank defines the blue economy as the ‘sustainable use of ocean resources for economic growth, improved livelihoods and jobs and ocean ecosystem health’ (World Bank, 2017). The sustainability element is a major feature of the blue economy. Sustainability

means ensuring the protection of the marine ecosystem while at the same time benefiting from the resources that the oceans provide. Hence, when implementing the blue economy, the following criteria have to be considered: activities conducted under the blue economy should generate social and economic benefits for the present and future generations; it should promote the protection, maintenance and restoration of the marine ecosystem and it should ensure the reduction of waste and use clean technologies to ensure the protection of the marine environment (World Bank, 2017).

Many countries have already taken the steps to make the blue economy a central pillar of their national economy. The reasons behind the rapid rate of implementation of the blue economy rest on the advantages that this new sector represents. The oceans and seas provides for a pool of resources that can be sustainably used for the socio-economic development of countries. The blue economy provides for a wide range of sectoral maritime activities. Traditional maritime sectors such as: fishing, tourism and shipping activities are enhanced and regulated. Along with these traditional sectors, new sectors are emerging within the realm of the blue economy. These sectors are: marine bioprospecting, marine biotechnology, offshore renewable energy, ocean finance and accounting and cyber maritime security among others.

Mauritius, with its Exclusive Economic Zone extending up to 2.3 million km<sup>2</sup> has the potential required to develop the blue economy. Over the years, the authorities have set up roadmaps and strategies to enhance the development of this new sector because of the advantages that it generates.

The blue economy offers employment opportunities directly and indirectly in both the traditional and emerging maritime sectors. In addition to job creation, the blue economy creates investment opportunities in human and capital development. In order for the blue economy to be effectively and efficiently implemented, people have to be trained and capital invested in the various maritime sectors. This provides for an opportunity for countries to collaborate by sharing knowledge, experience and capital. The Organisation for Economic Cooperation and Development (OECD) estimated that by 2030 ocean-based industries would generate approximately USD 3 trillion worldwide.

The key criteria needed for the effective implementation of an ocean-based economy are the following: a vast knowledge base of the ocean and its resources, availability of resources for

the development and management of various marine related economic activities and the protection of the marine ecosystem. Many Small Island Developing States (SIDS) and coastal least developed countries lack these criteria as they face human, financial and technological capacity constraints with regards to developing their blue economy. The lack of technology, tools and untrained labour makes it difficult for some SIDS and coastal least developed countries to fully implement and benefit from the blue economy (UNCTAD, 2014). In order to address these shortcomings and in an attempt of not relying exclusively on international aid, the governments of many SIDS and coastal least developed countries are encouraging the setting up of small and medium enterprises as part of their blue economy strategy (Roberts and Ali, 2016).

Small and medium enterprises are important contributors to the economic development of emerging economies. As there are no agreed definition of SMEs (Berisha & Pula 2015) countries, through their national legislations, establish the criteria for enterprises to fall into the categories of: micro, small or medium enterprises. For example, in Canada as Treasury Board of Canada Secretariat, a small enterprise consists of less than a 100 employees and generate an annual revenue between \$30,000 to \$ 5 million.

In Mauritius, an enterprise is categorised as a small enterprise if it has an annual turnover of not more than MUR 10 million (approximately \$ 250,000) and an enterprise is considered as medium if its annual turnover is more than MUR 10 million (approximately \$250,000) and less than Rs 50 million (approximately \$ 1.2 million). According to the World Bank, SMEs contribute to 35% of the GDP of emerging economies. In the context of the blue economy post COVID-19, the creation of new SMEs and the promotion of existing ones can help countries in their journey of economic recovery.

One main characteristic of SMEs is their ability to quickly adapt to the demands of the market (Keskggn *et al* 2010). As the blue economy is an emerging sector with its intrinsic demands and specificities, SMEs with their ability to adapt and innovate, can rapidly meet the demands and expectations of the different sectors and actors involved in the blue economy. Emerging ocean based new economic sectors such as blue finance and investment, trade in goods and marine services as well as marine technology and innovation, require service providers that can conduct research and development of products and services, provide for innovative business ideas and avenues and adapt to the demands of the various stakeholders involved in the blue

economy. Small and medium enterprises are tailor-made to fulfill the demands of this new economic sector.

Post COVID-19, SMEs through their contribution to the development of the blue economy, can give a boost to the economy of a country. Not only will SMEs provide for innovative products and services, they will also contribute to job creation, whether directly or indirectly for the blue economy. SMEs represent a source of revenue for countries as they encourage national and international investment and ensures economic growth.

### **Legal and Institutional Frameworks regulating SMEs in Mauritius**

Mauritian Small and Medium Enterprises have witnessed considerable development throughout the years, making a significant contribution to the economy. The local government is always working on measures to help the SME sector grow and thrive. Because of the prevalence of unemployment, most people opt to work in the SME sector, as a result of which they can start their own firm at a minimal cost. Following this trend, it can be expected that post COVID-19, the number of SMEs in Mauritius increases due to a rise in unemployment in 2020.

Small and medium enterprises have always been a key feature of the Mauritian economy. Over the years, several legislations and regulatory frameworks have been developed to promote and encourage the creation of SMEs. Currently, the main legislation which regulates activities of SMEs in the country is the SME Act of 2017. Along with the Act, two regulatory frameworks have been established, namely: the SME Mauritius Ltd and the Mauritius SME 10 Years Master Plan. These regulatory frameworks and body contribute to the creation and expansion of SMEs in the country.

#### **➤ SME Act 2017**

Over the years, a series of modifications have occurred in the legal framework governing SME regulations. The present Act has been in effect since the repeal of the Small and Medium Enterprise Development Authority (SMEDA) Act in July 2017. The SME Act created the SME Mauritius Ltd, a government-owned firm registered under the Companies Act 2001. The SME Act is a legislation which integrates a higher level of modernization, promotes beneficial business practices, and has better uniformity.

The Act focuses primarily on SMEs and the registration of microenterprise, small business, or medium enterprise with the Registrar of small and medium enterprises (Part III of the Act). The new legislation focuses mainly on the administrative procedure - registration, fees, and violations pertaining to the operations of SMEs in Mauritius and Rodrigues.

The SME Act emphasise on catering and supporting the creation and performance of SMEs in order to promote a healthier and more progressive economic sustainability. Section 8 (1) of the Act provides that:

Where a person intends to set up an enterprise which has a project value not exceeding the value specified in the Second Schedule [Rs 20 million], he may request the Registrar, in writing, to provide support and information to facilitate the obtention of any registration, permit, licence, authorisation or clearance which the enterprise may require.

The new legislation, which the government regards as a significant landmark in the growth of the SME sector as stated by the Minister of Industrial Development, SMEs and Cooperatives, assists local SMEs in combating strong worldwide competition by implementing innovative techniques.

The current SME Act includes measures based on the Small and Medium Enterprises Development Authority (SMEDA) Act. Despite the fact that it has employed various portions of the SMEDA Act, it has repealed certain significant provisions that may have been critical for the effective functioning and growth of SMEs.

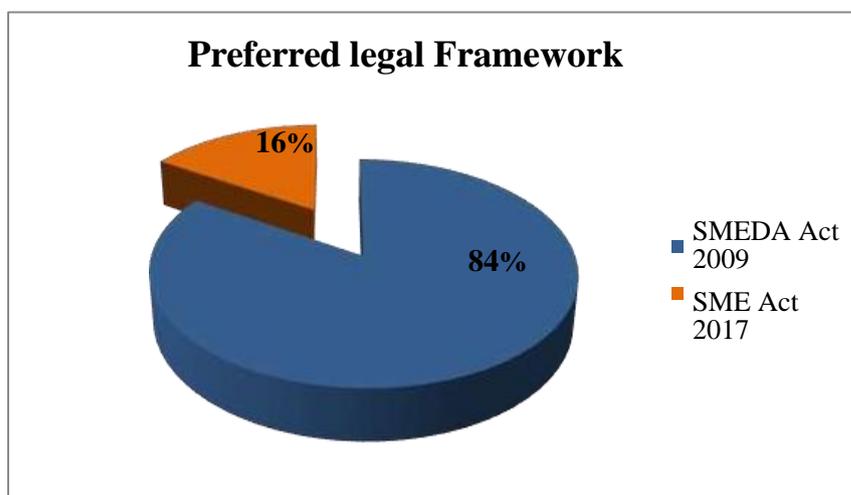
For instance, the new SME Act has repealed Part II of SMEDA Act which dealt with the objectives, powers and functions of the former SME regulator in Mauritius, namely the Small and Medium Enterprise Development Authority. The new SME Act does not provide for the established objectives, powers and functions of SME Mauritius Ltd. There is more scope for SME Mauritius Ltd to divert from its core functions and roles, thus impacting on the performance of SMEs.

Furthermore, the SME Mauritius Ltd is a government-owned firm, it is registered and incorporated under the Companies Act 2001, as opposed to SMEDA, which was a parastatal agency. This casts doubt on its accountability, auditing, and good governance; as a

government-owned company, it is subject to the Companies Act 2001 and its own Memorandum of Understanding- thus having its own framework for accountability- and this limits the ability of members of parliament to question the functioning and accounts of SME Mauritius Ltd despite being vested with public funds.

When the Census of Economic Activities of 2013 is compared to the one of 2018, it can be deduced that the steps implemented have resulted in an increase in the number of SMEs, as well as their contribution to GDP and employment. However, the Ten Year Master Plan, rather than the new legislation, has aided in this progress. This is mostly due to the fact that the current legislative structure prioritises administrative processes above expansion. The Ten Year Master Plan includes a variety of policies aimed at making Mauritius a high-income economy, as well as proposals for the passage of the SME Act.

Through a survey conducted for purpose of a final year dissertation (Dawoodarry, 2021), among 100 people interviewed 84% preferred the SMEDA Act compared to the 16% for the SME Act as shown below. This shows the extent to which further innovation is necessary to enhance the legislative framework especially to fit the context of today.



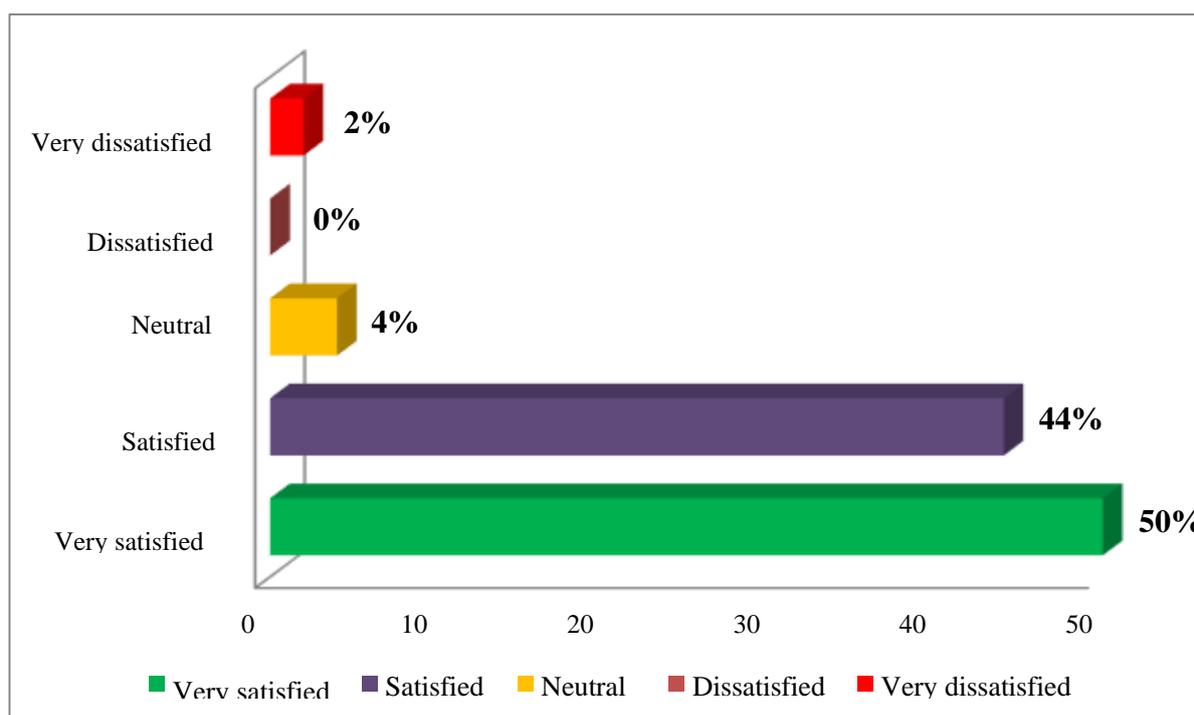
#### ➤ Ten Year Master Plan

In 2016, the Ministry of Business, Enterprise, and Cooperatives of Mauritius created a Ten-Year Plan in 2016 to foster economic growth, development, and unemployment reduction, as well as to uncover the causes of SME failures in Mauritius. Its goal was to transform Mauritius

into a high-income economy through innovation, job development, value addition, and economic democratisation.

The driving reason for the implementation of the SME Act has been the 10 Year Master Plan, which aimed to reshape Mauritius' SME sector in light of its growing relevance and contribution. Given the constraints, both locally and worldwide, it was critical for SMEs to have a stable business climate, easy access to capital when needed, and institutional assistance to boost exports and gain access to new markets over time.

The main objectives of the Master Plan were to improve SME's contribution to raise GDP from 40% to 52%, employment from 55% to 64%, exports from <3% to 18%. Information obtained from the survey conducted for the purpose of a final year dissertation (Dawoodarry 2020), showed that among 100 respondents, 50% was very satisfied with the 10 Year master Plan:



➤ **SME Mauritius Ltd**

The Small Scale Industry Unit (SSIU) was established within the Ministry of Industry and Commerce in 1976, and was subsequently renamed the Small Industry Development Organisation (SIDO) in 1983 owing to more integrated policies. As Small Scale Industry, a first legislative framework was proposed in 1988. The Industrial Expansion Act of 1993, also known as the Small and Medium Industries Development Organisation (SMIDO) Act, was

enacted to consolidate and promote the country's contemporary SME sector. Through the repeal of the SMEDA Act which was replaced by the SME Act 2017, it brought the emergence and formation of SME Mauritius Ltd.

The aim of the SME Mauritius Ltd is to promote the development of SMEs in Mauritius. It provides for the infrastructural framework within which SMEs in Mauritius can prosper. The company develops programmes and schemes to help SMEs contribute and integrate the Mauritian market. For instance, SME Mauritius Ltd has set up a COVID-19 scheme which provides for financial assistance to SMEs which have been impacted by the COVID-19 pandemic.

The new SME legislation framework lacks of transparency. As a distinct legal body with no restrictions on its goals or board composition, the SME Mauritius has unrestricted ability to nominate members to its board. The institution will obviously rely on solid corporate governance rules to maintain sufficient accountability and transparency.

### **How can the current institutional and legislative frameworks in Mauritius promote the contribution of SMEs to the blue economy post COVID-19?**

SMEs have always contributed massively to the economic development of Mauritius since the country's independence. With over 138 500 SMEs operating in the country, SMEs contribute to 50% of employment (Padayachy 2020). Furthermore, Mauritian SMEs contribute up to 42% of the GDP of the island. Post COVID-19, the SME Competitiveness Outlook 2020-COVID-19 has hailed the measures undertaken by the government to assist SMEs. These measures include providing financial assistance to SMEs to help them face the challenges triggered by the COVID-19 pandemic.

Along with this financial aid, the legislative and regulatory structures in Mauritius do provide SMEs with an environment that encourage production. The SME Act 2017 spells out the procedures to be followed for the setting up of SMEs in the country. The 10 Year Master Plan establishes the strategies and actions taken by the government to boost the contribution of SMEs in the country. The SME Mauritius Ltd has been established to promote MSMEs in the country by providing facilities and mentoring services to MSMEs. However, the limitations of these institutional and regulatory frameworks are that they do not spell out how the SMEs in

Mauritius can further contribute to the economy growth of the country by being involved in the blue economy sector post COVID-19.

In order to help SMEs further contribute to the economic development of Mauritius post COVID-19, the government should encourage the development of MSMEs in the blue economy sector. As mentioned above, the blue economy provides for a panoply of sectors which require research, investment, capital and human resources. Since Mauritius has already embarked on its journey of making the blue economy the next pillar of the Mauritian economy, facilities should be given to MSMEs to foster their participation in the blue economy.

The role of SME Mauritius Ltd becomes important in that context. The organisation promotes the role of SMEs in Mauritius by providing training sessions to owners and employees of SMEs. Noting the increasing interest of the authorities to boost the blue economy, the SME Mauritius Ltd can provide training sessions and workshops to people interested in setting up SMEs in the area of the blue economy. These workshops and training sessions will provide individuals with the opportunities to learn more about the blue economy and the areas which require development and investment.

There can also be a collaboration between the Ministry of Blue Economy, Marine Resources, Fishing and Shipping and the Ministry of Industrial Development, SMEs and Cooperative to assess the areas within the Blue Economy sector which require research, investment and production from local SMEs. In line with that, the ministries should encourage the creation of SMEs in these particular areas. Furthermore, special grants dedicated to investment and development in the blue economy can be provided to encourage the development of SMEs in this field.

The 10 Years Masterplan is a laudable initiative that has provided for a roadmap for the development of SMEs in the country. The Masterplan emphasises that SMEs should become the 'engine of growth' for Mauritius in order to make the country a high income economy. Hence, the Masterplan has provides for strategies that will make Mauritian SMEs visible on an international level and make them competitive. One of these strategies include providing for a business friendly and liberalised environment to SMEs which will allow them to satisfy the needs of the local as well as international markets.

In the Masterplan, the authorities have identified various sectoral opportunities where local entrepreneurship is encouraged. Among these opportunities are aquaculture and the blue economy. The aspect of the blue economy involved in the Masterplan relates mainly to the traditional aspects of the blue economy, namely: fishing, seafood processing, mariculture, energy from biomass and cultivation of edible seaweed for export. Although these sectors, thanks to the input of SMEs, are contributing to the economic growth of the country, the Masterplan has failed to take into consideration service-oriented sectors of the blue economy.

Activities such as ocean finance and accounting, maritime insurance, maritime cybersecurity and marine technology needs to be developed as part of the Mauritian blue economy strategy. Local entrepreneurs, can provide for the input needed to develop these sectors in Mauritius. To boost the development of the blue economy post COVID-19, the Masterplan should be reviewed to address these emerging sectors of the blue economy. Furthermore, the priority given to the blue economy in the Masterplan should be reviewed. The priority should move from ‘medium’ to high priority for investment and development.

The SME Act is the main legislation which regulates activities of SMEs in the country. The legislation focuses on the procedural aspects of setting up SMEs in Mauritius. The legislation should be reviewed to include more substantive rights to entrepreneurs. One example of a substantive rights include: intellectual property rights protection. Although the Patents, Industrial Designs and Trade Marks Act 2002 as well as the Copyright Act 2014 are the legal frameworks protecting intellectual property rights in Mauritius, the recognition of intellectual property rights in the SME Act 2017 will project that element of assurance and protection that the law should provide.

With regards to the role of the 2017 Act in promoting SMEs in the blue economy sector post COVID-19, as a legal framework, the Act provides for all the mechanisms and facilities needed to set up SMEs. The Act facilitates the setting up of SMEs and even provide for a relatively quick time frame for the Registrar to issue a registration certificate. Article 4 (1) (4) reads as follow:

#### 4. Application for registration

(4) The Registrar shall, within 15 days from the date of receipt of an application or from the date of receipt of any information or document sought under subsection (3), grant or reject the application, and inform the applicant thereof.

Hence, 15 days as from the day of the application, an entrepreneur is aware whether his application is granted or rejected. This 15 days period is quite time and cost effective. Therefore, entrepreneurs having all the legal requirements as well as financial and technological capacities to start a business in the blue economy sector, is helped by the law as the time frame to obtain a licence is quick.

The SME Act 2017, the 10 Years Masterplan and the SME Mauritius Ltd were created to boost the contribution of small and medium enterprises to the economy of Mauritius. With their strengths and shortcomings, these frameworks are the backbone of SMEs creation and evolution in the country. These 3 frameworks provides for and facilitates the development of SMEs in the blue economy field post COVID-19. To better structure the role of SMEs in the blue economy sector, minor amendments have to be brought to these frameworks.

#### **Conclusion**

Post COVID-19, the role of SMEs is of utmost importance to Mauritius. The pandemic has caused an economic tsunami across the world. Economic activities were halted during the various national lockdowns and this has impacted on the livelihood of many individuals. As countries are restructuring their economies, new sectors are emerging. The one sector which is embraced by many small island states is the blue economy. The blue economy represents an economic salvation for many.

The oceans and seas are now the new gem which have to be sustainably exploited. Small and medium enterprises are the tools through which the blue economy can develop. SMEs are at the heart of research, development and innovation and are risk taking businesses which can become the pioneer in many areas of the blue economy.

In Mauritius, in order to help the country restructure economically, this paper argues that SMEs are the tools through which this can be realised. The country has in place a series of regulatory and legislative frameworks which can help in this endeavour. The SME Act 2017, the 10 Years Masterplan and the SME Mauritius Ltd are the mechanisms which promote the growth of

SMEs in the country. In the post COVID-19 context, some elements of these frameworks have to be reviewed in order to encourage Mauritian small and medium enterprises to invest and contribute to the development of the blue economy.

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## The regulatory constraints for MSMEs to adopt e-commerce in the COVID-19 era.

*V. Mooneeram-Chadee (University of Mauritius)*

### **Introduction**

During the past two years, most of our attention has been oriented towards the pandemic of the Covid-19 disease. Our whole lives have been transformed in ways that we would have never thought of even in our worst nightmares and we experienced never-lived-before circumstances. Situations such as lockdown, confinement, closure of frontiers, social distancing and limit on physical interactions were never known before the outbreak of the disease.

This catastrophe led to consequential changes to our personal, family and social life including the ways in which we work, we eat, we live and most importantly and most relevant to this study here, is in the way we trade (Perreve, 2020). By being confined and by avoiding going out for sanitary and security reasons, people had to devise innovative ways to continue to communicate and procure themselves with their basic needs.

Actually, it became important to understand how consumers shop and how traders sell in those new circumstances. The pandemic has disrupted the whole chain of trade especially during very strict lockdown conditions where restrictions were imposed by the various governments in order to control the spread of the virus. Outlets, shops, markets and supermarkets were closed. International transport of goods was brought to a halt. People could not shop in the usual way. The demand and supply of goods and services was brought to a sudden stop. However for the whole global chain of trade to function, this 2-way traffic of demand and supply needs to be sustained and needs to be adapted to the context of Covid-19. Doing trade like we did before, or did for centuries till then, was no more working and we had to adapt to the new normal and to come up with new strategies and new methods.

In this perspective, electronic commerce became the alternative to traditional trade. A report of the UNCTAD in 2021 (UNCTAD, 2021) makes mention that global electronic commerce jumped to \$ 26.7 trillion in 2020 and this upsurge was largely triggered by the Covid-19 pandemic as investors had no choice than to go online to trade and do business. In the new normal that the pandemic has put us in, e-commerce has got an important role to play. In the context of this paper, the wide definition of e-commerce provided by the World Trade

Organisation is adopted namely that e-commerce refers to ‘the production, distribution, marketing, sale or delivery of goods and services by electronic means’. (Ismael, 2020)

When we consider trade, we can mostly look at it from a multinational and international sphere but in times of closure of frontiers, it is crucial to think of trade from the micro level i.e from the perspectives of small, sometimes informal, traders and enterprises. Accordingly, this shift to e-commerce, that was so earnestly demanded and so necessary, did not apply only to big multinationals and big corporate entities. It also applied to the small enterprises, to the Micro, Small and Medium Enterprises (MSMEs). This paper therefore investigates the regulatory constraints for MSMEs to adopt e-commerce in the Covid-19 era.

In order to combat the negative impacts of the pandemic, the literature from individual research (Trawnih and others, 2021; Cueto and others, 2022) as well as the policy papers from international organizations (OECD, 2020; WTO, 2021) are all geared towards an imperative and urgent need to shift to the online environment. This applies not only for big enterprises but also, and may be even more so, for small businesses, which need to ensure their resilience and their survival.

Shifting online for big entities happened quite rapidly as they had the financial means, the information technology infrastructure as well as the personnel that allowed the transition to happen promptly. However, MSMEs encountered issues and difficulties of various nature namely financial, human resources, adoption of information technology and also legal constraints (Nazir, 2020). Our focus here remains on MSMEs and we shall probe into one of these difficulties that the latter encountered which is the legal constraints. Indeed, it has been advocated that the MSMEs need to shift their business online if they want to survive and if they want continuity in their operation. But the adoption of e-commerce cannot happen at all cost. Exposing these small businesses to even more hurdles and making them even more vulnerable are not the purposes of the digitalization process. Thus, it has to be recognized that the adoption of e-commerce comes with its own set of quandaries and tribulations (which may differ from those faced by big corporate entities) and the shifting online may not be a smooth process for MSMEs.

### **Objectives of the paper**

In this context, the objectives of the paper is to identify the legal rules that MSMEs must follow when shifting online and after identifying the legal rules, to analyse the constraints that these

rules represent to the MSMEs. The study is trying to understand how these rules can impede on the trade aspects that MSMEs are concerned with.

### **Methodology of the paper**

The research work adopts a mixture of doctrinal research and socio-legal research. The doctrinal research methods will probe into the existing literature on the subject and will identify the legal parameters. The socio-legal research method will then provide an analysis of these rules and the constraints that they represent for MSMEs. The socio-legal method has been adopted by carrying out 3 focus group discussions with MSMEs. Each focus group comprised of 6-7 participants. The first focus group discussion was carried out with blue entrepreneurs including 2 fishermen, 1 tourist guide, 1 beach hawker and 2 tourist tour operators. The two others were held with two groups of MSMEs with one group being micro-enterprises and a gender balance was also achieved. MSMEs supplying goods as well as services were included in the sample. Further, about 10 in-depth interviews were carried out with the medium and small enterprises and these interviews catered for women-led MSMEs as this is another important aspect to consider in the course of the research.

### **Quandaries of the online environment.**

As mentioned above, quandaries of various nature are associated with the online ecosystem and these are expounded below, together with the views gathered through the focus group discussions.

Firstly, difficulties are related to digital literacy (Ollenrenshaw, 2021). During the focus group discussions, the interaction with micro enterprises, especially old women entrepreneurs and blue entrepreneurs, has demonstrated that the latter have a very poor knowledge of information technology. Often, they do not have a computer or other information technology device, apart from their mobile phones. Further, they use mobile phones of earlier generations which come with a minimum of options and functions. Consequently, minimal activities can be done through this mobile phone. These micro and/ or blue enterprises encounter big hurdles to handle and adopt the online ecosystem.

Competition is another issue as it is difficult to compete and survive against the big corporate entities which are well equipped and already possess the required arsenal to face online trade (UNCTAD, 2022). The MSMEs are not well versed with digital marketing, website

management, intellectual property protection...etc. Subsequently, this impairs on the access that they have and maintain to the markets.

The digital divide issue is relevant to those micro enterprises. Access to information technology devices, to a stable and reliable internet connection as well as knowledge of the latest developments and innovation are to be ensured if these MSMEs are to continue operation online (Ganne and Patel, 2021). However, during the discussions with the entrepreneurs, it was noted that for many of them, the jargon such as artificial knowledge, robotics, big data and cloud computing were unknown to them. As a consequence they do not benefit from all those advancements.

Furthermore, e-commerce is allowing for new business models. Previously it was mainly the Business-to-Customer model that was popular but in online sales, the Customer-to-Customer model is growing in importance and becoming increasingly popular. The governments are more and more going online with several countries like Mauritius and Seychelles having government portals and several e-government services. It is relevant to the MSMEs as they need to identify where their business will fit in those new business models and how they will better integrate the existing and popular online business models mushrooming actually and still ensure its survival. In addition, e-government services are definitely helpful as the entrepreneurs can carry out multiple administrative tasks from home and it spares them the pain of moving to the offices.

Last difficulty related to the adaptability of the MSMEs to e-commerce. Is the business adaptable to the online mechanism? It was found out during the interviews and focus group discussions that for the blue entrepreneurs, it is difficult to shift online as it does not suit their specific needs. Fishermen, owners of small accommodation facilities, 'tables d'hôte' and pleasure crafts owners cannot benefit from a shift online as it does not suit the needs of their businesses. These products and services require consumption locally and cannot move to an online consumption.

In the midst of all these limitations and vulnerabilities, is the shift online warranted? Still, should the MSMEs shift online? Several research works have demonstrated that yet, it is important for MSMEs to shift online, the more so in a Covid-19 era. Several reasons justify

and encourage the transition, especially in the specific circumstances that the pandemic has put us into.

For example, in a confinement period, people had to cope with a new mode of living where the freedom of movement was constrained. In those new circumstances, the MSMEs, especially for those who were till then procrastinating the idea of moving online, they have been forced to move online if they wanted continuity in their trade. If they wished to continue earning income to survive and meet the running costs of their trade, they needed to move online. If it was not by want or desire, it became by will and obligation. Thus, the pandemic provided a greater impetus to move online. It was pointed out by the entrepreneurs interviewed that the confinement period was a difficult situation for them, especially for the micro enterprises. Most of the entrepreneurs already worked from home (WFH) and they are acquainted with the WFH reality but during that period, WFH was more challenging as all the family members were around. In a normal, pre-Covid period, family members would leave and go to work or go to school and the micro entrepreneur would be able to work comfortably, quietly and at their ease. But during the confinement period, everyone was at home and the entrepreneur's load of work increased since he would have to deal with all household chores and on top of that, continue to manage his small business, in such circumstances where the business survival is at stake. Here again, moving to the online environment was a good alternative which allowed the entrepreneur to, firstly, ensure a continuity in trade and secondly, bring in some income which was so much vital for the survival of the business.

Social distancing is another new situation that the pandemic has generated. How can the MSMEs leverage on that new situation? Most of the small and micro enterprises used to sell their stock mainly at the markets and fairs that are organized by the authorities including the National Women Entrepreneurs Foundation, SME Mauritius and the Ministry of Industrial Development, SMEs and Cooperatives. To fill the gap left by the absence of fairs and markets and the temporary closure of malls, showcasing the products online is an important alternative as it allows them to present their products and attract customers to a safe environment. Contactless delivery mechanisms were also proposed and launched by the Mauritius Post Ltd which came up with interesting schemes to help the MSMEs in the delivery of their products all over the island. This was an opportunity for the MSMEs to continue to trade.

Eventually, the closure of frontiers and absence of tourists became a new normal we lived in for several months. This had a severe impact on the MSMEs and the island in general as we are highly dependent on the tourism sector. In that perspective, MSMEs have had to shift the reliance that they had on the tourist population to the local population and they had to adapt to the needs and demands of the local population. Offering their products online locally/ to local customers, is again one way for them to continue to trade. At the same time, they would be providing an alternative for local consumption because Mauritius has a high dependence on imported goods. Exposure to the products of MSMEs is allowing the local population to have access to some local products which could replace or be a substitute to the imported goods. It would allow the MSMEs to capture this new market of local customers provided though that they re-engineer themselves towards the demand of the local population instead of the reliance on tourists. Sometimes, this may imply the need to re-gear their production; for example from production of artisanal and souvenir products for tourists to products which the local population may need in their daily life. They may need to be creative enough to venture in the crafting of products that will be attractive to the local population.

Eventually, if the transition online is adopted, it is important that this shift permits continuity in trade for the MSMEs. This continuity in trade is equal to income generation and ensures the survival of the business whilst rendering it more resilient to face shocks.

### **The dilemma of legal rules**

It has been demonstrated that quandaries definitely exist in the adoption of e-commerce by MSMEs. Yet, there is another predicament that is faced by MSMEs but which is quite contradictory in nature. This one relates to the adherence to legal rules that apply to the e-commerce environment.

On one side, it has been demonstrated in the literature that Covid-19 has boosted the adoption of e-commerce and to allow digital trade to prosper, an adequate legal framework needs to be implemented. The legal framework acts as a facilitator and an enabler to the smooth and fruitful shift to the online ecosystem. But then, the contradiction lies in the fact that these legal rules that are normally seen as an enabler of e-commerce, become a hindrance when applied to the context of MSMEs. During the interviews and the focus group discussions, it has been transpiring that it can be the other side of the coin and legal rules are not really an enabler but rather, they obstruct the digitalization process. Those same parameters become a constraint in

the context of the MSMEs. The latter have several characteristics that make them different from other big enterprises (UNCTAD, 2022), for example, limited personnel is involved, they are not very skilled in or familiar with the digital environment, there is little awareness of the digital marketing strategies to adopt. Most relevantly, they find it difficult to cope with the legal rules which impose parameters to which they are not acquainted with. Terminologies like cyber security, data protection, intellectual property rights, consumer protection, competition law, electronic and digital contracts and signatures are not their cup of tea. Hence, all of these legal tools, despite being proven enablers of e-commerce, they might not play the same role when it comes to MSMEs.

### **The legal constraints.**

It is worldwide recognized that legal parameters are fundamental to the success of e-commerce. Cybersecurity, data protection, intellectual property rights, consumer protection, competition law electronic and digital contracts and signatures, all of these, create an environment which is supportive to e-commerce, all to the benefit of the consumers as well as the traders. The whole digital ecosystem normally benefits from these components of the regulatory framework on e-commerce.

Conversely though, from the focus group discussions and interviews carried out, as well as from some recent literature, these legal mechanisms can turn into legal constraints for MSMEs. The following points were revealed through the interaction with the entrepreneurs:-

- Intellectual property protection is very crucial to MSMEs. Since they generate innovative and creative products, intellectual property rights remain directly relevant and helpful to them and they need to be protected by copyrights, trademarks, patents or trade secrets law. Unfortunately, the entrepreneurs have little knowledge of all these intellectual property rights. When they were asked about trademarks, in their perception, it was meant for big companies and not for them. For the few who were aware of intellectual property laws, they found that it required a tedious registration process which was too complicated and too time-consuming for them.
- E-contracts, E-signatures, digital signatures, certification authorities and the various other terminologies are very confusing to the MSMEs. Though these electronic versions

of the traditional contracts are fundamental to the smooth operation and the security aspect of an online transaction, the entrepreneurs are not familiar with them.

- Consumer protection also is an important issue. The entrepreneur recognized that he will need to ensure that he can provide protection to his customers. For example, he needs to guarantee the fundamental consumer's rights including the right to information, right to safety, right to return, right to redress...etc. In this context, digital trade gets more challenging to the entrepreneur who needs not only to be acquainted to using an email or a website to provide information to the customers but he as well needs to clarify and put in practice other rights. The entrepreneur has to familiarize himself with return of goods methods in case the products do not match the description or the product is defective or deceptive. With that goes the refund of the money also. The MSMEs moving online therefore need to ensure that the facilities of return of the goods and refund exist. It may infer that there are additional costs to the production and the delivery of goods and he will need to factor this in his costs of doing business.
- There are some more digital-related issues when cybersecurity and data protection are concerned. The MSMEs shifting online must be aware that there are threats lurking around. He is treading here in a mine field and needs to be careful with his each and every step. When shifting online, the whole business can fall prey to the online dangers such as hacking, hijacking...etc. Thus, the entrepreneur needs to be careful and well equipped to fight against these threats. In Mauritius as well as elsewhere in the world, there has been a recent upsurge towards data protection and cyber security laws. Many of the existing laws and framework have been reviewed, revamped and strengthened. It is consequently important to handle the data of consumers with care and precaution so that there is no leakage and confidentiality is pledged all through. Any leakage of the consumer details and data to the public domain will be dooming to the entrepreneur. The entrepreneurs interviewed avowed that they had little knowledge of the provisions of the Data Protection Act 2017 and the CyberSecurity and Cybercrime Act 2021.
- The entrepreneur operating online will be using online payments mechanisms and will need to be accustomed with the security and control associated with online payment systems. The interviewees here had some knowledge of tools such as e-banking, card

payment as well as 'juice' payment but they were skeptical about the trust that they can place in these mechanisms.

- For the entrepreneurs dealing in food production and sales, the health and safety standards are very relevant. If there is any outbreak of diseases linked to the lack of hygiene in his business, the entrepreneur will be doomed. Since they need to provide clearances to the authorities and they often receive the visits and checks of the health and sanitary inspectorate of the Ministry of Health, the entrepreneurs demonstrated a certain level of understanding of these rules and standards.

### **Recommendations and Conclusion**

Following the exposé and analysis above, it is noted that the legal constraints become challenging mostly because of a lack of knowledge by the entrepreneurs. Therefore, to compensate this lacuna and allow the MSMEs to benefit fully from the online set-up, it is very important to provide them with the right training and literacy.

As important as it is to have intellectual property, contractual, data, consumer and cyber protection, it is equally important to raise the awareness of MSMEs on these safeguards and their importance as well as relevance to their respective businesses. There is an urgent need to educate the MSMEs in addition to raising their awareness on the procedures linked to these through workshops, roundtables and training sessions where the entrepreneurs would receive free training and advice on shifting his business to the digital environment in a safe and secure manner.

Apart from training and literacy at the micro level, the macro level should also provide support. Policy measures especially geared towards the needs of MSMEs should be devised. A suitable legislative framework oriented towards the needs of MSMEs should be put in place. The laws and policies need to be tailor made to MSMEs as what applies to David may not apply to Goliath.

The Covid-19 pandemic has left some lasting impacts and imprints on our lives. In those glooming circumstances, nevertheless, entry into the e-commerce ecosystem by MSMEs is one of the rare silver linings of the entire Covid-19 episode but we must not encourage a shift online

at their risks and perils! An adequate support and mentoring must be provided to our entrepreneurs so that they can leverage on their digitalization process.

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## **COVID-19 and Social Media Marketing**

## Antecedents of artificial intelligence adoption in MSME: From an employee perspective

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### Extended Abstract-

The latest trends in technology have assuaged whole business environment and automated many sectors. Notably, due to current technological and digital trends, artificial intelligence (AI) has disrupted the technology at both micro and macro levels particularly assisting MSME (Micro, Small, and Medium Enterprises) which is the main index for any country's growth. It has become a medium through which MSME can perform transactional as well as informational activities. With a current shift from society 4.0 to 5.0, artificial intelligence is burgeoning and creating competitive advantages to small scale firms (Ristryawan, 2020). COVID-19 pandemic situation has also induced and forced the usage of AI. In order to reap the benefits of having retained customers and gaining competitive edge online, MSMEs need to develop a comprehensive understanding of latest trends in digitalization like artificial intelligence, machine learning or smart gadgets (Mohanta & Mahanty, 2021). However, this transition of technology is not universal and MSME in developing countries are still struggling with adoption of artificial intelligence uniformly.

Therefore, understanding and examining the adoption of AI in current pandemic situation is significant in all the sectors to achieve competitive advantage, particularly, in the MSME sector as it has been affirmed that MSME sector is imperative in growth of any economy in development and economic and financial inclusion (Kandpal & Khalaf, 2020). Hence, it is crucial to understand the different aspects via investigating Technology Readiness (TR), Performance Expectancy (PE), Hedonic Motivation (HM) and Relative Utility (RU) in MSME, so that they can adopt AI effectively to gain the competitive advantage in the current situation

of COVID – 19 (Marsan, 2021). It is noteworthy to study MSME employee orientation towards AI adoption through personality and cognitive aspects to ease down the impact of the pandemic situation. Therefore, the current study explores the theoretical model of AI adoption and explores the impact of Technology Readiness (TR), Performance Expectancy (PE), Hedonic Motivation (HM) and Relative Utility (RU) on AI adoption (Figure 1) by integrating relative utility and hedonic motivation with technology readiness and TAM model.

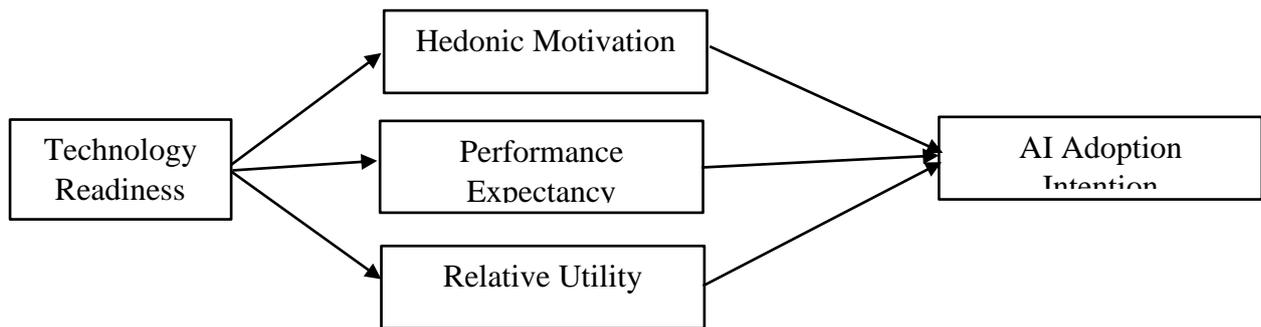


Figure 1: Research Model

A quantitative research method was employed by administering the questionnaire. The data from 174 respondents were collected in MSME and the analysis made through structural equation modelling. The data was analysed using SEM via AMOS was conducted. The respondents broached with the current scenario of COVID-19 and initial questions were framed to gain the insight regarding impact of COVID-19 in digital adoption of AI in MSME. Later, specific questions were stated to understand the adoption process of employees of MSME. Structural equation modelling (SEM) assessed the model in two parts where, in the first part, the measurement of the model was assessed to validate the model and check the internal consistency of constructs. In the second part, the structure of the model was examined to verify the hypotheses. It has been demonstrated that Technology Readiness (TR) positively impacts the Performance Expectancy (PE), Hedonic Motivation (HM) and Relative Utility (RU) and Performance Expectancy (PE), Hedonic Motivation (HM) and Relative Utility (RU) positively influence the AI adoption. Literature have tacitly examined AI adoption model using particularly MSME. The research makes important contributions to AI adoption literature especially in MSME sector. The research study is one of the few studies to integrate theoretical concepts of relative utility, hedonic motivation with Technology readiness and TAM model. The research also provides practical implications for MSME organisation who want to adopt

AI in the future. When AI is being introduced in an MSME setting, emphasis should be on the personality and cognitive traits of the employee to understand their attitude towards the AI adoption. Employees are the ones who will use AI and hence understanding them can help to successfully implement the AI in the organisation.

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## How do Small and Medium Enterprises (SMEs) perceive the contribution of Digital Marketing and Social Media Marketing (SMM) on their sustainability during Covid-19 crisis? - Evidence from Mauritius

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### Abstract

**Purpose:** The Covid-19 pandemic has caused a major upheaval for Small and Medium Enterprises (SMEs) in terms of business scale performance related to their production, market, and revenue. This unprecedented pandemic uncertainty has negatively affected the sustainability of SMEs around the globe. Thousands of SMEs around the world have ceased operations. Therefore, SMEs have to respond quickly and appropriately by adapting their strategies. SMEs can optimize on the adoption of digital marketing strategies and capitalize on social media marketing to ensure their sustainability. During Covid-19 global health crisis, diverse viewpoints of SMEs were obtained regarding the adoption of social media marketing strategies. These innovative marketing strategies have high potential to mitigate the adverse effects of this crisis on the businesses, in particular SMEs. The different factors underpinning the adoption of technology-based system by firms is well documented in the existing literature. However, there is a scarcity of studies on the adoption of these technologies by SMEs in developing countries like Mauritius. Moreover, the unique global crisis situation calls for fresh studies to uncover the underlying context specific factors impacting on the use and adoption of digital marketing strategies and SMM by SMEs. Against this backdrop, this study aims to depict a detailed understanding of the significance of digital marketing strategies and the contribution of SMM on the business sustainability of SMEs for a developing country during crisis situations. This study is aligned with the national priorities of governmental bodies and other important multi-stakeholders for contributing towards the socio-economic development

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of the country in the midst of the Covid-19 pandemic and ensure the sustainability of the small businesses for employment creation.

**Keywords** |: SMEs, Digital Technologies, Digital Transformation, Social Media Marketing, Sustainability initiatives, COVID-19 pandemic, Digital Marketing Technology Adoption Strategies

## **Introduction**

The global economy has been affected by multiple recessions in the last century due to the sudden changes in oil prices, politics and financial bubbles. However, the global eruption of the Covid-19 crisis has led to a major impact on health and economy in terms of investments, trade and tourism (Gössling *et al.*, 2020). The implementation of social distancing has made people very cautious when it comes to engaging in restrictive activities outside their home. This has affected various business sectors.

The role of large and small organisations is to drive economic growth. However, since the Covid-19 crisis, small businesses have become vulnerable because organisations are very dependent on the rapidity of the money inflow from its product sales. Accordingly, the decreased consumer demand has reduced the organisation's cash flow (Priyono *et al.*, 2020).

Governments across the globe have implemented a policy of physical distancing, social distancing and limited consumption and travel. Accordingly, various businesses have been affected including shopping centres, restaurants and markets (Chetty *et al.*, 2020). Consumers in different regions have transformed their shopping habits and fulfilled their shopping needs online (Bartik *et al.*, 2020). Companies that depend on a physical space, such as restaurants, supermarkets, fitness centres, traditional food markets, cinemas and car dealers, have all suffered from losses (Chetty *et al.*, 2020). It is the opposite for online markets. In times of crisis such as the Covid-19 lockdowns, technology use has been seen as the best solution to maintain business sustainability (Fletcher & Griffiths, 2020). Some companies, especially small businesses, do not have enough knowledge about digital skills and technology to run their businesses online so this situation forces them to learn about and use online business tools (Antonescu, 2020). However, consumers were able to continue their lives with digital technologies by providing services like Amazon, Google Cloud, Web services and Microsoft Azure, and with the help of applications such as Zoom, Netflix and Slack (Javaid *et al.*,

2020). Likewise, Facebook and Amazon have issued lower estimates of advertisement revenue during Covid-19 lockdowns (Fernandes, 2020).

The Covid-19 lockdowns have turned out to be the right time for companies to be more flexible and adjustable in different situations. It has prompted them to rethink and develop different strategies for providing goods and services based on their business needs (Chetty et al., 2020). The Covid-19 lockdowns should not be seen as a barrier for companies to increase their sales because companies can adopt new technologies to promote their products and services through online digital channels (Doyle & Conboy, 2020).

The digital technology adoption strategy involves changing the companies' offline store into an online, for consumer safety and convenience. During the Covid-19 pandemic, companies can improve their promotions through online applications for both sales and delivery (Chetty et al., 2020). Since both large and small organisations are part of the economic system, the adoption of digital technologies is critical to achieve business sustainability both now and in the future (Ameen et al., 2021; Dwivedi et al., 2020). Covid-19 pandemic has caused a major upheaval for Small and Medium Enterprises (SMEs) in terms of business scale performance related to their production, market, and revenue. This unprecedented pandemic uncertainty has negatively affected the sustainability of SMEs around the globe. Thousands of SMEs around the world have closed and ceased operations due to lack of knowledge of digital technologies and innovative strategies. Therefore, SMEs have to respond quickly and appropriately by adapting their strategies. SMEs can optimize on the adoption of digital marketing strategies and capitalize of social media marketing to ensure their sustainability. During Covid-19 global health crisis, diverse viewpoints of SMEs were obtained regarding the adoption of social media marketing strategies. These innovative marketing strategies have high potential to mitigate the adverse effects of this crisis on the businesses, in particular SMEs.

The present research reviews the need for the digital transformation of SMEs by adopting tools like Social Media Marketing for business survival during the Covid-19 pandemic as well as explore the critical role of technology adoption during the pandemic for effective and efficient optimisation of digital marketing strategies for small scale businesses. The different factors underpinning the adoption of digital marketing technology-based system by firms is well documented in the existing literature. However, there is a scarcity of studies on the adoption of

these digital marketing technologies in developing countries like Mauritius. Moreover, the unique global crisis situation calls for fresh studies to uncover the underlying context specific factors impacting on the use and adoption of SMM by SMEs.

Against this backdrop, this study aims to depict a detailed understanding of digital marketing and the contribution of SMM on the business sustainability of SMEs for a developing country during a crisis situation. This study is aligned with the national priorities of governmental bodies and other important multi-stakeholders for contributing towards the socio-economic development of the country.

## **Literature Review**

### **Insights from SMEs on Digital Marketing and SMM for Business Sustainability and Covid19 crisis**

SMEs are more than ever under pressure to embark on digital transformation to improve business competitiveness (Pelletier & Cloutier, 2019:855). Digital transformation amongst SMEs has been mainly driven by the reduction in the price of IT equipment and internet connection. To overcome their size related constraints (human, material and financial), SMEs are increasingly using digital marketing channels and tools to promote their business. According to Coman, Popica and Rezeanu (2021:1), digital marketing is no longer a tendency but a necessity. The adoption of digital marketing by SMEs have profound implications for the business performance since it improves marketing efforts and efficiency, gives access to new markets, allows better communication with key stakeholders, provides for customized products and services and develops relationships long lasting relationship with customers (Rua, 2018). Numerous digital marketing techniques and tools are being used by SMEs to adopt online marketing mix and to develop interactive applications including Search Engine Optimisation (SEO), web sites as well as numerous channels and means of online communication, such as blogs, e-mails, and social media.

In Mauritius, several factors have prompted the use of digital marketing among the local businesses including an increase number of number of mobile cellular subscriptions and mobile internet subscriptions, a change in customers' preference to communicate (from SMS to mobile social media), a reduction in the price of the Internet connection and an increasing use of messaging apps such as WhatsApp and messenger for communication. Moreover, it is apparent

that Mauritian SMEs have been integrating digital marketing within their overall marketing strategy to boost their promotion strategy, distribution strategy and brand's visibility.

However, many SMEs are reticent to apply this innovative and efficient means of communication. Hence, this study aims at uncovering the factors affecting the use of Digital marketing and Social media marketing among SMEs. The findings of the study will offer original theoretical insights and novel clues on how policy makers as well as professionals in the digital field and marketing could address this market segment more efficiently from the validated conceptual model that will be developed and tested in the contextual settings of SMEs in Mauritius.

### **Theoretical Review and Hypotheses Development**

Drawing from TAM, Theory of Reasoned Action (TRA) model and Innovation Diffusion Theory (IDT) (Rogers, 2003), this research will extend one's theoretical understanding towards digital marketing strategies and social media marketing in the context of SME by positing the dependent constructs and their impact upon the overall sustainability of the small businesses.

#### **Impact of Perceived usefulness (PEU) on SMM**

Perceived usefulness (PEU) has been one of the antecedent from Technology Acceptance Model (TAM), that has been widely promoted by Davis (1989) and Davis *et al.* (1989) as the theoretical underpinning to predict the acceptance of technology among users. PEU can be defined as the subjective perception of users where they believe that using certain technologies can improve the performance of their work. Several empirical research works have posited that SMEs can benefit from the adoption of Social Media Marketing (SMM) to enhance productivity in their business (Kraus, Gast, Schleich, Jones, Ritter *et al.*, 2019). Numerous research studies have also demonstrated that utilizing SMM can uphold the SMEs' performance (Chatterjee & Kumar Kar, 2020; Qalati *et al.*, 2021). Thus, the hypotheses are presented as follows:

***H<sub>1</sub>: PEU has a positive impact on social media marketing adoption among small scale businesses.***

### **Impact of Perceived Ease Of Use (PEOU) on SMM**

PEOU is another dimension of the TAM that has been extensively applied to comprehend the adoption of innovative technology in business and other relevant areas. In a SME context, entrepreneurs are willing to adopt new technological solutions for important and easy implementation of enterprise development (Ojo *et al.*, 2019).

The adoption of technology in terms of social media can enhance better prospects for accomplishment and revenue drivers. Thus, SMEs are engaged in proper adoption of social media marketing for greater sustainability in the business (Bankole & Bankole, 2017; Sunday & Vera, 2018). It is also posited that PEOU positively drives with the exert of new technology and this strong affirmation has been supported in previous studies by Chatterjee and Kumar Kar (2020) and Kraus *et al.* (2019), who recognized the relationship between PEOU and SMM. Therefore, the following hypothesis is provided:

***H<sub>2</sub>: PEOU has a positive impact on Social Media Marketing adoption among small scale businesses.***

### **Impact of Observability on SMM**

Rogers (2003:258) defines observability as “the degree to which the results of an innovation are visible to others”. The degree to which an innovation is observable, as perceived by members of a social system, positively affects the rate of its adoption. Hence some studies have found that observability has a positive impact on users’ attitudes and intentions to use the system. The more visible the results of an innovation, the more likely the innovation will be adopted rapidly and implemented (Tornatzky & Klein, 1982). The current study includes observability in the conceptual framework because social media use is highly observable, is transferable via WOM and recommendations from friends (Haridakis & Hanson, 2009) and can be stopped without additional cost (Valenzuela *et al.*, 2009), so this factor may well be influential. The few studies that have examined the effect of observability on innovation adoption found mixed results, all indicating either a positive or a non-significant relationship (Asare *et al.*, 2016; Sanchez-Torres & Juarez-Acosta, 2019). In line with Rogers’ model, it is expected that:

***H<sub>3</sub>: The observability of social media sites will positively influence adoption of social media marketing among small scale businesses.***

### **Impact of Subjective Norms on Social Media Marketing Adoption**

Drawing from the Theory of Reasoned Action (TRA) model, Subjective Norms (SN) have been found to be an important determinant of people's intention to adopt and use ICTs (Eid, 2009a). A subjective norm is a perceived social pressure (based on perception) to engage or not to engage in a behavior. The TRA states that subjective norms shape the cohesiveness of an individual's behavior. Meanwhile, a number of studies have investigated the influence of subjective norms in various behaviors and situations such as intelligence and security informatics technology (Eid, 2009a); blogging (Wang *et al.*, 2010); education (Robinson, 2006) and communication (Webster and Trevino, 1995). Furthermore, Eid *et al.* (2006) have shown that SN is a stronger predictor of intended use than either PU or PEOU. Eid (2009a) concluded that the influence of different peers has an effect on an individual's intention to use an information system. For SMEs, Nasco *et al.*, (2008) found that there was a direct relationship between a construct of TPB comprising subjective norms and the adoption of e-commerce. On this basis, we construct the following hypothesis:

***H<sub>4</sub>: Subjective norms will positively influence the use of social media marketing among small scale businesses.***

### **Impact of Costs on Social Media Marketing Adoption**

Costs are required to utilize technology by SMEs for their growth (Chittenden & Ambler, 2015). The nexus between cost and technology adoption is often perceived as being value-relevant (Alam & Noor, 2009). Furthermore, insufficient participation constraints, affordable costs, and inadequate levels of IT skills requirements motivate SMEs to adopt quality management systems. In particular, SMEs in Indonesia will not involve SMM when the initial costs are expensive (Derham *et al.*, 2016). This needs to provide space for SMEs to connect with their buyers in such circumstances at an affordable cost (Zhang *et al.*, 2019). A preliminary work by Cassetta *et al.* (2020) mentioned that engaged adoption of e-business information and communication technology (ICT) in a business company showed that companies investing in various platforms of ICT have a greater placement towards e-business, while the company cites handicaps in linked with cost and delivery acquaintance with lower e-business involvement. Additionally, Orouji and Kafashan (2017) remarked that companies with many advantages over time report, including providing affordable costs and reaching new customers, tend to have higher e-business operations. Drawing from the theory of economics and cost savings literature emanating from empirical research on social media marketing and cost efficiency, the following hypothesis is formulated:

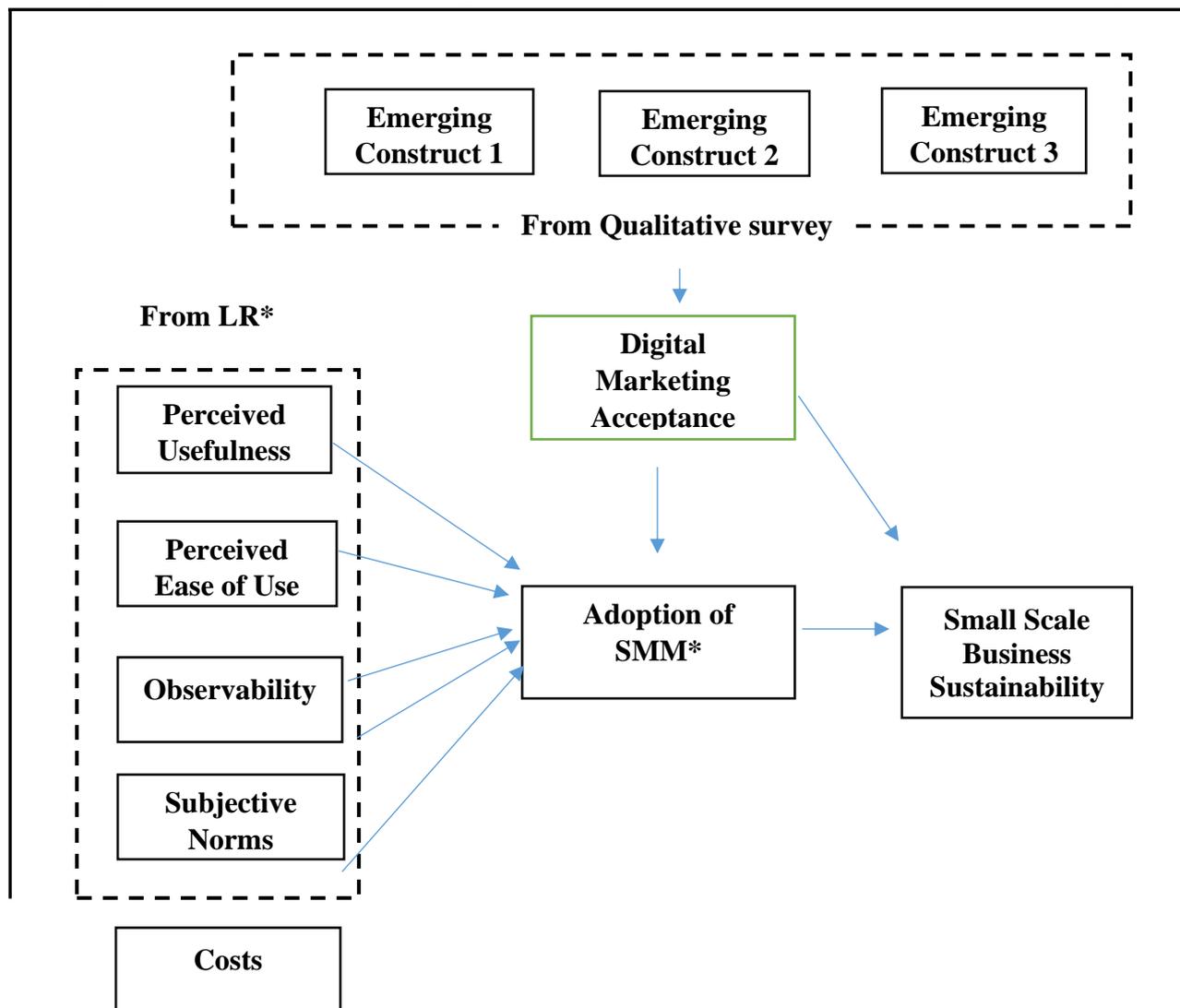
***H<sub>5</sub>: Cost implications can exert a positive influence toward the SMM among small scale businesses.***

### **Social media marketing (SMM) and SMEs' Sustainability**

SMM is viewed as an innovative and dynamic arena directed towards promotion, new services, and novel ideas being stimulated by the adoption of latest social media (Dwivedi *et al.*, 2020). With SMM, there are several online platforms (Yadav & Rahman, 2017) and the use of smartphone and web-based technology enable customers and group members to share, co-create and discuss (Dewnarain *et al.*, 2019). With online digital technologies and smart acceleration of social media sites, it has been easy for businesses to predict the future buying behavior of their customers (Kim & Ko, 2012), increase the popularity of brand posts (Kervin *et al.*, 2012), attract new customers (Chow & Shi, 2015), establish awareness, enhance sales and promote loyalty (Castronovo & Huang, 2012). Sustainability helps in serving, saving, and maintaining three core elements revolving around the environment, community, and the economy (Garbie, 2014). Sustainability enables organizations or companies to gain a competitive advantage in their business (Luthra *et al.*, 2015). Additionally, Raut *et al.* (2019) pointed out that the application of sustainable operations management (SOM) positively influences companies' business performance and minimizes side effects on the community and the environment. Gotschol *et al.* (2014) have supplanted that the internal activities in companies have a robust correlation with economic, environmental, social performance, and advantages for the organization in the long term. Companies should contemplate the green issue as an effort in reaching a competitive advantage and enhancing market share today in which highly erudite buyers tend to choose eco-friendly stuff (Deif, 2011). Social sustainability activities allow companies to reach a better social reputation (Marshall *et al.*, 2015). For this reason, it can be concluded that sustainability is crucial for organizational activities, which is promoted through the SOM approach (Shibin *et al.*, 2018).

***H<sub>6</sub>: Social media marketing has a positive impact on the overall sustainability of small-scale businesses***

**Conceptual Framework for the adoption of SMM on Small Scale Business Sustainability**



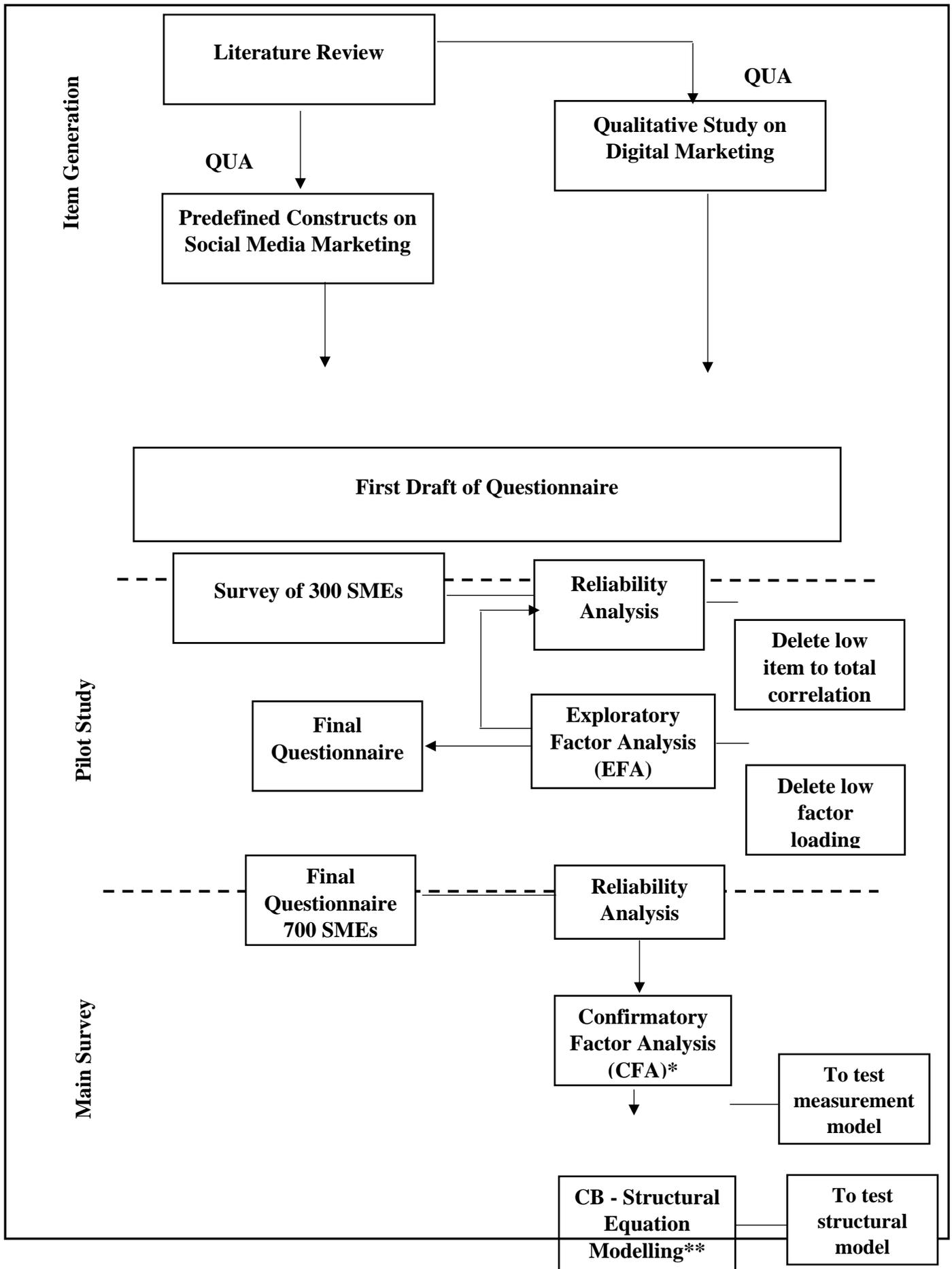
*\*Item scales to measure the respective constructs are listed an Annex 2*

## **Research Methodology**

### *Research Approach*

In this study, we intend to adopt a pragmatic approach that will enable us to apply a mixed-methods approach to achieve the set objectives. The mixed method will enable us to use the findings from one method to inform the other method, thereby strengthening the trustworthiness and validity of the study (Onwuegbuzie & Collins, 2017). Moreover, the combination of both approaches will provide better understanding of a research problem that either approach could alone (Guest *et al.*, 2013:16). According to Creswell and Plano Clark (2011), the mixed approach strengthens the overall research design as the strengths of one approach offset the weaknesses of the other and can provide more comprehensive and convincing evidence than mono-method studies. In this study, an exploratory sequential mixed-method approach (**QUAL+QUAN**) will be applied such that the QUAL and QUAN will occur across chronological phases as demonstrated in Figure 1.0. Thus, the procedures/questions from the QUAL strand will guide the QUAN strand. In other words, the insights gained from the QUAL study will be used to develop the instrument for the QUANT study. In this respect, this study is one of the pioneer studies that will adopt both inductive and deductive research approaches to explore the significance of digital marketing strategies and SMM for small scale businesses in a small island developing state.

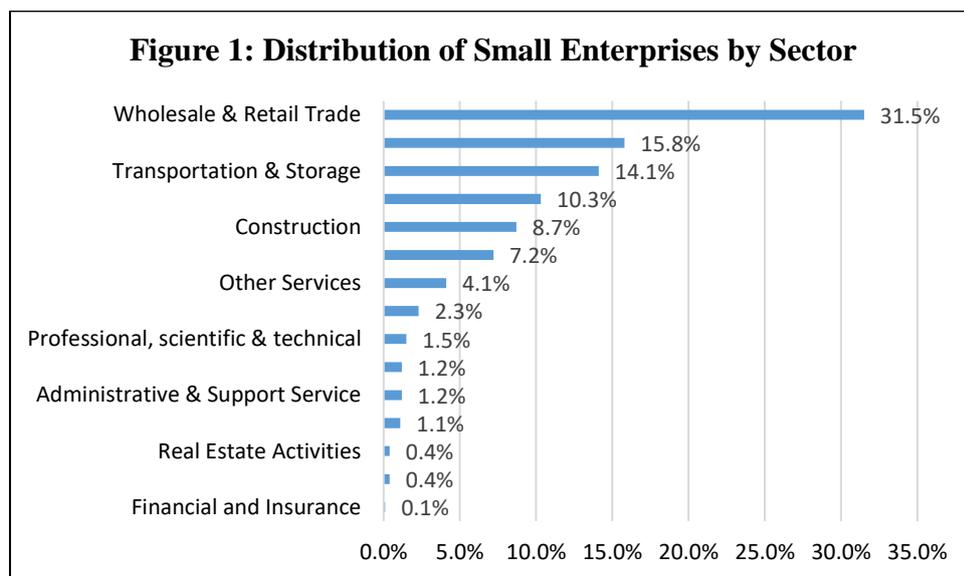
**Proposed research design for DM and SMM for SMEs**



## Population and Size

In this study, the population is defined as the SMEs registered with the competent authorities in Mauritius such as SME Mauritius and National Women Entrepreneur Council (NWEC). According to the SMEDA Act (2017), a small enterprise is defined as an enterprise which has an annual turnover of not more than 10 million MUR (250,000 USD) while a medium enterprise is defined as an enterprise which has an annual turnover of more than 10 million MUR but not more than 50 million MUR (1,250,000 USD).

According to SME Masterplan (2015), the 124000 SMEs which operate in different sectors of the Mauritian economy contribute 40% to the Gross Domestic Product (GDP). These businesses are categorized as follows (refer to Figure 1):



Source: Ministry of Business, Enterprise and Cooperatives (2015), “10-ear Master Plan for the SME Sector in Mauritius,[https://enterbusiness.govmu.org/SiteAssets/MofedStyles/Documents/SME%20Master%20Plan\\_Full%20Version\\_FINAL.pdf](https://enterbusiness.govmu.org/SiteAssets/MofedStyles/Documents/SME%20Master%20Plan_Full%20Version_FINAL.pdf)

*Qualitative sample.* Qualitative data will be collected from participants using the non-probability purposive sampling. The participants will be identified from the official lists of SMEs provided by the authorities. Since there is no consensus regarding non-probability sample size (Guest *et al*, 2006), the qualitative sample will depend on data saturation. Guest *et al* (2013:59) describe saturation as the point at which no or little new

information is being extracted from the data is reached. The qualitative research will enable the researchers to uncover the hidden factors towards the adoption of digital marketing strategies among small scale businesses.

As illustrated in Appendix 1, this comprehensive checklist will be used to gain insights from the small-scale businesses, that is, the entrepreneurs in Mauritius who are willing to adopt Digital Marketing strategies such as SMM and make innovative investments in digital marketing technologies to overcome COVID-19 pandemic crises and enhance their sustainability.

*Quantitative sample.* Quantitative data will be collected from a sample of SMEs that will be randomly selected using the stratified random sampling method. Since the sample size is >100,000, the sample size is estimated at 385 (with a confidence interval of 95% and margin of error of 5%). However, we envisage to collect data from 1000 SMEs.

### **Data Collection**

In the exploratory study, insights about various issues underpinning the study such as SMEs' intention to adopt digital marketing strategies, its perceived benefits, social media marketing, as well as the perceived factors influencing its adoption will be sought through qualitative interviews. An interview guide comprising of various questions such as unstructured (open-ended) questions, semi-structured and structured (fixed) questions will be designed (Annex 1). The information obtained from the interviews during the first phase of the study will be used to supplement the questionnaire for the quantitative survey with additional constructs and factors that may be contextualized for small island developing states. The survey instrument will be administered on the company's premises or sent by email. The data from the quantitative survey will allow us to validate the findings of the qualitative data.

### **Data Analysis**

Content analysis will be used to analyse the qualitative data. Moreover, the researchers will ensure that adequate measures are taken to safeguard validity and reliability. As proposed by Bezuidenhout (2005) the four criteria namely credibility, transferability, dependability and confirmability will be applied to ensure trustworthiness of the qualitative data. Several methods will be used to establish trustworthiness including member checking, prolonged engagement, peer debriefing, direct quotations, audio recordings, transcription of interviews, and reflexivity.

Furthermore, the emerging constructs that will be uncovered during the qualitative research will be incorporated in the second phase of the study.

The quantitative data will be analysed by using both exploratory factor analysis and by conducting multivariate data analysis through the application of CB-SEM (Covariance Based Structural Equation Modelling). The analysis of the data will also demonstrate the different factors impacting on the adoption of digital marketing strategies and use of social media marketing by SMEs. The impact of mediating factors such as the owners' demographic profile on the adoption of SMM by SMEs will also be investigated. EFA techniques will be applied from the data collected from 300 respondents to test the dimensionality of the constructs for validity and reliability of the scales and CFA will be used with the responses obtained from 700 respondents to test the robustness of the proposed model on digital marketing and social media marketing for SMEs to enhance their business sustainability. This research will enlighten the academic community and policy makers on the determining factors for adopting digital marketing and SMM for preserving the sustainability of small-scale businesses. Moreover, due to COVID-19, there has been more and more emphasis on digital marketing strategies. Since the outbreak of this pandemic, all businesses, whether small- and large-scale businesses are capitalizing on digital marketing strategies to be cost effective and cost efficient. Yet, this quantitative research will differ from existing research, due to the fact that this research will adopt robust multivariate data analysis techniques such as CB-SEM to provide greater predictive power of digital marketing strategies and SMM for ensuring business sustainability. The academic rigor of that this research is projecting is aligned with the policy decision making of the Government, to protect small and medium enterprises in the context of Mauritius.

### **Theoretical and Practical Implications of the Study**

This research will offer several theoretical and practical insights to the academic community, and policy makers of the SME sector of small and developing island economies. The SME sector is classified as one of the emerging forces of the country's economy impacting positively on the GDP. The Government is also committed to offer a conducive environment for the sustainable development of Small and Medium Enterprises (SMEs) sector as well as respond to the changing needs of SMEs in a proactive manner.

The SME sector represents a promising sector for ensuring greater economic and sustainable development in developing countries. Along these lines, this pertinent research on digital marketing and social media marketing will provide a novel approach of understanding the sustainability of the SMEs sector from both theoretical and practical perspective during pandemic times.

### **Theoretical Implications**

This research will offer a new theoretical lens to understand the concept of digital marketing, digital innovation and social media marketing by drawing from TAM, Theory of Reasoned Action (TRA) model and Innovation Diffusion Theory (IDT) (Rogers, 2003) to comprehend the digital and social media orientation of small-scale businesses in Mauritius.

This novel theoretical model, adapted from well-established theories on technological acceptance will service as an original theoretical map to guide researchers and academic scholars for ongoing studies in the field of digital marketing, social media marketing, digital innovations and effectiveness of mobile marketing strategies for small scale businesses. This research with the validated model will also contribute to the digital marketing, social media marketing and small business management literature by appraising the independent constructs and their impact on digital marketing and social media marketing and sustainability of small businesses in a small and medium enterprise context.

Therefore, this research will extend the theoretical understanding of digital marketing and social media marketing that have been immensely researched since the outbreak of COVID-19 by supplementing the body of knowledge with a new digital driven theoretical model of social media marketing as there will be sustained research interests in these fields in the forthcoming years.

This research will also offer a better theoretical clarity to appraise the role of digital marketing strategies, social media marketing and digital technological innovations upon the sustainability of small-scale businesses.

### **Practical Implications**

This research will also provide a clear practical guideline on the most important factors that will empower small businesses to adopt digital marketing strategies during COVID-19. This pioneer theoretical model will serve as a digital roadmap to promote greater adoption of digital marketing strategies among small and medium enterprises of developing. The validated theoretical model will also offer practical insights that policy makers (SME Mauritius Ltd, together with the Ministry of Business, Enterprise and Cooperatives) should adopt to empower small scale businesses to remain digitally sustainable during the pandemic crisis. The findings of the research will also offer constructive insights on future training sessions to be conducted with small business players to encourage them to adopt digital marketing tools to remain sustainable.

The findings of this study will be very useful to strategic policy makers of small island developing states to preserve the sustainability of small businesses. In the light of COVID-19, the government is emphasizing on the adoption of mobile applications and mobile services to avoid greater influx of persons in the country in order to safeguard safety standards. Hence, the findings of this research from the perspective of small business owners will be very valuable to further understand the hindrance related factors that might prevent small medium enterprises to adopt digital marketing tools. The policy makers of the SME sector, mobile and information technology domain, together with experts from ministry of information technologies and marketing and IT experts from public and private universities can have constructive consultations and working sessions to reflect on digital marketing optimisation strategies to promote digital mindset among small entrepreneurs in today's uncertain pandemic situation.

This research is one of the pioneer research that is paving the way forward to understand the effectiveness of digital marketing strategies through a multi-stakeholder perspective and uncovering the hidden insights from small scale businesses to understand their difficulties, revenue problems, cash flow uncertainties and supply chain bottlenecks during the uncertain outbreak of the pandemic crisis.

### **Future Research Directions**

Several factors such as type of small enterprise, size of the small enterprise, the educational level of the entrepreneurs and age could be used as moderating factors to explore the acceptance of digital marketing strategies and social media marketing in Mauritius. Moreover, our survey

will cover only a limited sample of small-scale businesses from Mauritius. Future research can cover more developing countries, which could yield greater variation in cultural dimensions of factors impacting on the adopting of digital marketing and social media marketing for small scale businesses. Further research could also apply additional cultural measures in order to account for the possibility of cultural differences within a specific country, which could help identify further impact of digital marketing and social media marketing towards business sustainability. Furthermore, internet marketing is changing rapidly, with new and disruptive technologies and platforms are constantly being introduced into the market, research in this domain is time sensitive. Future research should consider the new digital technological platforms that will emerge in the near future and the findings that will be derived will have to be validated in a pragmatic approach to ensure that there is ongoing academic research on digital marketing and social media marketing in the forthcoming year. It is important to ensure research sustainability and academic research endeavor in this timely digital research discipline for the long-term survival of small scale businesses.

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## **Annex 1- Interview Guide**

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### **Exploratory research questions**

1. How has the coronavirus situation impacted your financial situation?
2. How would you describe your production or services situation?
3. Is your business suffering from supply chain problems post the outbreak of covid-19?
4. Due to declined or no business revenue, do you consider starting a new product line to help generate income?
5. What are your plans regarding managing your cash flow?
6. How far have your customers' accessibility been affected due to the pandemic?
7. Did your business receive any support from the government? If yes, please specify.
8. During this rough time, how are you supporting your staff both financially and mentally?
9. How can Digital Technologies such as Mobile apps assist your organisations?
10. Do you think of building a new database or Apps through offering free services to your customers?
11. Are you considering changing your business strategies and make investments in innovation and digital technologies in the coming near future?
12. Do you consider switching your marketing, sales and business management to digital operations for example, through mobile applications?
13. How do you feel that government must provide incentives for Digital Marketing transformation to increase the sustainability of your enterprises economically?
14. According to you, what are the perceived benefits of adopting digital marketing?
15. Name a few barriers constraining the adoption of digital marketing among SMEs.

## Annex 2- Proposed Constructs and Scale Items for Quantitative Research

	Variable	Source
<b>1</b>	<b>Perceived usefulness (PEU) - IDV</b>	A. Q. H. Chung et al. (2017)
PEU1	Social media is useful for business.	Elbanna <i>et al.</i> (2019); Chatterjee & Kumar Kar (2020)
PEU2	Social media is a valuable tool for marketing.	
PEU3	Social media enhances the productivity of the business.	
PEU4	Social media helps better query management.	
PEU5	Social media helps more customer satisfaction.	
<b>2</b>	<b>Perceived ease of use (PEOU)- IDV</b>	
PEOU1	Overall, it is easy to learn social media marketing.	Ware (2018); Rana <i>et al.</i> , (2019); Chatterjee & Kumar Kar (2020)
PEOU2	It is easy to identify new customers using social media.	
PEOU3	It is easy to identify customer demand using social media.	
PEOU4	Information retrieval about a customer is easy using social media.	
PEOU5	Advertising products and services on social media platforms are easy.	
<b>Social Media Marketing (SMM) - DV</b>		

- SMM1 For advertising my products and services social media marketing is helpful. Shareef *et al.*,(2019); Chatterjee & Kumar Kar, (2020)
- SMM2 Because my competitors are using social media for marketing, I should use it.
- SMM3 Usage of social media marketing technique is good for my business.
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**Sustainability of small scale businesses - DV**

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- SS1 My business performance has been increased using social media platform. Elbanna *et al.* (2019); Shareef *et al.*, (2019); Chatterjee & Kumar Kar, (2020)
- SS2 My sales are above average compared to others using social media platform.
- SS3 My customers feel more connected with my business after using social media.
- SS4 My efficiency to identify the customers' need has been increased using SMM.
- SS5 Creativity of my employees has been enhanced through use of SMM.
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**Observability- IDV**

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- OBSERV1 I have seen social media in use outside my company. Adapted from Moore and Benbasat (1991)
- OBSERV2 It is easy for me to observe others using the social media outside my company.
- OBSERV3 There are plenty of opportunities to see others using the social media.
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**Subjective Norms- IDV**

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- SN1 Most people who are importance to our company (stakeholders think that we should use social media sites. Adapted from Moore and Bendasat (1991); Ajzen and Fishbein (1975)
- SN2 It is expected that companies like ours should use social media sites.
- SN3 Companies like ours think that we will benefit from the social media in our company.
- SN4 Our competitors use social media sites.
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SN5 Our customers use social media sites.

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**Cost- IDV**

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COS1	My cost of dealing with customer enquiries has been reduced using SMM.	Chung et al.(2017); Zhang <i>et al.</i> (2019); Chatterjee and Kumar Kar (2020)
COS2	Cost of identifying new customer has been reduced through use of SMM Customer awareness and training cost have been diminished by use of SMM.	
COS3	The overall advertising and promotion cost have gone down using SMM.	
COS4	My cost of dealing with customer enquiries has been reduced using SMM.	

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## Exploring Social Media Usage by Mauritian SMEs During COVID-19 Pandemics. A Qualitative Study

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**Background and purpose:** The purpose of this study is to examine factors influencing social media among SMEs during the COVID 19 pandemic in Mauritius.

**Methods:** The study uses a qualitative approach and in-depth interviews were conducted with 16 SME owners. Data was analysed through thematic analysis.

**Findings:** Seven sub-themes as follows “Survival strategy”, “Marketing and advertising”, “opportunity for growth”, “Need to satisfy customers”, “Competition”, “Ease of use” and “Health concerns” emerged from the analysis. These were categorised into three main themes as follows “Business model transformation”, “Ease of use” and “Health beliefs”. Emerging themes tend to convey that the pandemic created new business opportunities for SMEs, allowing SMES to reinvent themselves. They were able to target more customers which otherwise would not have been the case in normal circumstances. In addition, the findings suggest that social media has the ability to promote positive health attitudes

**Research limitations/implications:** While the study offers insights on the use of the social media during the pandemic, the findings should be interpreted with caution as complete objectivity is unachievable in qualitative research designs. Additionally, qualitative studies have inherent limitations in that the findings are low in generalisability.

**Practical implications:** Social media sites hold multiple opportunities for SMES in terms of the possibility to target new customer bases and the ability to survive. SME managers should

therefore consider the use of social media in their business strategy. Policy makers need to promote the use of social media as the study shows that it is an important preventive measure.

**Originality:** This study contributes to the literature on the impact of Covid-19 on small business, more particularly in Mauritius, given the importance that this sector plays in terms of its implications for poverty alleviation and employment and on its contribution to GDP. Conceptually, this research conveys that the use of social media among SMEs is heavily impacted by disruptive changes which force SMEs to reconsider their normal way of doing businesses. This leads to opportunity for growth, increased customer relations, innovation and renewed business models. In addition, the study shows that social media sites have fostered adaptive responses from both customers and SMEs during the pandemic and, can thus be considered as a preventive means in promoting healthy behaviours.

## **Introduction**

The COVID-19 pandemic has caused havoc to all business activities (Donthu & Gustafsson, 2020; Salam et al., 2021). To prevent the virus from spreading, sanitary restrictions such social distancing and lockdowns (Patma et al., 2021) had to be introduced. This led to the disruption of business activities (Priyono et al., 2020) whereby a lot of businesses have been forced to cease their operations temporarily or even shut down completely (Fabeil et al., 2020). As a response to the lockdown, most businesses have been forced to shift their businesses online to continue operation, to stay competitive and ensure business survival (Sugandini et al., 2020; Trawnih et al., 2021). Likewise, SMEs had to adapt their businesses to continue operating. Social media has been one such platform which has assisted this sector in their survival (Guo et al., 2020). With the impact of the pandemic, social media was considered to be the most appropriate option for SMEs to market their products and services.

Many studies have investigated the use of social media among SMEs (Salam & Burhan, 2021; El Charani et al., 2021; Trawnih et al., 2021; Fabeil et al., 2020; Caballero-Morales, 2021) through a quantitative approach. Theories such as the Technology Acceptance Model (TAM), the Technological, Organizational and Environmental (TOE), the Unified Theory of Acceptance and Use of Technology, (UTAUT) have been predominant approaches to understand the use of social media during the pandemic. However, a predictive approach only provides a partial understanding of the use of social media among SMEs. This is because the unprecedented nature of the problem warrants a more in-depth inquiry. Besides, there may be other factors other than technological reasons that drive SMEs to use social media platforms.

In addition, it has been argued that it is still unclear how SMEs respond to and build resilience in public crises like the COVID-19 outbreak (Guo et al., 2020). Furthermore, as compared to other businesses, SMEs are more vulnerable to the business consequences arising from the pandemic due to their inherent vulnerability to adapt quickly, their smallness and their lack of resources (Trawnih et al., 2021). In addition, the negative consequences of the pandemic have been even more devastating for developing economies (Caballero-Morales, et al., 2021; Trawnih et al., 2021), including Mauritius. This is because of the peculiarity of developing economies in terms of health care systems, timeliness and quality of information regarding the pandemic, access to clean water and availability of sanitary measures, pre-existing medical conditions of the population, etc, (Caballero-Morales, 2021). SMEs operating in these unique conditions may react differently to this environmental shock. Therefore, this calls upon a more comprehensive understanding of the way in which SMEs use social media. Thus, the study uses a qualitative approach to explore the factors that influence the use of social media platforms among SMEs in Mauritius.

The rest of the paper is organized as follows: The next section provides an overview of SMEs in Mauritius. Then, a review of literature covering social media, SMEs and COVID 19 is presented. Subsequently, the research methodology is explained. This is followed by the presentation of the study findings and the discussion. Finally, the paper concludes with the study's implications and future research directions.

### **Overview of SMEs in Mauritius**

SMEs play a fundamental role in the Mauritian economy. This sector contributes around 40 % of the country's GDP and accounts for 56 % of employment in the country (Roopchund, 2020a). According to the 10-year plan for small and medium enterprise of the Ministry of Business, Enterprise and Cooperatives, the number of SMES stands at 124, 972. The SME sector is more male dominated, representing of 80 % of SMEs (Roopchund, 2020a).

SMES continue to face innumerable challenges in the country. Access to finance remains of primary concern (Roopchund, 2020a). In addition, the survey from the Ministry of Business Enterprise identifies shortage of adequately skilled employees, lack of training and investment in training, skills mismatch, lack of technical skills and limited supply of entrepreneurial talents, poor innovative capacities as challenges that SMEs face. In addition, a study carried out by Gobin-Rahimbux et al., (2017) identifies that while SMEs are aware of technology,

adoption rate is quite low. The study further advance that 50% of SMEs in the handicraft sector did not use technology for marketing purposes to interact with suppliers and customers.

The importance of SMEs to the economy has led to a number of structural changes in terms of policy, institutions and regulatory environment (Sambajee & Dhomun 2015). With the view of positioning SMEs as an important pillar of the Mauritian economy, the government of Mauritius has been encouraging the younger generation to develop an entrepreneurial culture (Sannegadu, 2021). In addition, the country has established a framework with the view of assisting start-ups. For instance, to improve the resilience of SMEs, institutions such as SME Mauritius, the National Women Entrepreneur Council and the SME division of the Ministry of industrial development have been set up to provide support and assistance to SMEs in the country. A number of incentives have been put at the disposal of new SMEs such as the provision of diversified and specific channels for financing, the promotion of entrepreneurship, the construction of industrial estates, investment in human capacity building, and assistance for market development (Kasseeah, 2012, pp. 83).

### **SMES, social media and COVID 19**

There is no agreed definition of SMEs (Gilaninia et al., 2011; Roopchund, 2020a). The definition varies from country to country but is usually understood to mean a business that does not exceed certain threshold in terms of turnover, assets, size and number of employees (Gilaninia et al., 2011). As compared to other types of businesses, SMEs face important challenges. These impediments can be categorized into internal and external factors (Padachi et al., 2012). Roopchund, (2020a) identifies managerial skills, workforce, accounting systems and financial management practices as internal factors that impinge on the success of SMEs. External factors include lack to access to finance, economic conditions, competition, government regulations, technology and environmental factors (Roopchund, 2020a).

The COVID-19 which has been declared global health pandemic (WHO, 2019) (Fabeil et al., 2020) impacted negatively on all business activities (Donthu & Gustafsson, 2020; Salam et al., 2021). Given the virulent nature of the virus, many governments across the globe introduced lockdown measures (Papadopoulos et al., 2020) and travel bans (Fabeil et al., 2020). This has disrupted business activities in a disproportionate manner. The pandemic has caused more harm to SMEs as they are less prepared to large environmental shocks (Trawnih et al., 2021). The inherent weaknesses of SMEs such as a lack of resilience and flexibility (Trawnih et al., 2021); shortage of resources (Guo et al.,2020), low levels of operating cash flows (El Chaarani et al.,

2021) make SMEs more vulnerable to external shocks (Guo et al.,2020; Trawnih et al., 2021) and pose greater challenges to their survival (Guo et al.,2020).

It has been suggested that the adoption of digital technologies is fundamental in crisis periods (Guo et al., 2020). Social media is one such response. Social media is defined as a set of technology software applications that allows participants to exchange information on the Internet (Rugova & Prenaj, 2016). As a response to the disruptive changes, SMEs adopted digital technologies in an unprecedented manner and in a short time (Priyojo et al., 2021). SMEs have also been able to leverage technology to enhance their business (Salam et al., 2021). The most widely used social media platforms among SMEs are Facebook, WhatsApp and Instagram (Effendi, 2020).

There has been a proliferation of studies examining the role of social media among SMEs since the outbreak of the pandemic (Piccarozzi, et al., 2021). For instance, studies have examined how SMEs ensure business continuity and the different recovery strategies they adopt (Fabeil et al., 2020; Caballero-Morales, 2021). The studies show that SMEs use innovation as a survival tool and digital resources assisted them in their networking strategies. Survival and recovery strategies included the use of online marketing techniques. Priyono et al., (2020) demonstrate how SMEs use digital transformation paths during the COVID-19 pandemic and explain that digital technologies enabled SMEs to reach customers more easily, assisted in the diversification of their products. The use of social media for marketing purposes have also been investigated (Salam et al., 2021; Patma et al., 2021; Piccarozzi, et al., 2021). For instance, these studies demonstrate that social media has been a game changer for SME businesses. These studies show that SMEs had to identify different options for distributing and advertising their products (Salam et al., 2021). In general, all studies conducted on social media usage among SMEs during the pandemic confirm the importance and advantage of social media.

While these studies extend our understanding on how SMEs leverage the use of social media in crisis situations, they fail to take into account how SME businesses live the experience of the pandemic. In addition, given that the pandemic is a recent problem, it is not clear how the COVID-19 phenomenon impact on business practices. Besides, Guo et al., (2020: pp.2) argue that “Unfortunately, the ways in which SMEs should build and leverage dynamic capabilities in public crises like the COVID-19 outbreak remain largely unclear”. The study therefore asserts that an approach such as that obtained from a qualitative inquiry will provide deeper insights into the issue of interest. While many studies investigate the use of social media during

the pandemic, an inclusive approach to understand social media use among SMEs is lacking. To date, there is no study which provides a complete understanding of social media use during the pandemic. Given the magnitude of the COVID-19 disaster and given the importance of SMEs in the economic development of developing countries, there is a need for a detailed inquiry on the use of social media during the crisis. This study attempts to fill this gap by adopting a qualitative approach to understand social media use.

### Methodology

Although there is a plethora of studies on social media and SMEs during the pandemic (Piccarozzi et al., 2021), to the best of our knowledge, there is no integrative study to date that provides a comprehensive understanding of social media use. The study adopts a qualitative methodology because of a limited understanding of the research problem. A survey strategy in the form of in-depth interviews was used as this method was seen to be more appropriate to answer the research question. Interviews are useful to uncover the stories behind participants' experience (Doody & Noonan, 2013) and are a common data collection approach in qualitative studies.

Purposeful sampling was chosen as this technique allows the identification of information rich cases by selecting participants that are more suitable to answer the research question (Patton 2002; Palinkas et al., 2015). Therefore, our population comprised of SMEs in Mauritius. However, a complete list of SMEs was unavailable during the first lock down. Therefore, participants were identified thorough a snowballing strategy. This strategy is appropriate to identify hard to reach population and widely used in qualitative studies (Biernacki & Waldorf, 1981).

Details of the interviewees together with the SME sector are provided in Table 1.

<b>Table 1: Demographics of participants</b>				
<b>Interviewee</b>	<b>Age</b>	<b>Gender</b>	<b>Business sector</b>	<b>Length in business</b>
Interviewee 1	35	Male	Pineapple field	More than 5 years
Interviewee 2	21	Female	Clothing and accessories	3 years
Interviewee 3	25	Female	Sales	1 and half years
Interviewee 4	22	Male	Digital Marketing	2 years

Interviewee 5	19	Female	Apparel distributor	3 years
Interviewee 6	23	Female	Textile label apparel	2 years
Interviewee 7	19	Female	Handmade products	1 year
Interviewee 8	19	Female	Skincare products	Less than 6 months
Interviewee 9	25	Female	Beauty therapy	1 year
Interviewee 10	26	Female	Bakery	2 years
Interviewee 11	26	Female	Imports	3 years
Interviewee 12	52	Male	Hardware Store	15 years
Interviewee 13	31	Female	Online boutique	3 years
Interviewee 14	20	Female	Jewelry	1 year
Interviewee 15	25	Male	Pastry	10 years
Interviewee 16	50	Female	Bakery	20 years

The interviewees were contacted through emails and phone calls to schedule the interviews. The data collection was undertaken during the lockdown and therefore face to face interviews could not be held. Interviews were thus conducted via zoom calls. The majority of participants refused that the interviews be recorded. Therefore, notes were hand-written. Prior to scheduling the interviews, verbal confirmation was obtained from participants on their willingness to participate in the study. The interviews were conducted both in English and French language as not all respondents were at ease with the English language.

As previously explained, data was collected during the first lockdown. This did not allow us to observe our interviewees. However, we ensured the collection of rich data. The interview lasted between 40 minutes to one hour. At the end of the interview, a member check was done to ensure that there was no conflict or contradictions with the data collected and to clarify any inconsistency.

According to Fusch and Ness (2015, pp. 1408), data saturation is reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible. Accordingly, we stopped our data collection after the 16<sup>th</sup> interview, although data saturation was reached at the 14<sup>th</sup> respondent.

In order to confirm data saturation, a saturation grid (Brod *et al.*, 2009) was used. An example of how data saturation was reached for our first theme is provided in Appendix 1.

Data was analyzed in accordance with thematic analysis. “Thematic analysis is a data reduction and analysis strategy by which qualitative data are segmented, categorized, summarized, and reconstructed in a way that captures the important concepts within the data set” Ayres, (2008, pp. 868). We chose an inductive approach to identify our themes as we did not want to be driven by our analytic preconceptions (Braun & Clarke, 2006). This approach involves the identification of themes through the data.

Information gathered from the respondents was recorded by the second author and was transcribed verbatim (Creswell, 2013). In the first stage, the transcripts were read carefully several times by the first author so as to gain familiarity with the data (Taylor et al., 2015). As an informal coding process, important ideas and recurring themes were noted (Braun & Clarke, 2006; Taylor et al., 2015). The second stage involved organizing our data into groups. For instance, initial codes extracted from data sources were grouped together “businesses were closed”, “strategies had to be changed” and “adapted to new scenario”, “we had to be active on social media” ‘it was the only way to interact with the customers’, “because hotels were not buying pineapples”

A theme represents a patterned response or significance within the data and informs us of something important about the data (Braun & Clarke, 2006). Our coding categories were then reconceptualised, renamed and reorganised (Ayres, 2008). For example, “strategies had to be changed”, “adapted to new scenario”, “businesses were closed”, “promote my business”; “flourish”, “taking on new challenges”, “lot of viewers and customers”, “diverse audience”, “find more engagements”, “higher viewer rate”, “great platform to show products through stories”, “Satisfied customers”, “customer service is a must”, “satisfaction of my customers”, “boost”, “growing in abundance”, “meeting new potential clients” “find ways to differentiate” were initially coded for “Survival strategy”, “Marketing”, “Interactivity with customers”, “Advertising”, “Opportunity for growth”, “Need to satisfy customers”, “Competition” and “Innovation”. After much discussion and reviewing our themes, we agreed to five sub-themes (survival strategy; marketing and advertising; opportunity for growth; need to satisfy customers and competition) and three core themes. These three main themes were categorised as follows “Business model transformation”, “Ease of use” and “Health beliefs”. Finally, all themes collected were checked by a two academics as part of our dependability audit trail (Guba, 1981)

who remained independent of the study to identify categories and themes. No major inconsistency was noted between our themes and that of the academics.

## **Findings**

The paper used thematic analysis to understand the factors that influences the SME sector to use social media platforms during the COVID 19 pandemic. Three main themes as follows “Business model transformation”, “Ease of use” and “Health beliefs” emerged from the analysis of the data. The findings have been presented according to the emerging themes of the study.

### **Business model transformation**

#### *Survival strategy*

This theme highlights participants’ beliefs that social media allowed their businesses to survive. For instance, to ensure business continuity, some respondents who never made use of social media prior to the pandemic had to re-consider their traditional ways of conducting business and to identify novel ways to stay in the market. Many of them had to turn to social media. Interpretive codes such as “businesses were closed”, “strategies had to be changed” and “adapted to new scenario”, “we had to be active on social media” were used by respondents. This gives an indication that social media has been a source of business survival for many SMEs.

Interviewee 1 explained:

*I have not been using social media for the sale of pineapples but during the pandemic I have surfed on Facebook to look for more contacts with supermarkets and all.*

Social media created alternatives for SME businesses to survive and thrive as the platform was identified as the only way for them to reach out to the customers.

Interviewee 3 explained:

*As we were not able to meet during the pandemic, it was the only way to interact with the customers.*

Interviewee 3 and 9 further stressed on how social media allowed SMEs to keep in touch with their customers and how they tried to establish a relationship of trust.

*We're not working during a pandemic and we have to do our best to keep our customers close and make them feel that we are not really far. (Interviewee 3)*

*Had to use social media to do even more marketing to reassure clients. It was slow but gradually clients ordered while trusting they will get their orders after confinement. (Interviewee 2)*

### *Marketing and advertising*

This theme conveys that marketing and advertising were another factor which induced SMEs to use social media. Quotations such as “marketing of my creations”, “marketing is important”, “as a marketing tool and advertising platform”, “we have to market our services and creations on our business page to remain active”, “to promote my business”, “for marketing and online purchasing”, “social media helps me advertise the various products”, “to promote my handmade products, sharing videos”, “for advertisement”, “I prefer to use social media to promote my business rather than using other methods of advertising”. In addition, participants explained that they were able to target a wider audience. Interpretive quotes such as “a lot of viewers”, “had a higher viewer rate for sure”, “my audience has also grown”. They were quick to respond to a change in consumer behaviour.

### **Interviewee 13 explained**

*Well during the pandemic, I had a higher viewer rate for sure. Instagram more and more people were spending time on social media and was a great platform to show my products through stories.*

Another interviewee who was the owner of a hair salon explained how her business was affected during the lockdown and how she maintained an online presence by keeping their page active and interacting with customers so that they could remain close to their audience.

### *Opportunity for growth*

This theme imparts that social media was an opportunity for SMEs to develop. Social media was important for SMEs to grow as it allowed them to access new clients. This is because the magnitude of the pandemic with its associated sanitary measures directed new customers to social media sites. With the pandemic, no physical businesses were allowed to operate, hence moving to online platforms was the only solution for them. Interpretive quotes such as “lot of

viewers and customers”, “diverse audience”, “during the pandemic I found new clients” and “Pandemic has actually helped me to boost my business” were used.

#### *Need to satisfy customers*

This theme describes participants’ view that social media permitted SMEs to satisfy the needs of customers. Quotes such as “satisfied customers”, “customer service is a must”, “satisfaction of my customers” were used by participants. Customer satisfaction has often been recognised as a sine qua non to a company’s success and long-term competitiveness. However, it has been argued that customer satisfaction plays an even more important role during crisis period (El Chaarani et al., 2021; Patma et al., 2021). SME businesses understood that customer satisfaction results in continuing income. For instance, interviewee 5 noted:

*For a business like mine to flourish, one should never think in terms of how much money one can make but how many satisfied customers one can bring in. A satisfied customer is what is going to keep your flow of income increasing.*

#### *Competition*

The final sub-theme under this category depicts that SMEs used social media to stay ahead of competition. Participants explained that there are many online shops and they had to devise ways so that they can remain in the market. Interviewee 5 explained that she had to identify her own marketing strategy as it was becoming more and more complex to differentiate her business from that of competitors. In addition, interviewee 6 described that her business had to keep updated on new designs and trends to remain competitive. She also added that for her it was more important to have quality products which she believed made a difference to her product “compared to others”. Interviewee 2 expounded that she used social media to be visible to customers so as to remain in this competitive market.

#### **Ease of use**

Generally, interviewees found social media platforms to be easy to use. Quotes such as “ease of use to showcase”, “it has influenced me to give it a try as it is very easy to use and customers were very responsive to it”, “I was at ease” “it is very easy to use”, “it is easy to communicate with the clients”, “I was at ease to sell my products online”, “the easiest way to connect to clients”, “it is easier for me to interact with my customers”, “we were at ease”, “as it was the easiest way to reach the customers” were used.

#### **Health beliefs**

The analysis of our interview transcripts revealed that concerns over health issues influenced to both customers and SMEs to resort to social media platforms. Interestingly, apprehensions over well beings and fear of contamination mainly emanated from female interviewees. They explained that social media was seen to be a safe harbor where customers could be contacted. In addition, the fear of contamination made customers turn to social media platforms to shop. Interviewees explained that the lockdown which was introduced to reduce the spread by restricting customers to shop in physical stores, made many customers switch to online shopping. Statements such “helped a lot in minimizing or preventing some health problems”, “people are afraid to move around due to the contamination issues” were used. They considered that both clients and themselves were not at ease with face to face deliveries because of threats of contamination until they were aware of the safety measures to follow to avoid getting the virus.

Interviewee 5 explained

*people are more keen to shop online rather than risking their health by moving around to go to physical stores.*

What also transpired from the interview transcript was that health concerns were also opportunities for them to increase their customer base as customers who were originally not online shoppers were now shopping online.

## **Discussion**

The objective of the study was to understand the factors that influence the use of social media during the COVID 19 pandemic among SMEs in Mauritius. Data was collected with SME owners during the first lock down period in 2020. Thematic analysis was used to analyze our data. Seven sub-themes emerged which were categorized into three main themes as follows 1. Business model transformation, 2. Ease of use and 3. Health beliefs.

Taken together, the five sub-themes (survival strategy; marketing and advertising; opportunity for growth; need to satisfy customers; competition) indicate how SMEs were able to transform their businesses during the crisis period both in terms of strategy and operation. As far as strategy is concerned, the responses from participants revealed two important findings in relation to social media usage during the pandemic. First, the emergence of the pandemic necessitated the use of social media platforms among participants who were both non-social

media users and social media users. While it has been argued that business infrastructure constraints do not allow all small businesses to adopt to new strategy (Fabeil et al., 2020), our results instead show that the fear of closure creates adaptive response in small businesses where social media becomes an important survival strategy for SME businesses. The findings are in line with prior literature which argues on the pertinence of technology in the survival strategy of SMEs (Gerald et al., 2020; Adam & Alarifi, 2021). Second, a closer examination of interview data also revealed that SME businesses which were already using social media platforms prior to the pandemic, felt the urge to be more present online. This decision was mainly influenced by the fear of business closure and the fear of losing their clients. The role of social media to build trust among customers has been documented in literature where it has been observed that its use has attained unprecedented heights (Deelmann & Loos, 2002; Öztamur & Karakadılar, 2014) to the advantage of SMEs, particularly in the lockdown period.

The findings show that the COVID-19 pandemic caused changes in the marketing approach adopted by SMEs. SME owners understood that that they had to be more active online if they wanted to target a larger audience. The businesses knew that online shopping was the main alternative for many customers during the quarantine period. The findings are not inconsistent with prior studies which investigate the use of social media as a marketing tool among SMEs (El Chaarani et al., 2021; Priyono et al., 2020; Öztamur & Karakadılar et al., 2014). What is however worthy to note is that SME owners from both genders were able to exploit the situation to their advantage as social media allowed them to target more customers. It was easier for them to have a diversified audience.

Kumar and Ayedee (2021) also argue that social media has the potential of increasing the visibility of SMEs. In addition, Yan and Musika (2018) advance that social media is used by SMEs to promote the product or service of the company, improve brand awareness and grow traffic volume on a website. SME businesses which were already social media users were able to capitalise on a higher viewer rate. The use of social media platforms for marketing purposes also reflects an interesting contrast when compared to traditional forms of marketing. Interpretive codes such as “messages kept popping up each time for a new query”, “two-way communication”, “continuous communication with clients” and “ease communication with the clients” were used. Kumar and Ayedee (2021, pp. 10) state that “Social media tools can be an excellent resource in maintaining two-way communication with the customers and correctly analyzing their demands”.

The findings support prior research which suggest that content sharing leads to acquiring new customers (Susanto et al., 2021). In addition, participants' description of growth opportunities through social media supports the view that social media is an effective tool for growth and expansion (Susanto et al., 2021). Guo et al., (2020, pp. 4) suggest that SMEs “unlock the full potential of their dynamic capabilities” when confronted with external shocks or crisis situations. This was also the case in our study. SMEs were far more aggressive over social media which resulted in more viewers and customers. Participants used statements such as “lot of viewers and customers”, “diverse audience”, “found new clients” to describe the positive impact that social media had on their businesses. In addition, social media has enabled SME businesses to remain competitive and strengthen their position in the market.

For instance, interviewee 6 explained how they used social media to keep up to date with recent trends and designs. Our finding suggests that social media is significant in enhancing competitiveness of SMEs. The findings are in line with prior studies which advocate the use of social media to stay ahead of competition (Aswani et al., 2017; Kwayu et al., 2018). Furthermore, visibility was another approach used by businesses to keep away from competition. As argued by Loenardi (2015), in contrast with other forms of information technology, social media provides businesses with communication visibility.

Ease of use is a factor that has been persuasively used to explain technology acceptance in prior literature (Patma et al., 2021; Salam et al., 2021; Trawnih et al., 2021). The findings are not surprising. An examination of the interview transcripts conveyed that as customers were not reachable due to the sanitary restrictions, reinforced the belief of SME businesses in the usefulness of social media platforms. Our study leads support to prior literature that the external environment is of significance in promoting social media during the pandemic (Trawnih et al., 2021). While some studies advance that anxiety in using technology might hinder its use (Momani & Jamous, 2017), we did not find such a predisposition among the respondents. In addition, the recurrent quotes from the study with respect to the ease with which they used social media may also be explained by the ubiquitous nature of technology in the lives of Mauritians in general. This is also confirmed in the study of Effendi et al., (2020) which advance that platforms such as Facebook, WhatsApp and Instagram are now part of the lives of many individuals. It should also be highlighted respondents in our sample are quite young, with an average age of 27. While prior literature reports that women SME owners are less capable of using information technology (Orser & Riding, 2018), we did not find such a

disparity. There was no disparity between male and female respondents with respect to social media usage.

While there has been a proliferation of studies on the use of social media among SMEs during the pandemic (Salam & Burhan, 2021; El Chaarani et al., 2021; Trawnih et al., 2021; Fabeil et al., 2020; Caballero-Morales, 2021), these studies neglect to take into consideration that social media platforms could hold other benefits such as the ability to promote positive health attitudes. The study shows that social media sites have the possibility to foster adaptive responses from both customers and SMEs during the pandemic and can thus be considered as a preventive means in promoting healthy behaviours. In addition, attention over health issues emanated from female respondents only. This may be an important observation for a country such as Mauritius where the role of women has traditionally been confined to taking care of the family. It is only with quite recent incentives from the government on the facilitation of loans to SMEs and the setting up of a National Women Entrepreneur Council (Roopchund, 2020b) that led to more women entrepreneurs among SMEs in Mauritius. The findings tend to indicate that while women in Mauritius have adopted more unconventional roles, they are more concerned about health benefits than their counterparts.

### **Conclusions, research implications and future research**

The aim of this study was to understand factors that influence the use of social media among SMEs during the crisis period caused by the spread of the COVID 19 pandemic. In-depth interviews were carried out with 16 SME from different business sectors. Data was analyzed through thematic analysis. Three core themes were identified from our seven sub-themes.

The themes suggest that aside from technological reasons, social media platforms used as a response to the pandemic, are varied. For instance, the study identifies that survival strategy, marketing and advertising, opportunities for growth, the need to satisfy customers and competition were important considerations during the pandemic that led to the use of social media. Conceptually, this research conveys that the use of social media among SMEs is heavily impacted by disruptive changes which force SMEs to reconsider their normal way of doing businesses. This leads to opportunity for growth, increased customer relations, innovation and renewed business models. In addition, social media sites have fostered adaptive responses from both customers and SMEs during the pandemic and, can thus be considered as a preventive means in promoting healthy behaviours and an innocuous medium to avoid the spread of the

virus. So far, the literature has been silent on the potential of social media sites as a medium to promote healthy behaviours.

Contrary to other studies examining social media among SMEs, this study provides a more in-depth explanation of social media during the pandemic. The qualitative approach adopted by the study provided valuable insights that were not discussed in prior literature. Therefore, this study contributes to the literature on the impact of Covid-19 on small business, more particularly in Mauritius, given the importance that this sector plays in terms of its implications for poverty alleviation and employment and on its contribution to GDP.

The study holds some practical implications. The findings show that social media sites hold multiple opportunities for SMES in terms of the possibility to target new customer bases and the ability to survive. In other words, when confronted with external shocks, social media sites have the potential to transform businesses. SME managers should therefore consider the use of social media in their business strategy. In addition, policy makers need to promote the use of social media as the study shows that it is an important preventive measure which is in line with social distancing policies of many governments. While the study offers insights on the use of the social media during the pandemic, the findings should be interpreted with caution as complete objectivity is unachievable in qualitative research designs.

In addition, qualitative studies have inherent limitations in that the findings are low in generalisability. To address the above limitation, it is suggested that future research be conducted in other research settings to ensure generalisation.

#### Appendix 1

##### **Saturation grid for theme: Survival strategy**

Domain/theme	Interviewee 1	Interviewee 3	Interviewee 4	Interviewee 6	Interviewee 9
Be active on social media	during the pandemic I have surfed on Facebook to look for more contact with	During the pandemic, we were focusing on using social media to	we had to be active on social media	it is a must nowadays	But we has to keep our page and social media platforms active so we could keep

	supermarkets and all.	perform our operations			our audience close
Domain/theme	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 12
no bookings or appointments	It was quite different as there was extremely less client; we were not able to meet during the pandemic	the majority of the businesses were closed during the pandemic	the majority of the businesses were closed	there were no bookings or appointments at all.	No direct contact with clients, they were not able to see the quality of the material.
Domain/theme	Interviewee 1	Interviewee 2	Interviewee 4	Interviewee 6	-
adapt to new scenario	It was a bit difficult to overcome our expenses as hotels were mostly closed.	It's the only way; We were not working during the pandemic	our strategies had to be changed and adapted to the new scenario	The only solution I could think of	-

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# Surviving Disasters through Effective Business Continuity Management Practices: The Case of the Mauritian MSMEs in times of Covid-19 Pandemic towards Organisational Resilience

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## Abstract

This paper investigates the Business Continuity Management (BCM) practices of the Mauritian Micro, Small and Medium-Sized Enterprises (MSMEs) and analyses the impact that same may have on organisational resilience during the unprecedented crisis of Covid-19 pandemic. The parametric and non-parametric tests were used to measure the variables of interest. Results obtained supported all hypotheses formulated for this study. The independent variables (Program Initiation, Project Initiation, Risk Analysis, Risk Mitigation, Monitoring and Control, Implementation, Testing, Education and Training, Review and External Support) were found to have a positive relationship with the dependent variable (Organisational Resilience) individually. However, when analysed simultaneously, only project initiation, risk analysis, risk mitigation strategies and external support were found to be statistically significant. The findings are expected to help the MSME community to increase their resiliency while at the same time contribute to the advancement of this topic within the literature.

**Keywords:** Business Continuity Management (BCM), Organisational Resilience, Risk, SMEs, Covid-19

## Introduction

The concept of Business Continuity Management (BCM) has gained much attention over the past decades (Botha and Von Solms, 2004; Gibb and Buchanan, 2006; Lindström et al, 2010; Niemimaa, 2015b; 2017) following the complex and turbulent nature of the external business environment arbitrated by risks emanating from economical, societal, technological, environmental and geopolitical sources (World Economic Forum, 2021). BCM is regarded as an effective management strategy that identifies the impact of potential threats to organisations

in view of adopting effective measures towards organisational resilience and at the same time improve response capabilities in times of crisis (ISO 22301, 2014). Organisational resilience, in turn, is referred to the business continuity and crisis management practices aiming at mitigating all types of risks that may prevail ([www.itgovernance.co.uk](http://www.itgovernance.co.uk), 2020) and at the same time helps increase the ability of firms to adapt to the new environment after being disrupted by major events (Supardi and Hadi, 2020).

The Centre for Research on the Epidemiology of Disasters (CRED) reported that the year 2020 has been marked by an increased number of recorded disaster events resulting in a global economic loss totalling around US\$ 151.6 billion (CRED, 2021). Cook (2015) revealed that 75% of the businesses who do not have efficient BCM plans are likely to collapse within the next 3 years after being hit by a disaster. Therefore, with the increasing number of natural disasters, man-made crisis as well as emergencies (Munich Re, 2016; Statista, 2017), BCM is becoming increasingly important towards organisational resilience in both the short run and the long run (Herbane, 2010). Research on BCM towards maintaining organisational resilience for large organisations have been well established in the body of knowledge (Morganti, 2002; Gallagher, 2003; 2005; Cerullo and Cerullo, 2004, Jackson, 2006; Wainwright, 2007, Păunescu and Argatu, 2020 ; Corrales-Estrada *et al.*, 2021). However, the literature on BCM and organisational resilience within the context of Micro, Small and Medium-Sized Enterprises (MSMEs) is far less developed (Herbane, 2011, Auzzir, 2019, Supardi and Hadi, 2020).

MSMEs play a crucial role towards the economic success of most nations around the world by reducing unemployment rate and through their significant contribution in the Gross Domestic Product (GDP) of the country (Clemo, 2008; Falkner and Hiebl, 2015). Based on their size, geographical locations and their financial limitations, they are considered to be the most vulnerable form of organisation when it relates to the preparedness for facing disasters (ADRC, 2012; Falkner and Hiebl, 2015; Auzzir, 2019).

However, based on the element of affordability, the impact of disasters on MSMEs of developing countries is even higher compared to the developed ones (Auzzir, 2019). Clemo (2008) revealed that 59% of United Kingdom's SMEs are insurance-protected against flood while Perwaiz (2015) reported that only 14% of SMEs affected by Bangkok flood in 2011 had insurance coverage. Hence, it might be deduced that MSMEs of developing economies tend to be more vulnerable towards prevailing risks based on lower capacity to recover during and after a disaster (Göhl, 2008; Huq *et al.*, 2004; Smith, 2013; Auzzir, 2019).

In December 2019, the world has witnessed the outburst of an unprecedented and highly contagious virus from the city of Wuhan in China which attacks the human lungs causing acute respiratory casualties. On 11 March 2020, the World Health Organisation declared this crisis as a pandemic and officially named it as “Covid-19” (WHO, 2020). Due to its rapid expansion across the globe, countries were forced to close down by enforcing strict movement restrictions in the quest for stopping the proliferation of this mortal disease. This also applies for the Republic of Mauritius where almost all economic activities were abruptly interrupted on 20 March 2020. Bigger firms were able to shift their operations online based on the fully tested and operational business continuity plan (BCP) that they have in place. However, smaller ones like the MSMEs were mostly forced to stop their daily activities as they didn’t have any business continuity strategies in place to face this crisis, thus, resulting in serious cashflow issues that potentially lead to the closure of some. Through informal discussions with the owner-managers, we understood that in general, the Mauritian MSMEs anticipated mostly environmental risks relating to cyclones, flood and fire. They were never prepared to face movement restrictions that could possibly disrupt their business activities.

A systematic review of the literature governing the field of BCM and organisational resilience within the context of MSMEs has been conducted by Supardi and Hadi (2020) where it was found that an approximate number of 2,642 relevant articles were published within the last 10 years. However, the definition and the conceptualization of the term still varied significantly within the field of study (Baggio et al, 2015; Supardi and Hadi, 2020). Most researches have focused on specific aspect of BCM and organisational resilience, for example, resilience of system (Hosseini et al, 2016), supply chain management (Ambulkar et al., 2015), destination (Williams et al., 2020). So far, little consideration has been given towards a holistic approach towards maintaining full critical business activities within the MSMEs community. To feed into a conceptual framework for this study, we scanned through academic platforms such as Google Scholar, Emerald and EBSCO using the key words “BCM”, “Business Continuity Management”, “Organisational Resilience” by associating them with “Mauritius” through the word “AND”. No published article could be retrieved within the Mauritian context.

Based on the above gap identified within the current literature and the research problem formulated previously, this study has aimed at assessing the impact of BCM practices on the organisational resilience of the Mauritian MSMEs through a holistic approach by taking into consideration all factors relating to their critical business activities. It also proposed a BCM framework to help the MSMEs community to be better prepared to face any disaster in the

future which will ultimately increase their resilience. Policy makers can also inspire themselves from the proposed model to promote effective BCM practices towards the resiliency of this most vulnerable type of organisations. This research has also contributed to the body of knowledge by addressing the above stated research gaps where it can ultimately be used as a base for generativity by other researchers who wish to improve the proposed model. Hence, it started by setting the scene and the background of the stated research problem, after which the objectives were formulated. Through a well-defined literature review, the different variables under study were conceptualized to feed into a conceptual framework that was thoroughly tested with help of a well devised methodology, after which, the results were statistically analysed in view of formulating strong recommendations. At the end, the limitation and the scope for further study were elaborated.

## **Literature Review**

### **Organisational Resilience**

The word “resilience” comes from the Latin word “resilire” which means to “bounce back”. According to Herrman and Stewart (2011), there is no agreed single definition of the term resilience. Its definition depends on the context in which it is being employed. In general, it refers to a system’s ability to face disturbance and reorganise its activities while confronting changes in order to maintain its functioning (Walker *et al.*, 2004). However, in the business context, it refers to a company’s ability to survive, adapt and flourish throughout turbulent changes (Hamel and Valikangas, 2003; Fiksel, 2006).

According to Williams and Vorley (2014), resilient organisations respond flexibly to the changing circumstances while overcome risks to remain competitive. They further argue that MSMEs are viewed as more resilient based on their flexibility to respond to unforeseen shocks. However, they are more vulnerable to disasters based on the lack of financial support and expertise (ADRC, 2012; Falkner and Hiebl, 2015; Auzzir, 2019).

Ali *et al.* (2017) explain MSMEs’ resilience as a dynamic capability when they are able to adapt their supply chain to face unexpected events, react positively towards disruptions in their usual activity and recover from these occurrences by maintaining business functions, structure and relationships with the stakeholders. Asamoah *et al.* (2020) argue that the component of resistance represents the ability of a firm to mitigate the impact of a disturbance by totally avoiding it whereas the recovery capacity refers to the firm’s ability to return to its normal operations once the disturbance has occurred.

Halkos and Skouloudis (2019) emphasize the need to improve the adaptive and enduring power in order to become more resilient to turbulence. It can, therefore, be argued that the dynamic capabilities of organisational resilience form part of the; (i) proactive phase (before the occurrence of the event), (ii) responsive and adaptive phase (during the event) and (iii) reactive phase (after the occurrence of the event), which all simultaneously help the MSMEs to continue to grow and develop themselves in the face of turbulence (Supardi and Hadi, 2020).

### **Business Continuity Management**

BCM emerged in the 1970's with a technological mindset aiming at recovering hard systems from disasters such as external physical triggers, bomb, fire and flood for larger organisations (Camastral, 2014). Elliott *et al.* (2010) argue that BCM was originally linked with crisis management by establishing responsibilities at all levels in the organisation. In the 1980's the concept was applied to all aspects of the organisation while in the 1990's it was viewed from a value-based angle aiming at achieving competitive advantage throughout the entire organisation (Camastral, 2014). Speight (2011) defines BCM as being a managerial approach that analyses possible threats to an organization and establishes a framework for enhancing resilience and response capabilities. Hence, following a disruptive incident, BCM determines an organization's ability to continue delivering products or services at acceptable predetermined levels (Auzzir, 2019).

BCM protects a company from disruptions and threats caused by natural hazards (for example cyclones, flood, fire due to climatic change) and man-made disasters (sabotage caused by internal employees, cybercriminal activities, failure of the information system infrastructure, terrorism attacks, riots and so on..) (Parape *et al.*, 2013). Wedawatta and Ingirige (2012) found the importance of BCM for the MSMEs in dealing with natural hazards. It helps to identify risks and threats that may cause harm to assets and business operations so that proactive measures could be taken to mitigate them (Al Hour, 2012). To build resilient firms, Auzzir (2019) argues that BCM should encompass three core elements. The first one is to have sufficient infrastructure in place to continue operations of critical business activities (Davies and Walters, 1998), followed by the need of having a good crisis management mechanism to transit from the normality to the crisis phase (Shaw and Harrald, 2004) and finally to possess relevant competencies to combat the negative impacts of the disasters and return back to normal (Paton and Hill, 2006).

## **Business Continuity Management Practices: A Conceptual Framework**

Upon an extensive review of the existing literature within the field of study, a conceptual framework, being an iterative process (Gartner, 1985; Miles and Huberman, 1994), was developed to provide a direction for this research (Easterby-Smith, Thorpe and Jackson, 2012) while at the same time trying to find a theoretical base to address the stated research problem (Auzzir, 2019).

This conceptual framework has, therefore, been built on the external (Auzzir, 2019) and internal support (Gibb and Buchanan, 2009) that are imperative towards implementing a successful BCM model for the MSMEs community.

Gibb, Buchanan and Shah (2006) argue that the success of a firm relies on its internal processes aiming at supporting the delivery of the associated services in view of creating value to not only the customers but also for itself. Therefore, it is essential to effectively integrate, monitor and protect these internal processes to avoid any potential breakdowns. Hence, BCM is regarded a robust tool which MSMEs could use to maintain business continuity in the face of risks that may render them more resilient. It starts by identifying and managing different kinds of risks that could potentially disrupt operations, trying to implement possible strategies to mitigate them and ensuring that the recovery process after a disaster event is effective to avoid any significant disruption to the entire organisation (Gibb and Buchanan, 2009).

In this context, various BCM development cycles have been proposed within the literature (CCTA, 1995; Barnes, 2001; Hiles and Barnes, 2001; Starr, Newfrock, and Delurey, 2002; Smith, 2002). However, each covers specific area of BCM. Gibb and Buchanan (2009) combined all of them to come up with the following set of nine internal BCM practices aiming at adopting a holistic approach towards organisational resilience:

### **(i) Program Initiation**

BCM should encompass all critical functions of an organisation (Auzzir, 2019). However, there is a tendency to associate it mainly with an IT issue (Hosseini *et al.*, 2016), resulting in misallocation of resources (Gibb and Buchanan, 2009). Hence, it is important for a firm to delegate this task to a person of authority who should have the responsibility of developing a programme charter, being a strategic document aiming at outlining the critical business processes and associated resources arbitrated by adequate control and monitoring mechanisms. The programme charter should be in layman terms in order to meet the understanding of each

stakeholder and same should be constantly monitored and revisited as and when additional risks are being introduced through new processes (Gibb and Buchanan, 2009). A programme plan should then establish the roles and responsibility of each stakeholder within the BCM framework and also identify areas demanding budget allocation. As per Auzzir (2019), all internal stakeholders of MSMEs, who normally operate with limited workforce, should be informed of such BCP in order to gain their cooperation during the initiation of the plan. This has led to the development of the first hypothesis for the study:

*H<sub>1</sub>: There is a positive relationship between a BCM's program initiation and organisational resilience of the MSMEs.*

### **(ii) Project Initiation**

After defining the programme, Gibb and Buchanan (2009) argue that critical business functions should be identified, prioritised and initiated within the BCM by setting clear and specific, measurable, achievable, realistic and time-based (SMART) objectives. These should be measured to determine whether the company is in line with its goals and track any deviations as part of a continuous improvement process. Based on their financial limitations, MSMEs need to identify which core business functions should be prioritised during and after a crisis (Auzzir, 2019).

Hence, the owner-managers need to make sure that critical business information such as the business strategy, financial details, policies, data of both internal and external stakeholders and copies of important documentations are easily available to ensure that the MSMEs can continue operating in the face of a crisis and recover after the event. Since BCM is a multi-disciplinary area, Gibb and Buchanan (2009) argue that business owners should ensure that a wide range of skills is available to help in the initiation of a project in times of crisis. Hence, the following hypothesis has been proposed:

*H<sub>2</sub>: There is a positive relationship between a BCM's project initiation and organisational resilience of the MSMEs.*

### **(iii) Selecting Risk Mitigation Strategies**

There are several risks mitigating strategies that a firm can adopt after conducting a proper risk assessment to identify critical business functions as per Gibb and Buchanan (2009). The first

one is risk transfer where companies contract insurance policies (Weiß, 2008) or even outsource certain areas of their business activities with third parties (Lambaino *et al.*, 2018). Hence, during disasters, the liability is on the latter. Risk minimisation can be achieved by reducing the risks, eliminate them or by avoiding them altogether while risk absorption refers to a situation where a company completely disregard the risk due to its uneconomic impact or the impossibility to deal with it (Gibb and Buchanan, 2009). Disaster recovery plans (DRP) can also be an efficient type of risk mitigation strategy where the company is able to identify the compromise of its internal systems on a timely basis, contain the threats and reduce the associated negative impacts (Soni, 2020). According to Auzzir (2019), the MSMEs should refer to their own risk management matrix before deciding on which risk mitigation strategy to be used. For example, risk with high frequency and high impact should be avoided while that of low frequency and low impact can be absorbed. Hence, the following hypothesis has been identified:

*H<sub>3</sub>: There is a positive relationship between a BCM's risk mitigation strategy adopted and organisational resilience of the MSMEs.*

#### **(iv) Monitoring and Control**

For the BCM strategy to be successful, it is imperative that there is a good communication, command and control mechanism in place to ensure that actions undertaken are in line with the requirements of the BCP (Gibb and Buchanan, 2009). For this to happen, Auzzir (2019) states that MSMEs' staffs should be well trained with regards to the relevant BCM procedures to be adopted during crisis, the BCP should be thoroughly tested during frequent intervals to identify areas of improvements, risk reduction strategies and appropriate technologies are adopted and there should be a good incident reporting system in place to track progress. All these will allow the MSMEs to identify weaknesses in their BCM practices in a timely manner and take corrective actions to make the BCP even more effective. This has allowed us to formulate the following hypothesis for this study:

*H<sub>4</sub>: There is a positive relationship between a BCM's monitoring and control mechanism and organisational resilience of the MSMEs.*

#### **(v) Implementation**

Through the implementation stage, the BCP is implemented throughout all its aspects in view of improving the internal processes which may be beneficial in transferring, minimising or even absorbing the risks that relate to business operations being compromised (Gibb and Buchanan, 2009). It also involves a continuous assessment of the recovery plan which has been put in place to track any deviations towards the BCM goals to be achieved (Auzzir, 2019). Related activities can be to arrange insurance cover and ensure that the documentation with regards to the BCM plan is easily accessible to all relevant stakeholders and it is up-to-date based on the changing nature of the business environment which may introduce more risks for the MSMEs. Hence, the following hypothesis has been proposed:

*H<sub>5</sub>: There is a positive relationship between a BCM's implementation and organisational resilience of the MSMEs.*

#### **(vi) Testing**

The risk mitigation strategies and the disaster recovery plan need to be tested on a regular and comprehensive basis to assess their relevance towards the BCM. Gibb and Buchanan (2009) argue that the BCP should normally be tested on a quarterly basis within a financial year. A report should be emitted to the stakeholders specifying the effectiveness of the tested components and plans while at the same time highlight areas of improvements to better face crisis. MSMEs may carry out a walkthrough of the BCP which can be regarded as a low-cost exercise entailing little stress and minimal involvement of the stakeholder. Likewise, they can make sure that the risk mitigation strategies are aligned to the business functions. Furthermore, the ability of the employees responding to threats should also be tested to ensure that they are aligned with the objectives established for the BCM (Auzzir, 2019). This has led to the creation of the below hypothesis for this research:

*H<sub>6</sub>: There is a positive relationship between a BCM's testing practice and organisational resilience of the MSMEs.*

#### **(vii) Education and Training**

According to Gibb and Buchanan (2009), this stage consists of ensuring that the benefits and the strategy of the BCM are communicated to the relevant stakeholders. Furthermore, education and training need to be given to the workforce in view of increasing their skills to

achieve the BCM objectives during and after disasters (Auzzir, 2019). Communication is key as everyone should be clear about their roles and responsibility that they have towards the success of the BCM. Re-orientation trainings should be given on a periodic basis to existing staffs in order to align them with the updated BCP based on new processes implemented. Induction training for the new recruits should highlight the importance of the company's BCM strategy in order to clarify expectations. Hence, the following hypothesis has been proposed:

*H<sub>7</sub>: There is a positive relationship between a BCM's education and training programme and organisational resilience of the MSMEs.*

#### **(viii) Review**

The review stage, according to Auzzir (2019) aims at ensuring that the BCM strategy of the organisation is responsive towards the changing requirements of the business environment. New processes, technologies and personnel bring new risks to the firm. Hence, the BCM procedures should always be in a constant state of being reviewed and updated in order to ensure its relevance and effectiveness during disasters. Gibb and Buchanan (2009) also state that changes in the business climate, company priorities, and new projects should all be maintained up to date for the success of the BCM that will contribute to make the MSMEs more resilient to face disasters. Therefore, the following hypothesis has been formulated:

*H<sub>8</sub>: There is a positive relationship between a BCM's education and training programme and organisational resilience of the MSMEs.*

Past studies have revealed positive relationship that external stakeholders, such the Government, Non-Governmental Organisations (NGOs) and the private sector (e.g. insurance companies) could have on a well devised and operational BCM (Herbane, 2013a; McGuinness and Marchand, 2014; Schneider, 2014; Fisher *et al.*, 2015) especially for the MSMEs of the developing nations based on their financial and expertise vulnerabilities (ADRC, 2012; Falkner and Hiebl, 2015; Auzzir, 2019). Radford *et al.* (2013) and Keskitalo *et al.* (2014) state that affordable insurance coverage packages against disasters and sufficient trainings to increase knowledge of the owner-managers in the field of BCM are effective means of external contributions towards the sustainability of the MSMEs. Hence, it may be concluded that external supports are not involved directly in the MSMEs business operations but they play an

important role through the help they may bring to improve their resilience. Hence, the following hypothesis has been formulated:

*H<sub>9</sub>: There is a positive relationship between external support and organisational resilience of the MSMEs.*

### **The Mauritian MSMEs**

MSMEs are characterised differently based on the jurisdictions in which they operate. For example, The European Union and the United States of America set the criteria on the number of employees employed while South Africa uses headcount, annual turnover and gross asset value as proxies (OECD, 2005; The Banking Association South Africa, 2019). In Mauritius, MSMEs are classified based on their annual turnover. The micro firm should be having an annual turnover of up to MUR2.0 million. To be classified as a small or a medium-sized enterprise, the firm should operate within the range MUR2.0 million to MUR10.0 million and MUR10.0 million to MUR50.0 million respectively. Exceeding the threshold of MUR50.0m will classify the firm as a large enterprise. According to Padachi (2012), the behaviours of the MSMEs are influenced through their special attributes, their location and the market in which they operate.

Past studies have shown that the demographics of the MSMEs impact on the effectiveness of their BCM practices and their resilience level. For example, Garagorri (2016) revealed that the size of the MSMEs impact on their business continuity towards becoming resilient, the study of Kato and Charoenrat (2018) and Kaswadi (2021) support the positive relationship between MSMEs' years of operation and BCM while Van Velzen *et al.* (2019) provide empirical evidence that sector plays an important element in BCM practices adopted by the MSMEs. Sarmiento (2016) found the importance of education in disaster risk management which is a field of BCM. However, age and gender were not supported by Asgary *et al.* (2012). Since the Mauritian educational system does not discriminate with regards to gender for launching a business where one needs to be at least 18 years of age, we found no potential reasons to put these variables under investigation. Hence, we found it essential to test the demographics of the local MSMEs on BCM practices and organisational resilience through the following hypotheses:

*H<sub>10a</sub>: Size of the MSMEs impacts positively on the effectiveness of the BCM practices being adopted.*

*H<sub>10b</sub>: Size of the MSMEs impacts positively on their resilience.*

*H<sub>11a</sub>: The MSMEs years of operations impacts positively on the effectiveness of the BCM practices being adopted.*

*H<sub>11b</sub>: The MSMEs years of operations impacts positively on their resilience.*

*H<sub>12a</sub>: MSMEs' sector of operation impacts positively on the effectiveness of the BCM practices being adopted.*

*H<sub>12b</sub>: MSMEs' sector of operation impacts positively on their resilience*

*H<sub>13a</sub>: The education of the owner-managers impacts positively on the effectiveness of the BCM practices being adopted by the MSMEs.*

*H<sub>13b</sub>: The education of the owner-managers of the MSMEs impacts positively on the MSMEs' resilience.*

Based on the above theoretical perspective, Figure 1 illustrates the conceptual model proposed for this study:

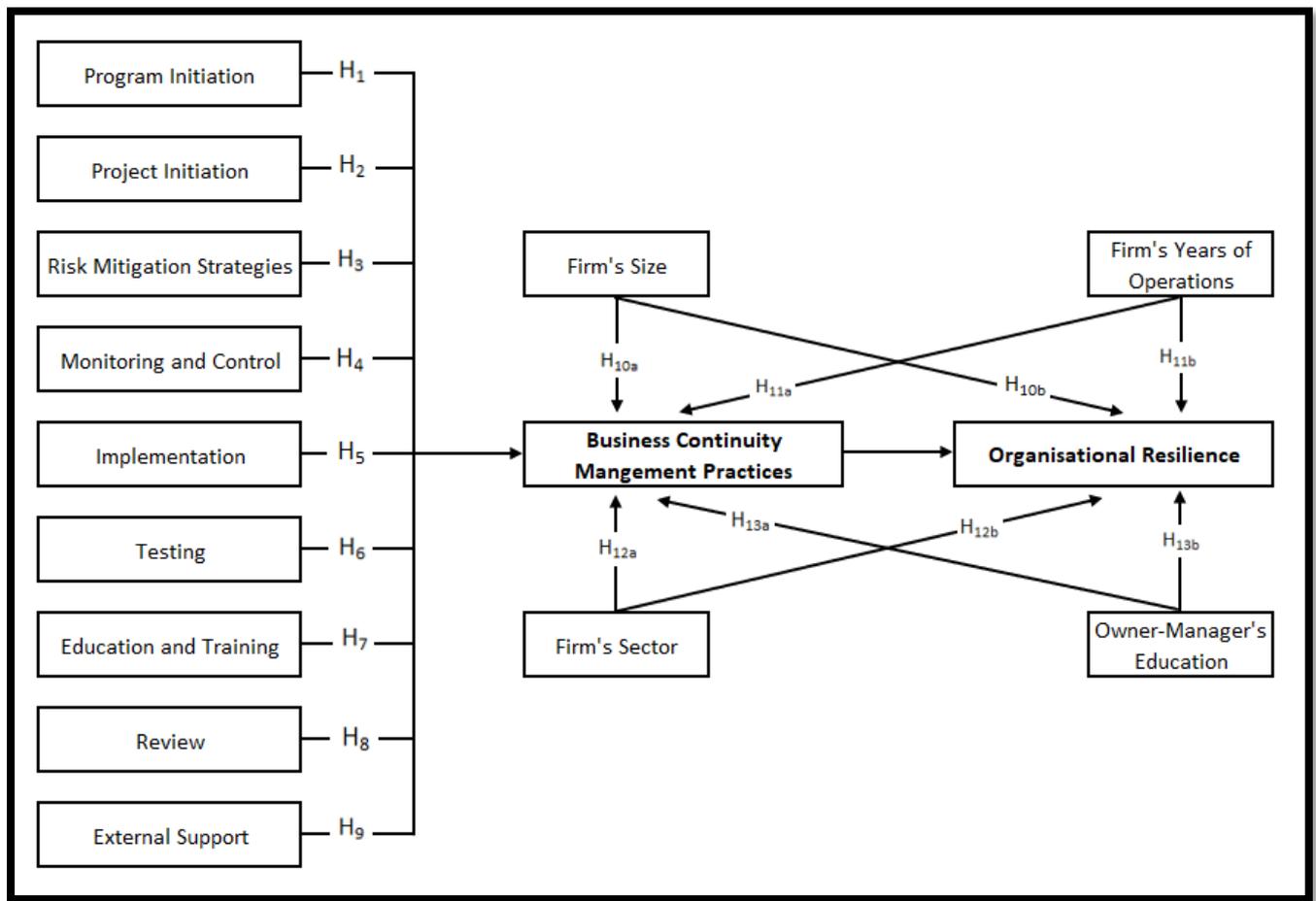


Figure 1: Proposed Conceptual Model for this Study

## Research Methodology

The context for this study has been focused around the Mauritian MSMEs registered with the SME Mauritius Ltd, which are among the most vulnerable firms in Mauritius (Joomunbaccus and Padachi, 2019). Since the population is quite large (N=116,000), the positivist research paradigm has been employed in order to test hypotheses using statistical techniques, resulting in bringing more validity and strengths to the research findings (Greener and Martelli, 2015). To facilitate the collection of data from a large population, a descriptive survey questionnaire was used as being advocated by both Jacobs (2015) and Brown and Harvey (2016). Using the sampling methodology proposed by Teeroovengadum and Nunkoo (2018), once the context of the study has been defined, the simple random probability technique was adopted based on the scope of this study. In order to ensure generalizability of the research findings to the study population, Cochran's (1977) sample size formula for scaled variables and his sample size correction formula, using a 95% confidence level and "gender" as variability rate (Bartlett *et*

*al.*, 2001), were used to ensure that the sample size calculated ( $n = 319$ ) is representative of the MSME community in Mauritius.

The data collection instrument comprised of 11 sections, each aiming at measuring specific variable under 3 different item statements based on that of Gibb and Buchanan (2009), Auzzir (2019) and Supardi and Hadi (2020). The item statements were measured on a 5-point Likert Scale using the rating of 1 to denote strongly disagree to 5 for strongly agree. The twelfth section measured 6 demographic questions using nominal questions. Statistical Package for Social Sciences (SPSS) version 22.0 and Microsoft Excel were used for analysis purposes. Ethical standards, such as the protection of identity, willingness to participate and ensuring confidentiality of the data collected, recommended by Cohen *et al.* (2017) were respected. Furthermore, the questions were reworded after conducting a pilot survey to ensure that expectations are clearly understood in order to eliminate biasness in responses (Robson, 2012; Crossman, 2017). Once the scene has been set through a systematic methodological approach, data collected were analysed in further section.

## **Results, Analysis and Discussions**

69 usable responses were obtained so far as most of the MSMEs do not adopt any BCM practices that allow them to fill the survey questionnaire. The data set used for analysis purposes is highly reliable (Cronbach's  $\alpha = 0.992$ ) and adequate (Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.938) based on the threshold (both  $\alpha$  and KMO  $> 0.700$ ) imposed by Tavakol and Dennick (2011) and Robson (2012) respectively.

### **Descriptive Statistics**

Based on the descriptive statistics illustrated in Table 1, it can be observed that the Mauritian MSMEs community consists of more males (56.5%) than the females (43.5%) which shows that more women have started to launch themselves in entrepreneurial activities as compared to a statistic of 69:31 (Male:Female) obtained in our past research (Joomunbaccus and Padachi, 2019). This increase can relate to the support system that the government has put in place to increase women entrepreneurs in Mauritius through the creation of the National Women Entrepreneur Council in 2019 (NWEC, 2019; Roopchund, 2020). 72.5% of the owner-managers are aged between 18 to 35 years old. This signifies that more youngsters are interested to launch their own business due to the possible cause of high unemployment rate in

the economy. 88.4% of the owner-managers have acquired a minimum of secondary education while only 10.1% have primary qualification. This shows the rising level of literacy in the Mauritian economy following the Government policy to educate every individual. With access to free tertiary education, this figure is expected to rise even further in the years to come.

The Mauritian MSME community has a rather younger population where most of them have up to 2 years of operations (68.1%) while only 10.1% have from 2 to 5 years and 21.8% have more than 5 years. This can also be attributed to the support system that the Government has put in place to facilitate start-ups (Joomunbaccus and Padachi, 2019). There are 29% of micro MSMEs, 49.3% small MSMEs and 21.7% medium MSMEs in Mauritius. Most of them operate within the wholesale and retail trade sector (30.4%) with transport and storage (24.6%) and Manufacturing (20.3%) taking the second and the third places respectively. Hence, we can argue that the cost of entry to these 3 sectors are comparatively low compared to the other markers which might require huge amount of operating capital.

Table 1: Demographic Descriptive Statistics

	Variables+A2:F21C20A2:E32	Frequency	Percent
Owner-Manager's Gender	Male	39	56.5
	Female	30	43.5
Owner-Manager's Age	From 18 to 25 years	18	26.1
	From 26 to 35 years	32	46.4
	From 36 to 45 years	8	11.6
	From 46 to 55 years	8	11.6
	Above 55	3	4.3
Owner-Manager's Educational Background	Primary	7	10.1
	Secondary	41	59.4
	Tertiary (including academic Professional Courses	20	29.0
	Non-academic professional courses	1	1.5
Firm's Years of Operation	Less than 1 year	18	26.1
	From 1 to 2 years	29	42.0
	From 2 to 5 years	7	10.1
	From 5 to 10 years	10	14.5
	Above 10 years	5	7.3
Firm's Size	Less than Rs2.0 million (Micro Enterprise)	20	29.0
	From Rs2.0 million till less than Rs.10.0 million (Small Enterprise)	34	49.3
	From Rs10.0 million till less than Rs.50.0 million (Medium Enterprise)	15	21.7
Firm's Sector	Wholesale and Retail Trade	21	30.4
	Transportation and Storage	17	24.6
	Manufacturing	14	20.3
	Construction	7	10.2
	Accommodation and Food Service Activities	7	10.2
	Other Activities	3	4.3

Research findings portrayed in Table 2 revealed that all the BCM practices (independent variables) of the Mauritian MSMEs are not supported by the respondents in general where the mean values fall into the category of disagree/strongly Disagree ( $M = 2.479$ ,  $SD = 1.175$ ). The respondents also revealed that the Mauritian MSMEs are not resilient in general ( $M = 2.469$ ,  $SD = 1.229$ ). Falkner and Hiebl (2015) and Auzzir (2019) argue that MSMEs are quite vulnerable when it relates to their preparedness to face disasters.

The main reasons for this were attributed to lack of financial resources and adequate expertise in the field which limit the scope of the MSMEs towards being resilient. Supardi and Hadi

(2020), through their systematic literature review, revealed that the conceptualisation of the term BCM varies across different contexts where little focus has been given towards a holistic approach for the MSMEs. Hence, there is a tendency to associate BCM to IT related issues rather than viewing it from an overall picture in view of maintaining critical business functions during a disaster and restoring them to their initial state after the occurrence of the event (Hosseini *et al.*, 2016).

Therefore, based on the different perspectives highlighted, it could be argued that the Mauritian MSMEs lack sufficient knowledge within the field of BCM and organisational resilience where the scarce resources they possess have not been equitably channelled towards maintaining and recovering critical business functions under different scenarios. For example, when hit by the impact of the several lockdowns imposed by the Mauritian Government due to the pandemic of Covid-19, the Mauritian MSMEs didn't developed efficient BCM Strategies that would allow them to maintain critical business operations. They had mostly presumed general disasters like flood, cyclones and fire where their resources might had been channelled towards mitigating the associated risks. They didn't anticipate movement restrictions that could potentially disrupt their operations. Auzzir (2019) argues that to perform an extensive risk assessment based on facts and figures, extensive knowledge and financial ability are required. This is where the Mauritian MSMEs might have lacked behind, leading to the closure of some.

Table 2: Descriptive Statistics for Dependent and Independent Variables

<b>Variable</b>	<b>M</b>	<b>SD</b>
<b>Organisational Resilience (DV)</b>	<b>2.469</b>	<b>1.229</b>
<b>BCM Practices (IV)</b>	<b>2.479</b>	<b>1.175</b>
Programme Initiation (IV)	2.628	1.352
Project Initiation (IV)	2.628	1.295
Risk Mitigation Strategies (IV)	2.415	1.236
Monitoring and Control (IV)	2.589	1.230
Implementation (IV)	2.435	1.255
Testing (IV)	2.507	1.322
Education and Training (IV)	2.435	1.226
Review (IV)	2.541	1.218
External Support (IV)	2.130	0.941

M = Mean; SD = Standard Deviation; DV = Dependent Variable; IV = Independent Variable

Measurement Scale = 1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree

### **Inferential Statistics**

Table 3 portrays the research findings for the proposed relationships between the different BCM practices and MSMEs resilience. Results from Hypothesis 1 revealed that program

initiation impacts positively on organisational resilience in the context of the Mauritian MSMEs ( $r = 0.872$ ,  $p < 0.01$ ). This finding is in line with the study of Gibb and Buchanan (2009) who revealed a positive significant relationship between these 2 constructs. Setting the tone through this stage by creating a programme charter and a plan will certainly help the MSMEs to be better aligned with their BCM strategy in view of becoming more resilient.

The relationship between Project initiation and organisational resilience has been tested in hypothesis 2 where same has been supported ( $r = 0.915$ ,  $r < 0.01$ ). Due to resource limitation, SMEs are unable to implement all projects under a BCP. Hence, it is important to prioritise same based on the most critical business functions that should be maintained during and after a disaster. This corroborates with Wheatley (2014) who argues that to become resilient, firms need to prioritise their BCM projects and align same with the goals and skills available under their BCP.

Risk mitigation strategies were found to be statistically significant on MSMEs' resilience ( $r = 0.925$ ,  $r < 0.01$ ) as per result obtained for Hypothesis 3. There are several risk mitigation strategies which MSMEs can use to decide which risks can be avoided, transferred to external parties, minimised and absorbed. This should be mapped with the MSMEs risk appetite in order to build resilience. Gibb and Buchanan (2009) supported this fact by stating that whichever the risk mitigation strategy to be adopted, it should be appraised to find out the value that it brings to the firm that could potentially increase its resiliency.

Hypothesis 4 projected a positive connection between monitoring and control with the resilience of the Mauritian MSMEs. Research findings revealed a strong positive association between the 2 constructs ( $r = 0.911$ ,  $r < 0.01$ ). This is because monitoring and control allows the MSMEs to make sure that the BCP is always aligned with the firm's BCM strategy and take timely actions to tackle any deviations that could potentially disruption operations. Auzzir (2019) supported this relationship by stating that an effective communication and a command and control mechanism would definitely allow the MSMEs to translate their plans into actions, thus, rendering them more resilient.

Hypothesis 5 predicted a positive link between the implementation of the BCP and organisational resilience. Results obtained ( $r = 0.921$ ,  $r < 0.01$ ) confirm the strong association between these two constructs. By implementing their BCP, MSMEs are able to determine whether same is fully operational. Hence, any improvements to be made to the existing processes and infrastructure that will help them to better manage risks can be easily identified.

This is supported by Wheatley (2014) who argues that through the implementation stage, the firm is able to ensure proper alignment between its business functions, thus, rendering it more resilient in times of disasters.

Results found testing to be statistically significant on MSMEs resilience through hypothesis 6 ( $r = 0.921, r < 0.01$ ). By performing periodical testings, MSMEs are able to determine whether the BCP is still relevant and deliverable based on the prevailing environmental context. Hence, they are able to ensure that relevant risk mitigation strategies are being used and the skills of the staffs are aligned with the objective of the BCP towards organisational resilience. This is supported by Auzzir (2019) who claims that frequent testing of the BCP allow MSMEs to adopt the proper and relevant BCM strategies that enhance their reliance.

The relationship between education and training with MSMEs resilience was supported by hypothesis 7 ( $r = 0.921, r < 0.01$ ). By providing sufficient knowledge and aligning employees' skills with the BCM strategy, MSMEs can become resilient towards disasters. This has been supported by both Gibb and Buchanan (2009) and Auzzir (2019) who stated that sufficient education and training lead to the achievement of the organisations' BCM objectives. However, it is imperative that refresher trainings are given to existing employees on a periodic basis and newcomers are given sufficient knowledge on the BCM strategy during their induction in order to align expectations.

Research findings for Hypothesis 8 confirm the positive relationship that exists between review as being a BCM practice and organisational resilience within the Mauritian MSMEs context ( $r = 0.918, r < 0.01$ ). By performing constant reviews, the MSMEs are able to find new business risks which necessitates the BCP to be amended while at the same time have the opportunity to eliminate redundant BCM activities which no longer constitute risks. It also helps in efficient resource allocation for the MSMEs.

This is supported by Auzzir (2019) who argues that changes in a business environment requires constant reviews permit the MSMEs to modify their BCP to better face crisis.

It was initially claimed that external support impacts positively on the MSMEs resilience. Hypothesis 9 confirms this relationship ( $r = 0.850, r < 0.01$ ) as MSMEs, by nature, possess limited resources and expertise which unable them to absorb risks by themselves. Having Government support through disaster incentives, contracting insurance policies to cover

against negative impacts or outsourcing any business function from a cost effectiveness perspective can render the MSMEs more resilient. This is in line with the study of Gibb and Buchanan (2009), Wheatley (2014) and Auzzir (2019) who all supported a positive relationship between external support and a firm's resilience.

Table 3: Pearson Correlation Coefficient Test Results

Hypotheses	Proposed Relationship	r-value	p-value	Result
H1	PGI ---(+ve)---> OR	0.872	0.000	Accept H <sub>1</sub> , P < 0.01
H2	PI ---(+ve)---> OR	0.915	0.000	Accept H <sub>2</sub> , P < 0.01
H3	RM ---(+ve)---> OR	0.925	0.000	Accept H <sub>3</sub> , P < 0.01
H4	MC ---(+ve)---> OR	0.911	0.000	Accept H <sub>4</sub> , P < 0.01
H5	I ---(+ve)---> OR	0.921	0.000	Accept H <sub>5</sub> , P < 0.01
H6	T ---(+ve)---> OR	0.901	0.000	Accept H <sub>6</sub> , P < 0.01
H7	ET ---(+ve)---> OR	0.924	0.000	Accept H <sub>7</sub> , P < 0.01
H8	R ---(+ve)---> OR	0.918	0.000	Accept H <sub>8</sub> , P < 0.01
H9	ES ---(+ve)---> OR	0.850	0.000	Accept H <sub>9</sub> , P < 0.01

PGI = Program Initiation, PI = Project Initiation, RM = Risk Mitigation, MC = Monitoring and Control

I = Implementation, T = Testing, ET = Education and Training, Review = R, ES = External Support

P-value = Significance (Sig.) value

All correlations are significant at the 0.01 level (2-tailed)

Table 4 revealed the research findings for the different hypotheses formulated between the MSMEs demographics with BCM practices and organisational resilience. Firm's size was found to have a strong positive relationship with both BCM (H<sub>10a</sub>: F = 38.105, P < 0.01) and organisational resilience (H<sub>10b</sub>: F = 37.027, P < 0.01). As and when a firm grows, its ability to develop effectively and efficiently its BCM practices improve as well because it has more resources to invest in improving its infrastructure and processes, thus, rendering them more resilient to face disasters.

This has been supported by the study of Garagorri (2016) who revealed that the size of the MSMEs correlate positively on their ability to become resilient through effective business continuity practices.

Research findings of Hypothesis 11a and 11b revealed strong positive association between the Mauritian MSMEs' years of operation with BCM practices being adopted (F = 32.872, P < 0.01) and their resilience (F = 28.777, P < 0.01) respectively. Knowledge increases with experience. Hence, experienced MSMEs, having faced previous crisis situations and by observing other market players dealing with disasters, are able to acquire significant knowledge

in combatting risks as compared to start-ups and inexperienced firms. This corroborates with Kaswadi (2021) who provided sufficient evidences that experienced MSMEs are more resilient through reliable BCM practices.

Sector of operation correlates positively with BCM practices adopted by the Mauritian MSMEs ( $H_{12a}$ :  $F = 3.231$ ,  $P < 0.05$ ) and their resilience ( $H_{12b}$ :  $F = 2.547$ ,  $P < 0.05$ ) respectively. MSMEs operating in sectors dealing with highly sensitive data (e.g. accountancy firms) are more prone towards maintaining reliable BCM practices for the good functioning of their operations Those operating in other sectors dealing with less sensitive data (e.g. construction) do not find the need to invest highly in maintaining good business continuity practices. Van Velzen *et al.* (2019) state that sector impacts positively on the BCM practices adopted by the MSMEs in view of becoming resilient.

Hypothesis 13a and Hypothesis 13b supported the strong relationships between owner-managers' education with the BCM practices adopted by the MSMEs ( $F = 18.834$ ,  $P < 0.01$ ) and their resilience ( $F = 15.585$ ,  $P < 0.01$ ) respectively. Education is an effective arm towards effective entrepreneurial skills (Joomunbaccus and Padachi, 2019). It increases the skills of the owner-managers and make them more capable of researching, analysing and taking better decisions towards adopting good BCM practices to become more resilient. This construct has gained the support of Sarmiento (2016) who found that business owners having good education are more agile in disaster risk management.

Table 4: One-Way Anova Test Results

Hypotheses	Proposed Relationship	F-Value	P-Value	Result
H <sub>10a</sub>	Firm's Size ---(+ve)---> BCM	38.105	0.000	Accept H <sub>10a</sub> , $P < 0.01^{**}$
H <sub>10b</sub>	Firm's Size ---(+ve)---> OR	37.027	0.000	Accept H <sub>10b</sub> , $P < 0.01^{**}$
H <sub>11a</sub>	Years of Operation ---(+ve)---> BCM	32.872	0.000	Accept H <sub>11a</sub> , $P < 0.01^{**}$
H <sub>11b</sub>	Years of Operation ---(+ve)---> OR	28.777	0.000	Accept H <sub>11b</sub> , $P < 0.01^{**}$
H <sub>12a</sub>	Sector ---(+ve)---> BCM	3.231	0.012	Accept H <sub>12a</sub> , $P < 0.05$
H <sub>12b</sub>	Sector ---(+ve)---> OR	2.547	0.037	Accept H <sub>12b</sub> , $P < 0.05$
H <sub>13a</sub>	Education ---(+ve)---> BCM	18.834	0.000	Accept H <sub>13a</sub> , $P < 0.01^{**}$
H <sub>13b</sub>	Education ---(+ve)---> OR	15.585	0.000	Accept H <sub>13b</sub> , $P < 0.01^{**}$

BCM = Business Continuity Management, OR = Organisational Resilience, "---(+ve)--->" = Postive Relationship  
P-value = Significance (Sig.) value at 5% and 1% \*\* margin of error;

Once all the relationships between the different constructs of the proposed conceptual model have been analysed individually, the next objective of this study is to assess them simultaneously in view of determining their fit into the model while at the same time quantify its predictive power. Table 5 pictures the results obtained from a multi-regression analysis performed.

Table 5: Multi-Regression Analysis Results

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.960 <sup>a</sup>	.921	.903	.38336		

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	94.654	13	7.281	49.543	.000 <sup>a</sup>
	Residual	8.083	55	.147		
	Total	102.738	68			

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.090	.194		-.463	.645
	D1_Size of Firm	-.005	.116	-.003	-.046	.964
	D2_Years of operations	.069	.076	.068	.903	.371
	D3_Sector	-.020	.035	-.025	-.572	.570
	D6_Accademic background of owner-manager	.015	.101	.008	.153	.879
	PROGRAM_INITIATION	-.183	.121	-.201	-1.513	.136
	PROJECT_INITIATION	.358	.136	.377	2.628	.011
	RISK_MITIGATION	.415	.151	.418	2.751	.008
	MONITORING_CONTROL	.024	.155	.024	.155	.877
	IMPLEMENTATION	.024	.186	.024	.127	.899
	TESTING	-.071	.132	-.077	-.540	.591
	EDUCATION_TRAINING	-.007	.154	-.007	-.045	.964
	REVIEW	.223	.151	.221	1.479	.145
	EXTERNAL_SUPPORT	.221	.106	.169	2.093	.041

The coefficient results stated in Table 5 revealed that size ( $r = -0.046$ ,  $r > 0.05$ ), years of operations ( $r = 0.903$ ,  $r > 0.05$ ), sector ( $r = -0.572$ ,  $r > 0.05$ ) and education of the owner-managers ( $r = 0.153$ ,  $r > 0.05$ ) are not statistically significant when being assessed simultaneously in the model as compared to the results obtained from the hypothesis testings when their relationships were analysed individually. These findings go against that of Garagorri (2016), Kato and Charoenrat (2018), Kaswadi (2021), Van Velzen *et al.* (2019) and Asgary *et al.* (2012) for the probable reasons that irrespective of size, sector, organisational tenure and education, all firms are required to adopt sufficient BCM practices in order to become resilient. The pandemic of Covid-19 didn't consider such demographics before impacting negatively on the Mauritian MSMEs' sustainability. Only firms with reliable BCM practices were able to survive this crisis period. Hence, it could be argued that irrespective of their demographics, all Mauritian MSMEs should absolutely have BCM practices in place in order to face disasters and recover successfully after the events.

Program initiation ( $r = -1.513$ ,  $r > 0.05$ ), monitoring and control ( $r = 0.155$ ,  $r > 0.05$ ), implementation ( $r = 0.127$ ,  $r > 0.05$ ), testing ( $r = -0.540$ ,  $r > 0.05$ ), education and training ( $r = -0.045$ ,  $r > 0.05$ ) and review ( $r = 1.479$ ,  $r > 0.05$ ) were also not statistically significant within the model as compared to their positive individual relationship with organisational resilience. This might be because the Mauritian MSMEs are, by nature, firms with scarce resources. Due to poor access to finance and lack of entrepreneurial skills (Joomunbaccus and Padachi, 2019), they are unable to invest resources in such BCM practices. They only focus on important aspects of BCM, either formally or informally, that they perceive to be essential and affordable as per their resource capacity. This also explains the reasons why project initiation ( $r = 2.628$ ,  $r < 0.05$ ), risk mitigation strategies ( $r = 2.751$ ,  $r < 0.05$ ) and external support ( $r = 2.093$ ,  $r < 0.05$ ) have fitted-in the model. This has been supported by ADRC (2012), Falkner and Hiebl (2015) and Auzzir (2019) who all stated that due to financial and expertise constraints, MSMEs are unable to focus their limited resources on all aspects of BCM. Hence, it can be argued that due to resource limitations, the Mauritian MSMEs focus only on the basic aspect of BCM where risk mitigation strategies were found to have more strengths in the model, followed by project initiation and external support.

Based on the above analysis, the revised model proposed by this study is illustrated in Figure 2.

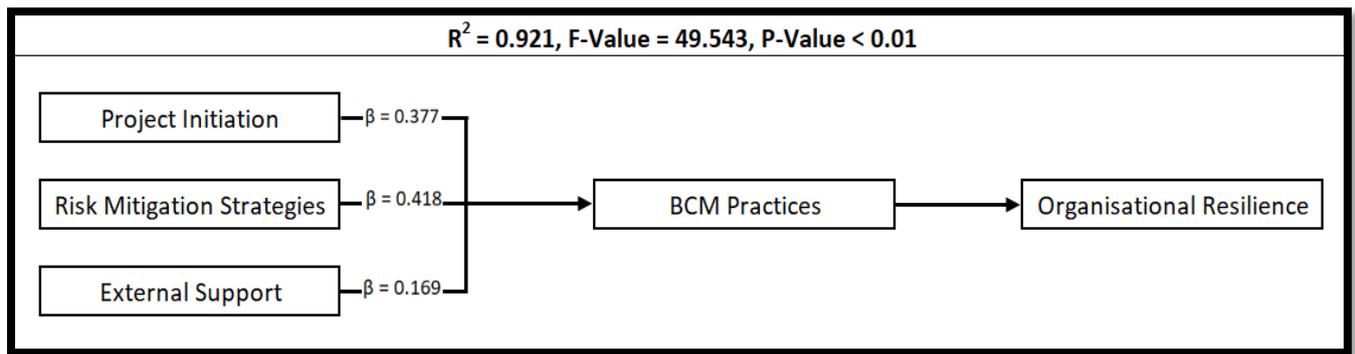


Figure 2: Revised Model

According to Bhattacharjee (2012), any model having a significant value less than 0.05 is said to be statistically significant with good theoretical underpinning. Research findings in Table 5 reveal that the whole model proposed for this study is statistically significant ( $F = 49.543, P < 0.01$ ). Hence, we reject the null hypothesis of the model. Furthermore, with a  $R^2$  value of 0.921, the model for this study is said to have a high predictive capacity with only 7.9% as unexplained variance.

## Practical Implication of the Study

### Program Initiation

This study recommends the owner-managers of the MSMEs to prepare a program charter in which ownership of the BCM should be clearly specified. Roles and responsibilities towards the different BCM practices should be well defined, communicated and explained to each direct stakeholder so that expectations are clear understood and everyone is aware of what immediate actions need to be taken during a disaster. Despite having scarce resources, MSMEs should look for suitable financing to approve a budget, irrespective of the amount, as it is better to have some sort of security rather than having nothing. This is because the impact of disaster can at times be so disastrous that can put the survival of the MSMEs in jeopardy. The budget can be increased gradually as and when the firm is growing in order to increase their resilience.

### **Project Initiation**

Due to scarce resources, the MSMEs won't be able to maintain full business operations in times of crisis. Hence, it is advisable that the owner-managers conduct an audit of all the business functions and prioritise them based on their level of criticality. Resources should then be allocated to recover these core activities during disasters. Hence, it is recommended that a backup of all important data and documentations relating to these core business functions is performed on a frequent basis based on the MSMEs risk appetite and same is saved at an offsite location or on free cloud technology in order to recover easily during a disaster.

### **Risk Analysis**

The owner-managers of the MSMEs should chose a risk management framework that could be easily conducted without having to invest additional money. A business impact analysis (BIA) normally requires investment and expertise. Taking into consideration the vulnerabilities of these small firms in these areas, it is advisable that the MSMEs perform a simple SWOT analysis in which they will be able to identify threats towards their business continuity. Hence, a simple risk assessment matrix could be performed to situate the identified risks within their probability of occurrence and their impact on the business.

### **Risk Mitigation Strategies**

Once threats to the MSMEs have been categorised, resources should be allocated to avoid high risk areas in order to make the MSMEs more resilient. An insurance coverage should be contracted and substitute processes should be designed to mitigate such threats to the organisation. Since investing in a disaster recovery site may be quite expensive, MSMEs trading within the same sector may form a partnership to share the cost of same in order to reduce the financial burden. This will be effective as the disaster recovery site, which normally contains the basic infrastructure to continue core operations, will make the MSMEs more resilient. Hence, proper agreement within the MSMEs partners should be drafted in order regulate this practice. For the low risks, the MSMEs can absorb them by taking preventive measures. A community of practice may also help them to identify potential low cost strategies towards improving their resilience.

### **Monitor and control**

Leadership and communication are key towards maintaining a good BCP. Hence, MSMEs are recommended to have a good channel of communication so that commands from the process owners are clearly communicated to the direct stakeholders. This will allow requirements of the BCP to be easily translated into actions. Hence the contact details of the key employees should be easily accessible in order to initiate the recovery plan at the earliest possible during times of crisis. Leaders should also motivate their employees towards the BCM strategy so that they get their full cooperation which is critical during these events. Incentives such as a special intervention allowance may be given to them.

### **Implementation**

Any new processes adopted by the MSMEs should be documented in the program charter and improvements will have to be made within the existing operating procedures, infrastructures, technologies or security aspects which can help to better manage risks. Higher insurance coverage will have to be arranged to cover the new processes or new preventive measures will have to be designed to address the new risks which the MSMEs can potentially face.

### **Testing**

MSMEs are highly recommended to test their risk mitigation strategies and their full DRP on a periodic basis. For example it can be on a quarterly basis depending on the number of transactions being processed. Likewise, the MSMEs will determine which strategies have been redundant and need to be removed from the BCP in order to free resources. This will help the firms to be up-to-date with their plans, ensure that it is still deliverable and at the same time improve it against weaknesses identified for better resilience.

### **Education and Training**

It is important that any skill gaps identified are addressed through relevant trainings so that employees are better armed to face challenges during crisis. Hence, it is recommended that the MSMEs conduct regular trainings, for example once every three months, to ensure that expectations with regards to BCM are clearly understood. Inductions for the newcomers should also stress on the important of the company's BCM strategy so that the latter are aware of the roles to be undertaken if ever a sudden disaster is declared. Furthermore, a soft copy of the BCM manual saved on a shared folder, a hard copy of the procedures stored in a filing cabinet

or preparing a graphical view of the disaster recovery plan and stick it on the wall are relevant strategies to keep up to date with changes relating BCM.

### **Review**

The business environment is dynamic and complex in nature with changes happening quite frequently on the market. New processes might be introduced, new individuals are being recruited and exiting infrastructures might get outdated. All these constitute several risks for the MSMEs. Hence, it is recommended that they should review all these changes on a timely basis and assess same from a risk perspective so that actions could be designed to mitigate them. A risk steering committee can be set-up internally and meetings can be conducted on a regular basis to review all these changes and action accordingly to make the firm more resilient. Subsequently, the BCM procedures should be updated and recommunicated to all relevant employees.

### **Conclusion**

This study has assessed the different BCM practices of the Mauritian MSMEs while at the same time explored the impact that same had on their resilience level. It was found in general that the MSMEs do not follow any formal set of effective BCM practices which has resulted in a level of resilience during the period of Covid-19 in Mauritius. All BCM practices were found to be statistically significant on organisational resilience. Furthermore, the model derived from this study has been found to have high predictive power. Consequently, several recommendations have been formulated to help the MSME community to better arm themselves against the threats of disasters so that they can become more resilient in the near future. Hence, it can be concluded that this research has fully met its objectives. Furthermore, through its theoretical and practical contributions, this study can serve as a base for generativity to guide future researchers in the field of BCM and organisational resilience for the vulnerable type of firms.

### **Limitation of the Study**

This study has used a small sample size for its analysis where a greater sample could have given a better picture of the reality and allow for better generalizability of the research findings to the study population. Biasness in certain areas could have occurred since some areas

investigated were subjective. This study has also been limited by time, on the contrary, it could have produced more interesting findings.

### **Scope for Further Study**

The model can be retested with a greater sample size to reconfirm its relevance within the MSME community. A mixed research paradigm could be adopted by using both survey questionnaires and focus group to gain more insight on the phenomenon under study. Merging several existing BCM frameworks together to create a better conceptual framework can give more interesting results.

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## **COVID-19 and MSMEs**

## Impact Of COVID-19 On MSME' s In India - A Comparative Study Of Rajasthan and Uttarakhand

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### ABSTRACT

MSMEs continue to be the backbone of the economy for countries like India where the problem of unemployment is steadily escalating and the agriculture land holdings continue to shrink. The State of Uttarakhand in India is looking at sustainable and inclusive industrial growth as it faces an acute problem of migration from the hilly terrain to the plains due to lack of employment and business opportunities. The purpose of this paper is to comprehensively analyse the impact of COVID-19 on MSMEs in Rajasthan and Uttarakhand and to explore the reasons responsible for hindering their growth. A descriptive study was conducted with the help of secondary data and is based on extensive review which significantly contributes in directing the stakeholders to take appropriate measures for speedy development of the region

Key words- MSME, Unemployment, Business opportunities, Migration.

### Introduction

In this tough global business environment micro enterprises have survived and even flourished therefore, in recent time the micro enterprises sector is emerging as an option for supporting business environment of any developed and developing economy (Munoz. S. Mark Joseph (ed), (2010). In the present time all developed and developing countries are facing unemployment, unequal distribution of wealth, income and economic fluctuations. Therefore, micro enterprises have emerged as an economic growth engine in all the nations of the world. . Development of micro enterprises can help to create immediate employment opportunities at lower investment level therefore micro enterprises have emerged as a real bone for the poor (U. Jerinabi 2009). Micro enterprises are also called small businesses. In the present time world's all developed and developing nations are adopting the various programs of micro enterprises development for creation of self -employment opportunities and economic

development. During this economic environment, in the mid 1970 Dr. Yunus introduced Holistic development strategy by linkage micro enterprises to micro finance concept in Bangladesh. After the success of the development strategy in Bangladesh, world -wide it was considered micro enterprises are the best way to generate employment opportunities and overall economic growth. Since 1980, various development agencies and developing and developed nation had been started various micro enterprise development programs and after 1990 microenterprise have been become the synonyms of economic development in all the countries of the world. The World Bank has been actively engaged micro enterprise development since 1990 as it approved roughly 49 project between 1989 and 1993 that aims to improve the living standards of low-income people and just under half of these incorporated micro enterprise development programme (Websler M. Leila, Riopelle Rabdall, and Chidzero Morie Anne, (1996)).

MSMEs are said to be highly innovative, having high growth potential and a major contribution to economy as a whole but the growth and performance of MSMEs could not be assessed accurately due to the sector comprising of more unorganised and unregistered sector rather than registered. Micro, small and medium enterprises are also facing various challenges that are uncommon to the large scale companies and multinational companies like lack of finance, marketing , skilled labour, technology , infrastructure and so on. In an endeavour to promote , develop and enhance competitiveness of the sector, Government of India enacted a single comprehensive legislation the MSME Act 2006 and also the NDA government has committed to boost micro, small and medium enterprises by invoking slogan like “make in India’.

### **Objectives**

- 1) To analyse the impact of COVID-19 on MSMEs in Rajasthan and Uttarakhand.
- 2) To examine problems faced by MSMEs in respect of availability of raw materials, finance, skill-promotion and capacity-building, labour and marketing strategies.
- 3) To suggest appropriate guidelines for strengthening the MSMEs.

### **Review of literature**

C. LALROLUAHPUIA (2016)- The paper “STUDY ON THE PERFORMANCE OF MSMEs IN LUNGLEI DISTRICT, MIZORAM”, tried to find out the role and performance of micro,

small and medium scale enterprises in Lunglei district, Mizoram. It was observed in the study that the small scale and medium scale industries in India can make a significant contribution to achieve social and economic objectives such as labour absorption, eradication of poverty, reducing regional imbalances, ensuring equitable distribution of national income, rural development and growth of various development activities. Manvendra Pratap Singh, Arpita Chakraborty and Mousumi Roy (2016)- The paper “ENTREPRENEURIAL COMMITMENT, ORGANIZATIONAL SUSTAINABILITY AND BUSINESS PERFORMANCE OF MANUFACTURING MSMEs: EVIDENCE FROM INDIA”, was an attempt to understand the motivation of micro, small and medium enterprises towards organisational sustainability in such a competitive environment. Conceptual Framework was developed to test the link among entrepreneurial commitment, organisational sustainability and business performance. Structural equation modelling and other standard statistical analysis have been used to analyse the data collected through questionnaire survey from 262 manufacturing micro, small and medium enterprises in India. The study findings highlighted that organisational sustainability emerged as a driving source of motivation to improve the business performance among manufacturing micro, small and medium enterprises in India. In addition, there is significant mediation effect of organisational sustainability on entrepreneurial commitment and business performance. Dr. Samuel Muiruri Muriithi (2017)- The paper “AFRICAN SMALL AND MEDIUM ENTERPRISES (SMES) CONTRIBUTIONS, CHALLENGES AND SOLUTIONS”, was based on empirical evidence and current research on small and medium scale Enterprises worldwide with the major focus on African small and medium scale enterprise and how to improve their operations and profitability. It was observed that the African government have to put more efforts to come up with practical rather than theoretical solution because of small and medium scale enterprises alarming rate of failures and solutions. Ms. Heena Upadhyay and Dr. Vivek Singh Kushwaha (2017)- The paper “Growth of MSMEs in INDIA: Its' Performance and Future Prospects”, highlighted the performance of Indian micro, small and medium enterprises and also forecasts the future trend. The research design was analytical research design. The data required for the present study had been collected from secondary sources. It was observed that micro, small and medium enterprises not only help in industrialization of rural and backward areas but also they play a crucial role in providing large-scale employment opportunities at reasonably lower capital cost than large scale industries thereby ensuring more impartial distribution of national income, resources, wealth and thus reducing the regional imbalances. Economically this sector has strengthened the regions of the country and helped in achieving the self-reliance in every

aspect of life. It also eliminates the imbalances between rich and poor. Karabo Molefe, Natanya Meyer, Jacques de Jongh (2018)- The paper “A Comparative Analysis of the Socio-Economic Challenges Faced by SMMEs: The Case of the Emfuleni and Midvaal Local Municipal Areas”, tried to identify and compare the main socio-economic challenges faced by SMEs in two local areas within the Vaal Triangle region. The study used quantitative research approach and a cross-sectional research design through means of the survey method. A total of 198 SME owners that resided in both the Emfuleni (ELM) (n=100) and Midvaal (MLM) (n=98) local municipal areas were surveyed. Data analysis involved the use of descriptive statistics, cross-tabulations and chi-square tests. The study revealed that managerial and economic challenges were the biggest challenges faced by SMEs which include: lack of skilled labour, insufficient business training and local economic conditions. The findings of the study provide valuable insight towards fostering an enabling environment for SME development on local levels. Simranjeet Kaur Virk, Pinnacci Negi (2019)- The paper “An Overview of MSME Sector in India with Special Reference to the State of Uttarakhand”, performance of micro, small and medium sector of India was highlighted by last annual report by government of India that is annual report of 2017 to 18. The study observed that MSMEs have the potential to act as a catalyst of growth and does social crisis. So observed that the Uttarakhand State should drive for MSME penetration across all the 13 districts to ensure an overall development of the state. Also the Uttarakhand government needs to provide adequate support to the MSME to develop to its full potential in the state. Dr. Megha Batola (Main Author), CA Bijaya Laxmi Thapliyal, Ms Neha Rani, Dr Ankur Singh Bist (2020)- The paper “Growth and Performance of Small and Medium Scale Enterprises in Women Entrepreneurship Development (A Case of Uttarakhand)”, studied the impact of type of industry, age of entrepreneur and form of Organisation on women entrepreneurial development in Uttarakhand. The study basically included the small and medium scale women entrepreneurs of Uttarakhand from Dehradun, Haridwar, Nainital, Udham Singh Nagar and Haldwani and the sample size for the study comprises of 300 women entrepreneurs chosen according to stratified random sampling. Cross-sectional bivariate analysis was performed to determine the impact of various factors on the growth and performance of women entrepreneurship development. It was observed from the study that women are unaware of latest technological developments and market trends.

### **Research Methodology**

The study area selected to accomplish the objectives of the paper is Uttarakhand and Rajasthan State.

### **Sample and Data Type**

- In this study we have used secondary data due to time limitation from different sources.
- Descriptive in nature
- Quantitative study.

### **Sources of Data**

- Industries Department Uttarakhand
- National sample survey organization
- PHD Chamber of commerce and industry
- Confederation of Indian Industry
- KVIC reports
- Directorate Of Industries

### **Findings**

**TABLE 1 - Number of MSMEs Registered in Rajasthan and Uttarakhand**

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Raajasthan	Uttarakhand	Rajasthan	Uttarakhand
2015-16	29022	1337	4655	393	188	40
2016-17	89533	3485	11937	1132	448	103
2017-18	111190	4666	11231	951	359	69
2018-19	113144	7886	12404	1468	414	112
2019-20	153563	14988	18774	2011	548	148
2020-21	50971	7321	14722	1679	456	95

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of MSMEs units registered from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020, number of MSME's units were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although MSME units were more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19, MSME units declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

TABLE 2- Total Employment in MSME in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand
2015-16	139439	6806	69127	8968	10717	4223
2016-17	365161	21420	184473	29583	37002	8743
2017-18	388859	20066	134657	22223	25313	7007
2018-19	411678	37571	143735	28391	25272	12222
2019-20	530333	56617	195461	33684	31108	10570
2020-21	202119	36671	150319	24286	2665	7172

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the total employment in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020, total employment was increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although total employment was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19, employment declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

TABLE 3 - Male Registration in MSME in Rajasthan and Uttarakhand

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand
	Male	Male	Male	Male	Male	Male
2015-16	1308	49	430	44	34	7
2016-17	13817	453	2235	231	104	27
2017-18	91252	3642	9496	785	324	66
2018-19	94969	5870	10667	1212	369	97
2019-20	129780	10089	16195	1718	483	127
2020-21	44246	6175	13325	1454	409	85

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of males registered in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020, number of males who were registered in MSME sector were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although males participation in MSME sector was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19, males participation declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

TABLE 4 - Female Registration in MSME in Rajasthan and Uttarakhand

**COVID-19 and MSMEs**

Years	Micro		Small		Medium	
	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand	Rajasthan	Uttarakhand
	Female	Female	Female	Female	Female	Female
2015-16	213	9	80	8	2	0
2016-17	3350	108	389	50	8	2
2017-18	19938	1024	1735	166	35	3
2018-19	18175	2016	1737	256	45	15
2019-20	23783	4899	2579	293	65	21
2020-21	6725	1146	1397	225	47	10

Source- Ministry of MSME, Government of India Report 2020-21

The above table shows the number of females registered in MSME sector from 2015-16 to 2020-21. It is quite evident from the table that before COVID-19 i.e. 2020 ,number of females who were registered in MSME sector were increasing over the years till 2019-20 both in Rajasthan and Uttarakhand, although females participation in MSME sector was more in Rajasthan as compared to Uttarakhand. But, in 2020-21 i.e. after the outbreak of COVID-19 , females participation declined both in Rajasthan as well as Uttarakhand state. However, Rajasthan is still much ahead than Uttarakhand.

**Problems faced by MSME's in Uttarakhand and Rajasthan**

Uttarakhand has been facing some crucial problems since last few decades that are responsible for hindering the performance of khadi village institutions in the state. Some of them are mentioned below;

? There is a problem of effective marketing and selling in the state due to uneven geographical factors.

? Inadequate Infrastructure

? Lower technology levels

? The industries are heavily weighed down by the rules and regulation imposed on them. investment in the khadi and village sector

? Shortage of energy leading to high energy cost is also an issue.

? Problems of storage, designing, packaging and product display

? Youth of the state lacks in proper skill development and training.

? Lack of proper research and development is also an issue.

## **Conclusion**

- MSMEs are termed as the “engine of economic growth” of any country both developed and developing but specially developing countries. It’s the panacea to alleviate poverty and also a proven way to improve the quality of life particularly for the poor people.
- MSMEs have the potential to act as catalysts of growth and thus curb this societal crisis.
- From the study it is observed that COVID-19 has seriously affected the MSME sector in both the states as there was a sharp decline in number of MSME units registered, employment and gender-wise participation.
- The State should strive for MSMEs penetration across all the thirteen districts to ensure an overall development of the state.

## **Recommendations**

### **1. Availability of Data**

- There is no data which shows the percentage contribution of tourism on MSMEs, it should be made available
- Data should be made available for the revenue generated from tourism.

### **2. Infrastructural development**

- Investments in tourism infrastructure may include development of both tourism as well as civic infrastructure.

Also involves provision of tourist information bureaus and websites for providing requisite tourist information

- Efforts towards enhancement of overall transport infrastructure in the form of good quality roads, rail network, airports, availability of tourist vehicles etc. may also be strengthened in order to improve the overall infrastructure.
- There is less number of beds per million people. Steps should be taken to increase and improve accommodation facilities.

### **3. Human resource development**

- Provision of additional training institutes, enhancing capacity of existing ones along with introduction of short term courses providing specific skills directed at hospitality and travel trade sector employees may be required for catering to the increased manpower and skill requirements.
- Rural youth may be provided vocational training through special institutes to provide them employment opportunities.

### **4. Marketing programs**

- Collaborative marketing efforts may be required for promotions. Focused branding and promotional campaigns may be designed.
- Involvement of local travel trade partners may be encouraged.
- Trips to involved destinations, informative sessions, financial support and incentives may be provided.
- A greater number of domestic tourism events and road shows may be organized in order to offset seasonality of tourist inflow. Events may be based on innovative themes of music, dance, sports, food, fruits, handicrafts, Indian culture and traditions, Indian villages, festivals etc.

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## Digital Trading under the African Continental Free Trade Area (AfCFTA)

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### Abstract

The COVID-19 and attendant safety measures imposed by governments across the world have resulted in the increased use of digital technology for trade. Some Micro Small and Medium Sized Enterprises (MSME)s in Africa, have begun to embrace digital technology.

The African Continental Free Trade Agreement (AfCFTA) presents an excellent opportunity for boosting intra-African trade, more so, through digital trade. However this can only be achieved where MSMEs embrace digitisation.

This paper assesses the potentials of digital trade for MSMEs under the AfCFTA from 2 perspectives, using desk based research. Firstly, the paper shows how current AfCFTA protocols, provisions and the upcoming protocol on digital trade can support digital trade for MSMEs using applied and analytical legal research methodologies. Then, through descriptive and conceptual legal research methodology, the paper considers the opportunities that digital trade creates for MSMEs under the AfCFTA, and examines potential technologies to achieve this. Some of the hindrances to digital trade peculiar to Africa are also considered.

**Keywords:** *Digital trade, e-commerce, AfCFTA, MSMEs*

### Introduction

Digital trade are transactions of trade in goods and services, which are digitally enabled, and can either be digitally or physically delivered (OECD, 2021). E-commerce on the other hand refers to physical goods bought via digital platforms that need to be shipped (Benson, 2019). Digital trade can be used to facilitate e-commerce.<sup>104</sup> Although digital trade and e-commerce had been growing steadily across the globe, the COVID-19 pandemic, resulting in government

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<sup>104</sup> The terms digital trade and e-commerce will be used interchangeably in this paper.

measures including lockdowns, and travel restrictions, accelerated digital technology adoption because digital trade became lifelines for businesses and households.

For some businesses, especially in developed countries, digitisation of their customer and supply chain interactions and internal operations sped up by three to four years, whilst for others, digitally enabled products in their portfolios accelerated by seven years<sup>105</sup> (McKinsey & Company, 2020). Accepting government-imposed measures as normal, some Micro, Small and Medium Sized Enterprises (MSME)s in Africa began transitioning to digital trade. Whilst the primary aim of adopting digital trade was to mitigate the economic downturn caused by the pandemic, there has been an increase in e-commerce's share of global retail trade from 14% in 2019 to 17% in 2020. (UNCTAD, 2021) The average share of online sales since Covid-19 is also 43%, up from 31% in 2019 with some businesses reporting diversification into new markets through e-commerce during the pandemic, leading to projections that digital trade will continue, and is here to stay (Karishma Banga, 2021) These projections are in line with WTO estimates that digitalisation could empower trade flows of developing countries through trade costs, and the reduction in trade costs resulting from technology diffusion and regulatory policies could increase developing countries share in global trade up to 57 per cent by 2030 (World Trade Organisation, 2018).

The AfCFTA, the largest free trade area globally, is an African Union Agenda 2063 project aimed at achieving inclusive and sustainable development (TRALAC AfCFTA, 2019). The AfCFTA aims to boost intra African trade, currently just 12%, particularly low when compared with Europe at 68% and Latin America at 17%, by providing mutually beneficial trade agreement among State Parties (CSEA, 2020). It is predicted that AfCFTA will help bring about 30 million people out of extreme poverty and raise the incomes of at least 68 million people (The World Bank, 2020). Boosting intra regional trade in Africa will involve a lot of MSMEs, who contribute up to 70% of total employment and 38% of GDP (The Africa Debate). These MSMEs can harness the transformative power of the AfCFTA through digital trade.

Given that digital trade is here to stay, it becomes imperative to understand how MSMEs in Africa can fully engage with it, particularly when trading under AfCFTA. This makes it important to understand how AfCFTA supports digital trade for MSMEs. Considering this, the

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<sup>105</sup> The online survey was in the field from July 7 to July 31, 2020, and garnered responses from 899 C-level executives and senior managers representing the full range of regions, industries, company sizes, and functional specialties.

paper first shows how current AfCFTA protocols, provisions and the upcoming protocol on digital trade can support digital trade using applied and analytical legal research methodologies. Then, through descriptive and conceptual legal research methodology, the paper considers the opportunities that digital trade creates for MSMEs under the AfCFTA and examines the digital technologies to achieve digital trade as well as the barriers to digital trade.

Following this introductory part is section two, where I highlight provisions of AfCFTA that support digital trade as well as the potential of the upcoming AfCFTA protocol on digital trade. In the same section, I consider the opportunities and advantages of digital trading for MSMEs under AfCFTA. Section three is an overview of various technologies to help MSMEs trade digitally, bearing in mind their risks. In section four, I examine the challenges to digital trading in Africa. I conclude in section five, by emphasising the importance of digital trade for MSMEs and the need for a harmonised framework and collaboration of stakeholders.

### **Digital Trade under AfCFTA**

The AfCFTA aims to deepen economic integration in Africa, eliminate tariffs on 90% of goods, enable MSMEs to diversify their exports, penetrate new markets and establish strong supply cross border supply chains with trade partners on the continent, and attract FDI in Africa. However to maximise these gains, trade costs must be reduced and efficiency created in order to enable the free flow of goods and boost productivity. Digital trade, which facilitates the development of new business models of trade, and reduces the geographical barriers of economic transactions, is one way to create efficiency. Moreover, the African market is an important destination for electronically Transmitted (ET) exports of African countries (Banga K, 2021).<sup>106</sup>

Despite the advantages of, and market for digital trade, it still threatens privacy and security worldwide, and African countries do not have adequate tools, environment or regulation for digital trade. Thus, the establishment of harmonised policy, legal and regulatory frameworks will create a conducive environment for digital trade and help maximise the opportunities that digital trade creates for MSMEs within the AfCFTA (TRALAC Assembly, 2020). Given this, the AfCFTA framework will be critical for harmonising policies necessary to achieve digital

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<sup>106</sup> Or for instance, some countries are highly dependent on intra-African trade for ET products; 70% of exports of digitisable products by Rwanda, Mauritius, Namibia, Burundi, Togo, Zambia, Ghana, Zimbabwe and Eswatini are intra-African.

transformation, whilst also dealing with the attendant challenges of the African digital economy.

Whilst some of the current provisions of the AfCFTA support digital trade, there was a need for a more specific protocol to enable African countries collectively establish common positions on e-commerce. Recognising this, the African Union and Government Assembly, in February 2020, decided<sup>107</sup> that Phase III negotiations must focus on the AfCFTA protocol on digital trade (TRALAC Decision, 2020).<sup>108</sup>

## **Framework for Digital Trade under AfCFTA**

### **Current provisions of AfCFTA that support digital trade/e-commerce**

The AfCFTA agenda includes several Annexes to the Protocol on Trade in Goods that support e-commerce including:

- Annex 2 on Proof of Origin - Article 17(a) allows State Parties importing goods to submit their Certificate of Origin in either hard or electronic copies
- Annex 3 on Customs Cooperation and Mutual Administrative Assistance states
  - Article 2(1)(b)(iv)(v) states that State Parties shall offer each other mutual administrative assistance to facilitate the simplification and harmonisation of their customs procedures and ensure the smooth flow of trade and the integrity of the international supply chain. This provision is wide enough to allow electronic means of achieving these objectives
  - Article 6 provides for automation of customs operations.<sup>109</sup> State Parties are also encouraged in Article 6(2)(b)(c) to develop or adopt interconnectivity of computerised customs clearance and information system in collaboration with stakeholders and facilitate exchange of data
  - Article 7 allows information to be exchanged electronically and
  - Article 11(d) states that State Parties shall endeavour to support each other in the modernisation of customs procedures including e-customs and electronic data interchange applications

<sup>107</sup> In these decisions, Assembly/AU/4(XXXIII) of 10 February 2020 and Ext/Assembly/AU/Decl.1(XII) of 5 January 2021 the Heads of State and Government of the African Union mandated negotiations of e-commerce protocol under the AfCFTA, due to be concluded in December 2021.

<sup>108</sup> The e-commerce agenda was first captured in the African Union Convention on Cybersecurity and Personal Data Protection (2014) and more recently, the African Union [Digital Transformation Strategy \(2020-2030\)](#) (DTS). (African Union DTS, 2020)

<sup>109</sup> This article provides that State Parties undertake to establish, use and continually upgrade modern data processing systems to facilitate effective and efficient customs operations and transmission of trade data amongst themselves.

- Annex 4 on Trade Facilitation also supports digital trade
  - Article 4 encourages the use of Internet in publishing relevant information to aid trade facilitation
  - Article 8 provides that State Parties should allow electronic payment for customs duties, taxes and fees
  - Article 17 on use of information technology requires State Parties to use the most modern information and communications technology to expedite procedures for the release of goods, electronic submission of documents, data exchange and collaboration and exchange amongst State Parties
  - Article 18 urges State Parties to establish and maintain a Single Window<sup>110</sup> to enable traders submit documentation and
  - Article 20 states that State Parties should allow submission of electronic means of import/export or transit of goods.
- In the Protocol on Trade in Services, article 15(c)(ii) provides an exception that allows State Parties to adopt national measures necessary to protect data privacy of citizens provided it is not a disguised means for restricting cross border trade.

Other ways the current AfCFTA agenda supports digital trade is in its objectives, which include the establishment of a dispute resolution mechanism in article 3, so that there is a means to resolve issues related to digital trade.

### **The protocol on digital trade**

The inclusion of the protocol on digital trade to the AfCFTA agenda has been particularly contentious (Harzenber, 2021, p. 91). Yet, the digital trade protocol presents an opportunity for African countries to collectively establish common positions on e-commerce, harmonise digital trade regulations and gain the benefits of e-commerce. (Karishma Banga, 2021, p. 8) The AfCFTA, through this protocol can provide a guiding framework for data protection, privacy policies and stronger enforcement.

Preferential Trade Agreements have been significant in shaping the regulatory environment for digital trade (Mira Burri, 2020).<sup>111</sup> Under the WTO, there is no comprehensive agreement on digital trade (Karishma Banga, 2021, p. 10).<sup>112</sup>

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<sup>110</sup> Trade facilitation measure that allows parties involved in trade to lodge standardised information and document with a single entry point.

<sup>111</sup> More than half of the PTAs entered into from 2000 to 2019 have provisions and chapters on digital trade.

<sup>112</sup> Although some aspects are covered under the WTO Information Technology Agreement (ITA) on tariffs and, since 1998, WTO members have also agreed to a moratorium on customs duties for electronic transactions.

E-commerce in trade agreements is usually organised into four main categories: Market access which includes Customs duties, digital products, non-discrimination for electronic and digital products, cross-border flows, rules and regulations which covers consumer protection, protection of personal information, electronic supply of information, domestic electronic transaction framework, facilitation which includes paperless trade administration, cooperation, transparency, electronic authentication and enabling issues including technology, infrastructure and related matters (Ogo, 2020). The AfCFTA protocol on digital trade may treat several issues, covering these areas identified in the figure. Some areas where the protocol can help to encourage digital trading include:

### **Data Governance**

As Africa's digital economy is growing, and projected to grow faster by 57% in the next five years, (S Osakwe, 2021, p. 5) there will be a need for increased connectivity and data sharing amongst African States. For MSMEs to fully access the benefits of the digital economy under AfCFTA in cross border trade, there has to be data access and interoperability because of the increasing reliance on cross border flow of information (S Osakwe, 2021, p. 5). Yet, there are attendant risks of data proliferation and use, such as unauthorised access, theft, privacy violations, misuse and abuse, unfair practices and exploitation. There are also issues with determining data ownership, consent management, and curbing cybercrime.

The Centre for the Study of Economies in Africa (CSEA) identified several digital and data trends, and data governance trends, emphasising even more, the timeliness of the AfCFTA protocol on digital trade, which could address these issues. These trends include: a faster growing digital economy in Africa, a rise in platform usage and subscribers, increase in volume and complexity of data and increase in data threats. With respect to data governance, the following trends were observed: slow enactment of data regulations and enforcement, low commitment in promoting cyber security and restrictions in information integration and data flow (S Osakwe, 2021). Other relevant areas include source-code sharing requirements, intellectual property and tech transfer (Karishma Banga, 2021, p. 33).

With respect to data issues – cross border data flows and data localisation, different jurisdictions have adopted different approaches.<sup>113</sup> In Africa, at least 17 countries impose some

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<sup>113</sup> The US proposal under the JSI is for free cross border data flows with some exceptions. China made no commitment but requires operators of critical information infrastructure to pass a security assessment by government agencies before transmitting important data overseas. See

form of restriction on cross border data flows (Deloitte, 2017). Currently, Nigeria has a data localisation law, Kenya has a Data Protection Act and Rwanda has the 2017 Data Revolution Policy.<sup>114</sup> To enable free flow of data, data localisation requirements have to be banned. Without data localisation requirements, MSMEs in Africa looking to expand and invest in other African countries can access data, which would allow them to build networks of data cheaply and quickly. However such bans may not entirely be favourable to MSMEs because many African countries do not have the required national capabilities, such as, data ownership frameworks, policy support for Internet access, incentives for SMEs online participation and digital infrastructure, to operate on the same level as other developed countries (WTO , 2017). Furthermore, data localisation bans can be costly to enforce (Bauer M, 2014). Thus, growing MSMEs unable to afford the costs will find their competitiveness reduced.

Considering the fragmented laws in Africa and the challenges MSMEs may face where there is a ban on data localisation requirement, the AfCFTA protocol on digital trade is an opportunity to provide a harmonised, yet enforceable framework to govern data localisation policies between African countries. The AfCFTA protocol on digital trade can also address disparities in enforcement of data protection rules across countries (Karishma Banga, 2021, p. 29).

With respect to cyber security, personal data protection and privacy, an analysis of the legal framework in Africa shows wide inequalities. Just a few countries like Morocco, Senegal and Tunisia have advanced in e-commerce regulation in general, and in cyber security in particular (Jean-Marc, 2015). These countries have laws on the protection of personal data and electronic communication, while most of other African countries are struggling to enact laws in these fields (UNCTAD, 2015). This means that African countries are lagging behind in data regulatory infrastructure<sup>115</sup> (Karishma Banga, 2021, p. 29).

The AfCFTA protocol on digital trade can build on existing policies and frameworks in Africa such as the East African Community (EAC) Framework for Cyberlaws (2010) which

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Art 37 of China's Cybersecurity law. The EU argues for free cross-border flow of data but member states can design their own rules in the interests of privacy. Work programme on electronic commerce: non-paper from the United States.

<sup>114</sup> This Act states that Rwanda has exclusive data sovereignty over national data but it allows for data to be hosted on cloud within or outside the country under agreed terms governed by Rwanda.

<sup>115</sup> Only 27 out of 54 countries have legislation on data protection and privacy. Nine have draft legislations and 13 have no legislation yet. With respect to cybercrime, only 39 African countries have a formal legislation, two have draft legislation and four have no legislation at all.

recommends that each member state develop a regulatory regime for data protection. Article 14(6)a of the African Union Convention on Cyber Security and Personal Data Protection prohibits the transfer of personal data to non-member states except privacy, freedom and fundamental rights are adequately protected. Building on these would enable ‘free movement of data, which is aligned to member states interest in protecting privacy and ensuring security supporting a single global internet, cooperation on cybersecurity, protection of personal information of consumer and protection against fraud, and defining commonly agreed-upon principles and rules’ (Karishma Banga, 2021, p. 31).

The AfCFTA agenda on digital trade can also address source-code sharing requirements, intellectual property and tech transfer. The EU and US support banning source code requirements,<sup>116</sup> an approach which can be helpful for African businesses moving to other African countries, because they do not have to hand over source-codes to the government. The problem however is that most African countries have used tech transfer and reverse engineering from developed countries to develop faster. Furthermore, source-codes can help with effective regulation of tax, procurement, competition law and tech-transfer (Karishma Banga, 2021, p. 33).

The AfCFTA protocol on digital trade will help African countries that do not have a strong bargaining power to negotiate access to source code for market access. The protocol could also help with a harmonised intellectual property regime, as extant ones are currently fragmented, disparate, weak, with low adherence rules and low monitoring and enforcement capacities (Mengistie, 2011).

### **Uniform digital taxation for businesses**

Results of a survey carried out by ODI amongst African businesses indicate that the most critical regulation for MSMEs is the harmonisation of rules for taxation (Karishma Banga, 2021, p. 36). In Africa, there are fragmented tax solutions across the continent making obvious the need for a continental approach to taxing the digital economy. There needs to be certainty in how a tax applies, effective tax administration and a balanced approach to taxation which offers a reliable revenue stream to the government but at the same time does not discourage economic growth and efficiency in African firms (Karishma Banga, 2021, p. 36). Digital tax

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<sup>116</sup> The EU and US support banning source codes although with different exceptions. This is based on the argument that forced technology transfer hinders the development of e-commerce and a flourishing digital economy, (United States Trade Representative Executive Office of the President, 2018, p. 32) thus restricting Foreign Direct Investment (FDI).

has not been easy to implement although there are several initiatives underway, most notably the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting working to reduce tax base erosion and multinational organisation profit sharing in the digital economy. Since 1998, members of the WTO adopted a Declaration on Global Electronic Commerce in which members cannot impose customs duties on ‘electronic transmission’. Whilst a lot of countries have adopted this permanently, developing countries are hesitant about it because of the revenue implications, the uncertain scope and definition of the term electronic transmissions (ET) and technical feasibility of imposing duties and broader impact of the moratorium on trade and industrialisation. It has been suggested that since a few African countries are not yet significant producers of ET products, protection of digital industry is not currently feasible, and may not be effective (Hope, 2019). But in order to raise revenues, tariffs may be effective provided that consideration is given to the relative value of the type of import. The upcoming protocol on digital trade can be helpful here because it can provide a framework for applying indirect tax to digitally traded goods (Hope, 2019). AfCFTA may adopt new internationally recognised methods to ensure a level playing field among local and foreign suppliers and increase revenue.

### **Cross border e-commerce and trade facilitation**

The International Trade Centre’s survey of MSMEs identifies two challenges for businesses - concentration in the market for e-commerce platforms, e-payment solutions and cross border delivery services, and cost of membership fees for cross border e-commerce platforms (ITC, 2017). This can make MSMEs prices uncompetitive, and especially it is cost prohibitive for women entrepreneurs (Karishma Banga, 2021, p. 39). Additionally, there are issues with postal competence, delivery and transport costs, lack of awareness of regional rules and customs duties. These issues reveal a need for harmonisation of regulations across these areas of e-trade, through the protocol on digital trade.

In terms of electronic trade facilitation, the UNCTAD Global Cyber law tracker 2020 reports that 33 out of 54 African countries have a formal e-transaction legislation, six have a draft legislation and six have none (Karishma Banga, 2021, p. 39). These laws are drawn primarily from several UN laws<sup>117</sup> to develop certain key principles, technology neutrality, non-discrimination of electronic communication, and functional equivalence. However, the

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<sup>117</sup> The UN model law on electronic commerce (1996), model law on electronic signature (2001) and the convention on the use of electronic communications in international contracts.

challenge with cross border e-commerce is that most e-transaction laws do not deal with the international aspects effectively.<sup>118</sup>

These disparities can be dealt with under the AfCFTA protocol on digital trade in a harmonised manner, aimed at lessening the regulatory burden on cross border services trade and e-commerce in Africa. Specifically, the protocol can address the requirement of a local presence in African countries in order to provide services.<sup>119</sup>

Although there are regulatory attempts to tackle some of these issues, the frameworks are mere recommendations or have not gained momentum.<sup>120</sup> The AfCFTA protocol on digital trade will deal with all of these issues through a harmonised, binding and enforceable framework.

### **Opportunities and Advantages of Digital Trade under the AfCFTA**

Broadly speaking, digitisation can help reduce the costs of trade, facilitate the co-ordination of Global Value Chains (GVCs), help the spread of business ideas and innovative technologies and connect businesses to more clients and vice versa. This can be done through the provision of online services, export diversification, efficiency and growth in manufacturing, improvement of competition in the financial sector and access to information for MSMEs. This can be achieved through innovative technologies that enable digital trade, and which are also expected to have significant impact on the labour market. Africa has a young population that is growing and engages heavily in the digital trade, making digital trade particularly welcome. For MSMEs in Africa focusing on digitisation and e-commerce services, they will benefit from access to a single digital market, which the AfCFTA offers. More specifically digital trade can help MSMEs in the following ways.

### **Expansion of the scope, scale and speed of trade of MSMEs under AfCFTA**

Digitisation will help MSMEs in Africa increase the scale, and scope of trade particularly under the AfCFTA because they will have other markets for their goods. There are two economic

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<sup>118</sup> The (EAC) Eastern African Community developed an electronic transaction bill 2014 to address these issues. EAC states also adopted e-transaction policy recommendations to be domesticated through regulatory frameworks.

<sup>119</sup> For instance Jumia has to have a physical presence in most African countries, which is rather expensive. (Karishma Banga, 2021 p.44).

<sup>120</sup> See for instance the African Union Digital Transformation Strategy (2020-2030) which is not binding; The Personal Data Protection Guidelines for Africa which is simply a set of guidelines for engendering trust online; African Union Convention on Cybersecurity and Personal data Protection 2014 (Malabo Convention); This lack of productivity limits their involvement in foreign markets. Declaration on Internet Governance and Development of Africa's Digital Economy 2018; Economic Community of West African State has a supplementary act dated 2010 on personal data protection that requires the establishment of a legal framework for data protection and privacy at the national level, and the establishment of national data protection agencies. Seven of the fifteen member states have enacted legislation in compliance with the agreement. The East African Community has a framework for cyber laws adopted in 2010 which recommends that each member state develop a regulatory regime for data protection but makes no specific recommendations on the selection of the law. Southern African Development Community SADC Model Law on Data Protection (2013) is another example.

benefits from this; lowering of costs traditionally connected to trade and lowering of entry barriers (variable costs and scale). (Department for International Trade, 2020) This means that businesses have a larger pool of customers, and more employment opportunities. This is especially useful for MSMEs that could not formerly scale their business because of lack of connectivity, high transaction costs and information asymmetries. African businesses will be able to bring new products and services to a larger number of digitally connected customers across the globe. Smaller businesses will use innovative digital tools to overcome barriers to growth, facilitate payments, and enable collaboration (OECD, 2021).

One of the challenges that businesses face in Africa is insufficient productivity, at least when compared to their larger counterparts. This is because MSMEs globally, and especially in developing countries, are less productive than larger companies, tend to operate in low value-added and labour-intensive sectors and use little technology (ITC International Trade Centre, 2018, p. 2). Digital trade can help close this productivity gap. In the study of 43 Sub-Saharan African countries it was found that the adoption of ICT by companies could be linked to productivity growth through an increase in output (E F Wamboye, 2016).

This ultimately has two direct effects: it would contribute to GDP growth because of increased SME productivity, and it would mean better jobs and higher pay in the low-wage segments of the economy (ITC International Trade Centre, 2018).

In terms of speed, the fact that MSMEs will have direct digital communication, electronic payments and easier communication of supply chains makes digital trade easier at least when compared to conventional trade (Department for International Trade, 2020).

### **Digitisation can facilitate the rise of services in cross-border trade**

Digitally enabled services are those services that are principally or largely enabled by ICT. Cross border digital services are easy to overlook given their intangibility, but it is one of the fastest-growing areas of trade in recent years. The cost reduction effects of digital trade are also substantial for services that are digitally deliverable. Digital operations can propel overall services trade to US\$8 trillion by 2025 (Consulting.ca, 2020). This growth is facilitated by new technologies that are supported by a range of new services building on data-driven innovative solutions such as cloud computing. In a 2018 report, using a gravity model approach based on the OECD's Trade in Value Added (TiVA) database to analyse services exports, found that

digitally deliverable services profit more from increased digital trade (Javier Lopez Gonzalez, 2018).

For those offering services digital trade has largely removed the need for establishing commercial presence in every country, which is costly, thus, making it possible to outsource business processes. Various services are now digitised and tradable across borders. As far back as 2011, at least half of the world's services trade was enabled by ICT and connectivity with the Internet being the dominant mode for cross border services. In an EU external trade, about 56 per cent of EU services exports to the rest of the world are dependent on, and enabled by ICT, and 52% of EU imports. The ICT-dependent services exported include financial services, research and development, professional services, information and communication services and services using intellectual property. These are some of the service areas covered by the AfCFTA protocol on trade in services. Thus, MSMEs in Africa, in such areas will be able to trade more. The AfCFTA upcoming protocol on digital trade can address the requirement that digitally enabled services

### **Access to financing for MSMEs**

Many MSMEs will depend on access to trade finance in order to unlock new markets under the AfCFTA. However, a factor affecting MSMEs' ability to acquire finance for international trade is the high cost of service often associated with MSME financing, in particular trade finance. This can largely be attributable to a lack of automation because of a non-digitized environment. Without automation, manual-handling costs will remain high for MSME (Deepesh Patel, 2021). MSMEs are usually unable to meet the risk assessment criteria to prove their credit worthiness and limited access to historical data constrains banks' ability to extend credit. With digitisation, banks can easily access credit history of MSMEs through data, which will allow them access credit. This increases the availability of financing liquidity because funds can be paid quicker when MSMEs present their electronic documents, thus hastening digital trade. DLT platform solutions can particularly useful in providing access to trade finance for MSMEs in Africa because they can help reduce time of regular trade operation and increase trust buyer transparent communications between MSMEs, banks and other participants. They can also provide faster battery cycles with increased speed of reconciliation and end to end tracking of goods (Strogal, 2021).

### **Financial inclusion**

In Africa, the AfCFTA has spurred more investment in digital trade as a result of the possibilities for MSMEs. Digital trade has the potential to facilitate increased financial inclusion of MSMEs in Africa. This is important because a majority of Africa's adult population who own small businesses remain unbanked. Financial services are an important sector because free movement of goods and services also requires free movement of capital. Fintech companies, which are rapidly growing in Africa, could provide digital trade services that can help in enhancing access to financial services for those MSMEs that have been excluded from formal financial markets.

### **Elimination of paper documents**

An important aspect of digital trade is digitalising trade finance documents like negotiable instruments. Negotiable financial instruments are a critical part of commercial transactions. However, they are fraught with challenges such as miscommunication, complex documentation flow, lack of transparency and increasing documentary fraud. On paper alone, it is estimated that the international trade industry generates an estimated four billion paper documents per year (ICC, 2018). The complex paper-based processes can place extra ordinary burden on MSMEs seeking to expand to other African countries. When these documents are digitalised, all stakeholders relevant to the trade transaction will have quicker access to them and transactions will become more transparent and less complex.

### **Digital technologies to advance opportunities under AfCFTA**

Given the benefits of digital trade, the technologies to drive them are important. Digital trade technologies can change the way we trade, what is traded and who trades (World Customs Organisation , 2019, p. 10). In developing countries digital trade technologies such as robots and big data sets have a significant impact on trade (Eddy Bekkers, 2021). Logistics technology like robotics, AI and IoT applications could decrease shipping and customs processing time by 16 to 28 per cent and boost overall trade by 6 to 11 per cent by 2030 (Mckinsey Global Institute, 2019).

There is usually a complex interplay between digital tools, as such it must be emphasised that most of these technologies rely on the capabilities of others to deliver their greatest benefits.<sup>121</sup> Even with their advantages, digital technologies have challenges, which can be more glaring in Africa because of the level of digital divide.

### **Potential digital technologies**

#### **Distributed Ledger Technology (DLT) /Blockchain Technology**

A distributed ledger is a decentralised, distributed record of transaction which use independent computers (referred to as nodes) to record, share and synchronise transactions in their respective electronic ledgers (The World Bank , 2018). Blockchain is one type of a distributed ledger which organises data into blocks chained in an append-only mode.<sup>122</sup> Blockchain/DLT eliminates the need for central coordinating entity. Thus, data is not kept centralised as in a traditional ledger. This technology has the capability to move any type of data swiftly and securely and yet make a record of that transaction available instantly in a trusted and immutable (difficult to change) manner to all the participants in the blockchain network.<sup>123</sup>

DLT can facilitate trade under AfCFTA in the following ways; rendering payments and other processes made by MSMEs and their clients automatic, tokenization of assets, which will allow direct investors in primary and secondary markets<sup>124</sup> transferring digital assets, preventing double spending and forgery, reducing paper waste and introducing a new approach to identity management. This will ensure that MSMEs trading under AfCFTA can make their transactions more efficiently, economically and quickly on a secure platform (Deepesh Patel, 2021, p. 36).

Specifically in aspects like MSME financing, DLT can bring values such as trust, transparency and traceability, which can help MSMEs, build a digital credit history and banks can assess

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<sup>121</sup> Whilst some technologies may collect and deliver data, others analyse and interpret the data, and yet others provide the infrastructure for the operation of the technology (Deepesh Patel, 2021, p. 15). Thus, in using these technologies for trade under the AfCFTA, they must not be thought of in isolation but as complementary to each other.

<sup>122</sup> In this paper, I will use DLT and Blockchain interchangeably (The World Bank , 2018).

<sup>123</sup> Each block typically contains a cryptographic hash of the previous block, a timestamp and transaction data. This allows the blockchain to be immutable - quite difficult to change - once recorded, because all the other blocks will have to be altered as well (World Customs Organisation , 2019 p. 17).

<sup>124</sup> Tokenisation is the creation of digital tokens representing real assets issued on the blockchain. When these tokens are digitalised, they carry the rights of the assets. The main benefit is that t=you can transfer an asset without the need for a centralised authority (OECD Blockchain, 2020).

their credit worthiness, so as to offer them finance.<sup>125</sup> This is important because MSMEs in Africa struggle to access finance from traditional institutions like banks.<sup>126</sup>

Another way DLT is helpful is in customs and border management where participants need to exchange information. MSMEs can use the same copy of a ledger, which would be available to all parties at different nodes in the most updated, trusted, and immutable manner.

Thus, by reducing the complexity for MSMEs, blockchain can improve compliance, trade facilitation and fraud detection. Moreover, tax authorities and customs authorities can share the information, producing a more harmonised approach to revenue collection, audit, risk management and customs valuation. DLT can also help in supply chain efficiencies under the AfCFTA, not only in the reduction of intermediaries but also in improving certainty and predictability based on reliable real time data available to all stakeholders in a supply chain. Thus, there can be traceability and end-to-end visibility, enhancing supply chain security and facilitation (World Customs Organisation , 2019, p. 20).

In terms of challenges, DLT applications “require smart transactions and contracts to be indisputably linked to known identities and thus raise important questions about privacy and security of the data stored and accessible on the shared ledger” (World Customs Organisation , 2019, p. 23). Another problem is the digital island problem, where multiple DLT platforms that do not “talk” to each other, or that only talk to a limited extent. Here interoperability on business models, platforms and infrastructures, will be key in overcoming these challenges (World Economic Forum , 2020). There is also uncertainty in the legal aspects of DLT for trade finance, however, inspiration can be drawn from the UNCITRAL Model Law on Electronic Transferable Records – (MLETR), in drafting the digital trade provisions of the AfCFTA (Anyamele, 2021).

There is also scepticism that solutions created by DLT may not meet MSMEs specific needs since many of the products are geared towards servicing bigger companies that are capable of

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<sup>125</sup> As a result of an increased level of transparency, small businesses can also access finance, which are usually available to larger businesses. DLT can also allow MSMEs to do away with traditional sources of finance such as banks because transactions can be done on a peer-to-peer basis (Deepesh Patel, 2021 p. 36).

<sup>126</sup> In developing countries like Nigeria, there is anecdotal evidence that there is increasingly use of cryptocurrencies in cross border transaction and digital assets are being used to settle global payments and bypass traditional correspondent banking systems. See for Instance Ripple <https://ripple.com/rippletnet/#>. The low efficiency of the current correspondent banking system has led startups, such as Ripple, to develop alternative payment systems based on DLT. RippleNet allows financial institutions to exchange, in real time and at little or no cost, currencies, cryptocurrencies, commodities and other tokens of value directly, without relying on the traditional intermediaries.

offering potential return on investment. To counter this, some start-ups are focused on SMEs, and if they continue to do so, MSMEs will continue to have their needs met.

### **Application Programming Interfaces (API)**

APIs are codes or sets of functions and procedures, which are an intermediary that allows two applications with separate software to function together. APIs can make platforms more efficient because customers of MSMEs trading under AfCFTA can gain instantaneous and transparent access to information about their own orders.

Challenges related to API are that MSMEs may have to get an extra budget for them, outside their regular budget, which they normally do not have. Securing these funding can be difficult especially for MSMEs in developing countries. Another challenge is the need for different APIs, since different platforms send different data. This problem can be solved by development of standardised data model (Deepesh Patel, 2021, p. 35).

### **Cloud Computing**

Cloud computing is the delivery of computing services – including ‘servers, storage, databases, networking, software, analytics, and intelligence – over the Internet (“the cloud”) to offer faster innovation, flexible resources, and economies of scale’ (Microsoft Azure, 2021). Cloud computing can lower the costs of using technology because it reduces upfront costs of setting up infrastructure, by up to 90 per cent. This could in turn lower general trade finance costs for MSMEs. Since cloud computing can be accessed anywhere, it offers convenience for MSMEs for global trade.<sup>127</sup>

Since cloud services are dependent on the Internet, there can be attendant security risks, especially because MSMEs are unable to verify the physical infrastructure – location of information and methods used for data protection (Karis Kreslins, 2018, p. 2). Furthermore, ambiguous and out-dated regulations need to be updated to enable the use of cloud technology and secure data in trade. The key to addressing this challenge is regulatory reform, which many countries are currently doing.<sup>128</sup>

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<sup>127</sup> An example of a use case for MSMEs is Pollinate. In October 2020, the National Australia Bank partnered with Pollinate to transform their merchant acquiring offering for MSMEs across Australia and to help MSMEs better manage and grow their businesses by giving them access to digital tools and payments solutions historically only available to larger businesses. Pollinate is currently in discussions with leading banks in South Africa, Canada and other regions (Deepesh Patel, 2021 p. 26).

<sup>128</sup> Some “regulatory challenges exist regarding data localization requirements”. These regulatory requirements have a tendency to contain ambiguous phrasing, making it difficult to parse their exact meaning, which raises impediments to cloud computing.(Deepesh Patel, 2021 p. 26).

## Internet of Things (IOT)

The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet (Oracle, 2021). IoT has contributed to the growth of e-commerce by transforming how people buy – through Omnichannel sales and superfast shipments. IoTs can also allow customers to track goods they have purchased from MSMEs whilst enabling customs to provide an estimate of costs of duties and taxes.<sup>129</sup>

IoT can also be used in asset tracking in supply chain management by monitoring the movement of goods in real time, including the position of the container, which can help in voyage optimization. This can help MSMEs make better decisions and save time and money. IoT can also enable customs officials strengthen cooperation with stakeholders like shippers, carriers, forwarders which can help with getting information that corresponds to certain risk factors. With IoTs, customs officials will be able to determine which shipments are more urgent in terms of release and clearance, and thus give them priority in release/clearance procedures and address safety concerns from MSMEs (World Customs Organisation, 2019, p. 28). In terms of MSME financing, because IoTs generate data through sensors, they bring a level of transparency that enables information to be communicated from and about each section of the physical supply chain. This gives a higher sense of security to institutions that provide finance to MSMEs (Deepesh Patel, 2021, p. 31).

Some of the challenges of IoT are with regards to using and understanding the huge data generated. Analysing such data requires thorough analysis, thus, staffs of MSMEs need to be trained to interpret and work with the data effectively. Although AI can be used for this, because it involves the internal processes of a company, MSMEs in Africa may find it cost prohibitive to train staff or employ AI. Another data issue relates to data ownership and its legal admissibility when it comes to litigation. This would require regulatory clarity, which can be achieved by the establishment of a common understanding and approach to structuring and using data (Deepesh Patel, 2021, p. 32).

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<sup>129</sup> Companies such as Amazon and Alibaba are able to deliver within one hour of ordering, and rely on the technology to move every item with accuracy and on time. (Oracle, 2021).

Given that IoT can be cost prohibitive for MSMEs, it will be necessary for them to check whether there is enough perceived benefit to justify the expenditure on IoT. There are also attendant security issues of using IoT such as possibility of intercepting and altering the data broadcast by the IoT device, falsifying data, hacking the IoT device to gain access to a connected system. Where these challenges are addressed, they can drive down costs relative to the perceived benefits of implementing IoT (Deepesh Patel, 2021, p. 32).

### **Artificial Intelligence (AI)**

Artificial Intelligence ‘is the constellation of many different technologies working together to enable machines to sense, comprehend, act and learn with human like levels of intelligence (Accenture , 2001). AI can be used in trade finance for MSMEs to facilitate the ‘creation of new processes that were simply too complex for the brain cell’ (Deepesh Patel, 2021, p. 48). This includes ‘predictive insights across trade functions’ predictive insight can help with applications that facilitate credit scoring for MSMEs.<sup>130</sup>

AI can be used in customs and border management specifically with cross border movement of people and goods. AI can help to understand data related to this, which can help to predict human patterns - visual search and facial recognition, and behavioural and predictive analytics, which are already being used in other sectors, can also be further tailored for use in customs and border management. Through AI, custom officials can develop revenue collection models to ensure appropriate duties and taxes are collected at the border and classify products under the Harmonized System (HS) amongst other benefits.<sup>131</sup> This can be especially useful for MSMEs in Africa, to create certainty in charges and simplify matters at the different AfCFTA member States borders.

Exploitation of AI systems may occur which can skew results. In this case, integrity of underlying data and information is critical. Regarding risks of AI in customs administration, there would need to be provisions governing the application of the AI-based information and

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<sup>130</sup> A better outcome for credit scoring could help shift the focus towards good risk potentially increasing MSME access to trade finance (which is low-risk by nature).

<sup>131</sup>As part of Customs audits to identify anomalies much more quickly and thereby enable Customs auditors to focus on areas of non-compliance; To improve risk-based targeting of commercial shipments, as well as to provide and analyse data during shipment inspections using augmented/mixed reality glasses in detecting contraband and counterfeit goods; Analysing container images made by x-ray scanners to improve the efficiency of cargo inspection; Logistics monitoring and control in Customs warehouses and bonded areas; Identifying high-risk passengers and vehicles by using facial recognition and visual search at the border. This can be further expanded to create intelligent analytics to predict future outcomes, facilitating better risk management and preparedness; Providing better service by placing enquiring robots for passengers at the border; Providing Customs duty self-payment service by developing mobile apps at the border (World Customs Organisation , 2019 p. 30).

determinations, such as HS classification tools, are needed to ensure effective compliance. There is also need to have accessible and transparent redress systems to ensure integrity and on-going improvement of AI processes (World Customs Organisation , 2019, p. 33).

AI may be used for malicious purposes, to threaten digital security, physical security and political security.<sup>132</sup> AI can also adversely affect privacy and security and used to create fake content. Some of these risks can be managed through sturdy ethical principles combined with robust compliance and legal frameworks under which AI can operate are critical to ensure that it is not misused. There is also the need to have people with requisite job skills in AI. This can be challenging in Africa but can be surmounted by shared responsibility between the public and private sectors.

### **Drones**

The term “drone” usually refers to any unpiloted aircraft and sometimes also refer to as “Unmanned Aerial Vehicles” (UAVs) (Bultin Beta, 2001). In the international trade environment, businesses often seek innovative ways to deliver their goods and drone technology will allow small businesses a high level of autonomy. Some drones are guided by human operators to deliver packages, whilst others, more sophisticated, can be pre-programmed to deliver at optimal costs. The cost saving benefits of using drones to deliver goods in cross border can be attractive for MSMEs in Africa, especially if urgent and efficient delivery is necessary to a remote location. One of the challenges that African countries face in international trade is infrastructural challenge such as lack of road transport. Drones can therefore help in cross border delivery to neighbouring African countries.

Some concerns with using drones relate to safety, security and privacy. There are also regulatory issues of managing airspaces. To this extent, there has to be global/regional standards of safety, privacy and data protection that will need to be reviewed. This can be addressed on the AfCFTA agenda of the upcoming protocol on digital trade.

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<sup>132</sup> Physical security is non-state actors weaponising consumer drones, for political security e.g. profiling, repression privacy eliminating surveillance (Miles Brundage et al, 2018 p. 26).

Other digital technologies which are still in infancy but may be useful include: Big Data Analytics<sup>133</sup> Quantum computing which can be used to analyse volumes of data to assess credit ratings for MSMEs,<sup>134</sup> Biometrics<sup>135</sup> and 3D printing.<sup>136</sup>

### **Digital technology and labour costs**

A main concern of digital technologies such as AI is that they can cause job losses because they have come to take the place of predictable, repetitive work. This means that whilst these technologies can make international trade more efficient for MSMEs, they will also create job losses. Although this is true, digital trade will grow exports under the AfCFTA, meaning that there will be new services, which may require more cognitive work. This can create more employment. Moreover, in a study by Wnyoike et al, they found that small businesses that adopt e-commerce outperform those that do not because of the catalytic effect of e-commerce on business skills (D Wnyoike, 2012).

### **Hindrances to digital trade under the AfCFTA**

Despite the potential benefits of digital trade under the AfCFTA, there are challenges, which if not properly addressed will not allow the expected gains to translate into tangible economic benefits. Some of these challenges include:

#### **Preference for conventional practice**

One of the challenges to MSMEs engaging in digital trade is their continued preference for face-to-face trading. E-commerce users in Africa prefer their conventional way of making purchases and around “95% of all transactions in Africa are in cash,” (Assoko, 2021). This means that in order for MSMEs to trade digitally, there has to be a desire for digital trade and money rather than conventional trade and cash. There is hardly evidence showing that low-income customers’ behaviour and preferences for cash will change with the introduction of digital money (Greta Bull, 2021). For instance, mobile network operators (MNOs) for the past decade continue to seek digital merchant payments. As of December 2020 just 4% of mobile money funds were used to make such payments. Yet cash in cash out transactions represented

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<sup>133</sup> Big Data Analytics is the use of advanced analytic techniques against very large, diverse data sets that include structured, semi-structured and unstructured data, from different sources, and in different sizes” to uncover hidden patterns, correlations and other insights (IBM, 2021).

<sup>134</sup> According to IBM ‘Quantum computing harnesses the phenomena of quantum mechanics to deliver a huge leap forward in computation to solve certain problems’ (IBM, 2021).

<sup>135</sup> In international supply chain, biometrics can be employed for crime prevention because it can ensure the identity of customs actors can be verified and are accurate. This will decrease identity theft and security breaches in customs environment.

<sup>136</sup> (OECD 3D, 2021).

43% of total transaction value (Simon K Andersson-Manjang, 2021). This is evidence that persons with access to mobile money still prefer cash for retail purchases, which in turn shows that conventional trade is still preferred. This particular challenge can be surmounted by educating and training MSMEs on digital tools for trade. Such training in the interim, must be hybrid – face-to-face and digital training. The face-to-face approach will allow those MSMEs that are particularly averse to digitisation or used to the face-to-face trade to welcome and receive training on digital trade in a familiar mode.

### **Limited access to finance and digital infrastructure gaps**

MSMEs may be limited from participating in digital trade because they cannot afford to purchase digital technologies as a result of restricted access to finance and infrastructure gaps. MSMEs in Africa usually lack creditworthiness, which means they cannot access finance needed to deploy digital technology (Were, 2016 ). Some important digital infrastructure constraints include; limited access to fibre and broadband connectivity due to the high costs of installation and use, low availability of spectrum for wireless, low availability of public access points and shared access to devices. According to the InternetWorldStats, only 17.8% of Africans have Internet access at home and only 10.7% of households have a computer (European Think Tanks Group (ETTg), 2021). There are also low quality roads, limited rail network, airports, harbours and houses not properly numbered which all leads to delay in delivery and thus increased costs. The African Union Digital Transformation Strategy (AUDTS) emphasises the importance of digital infrastructure. However, with 54 countries, it can be challenging to ensure the strategy is implemented. The AfCFTA protocol on e-commerce can complement the AUDTS Strategy by providing for policy solutions that can help close this gap.

### **Illiteracy and Poverty**

Poverty and high levels of illiteracy levels limit participation in digital commerce in Africa. In Kenya for instance, 36 per cent of household live below the poverty line, which means that they cannot afford Internet subscription (Tabitha Kiriti Nganga, 2021, p. 103). Illiteracy is also a major hindrance to digital trade. A significant number of the adult population in Africa are illiterate, specifically, in Sub-Saharan Africa, 1 in 3 adults or 182 million people cannot read and write (African Library Project, 2021). In Hargittai's (2002) study of Internet skills (using both observed capacity and self-reported skills) among U.S. users, it was found that education is correlated with Internet skills, with higher levels of education implying more exposure to

technology. (Hargittai, 2002) Where there is a high level of illiteracy, there will be challenges with communication and little or no access to information. Education, capacity building and sensitization of digital technologies can be used to overcome these challenges.

### **Cyber-security**

Various reports show that participants of e-commerce consider transaction security a major threat, and deterrent for them (Charlemagne Igue, 2021, p. 124). Cybercrime hinders e-commerce development, and is one of the top risk factors likely to jeopardise Africa's digital economy (ECA, 2021). Increased cybercrime problem is a result of emerging technologies and high Internet penetration on the continent coupled with lack of awareness and knowledge of risks, inadequate institutional capacity to coordinate and implement available cyber security laws. Moreover cybercrime is hard to control because of the difficulties of identifying criminals and lack of data and strong policy agenda. The Global Cybersecurity Index (GCI), released in June by the International Telecommunication Union (ITU), suggests Africa's levels of commitment to cybersecurity – as well as capacity for response to threats – remain low compared to other continents (ITU, 2020). The cost of cybercrime to Africa is estimated at 0.20 per cent of its GDP annually, (Gady, 2010) and the vulnerability rate of digital infrastructure in Africa is 83 per cent above that of other continents.<sup>137</sup> The legal framework on cybercrime in Africa shows high levels of disparity and only a few countries like Tunisia, Morocco and Senegal have achieved advances in cyber security (Charlemagne Igue, 2021, p. 125). Sub regional cooperation have been inadequate in dealing with cybercrime.<sup>138</sup>

To solve the cybercrime problem there is a need for international, regional, private sector cooperation, public awareness campaigns and building capabilities. AfCFTA supports the control of cybercrime recognised in its objectives, which includes the implementation of trade facilitation measures and establishment of a dispute resolution mechanism in Article 3. The harmonisation of e-commerce policies through the AfCFTA e-commerce protocol, will address some of these challenges.

### **Consumer Protection**

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<sup>137</sup> James, C. (2019), "L'Afrique est le continent le plus exposé à la cybercriminalité", AFP, 4th Africa Cybersecurity Conference, Abidjan, Côte d'Ivoire, 4 October 2019

<sup>138</sup> Recognising this, the African Union adopted the "African Union Convention on Cyber Security and Personal Data Protection" to promote the harmonization and development of cybercrime regulations.<sup>138</sup> This Regulation urges States Parties to commit to ensuring that legislation and regulation adopted to combat cybercrime strengthen the possibility of regional harmonisation

Consumer protection emerged as an important obstacle to e-commerce in a study by ODI, where 60% of small firms in the sample ranked low online trust as a primary obstacle constraining local e-commerce (Karishma Banga, 2021, p. 8). Some of the reasons for low online trust among consumers include concerns around privacy of their data, cybercrime and lack of dispute resolution mechanisms. Many African countries do not prioritise consumer protection, as such there is a dearth of appropriate legal and regulatory instruments to foster online transactions. In order to engender user trust, facilitate online transaction and develop e-commerce and digital trade, it is necessary to put in place legal frameworks. This is where the AfCFTA protocol on digital trade could potentially make a difference.

### **Lack of e-commerce legislation in Africa**

Africa has recorded significant growth in ICT, particularly through the use and development of mobile money. Yet, a majority of African countries do not have the basic requirements of a legal framework for e-commerce (Charlemagne Igue, 2021, p. 126). For instance, it is just Algeria that has laws providing for the acceptance of electronic signatures and a few countries have made progress in establishing a legal framework for e-commerce.<sup>139</sup> Moreover, there is no harmonisation of the legal frameworks in e-commerce. This lack of legal framework and harmonisation is a barrier to cross border trade and could be helpful in building consumer trust. Some other challenges affecting e-commerce in Africa include skills gap<sup>140</sup> and poor governance and instability.

### **Conclusion**

The opportunities and advantages of digital trade in international trade for MSMEs under the AfCFTA are numerous. From the expansion of scope, scale and speed of business, to better access to financing and simplified paper cost, digital trade promises to reduce trade costs. Yet these technological advances have real risks, making it an imperative that infrastructure gaps in Africa are addressed, and that some of these issues are regulated and managed properly through a harmonised and enforceable legal framework. The AfCFTA is one such framework that supports digital trade. Particularly, through the upcoming protocol on digital trade, which is currently being negotiated, the AfCFTA could offer appropriate and tailored policy/regulatory support to better promote digital trade and address the attendant challenges

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<sup>139</sup> A few countries, including Algeria, Côte d'Ivoire, Ethiopia, Morocco, Senegal and Tunisia.

<sup>140</sup> There is a significant need to build relevant skills and other capabilities to enable active participation in the digital economy. Courses in tertiary education and vocational training dedicated to e-commerce are recommended to help close the gap (UNCTAD, 2019 p. 127).

of digital technologies. More importantly, the opportunity of a harmonised and common framework for African countries will create efficiency and congruence in international trade. Whilst the AfCFTA provides the framework, MSMEs, government agencies, private sectors and fintechs will need to work together to practically streamline solutions in order to harness the full benefits of digital trade and mitigate losses that may arise as a result of the challenges. It is expected that both the technologies and the regulatory landscape of digital trade in Africa will continue evolving. This will require flexibility and adaptability on the part of all stakeholders involved.

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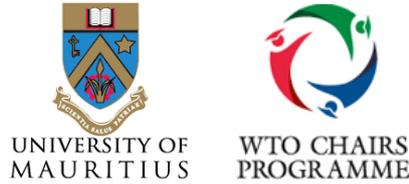
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# CALL FOR PAPERS



## WCP Virtual International Conference

### **MSMEs and COVID-19: Impacts, Challenges and Opportunities.**

*Special Theme: COVID-19 and the Sustainability of Blue Entrepreneurship*

**8-9 December 2021**

*Organized by the WTO Chairs Programmes (WCP) at the University of Mauritius (UoM)*

#### **Background:**

The COVID-19 pandemic has had significant impacts on the livelihood of each and everyone. Particularly, the MSMEs have been affected by the various measures and policies implemented by governments worldwide. Lockdowns, confinement, travel restrictions, vaccination requirements have all changed the daily routine of entrepreneurs. Being a category that remains highly vulnerable to shocks, MSMEs have been definitely, and sometimes irreversibly, affected by the COVID-19 pandemic.

The WTO Chairs programmes (WCP) at the University of Mauritius (UoM) is organising a Virtual International Conference on ‘**MSMEs and COVID-19: Impacts, Challenges and Opportunities**’, with a Special Theme: *COVID-19 and the Sustainability of Blue Entrepreneurship*. This virtual conference aims at specifically convening research and discussion focussing on the impacts of the pandemic on MSMEs and providing a forum to academics, policy makers, civil societies, business partners and experts working on issues relating to the impact of COVID-19 on Micro Small and Medium Enterprises (MSMES), new challenges that the pandemic has imposed on them and the recovery measures adopted to circumvent the effects of the pandemic. A special focus will be put on those involved in the blue entrepreneurship sector and on small island developing states, which often remain largely dependent on their blue economy and sustainable ocean stewardship. Small island states,

relative to their land mass, have vast ocean resources at their disposal which present a huge opportunity for boosting their economic growth and to tackle unemployment, food security and poverty. The blue economy is thus the sustainable use of ocean resources for economic growth, improved livelihoods and social equity, alleviation of poverty, creation of jobs, as well as the preservation of the ocean ecosystem. It provides for an inclusive model in which coastal states can begin to extend the benefit of those resources to all by promoting the inclusion and participation of all affected social groups and sectors.

The conference invites conceptual, empirical research presentations, and country context case studies along the conference theme as well as other related issues from all over the globe. Delegates are invited to present completed research papers and/or work in progress. Submissions and presentations must address both the theoretical and practical implications of the findings. Parallel tracks of refereed presentations will enable authors to obtain constructive feedback on their study. Furthermore, the organisers are hoping to hold a round table, revolving around the conference theme and regrouping academics, stakeholders and policymakers. 2

The topics considered may include, but are not limited to, the following:

- COVID-19 in Small Island Developing Countries
- COVID-19 and MSMEs: Impacts, Challenges, Opportunities and Recovery Measures.
- COVID-19 Employment and Productivity Effects on MSMEs
- COVID-19: SMEs Investment, Innovation and Market Diversification Strategies
- MSMEs building resilience through trade during COVID-19
- Assessing the socio-economic effects of COVID-19 and health measures on the blue economy.
- COVID-19 and new opportunities for MSMEs in the blue economy
- Government policies and the integration of MSMEs in the sustainable blue recovery.
- COVID-19 and blue entrepreneurship
- Sustaining blue entrepreneurship in the COVID-19 era
- Competition Law and Policy for MSMEs in the COVID-19 period
- COVID-19 and MSMEs: The opportunities, challenges and relevance of digital trade
- Electronic commerce for MSMEs in the COVID-19 era
- The regulatory responses to COVID-19 and their impacts on MSMEs
- Regulating the digital economy in the COVID-19 era

- Access to finance in the COVID-19 period

### **Guidelines:**

The organizing committee invites both extended abstract (600-700 words) and full paper submissions (5000-6000 words) from researchers and practitioners in the field of business, law, economics, statistics and other social sciences. All abstracts and full papers should be formatted accordingly to facilitate the review process. Author's names and details, including names of all co-authors plus affiliations and addresses for general correspondence (including email address) of each author, and a brief personal profile (maximum 100 words) of the presenter, should appear on a separate cover page. In submitting an abstract, at least one author undertakes to attend the virtual international conference if the extended abstract/final paper is accepted. In addition, one author should not have more than two submissions, either as a single author or as a co-author.

All submissions should be forwarded via email (as a word.doc attachment) to b.seetanah@uom.ac.mu, v.tandrayen@uom.ac.mu and v.mooneeram@uom.ac.mu, with subject line as '*Virtual Conference: MSMEs and COVID-19: Impacts, Challenges and Opportunities*'. Researchers are encouraged to register upon acceptance of their extended abstract/full paper. Authors of accepted extended abstracts/full papers, subject to a blind review, will need to submit the final revised version by 22nd November 2021 for inclusion in the conference refereed proceedings.

### **Important Dates and Deadlines**

#### **Deadlines**

Submission of extended abstracts/full papers: *30 October 2021*

Notification of review/acceptance: *15 November 2021*

Revised extended abstracts/final papers for inclusion in the refereed proceedings: *22 Nov 2021*

Registration: *30 November 2021*

Conference Dates: *8-9 December 2021*

***Registration is FREE, the conference is sponsored by the WTO Chair Programme***

## **Conference Chairs and Organising Committee**

**Co Chairs:** *Boopen Seetanah, Varsha Mooneeram-Chadee and VerenaTandrayen-Ragoobur*

### **Scientific Committee:**

Prof N. Ngepah (University of Johannesburg); Prof J De Melo (Emeritus Professor FERDI, University of Geneva); Dr S. Moncada (University of Malta); Dr P. Ongono (University of Yaounde II, Cameroon); Prof M Sarma (Jawaharlal Nehru University); Prof S. Dijoux-Rolfingh (University Paris-Nanterre); Prof J. Colom (HDR of Universite de la Reunion); Prof Marie-Annick Lamy (Universite de la Reunion); Dr K Padachi (University of Technology Mauritius); Dr V Teeroovengadam (University of Mauritius), Prof R V Sannasee (SADC), Prof W Viviers (North-West University), Prof T Soobaroyen (University of Essex), Dr S Fauzel (University of Mauritius), Dr V Ramiah (University of Wollongong), Dr R Bhattu-Babajee (University of Mauritius), K Kamoche (Uni of Nottingham Business School), E.Ganne (WTO), K. Lundquist (WTO), Prof W Zdouc (WTO), H Alfred (North West University), B Bolaky, (UNECA), A. Diallo (ITC), Dr N Oulmane(UNECA) and Dr M Smeets (St Petersburg State University/ SUIBE).

### **About WTO Chairs Programme**

The WTO Chairs Programme (WCP) seeks to enhance knowledge and understanding of the trading system among academics, citizens and policy makers in developing countries by stimulating teaching, research and public debate on international trade and trade cooperation at the level of tertiary education and research institutions. The WTO provides financial support to academic institutions, and facilitates continuous interaction between institutions, ministries, civil society, private sector, students and academics. It also supports academic institutions and associated individual scholars from developing countries in the following areas: course preparation, teaching, research and information dissemination. The ultimate objective of the WTO Chairs Programme is to strengthen the human and institutional capacities of universities from developing countries to support governments in the formulation of sound trade policies. One of the main objectives of WCP is to promote research focused on extending specialized knowledge and explaining the policy relevance of existing research.

Conference programme

## Conference programme



WCP Virtual International Conference

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### MSMEs and COVID-19:

### Impacts, Challenges and Opportunities.

*Special Theme: COVID-19 and the Sustainability of Blue Entrepreneurship*

*8-9 December 2021*

*Organized by the WTO Chairs Programme (WCP) at the University of Mauritius (UoM)*

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## PROGRAMME

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DAY 1

WEDNESDAY 8 DECEMBER 2021

OPENING CEREMONY AND KEYNOTE ADDRESS: 11:00-13:00 MUR Time (GMT+4)		Zoom Link: Register
11:00-11:05	Opening and Welcoming remarks by <i>WCP Team (UoM, Mauritius)</i>	
11:05-11:10	Address by <i>Mr Werner Zdouc, WCP Team (WTO)</i>	

### Conference programme

11:10- 11:15	Address by <i>Prof D Jhurry</i> , Vice-Chancellor, University of Mauritius	<a href="#">here</a>
11:15- 11:30	Address and formal opening by The <i>Hon Soomilduth Bholah</i> , Minister of Industrial Development, SMEs and Cooperatives	
11:30-12:10	<u>Keynote Address :</u> Ambassador H E Mr <i>Xiangchen ZHANG</i> , Deputy Director-General, WTO  Dr <i>Yuvan BEEJADHUR</i> , Senior Adviser to the Director General, WTO	
12:10 - 13:00	<b>PANEL DISCUSSION : COVID-19, Digital Trade and Blue Entrepreneurship.</b>  <i>Panelists:</i> M Sadni Jallab (WTO), A. Bolaky (UNECA), K Lundquist (ERSD, WTO), D Ramdenee (Economic Development Board) and Paul Baker (International Economics).  <i>Moderator:</i> Ambassador <i>U Dwarka Canabady</i> (Permanent Mission of Mauritius to the WTO)	

Conference programme

PARALLEL SESSIONS I: 13:00-15:00 - MUR Time (GMT+4)	
<p><b>TRACK 1</b></p> <p><b>THEME:</b></p> <p><b>COVID-19 and MSMEs: Impacts, Challenges, Opportunities and Recovery Measures I</b></p> <p>Chair: Dr K Padachi</p> <p>Zoom Link: Register <a href="#">here</a></p>	<p>1. <b>COVID-19 and MSMEs in Mutare, Zimbabwe: Impacts, challenges, opportunities and recovery measures</b></p> <p><i>S Murairwa (College of Business, Peace, Leadership and Governance, Africa University, Zimbabwe)</i></p>
	<p>2. <b>COVID 19 pandemic and Micro, Small and Medium Enterprises (MSMEs): Impacts and recovery measures.</b></p> <p><i>M Behera, S Mishra, N Mohapatra &amp; A R Behera (Jawaharlal Nehru University, New Delhi; Baji Rout Memorial College, Dhenkanal, Utkal University, Bhubaneswar; Utkal University, Bhubaneswar)</i></p>
	<p>3. <b>Developing competitiveness of SMEs to build resilience to COVID-19.</b></p> <p><i>H Batool (International Trade Centre, UN/ WTO, Geneva)</i></p>
	<p>4. <b>Enhancing online financial and digital education to ensure business continuity in the COVID-19 era.</b></p> <p><i>K Padachi, D Mauree-Narrainen &amp; A Boolaky (University of Technology, Mauritius)</i></p>
<p><b>TRACK 2</b></p> <p><b>THEME:</b></p> <p><b>COVID-19 and Blue Entrepreneurship</b></p> <p>Chair: Dr V Tandrayen-Ragoobur</p> <p>Zoom Link: Register <a href="#">here</a></p>	<p>1. <b>The contradiction of the fisheries sector in relation to the socio-economic effects of COVID-19 and health measures in the Mauritian blue economy.</b></p> <p><i>D Michel (University of Mauritius)</i></p>
	<p>2. <b>Risk sharing and investment strategies for small fisheries enterprises (PEs) in the COVID-19 period.</b></p> <p><i>A B Book Nyobe (University of Douala, Cameroon)</i></p>
	<p>3. <b>Is the future of the blue entrepreneurs still blue after the dark era of COVID 19?</b></p> <p><i>V Tandrayen-Ragoobur, V Mooneeram-Chadee, &amp; B Seetanah (University of Mauritius)</i></p>
	<p>4. <b>Pandemic and its impact on micro enterprises in the coastal districts of Karnataka.</b></p> <p><i>G Shanbhogue (GFGC Shankaranarayana, Karnataka-India)</i></p>
PARALLEL SESSIONS II: 15:00-17:00 - MUR Time (GMT+4)	

## Conference programme

<p><b>TRACK 1</b></p> <p><b>THEME: COVID-19 and MSMEs: Impacts, Challenges, Opportunities and Recovery Measures II</b></p> <p>Chair: Dr V Teeroovengadam</p> <p>Zoom Link:</p> <p>Register <a href="#">here</a></p>	<p>1. <b>COVID-19 production and employment effects on business enterprises in Ethiopia: insights from Rapid Phone Survey.</b></p> <p><i>M Araya, T Woldehanna &amp; H Ali (Addis Ababa University, Ethiopia)</i></p>
	<p>2. <b>Assessing the impact of COVID-19 on consumer behaviour for online grocery shopping in Mauritius.</b></p> <p><i>R Dhonye &amp; V Teeroovengadam (University of Mauritius)</i></p>
	<p>3. <b>Can networking help in facilitating the internationalisation of SMEs in the aftermath of COVID-19? - A survey among Mauritian export-oriented SMEs on the perceived benefits of networking to their internationalisation.</b></p> <p><i>R. Sannegadu, R. Gunesh, T.D Juwaheer &amp; S. Pudaruth (University of Mauritius Open University of Mauritius, University of Mauritius)</i></p>
	<p>4. <b>COVID-19 pandemic: Impacts on household and small business in Nigeria</b></p> <p><i>A A Dantsoho (The Federal Polytechnic Bida, Department of Public Administration, Niger State, Nigeria)</i></p>
	<p>5. <b>Enhancing operational efficiency of SMEs and facilitating the green energy transition of businesses in Mauritius</b></p> <p><i>G Chinnapen &amp; R Badaloo (Mauritius Chamber of Commerce and Industry)</i></p>

<p><b>TRACK 2</b></p> <p><b>THEME: COVID-19 and DIGITALISATION</b></p> <p>Chair: Dr S Fauzel</p>	<p>1. <b>The 4th industrial revolution and COVID-19: The increase in digital trade in goods and services in Cameroon.</b></p> <p><i>G Mbipan Kwachuh (Ministry of Trade, Yaounde, Cameroon)</i></p>
	<p>2. <b>COVID-19: ERPNext: A Case Study.</b></p> <p><i>V Goorah (National Productivity and Competitiveness Council, Mauritius)</i></p>
	<p>3. <b>COVID-19 and MSMEs: The opportunities, challenges and relevance of digital trade business resilience of small enterprises in Mauritius in a COVID-19 context.</b></p> <p><i>N K Betchoo (Université des Mascareignes, Mauritius)</i></p>

## Conference programme

<p>Zoom Link: Register <a href="#">here</a></p>	<p><b>4. Driving digital trade amid COVID-19 pandemic: Lessons from African MSMEs.</b> <i>G Odularu &amp; I Okhale (Socio-Economic Research and Applications LLC (SERAP) and Department of Economics and Business, Bay Atlantic University, U.S; Centre for the Study of the Economies of Africa, Abuja, Nigeria)</i></p>
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DAY 2

THURSDAY 9 DECEMBER 2021

PARALLEL SESSION III - 11:00-13:00 - MUR Time (GMT+4)	
<p><b>TRACK 1</b>  <b>THEME:</b>  <b>COVID-19 and MSMEs Finance</b></p> <p>Chair: Dr R Babajee</p> <p>Zoom Link:                      Register <a href="#">here</a></p>	<p><b>1. Small firms amidst COVID-19: Financial constraints and role of government support.</b></p> <p><i>S. Sasidharan, R, R Natarajan &amp; R Chundakkadan. (Indian Institute of Technology Madras, Chennai, India; Sikkim University, Gangtok, India; Indian Institute of Technology Bhilai, Raipur, India)</i></p>
	<p><b>2. Macroeconomic impact of COVID-19 on two selected economies in Southern Africa: The role of foreign direct investment.</b></p> <p><i>J H Eita (School of Economics; University of Johannesburg; South Africa)</i></p>
	<p><b>3. Impact of access to finance on the performance of Micro, Small, and Medium Enterprises: Does the COVID-19 pandemic make a difference?</b></p> <p><i>N. Bhowoniah (University of Mauritius)</i></p>
	<p><b>4. Assessing the impact of COVID-19 on the IPO Indices: An event study approach.</b></p> <p><i>S S Nair, J J Jerush &amp; N. Sharma (School of Commerce, Finance and Accountancy CHRIST (Deemed to be University) Delhi NCR)</i></p>
<p><b>TRACK 2</b>  <b>THEME: COVID-19 and Women Entrepreneurs</b></p> <p>Chair: Mrs V Mooneeram-Chadee</p>	<p><b>1. Impact of COVID-19 on women Small and Medium Enterprises (SMEs) in Mauritius</b></p> <p><i>L M M Amelot &amp; N Gopy-Ramdhany (University of Mauritius)</i></p>
	<p><b>2. The socio-economic impact of COVID-19 pandemic on the lifestyle of the elderly women in the informal sector in Mauritius.</b></p> <p><i>R Suntoo (University of Mauritius)</i></p>
	<p><b>3. Empowerment of Mauritian women entrepreneurs in the wake and beyond the COVID-19 Pandemic: A Critical Investigation of COVID-19 'Womenpreneurs' experience of COVID-19 and the existing challenges and opportunities in a COVID-19 New World Order: The case of Mauritius</b></p>

### Conference programme

<b>Zoom Link:</b>  <b>Register</b>  <a href="#">here</a>	<i>K A Appadoo &amp; A Beebeejaun (University of Mauritius)</i>
	<b>4. Challenges and opportunities of survivalist female owned Small &amp; Medium Enterprises in Africa: 2019 African Continental Free Trade Area and COVID- 19.</b>  <i>Val Okaru-Bisant (Afrocosmo Development Impact, LLC, Maryland, USA)</i>

Conference programme

PARALLEL SESSION IV - 13:00-15:00 - MUR Time (GMT+4)	
<p><b>TRACK 1</b></p> <p><b>THEME COVID-19 and MSMEs: Impacts, Challenges, Opportunities and Recovery Measures III</b></p> <p>Chair: Dr V Tandrayen-Ragoobur</p> <p>Zoom Link: Register <a href="#">here</a></p>	<ol style="list-style-type: none"> <li>1. <b>Supply chains in times of crisis: Evidence from Kenya's production networks.</b> <i>P Chacha, B Kirui &amp; V Wiedemann (IMF, Kenya Revenue Authority and University of Oxford)</i></li> <li>2. <b>Impact of COVID-19 on small business outcomes in Mauritius.</b> <i>S Fauzel, V Tandrayen-Ragoobur, B Seetanah, V Teeroovengadam, Z Khan Jaffur &amp; J De Melo (University of Mauritius, University of Geneva)</i></li> <li>3. <b>Internationalization barriers faced by Small and Medium Enterprises (SMEs) in Small Island Developing States (SIDS): A Mauritian study.</b> <i>K Bundhoo, R Sannegadu, T D Juwaheer &amp; S Pudaruth (University of Mauritius)</i></li> <li>4. <b>The benefits of technological developments on businesses: A survey conducted among SMEs in the city of Beni, Democratic Republic of Congo.</b> <i>K K Rodrigue (Texila American University and Adventist University of Lukanga, Democratic Republic of Congo)</i></li> <li>5. <b>Microeconomic Resilience Practices in Entrepreneurship During Pandemic: A Study of Pokhara, Nepal</b> <i>N Chongbang (International Organization of Migration (UN-Migration), Gandaki Province, Nepal.</i></li> </ol>
<p><b>TRACK 2</b></p> <p><b>THEME: COVID-19 and Regulatory Responses</b></p> <p><b>SESSION IV</b></p> <p>Chair: Mrs V Mooneeram Chadee</p> <p>Zoom Link: Register</p>	<ol style="list-style-type: none"> <li>1. <b>Survival of MSMEs in the wake of COVID-19: A comparative study of regulatory responses between Mauritius and UK.</b> <i>A Beebeejaun, H Ibrahim &amp; H Masirah (University of Mauritius)</i></li> <li>2. <b>Entrepreneurial digital technology: Electronic commerce: A new relief for MSMEs in the COVID-19 Era? The Mauritian Approach.</b> <i>R P Gunputh &amp; A Beebeejaun (University of Mauritius)</i></li> <li>3. <b>How can the SME Act 2017 and the current institutional and regulatory frameworks in Mauritius promote the contribution of SMEs to the blue economy?</b> <i>M V Uppiah &amp; T Dawoodarry (University of Mauritius)</i></li> <li>4. <b>The regulatory constraints for MSMEs to adopt e-commerce in the COVID-19 era.</b> <i>V. Mooneeram-Chadee (University of Mauritius)</i></li> </ol>

Conference programme

<p><a href="#">here</a></p>	
<b>PARALLEL SESSION V – 15:00-17:00- MUR Time (GMT+4)</b>	
<p><b><u>TRACK 1</u></b> <b><u>THEME:</u></b> <b>COVID-19 &amp; SOCIAL MEDIA MARKETING</b></p> <p>Chair: Dr K Padachi</p> <p>Zoom Link: Register <a href="#">here</a></p>	<ol style="list-style-type: none"> <li>1. <b>How do Small and Medium Enterprises (SMEs) perceive the contribution of Social Media Marketing (SMM) on their sustainability during COVID-19 crisis? Evidence from Mauritius.</b> <i>T D Juwaheer, R Sannegadu &amp; S Pudaruth (University of Mauritius)</i></li> <li>2. <b>Exploring Social media usage by Mauritian SMEs during COVID-19 pandemic. A qualitative study.</b> <i>V Ramlugun &amp; K Wen Yu Fen (University of Mauritius)</i></li> <li>3. <b>Antecedents of artificial intelligence adoption in MSME: From an employee perspective.</b> <i>R Payal &amp; N Sharma (School of Business and Management, CHRIST (Deemed to be University) Delhi, NCR, India)</i></li> <li>4. <b>Surviving disasters through effective business continuity management practices: The case of the Mauritian MSMEs in times of COVID-19 pandemic towards organisational resilience</b> <i>S Joomunbaccus &amp; K Padachi (University of Technology, Mauritius)</i></li> </ol>
<p><b><u>TRACK 2</u></b> <b><u>THEME:</u> COVID-19 and MSMEs</b></p> <p>Chair: Mrs V Mooneeram Chadee</p> <p>Zoom Link: Register <a href="#">here</a></p>	<ol style="list-style-type: none"> <li>1. <b>Impact of COVID -19 on MSME's in India - A Comparative study of Rajasthan and Uttarakhand.</b> <i>D Tomar (University of Kota, Rajasthan, India)</i></li> <li>2. <b>Assessing the economic impact of COVID-19 in Mauritius.</b> <i>N Gooroochurn &amp; S Seechurn (Economic Development Board, Mauritius)</i></li> <li>3. <b>What causes spread of COVID-19 across countries, regional groupings and across Indian states and districts: An econometric and deep learning investigations.</b> <i>S K Mathur (The Department of Economic Sciences, IIT Kanpur, U Pradesh, India)</i></li> <li>4. <b>Digital Trading by MSMEs under the African Continental Free Trade Area</b> <i>Uchenna Anyamele (Hakakire Legal Consulting Services, Nigeria)</i></li> </ol>

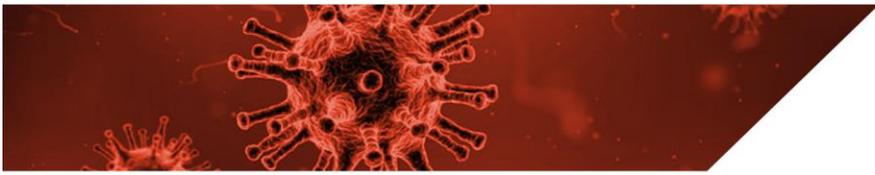
## Conference programme

### Conference Chairs and Organising Committee

**Co-Chairs:** *Boopen Seetanah, Varsha Mooneeram-Chadee and Verena Tandrayen-Ragoobur*

#### **Scientific Committee:**

*Prof N. Ngepah (University of Johannesburg); Prof J De Melo (Emeritus Professor FERDI, University of Geneva); Dr S. Moncada (University of Malta); Dr P. Ongono (University of Yaounde II, Cameroon); Prof M Sarma (Jawaharlal Nehru University); Prof S. Dijoux-Rolfingh (University Paris-Nanterre); Prof J. Colom (HDR of Universite de la Reunion); Prof Marie-Annick Lamy (Universite de la Reunion); Dr K Padachi (University of Technology Mauritius); Dr V Teeroovengadum (University of Mauritius), Prof R V Sannasse (SADC), Prof W Viviers (North-West University), Prof T Soobaroyen (University of Essex), Dr S Fauzel (University of Mauritius), Dr V Ramiah (University of Wollongong), Dr R Bhattu-Babajee (University of Mauritius), K Kamoche (Uni of Nottingham Business School), E Ganne (WTO), K. Lundquist (WTO), Prof W Zdouc (WTO), H Alfred (North West University), B Bolaky, (UNECA), A. Diallo (ITC), Dr N Oulmane (UNECA) and Dr M Smeets (St Petersburg State University/ SUIBE).*



ISSN: 16941225

