



IITK SAMANVAY

HARNESSING INNOVATION FOR A BETTER TOMORROW

REPORT 2024



OVERVIEW

IITK Samanvay, held on November 29, 2024, at the IIT Kanpur campus, was a landmark initiative aimed at fostering collaboration between industry and academia to drive innovation, progress, and societal impact. Under the theme "Harnessing innovation for a better tomorrow," the event brought together leading industry professionals, academia, and policymakers to explore opportunities for partnership, discuss pressing challenges, and envision transformative solutions.

The event featured keynote addresses, engaging panel discussions, and interactive networking sessions, all designed to bridge the gap between academic research and industry applications. Participants delved into crucial themes such as the role of corporate social responsibility (CSR) in academic innovation, translational research for industry advancement, and aligning shared goals to create sustainable ecosystems. By facilitating dialogue, knowledge-sharing, and collaboration, IITK Samanvay reinforced IIT Kanpur's commitment to being a catalyst for impactful partnerships and technological advancement, paving the way for a more connected and innovation-driven future.

KEYNOTE SPEAKERS



DR. RAM SEWAK SHARMA

Chairman,
Open Network For Digital Commerce
(ONDC)



MR. SP SHUKLA

Chairman,
Mahindra Agri, Mahindra EPC
Irrigation, CIE Automotive India Ltd.



OBSERVATIONS:

- **Connectivity and Location Challenges:** Geographic location and connectivity have historically hindered the institute's progress compared to urban counterparts. Innovations originating from less connected areas, such as Bihar and Jharkhand, often face undue scrutiny. Addressing these challenges is essential to ensure equitable development.
- **Evolving Industry-Academia Dynamics:** A historical divide between pure and applied research created a disconnect between academia and industry. However, this gap is narrowing as more students aspire to launch start-ups rather than pursue education abroad. This paradigm shift is driving robust collaborations in sectors like health-tech and digital infrastructure, fueled by the entrepreneurial spirit of today's youth.

KEY TAKEAWAYS:

- Establish regular events as formal platforms to ensure continuous dialogue and assess the long-term impact of initiatives. Follow-up mechanisms are crucial to maintain momentum.
- Promote scalable and frugal solutions for cost-effectiveness and inclusivity, exemplified by transformative innovations like UPI.
- Encourage continuous research beyond immediate market appeal, as it fuels future technologies. For instance, IIT Kanpur's flexible electronics center has transitioned from research to producing industry-applicable products such as non-clonable ink.



OBSERVATIONS:

- For students, Mr. Shukla advised that they should consider the long-term implications of career choices, especially in the context of fluctuating industry cycles. For example, while the telecom sector's early 2000s boom faded by 2010, similar patterns may occur in emerging fields like AI. Students should prioritize flexibility and adaptability over short-term trends.
- The current challenges in the Industry academia collaboration are :-
 - Student projects often get delayed when research takes a backseat to CV enhancement. Faculty involvement is critical but often constrained by their teaching and research responsibilities.
 - Effective collaboration requires clear problem definitions, expected outcomes, and timelines.

KEY TAKEAWAYS:

- Build robust infrastructure tailored to specific project requirements.
- Establish deadlines to ensure timely progress and foster confidence in academic efforts.
- Form active project teams to bridge the gap between academic research and industry needs.
- Clearly articulate problems and desired outcomes, collaborating with academic experts to define the roadmap.
- Appoint brand ambassadors from industry to engage stakeholders and enhance industry-academia alignment.
- Develop specialized PR and outreach teams to showcase institutional capabilities and promote collaborative opportunities.
- While proximity to institutions in cities like Mumbai, Bangalore, and Hyderabad offers competitive advantages, the rise of virtual communication since COVID-19 has reduced dependency on location. However, in-person interactions remain crucial for fostering deeper connections.

PANELLISTS

PANEL DISCUSSION 1

TRANSFORMING ACADEMIC RESEARCH INTO REAL-WORLD SOLUTIONS



PROF. BUSHRA ATEEQ

Dean of International Relations,
IIT Kanpur
(MODERATOR)



DR. AKHILESH SHARMA

President & Chief Medical Officer,
Alkem Laboratories Ltd



MR. MRIDUL MAHAN

Managing Director, India Region
Head - CIO IB, Compliance, RFT,
Sustainability Technology &
TDI Engineering, Deutsche Bank



MR. MURALIKRISHNA MENON

Vice President - R&D,
BPL Medical Technologies Pvt.Ltd.



MR. NAVEEN KALAPPA

Global Practice Head,
Embedded and Electronics,
TATA Technologies



DR. SURESH RAMAMURTHI

Chief Scientist and Head of Corporate
R&D, ITC Limited

TRANSFORMING ACADEMIC RESEARCH INTO REAL-WORLD SOLUTIONS

The first panel discussion was moderated by **Prof. Bushra Ateeq (Dean of International Relations)**, titled "**Transforming Academic Research into Real-World Solutions**," setting the stage for engaging conversations about bridging the gap between academia and industry and how academic research can help in solving real world problems.

The discussion delved into a range of topics, from funding innovations and sustainability practices to evolving consumer technologies and scaling academic breakthroughs. The engaging conversation highlighted actionable strategies to align academic research with industry needs, fostering impactful solutions for societal and industrial advancement.

KEY DISCUSSIONS:

Moderator started the discussion by stating that, While there is an advancement in technology, a lot of technology getting patented, products and solutions from India being highlighted at a global level, still there is a gap on having its usage in practical world and how it can be resolved. Following are the key takeaways from the panel discussion:-

FINANCIAL TECH EVOLUTION

- Emphasized the need for the banking industry to define contexts and educate academia on its ecosystem.
- Advocated for continuous collaboration rather than sporadic engagements to foster ecosystem development, funding, and partnerships.
- Funding is not an issue, banks like Deutsche Bank actively funds global research and projects in AI, banking technology, and robotics, emphasizing the need for academia, like IITs, to deeply understand banking contexts to align with industry requirements.
- Banking Industry advocate for triarch discussions among industry, academia, and government to build pipelines for talent and innovation, exploring opportunities similar to their IIT Bombay partnership on initiatives like the e-Yantra robotics competition.

INNOVATION FOR DRUG DISCOVERY

- Academia and the pharma industry have a long history of collaboration, starting with landmark innovations like Penicillin, emphasizing the need for active and ongoing partnerships to achieve impactful results.
- Large-scale pharma companies often seek agile academic partners to deliver fast, innovative solutions, whether developing new concepts or refining existing products.
- Developing solutions in med-tech must begin with understanding real-time societal and patient needs, identifying unmet requirements, and creating a Target-Product Profile (TPP) that outlines the target population, disease focus, and potential benefits.
- Global academia-industry collaborations have led to significant innovations, such as the development of oncology drugs like Keytruda, highlighting the need for similar collaborations in India to benefit both academia and industry, as global pharma R&D centers increasingly partner with academic institutions for research and product development.

ADAPTING TO CONSUMER ELECTRONICS

- Industries are diversifying focus areas, shifting from electronics to nanotechnology, chemical sciences, and med-tech, based on emerging needs.
- Academia can significantly contribute through indigenous technologies and domain-specific expertise, aiding industries in addressing complex challenges.
- Solutions from academia or industry must align with customer needs, and methods like Kanpur BioDesign help ensure products meet both customer and business requirements, eliminating unnecessary elements.
- Technology-driven innovations, such as mobile phones, may evolve over time, requiring continuous evaluation of application scope and innovation viability at each stage to ensure practicality and success.

INDUSTRY-ACADEMIA FOR AUTOMOTIVE INDUSTRY

- The automotive industry urgently needs advancements in electronic and software technologies to keep pace with rapid global changes. Significant progress in electronic and software components demands quick adaptability within the sector.
- Bridging the gap between academia and industry requires understanding their differing focuses: industry prioritizes application and end-user needs, while academia emphasizes deep research.
- Embedding faculty within industry for 1-2 years to work on targeted segments enhances collaboration, aligning research with practical applications—a practice successfully adopted in Western countries.
- Academia partnerships have significantly benefited areas like material engineering, mechanical structure design, welding, and research in EV technology, including battery development, motor research, and power electronics.
- As the focus shifts to software, high computing, and autonomous driving technologies, academia continues to play a vital role, with the next big opportunity being in semiconductor research and the development of domestic chips.

INNOVATION AND SUSTAINABILITY IN FMCG INDUSTRY

- The evolving focus on sustainability presents a unique opportunity for academia and industry to collaborate on decarbonization, afforestation, wastewater treatment, and more.
- ITC's global leadership in sustainability, being carbon, water, and solid waste positive, aligns with academia's increasing emphasis on innovations for societal and industrial betterment.
- Packaging presents opportunities for collaboration, including plastic recycling and developing paper-coated materials, focusing on translating scientific advancements into commercially viable technologies.
- ITC approaches academia partnerships with varying strategies based on the probability of success: for lower chances (<30%), they partner for product/solution success, and for higher chances (50-80%), they collaborate with field specialists in academia for focused outcomes.
- ITC also collaborates with students, particularly in digital and AI fields, capitalizing on their exceptional capabilities, and invites professors like Prof. Joshi to share their insights, fostering a dynamic and multi-faceted approach to collaboration.

RAPID-FIRE INSIGHTS

- **Government Policy for Academic-Industry Partnerships**
 - a. Encourage internships and exchange of thought processes.
 - b. Professors in residence from industry and vice versa.
- **Improving Industry Exposure for Students and Faculty**
 - a. Internships, training programs, and corporate involvement in academia.
 - b. Focused workshops and departmental programs with corporate participation.
 - c. Digital communities connecting IITK alumni in industry.
- **Leveraging India's Intellectual Capital**
 - a. Maintain regulatory barriers while increasing focused engagements.
 - b. Develop structured translation models for research.



PANELLISTS

PANEL DISCUSSION 2

DRIVING ACADEMIC INNOVATION THROUGH CSR



**PROF. BISHAKH
BHATTACHARYA**

Professor,
Department of Mechanical Engineering
(MODERATOR)



MR. ASHISH SRIVASTAVA

Associate Director,
Ernst & Young Foundation, India



MR. UDAY SHANKER SAHI

Executive Director (R&D),
NHPC Limited



MR. MARTIN JOJO

General Manager, ITC Limited



MR. RAVI ARORA

Head, Marketing and CSR,
Sandvik Mining and Rock Technology
India Pvt. Ltd.

DRIVING ACADEMIC INNOVATION THROUGH CSR

The second panel discussion was moderated by Prof Bishakh Bhattacharya (HAL Chair Professor, Department of Mechanical Engineering) to understand how **Academic Innovation can be driven through CSR**” focused on the benefits of CSR in driving academic innovation and creating societal change. Fostering partnerships between corporations and educational institutions can effectively overcome challenges in funding, infrastructure, and talent development. The session highlighted the critical need to align corporate and societal goals to achieve impactful and sustainable outcomes.

KEY DISCUSSIONS:

The moderator opened the discussion by emphasizing the significant impact of CSR today, noting the widespread utilization of funds across various thematic areas in the country. He highlighted several projects at IITK that are supported by CSR and discussed how the industry can further accelerate impactful research at academic institutions.

CSR FUNDING AND ORGANIZATIONAL PRIORITIES

- Now a days industry is strictly following the CSR Act of 2014 that mandates large profit-making companies to allocate 2% of their net profit to CSR activities, with current CSR allocations exceeding ₹80 crore and commitments surpassing ₹170 crore.
- 80% of CSR funds are directed towards ongoing projects, while 20% are reserved for urgent, unforeseen needs. Despite efforts, CSR initiatives often face challenges due to industries assuming they fully understand ground realities, which can differ significantly from actual needs.
- To align with India's developmental goals, significant investments in human resource development, STEM education, and streamlining the education system with the NEP through multimodal approaches are essential.

SUPPORTING EDUCATIONAL INSTITUTIONS AND OVERCOMING CHALLENGES

- Organizations today are committed to supporting talented students from deprived or backward backgrounds through scholarships and skill-building initiatives, with employees also contributing by offering training to enhance employability.
- Challenges include the lack of understanding of STEM education, leading to reluctance among students to pursue science or engineering, and efforts are focused on making STEM education more accessible. IITs can play a major role here by reaching to these students from the marginalized backgrounds.
- Another big challenge where IITs can leverage their strength is by providing platforms in training faculties and enhancing their ability to provide quality education, particularly in colleges outside prestigious institutions like IITs and NITs, coupled with inadequate infrastructure and basic facilities such as labs and research centers.

FRAMEWORK FOR INDUSTRY-ACADEMIA COLLABORATION UNDER CSR

- Speaker mentioned about the heavy machinery industry and highlighted the fact that mining machinery is the biggest and they have a clear understanding when it comes to the laws of CSR, the businesses they are in and their internal compliance and hence all these 3 are aligned when it comes to the framework.
- With Main focus on Education and Skilling, Sandvik Mining & rock technology, as part of their academic collaboration, have built a center in IIT Dhanbad called ' Sandvik Mine Automation Learning Centre' (SMAC). It is a state-of-the-art Digitalisation and Automation learning centre at Indian Institute of Technology (Indian School of Mines), Dhanbad which focuses on futuristic tech and other tech driven aspects that are required in our field of work and this is a part of curriculum starting from 2nd year.
- It is ensuring that students are future ready in this niche sector of industry and they are already well-aware of this industry when they pass out. Contributing towards the society, collaborating and working with the beneficiaries is important

CSR EFFORTS IN SUSTAINABILITY

- Companies today are prioritizing sustainability by aligning initiatives that benefit both the planet and business, fostering collaborations with institutions like IITs. Key CSR focus areas include climate action, water purification, sustainable livelihoods, sustainable packaging, and supply chain efficiency.
- Sustainable packaging could be another critical area for FMCG business, with an emphasis on resource efficiency, particularly reducing plastic use, where partnerships with institutions like IIT Kanpur can play a critical role.
- Addressing climate change is another priority area, with academia partnerships being essential for driving impactful solutions.



PANELLISTS

PANEL DISCUSSION 3

COLLABORATIVE TRANSLATIONAL RESEARCH FOR INDUSTRY ADVANCEMENT



PROF. ANKUSH SHARMA

Associate Professor,
Department of Electrical Engineering
(MODERATOR)



MR. ABHISHEK AGARWAL

Head, Mobility and Energy
HORIBA India



MR. DHEERAJ SAXENA

Director, Global Engineering,
Regal Rexnord



MS. MAYURIKA SINGH

Senior Director, Microsoft India



DR. RAJARAM IYER

Executive Vice President,
Laurus Labs



MR. SONI SARAN SINGH

Founder, Managing Director & CEO,
NMTronics India Pvt Ltd
Director, iNETest Technologies India Pvt. Ltd.



MR. VIJAI BHASKAR S.

Director, Innovation Ecosystem,
Schneider Electric R&D India

COLLABORATIVE TRANSLATIONAL RESEARCH FOR INDUSTRY ADVANCEMENT

The third panel discussion, moderated by Prof. Ankush Sharma (Associate Professor, Department of Electrical Engineering), focused on the theme '**Collaborative Translational Research for Industry Advancement.**' The discussion highlighted the potential of collaborative translational research in driving industry innovation while addressing critical societal challenges. Key insights included the significance of early engagement, the need for well-structured collaboration frameworks, and the importance of building mutual trust between stakeholders. The session concluded with a strong call to action for industry and academia to actively pursue partnerships that align with shared goals and foster impactful innovations.

KEY DISCUSSIONS:

INDUSTRY-ACADEMIA COLLABORATION

- Industry-academia collaboration acts as a catalyst for business growth by enabling industries to integrate cutting-edge academic research into their products. This accelerates the development process, ensuring market-ready solutions that are crucial for staying competitive.
- Such collaborations provide industries with access to a rich talent pool from academia while offering students and researchers opportunities to work on real-world challenges. This mutual engagement fosters skill development, innovation, and practical application of academic expertise.

ACADEMIC PARTNERSHIP IN THE ELECTRONICS SECTOR

- Despite rapid growth in India's electronics sector, a significant mismatch exists between industry needs and the available skillset. To bridge this gap, a CSR initiative can focus on creating industry-ready engineers by leveraging world-class institutes and advanced technology resources.
- As part of the current partnership between NMtronics and IIT Kanpur, a hybrid program aims to equip engineers and diploma holders with essential, industry-relevant skillsets in electronics and mechanical engineering.
- The other area of this partnership could be to address challenges faced by start-ups in converting ideas into real-world products, the initiative establishes a center at IIT Kanpur.

HOW IIT KANPUR CAN CONTRIBUTE TO PHARMACEUTICAL SECTOR

- Speaker started with an example of Laurus Lab's collaboration with IITK that began to address India's lag in leading pharmaceutical innovations, focusing on personalized medicines like gene and cell therapy. Partnerships with IIT Bombay and IIT Kanpur have enabled the development and commercialization of advanced cancer treatments and ongoing gene therapy research.
- Early partnerships faced hurdles due to academia's limited focus on scalability and market readiness. Laurus Lab addressed these gaps by providing expertise in setting commercial and scale-up parameters, ensuring successful product development and market entry.
- Industry-academia collaborations should prioritize creating impactful solutions for unmet needs, moving beyond CSR-focused engagements. While challenges exist, aligning technological innovation with commercial scalability results in transformative, real-world outcomes.

BRIDGING IT INDUSTRY AND ACADEMIA

- Industry-academia partnerships should extend beyond research and CSR, integrating real-world industry challenges into student curriculums. This can include incorporating practical problem-solving into syllabi, fostering early exposure to industry scenarios, and moving beyond traditional internships and hackathons.
- Collaboration efforts must emphasize mutual understanding and intentional discussions that focus on scalability and market readiness. Internships should be structured as continuous, meaningful engagements, providing students with broader exposure and impactful learning experiences.

NEED FOR ECOSYSTEM READINESS AND PARTICIPATION IN INTERNATIONAL FORUMS

- The ecosystem is thriving with numerous prototypes showcasing groundbreaking innovations across various fields, reflecting the immense capabilities and potential of Indian talent.
- A key challenge remains in scaling these prototypes to market-ready products. Industry and academia can collaborate through forums to evaluate product readiness, determine scalability, and explore global opportunities.
- Industry and academia must embrace the long-term process of innovation, leveraging academic talent for groundbreaking solutions while navigating mechanisms like IP exchanges and royalties for mutual benefit.

SUPPORTING INNOVATIONS AND START-UPS

- Industries must take ownership of scaling up innovations, leveraging their expertise to analyze and ensure market readiness for ideas they decide to support.
- Forming collaborations before the research phase fosters active participation, aligning both industry and academia toward a shared understanding and goal.
- Strong partnerships help bridge the gap between research and market deployment, ensuring innovations are efficiently translated into real-world solutions.



AUDIENCE Q&A HIGHLIGHTS

Why did Laurus Lab choose IIT Kanpur for partnership, and why aren't more large industries collaborating with academia?

Dr. Rajaram Iyer: Industries hesitate due to uncertainties in success and confidence issues. Building trust through more case studies and success stories is crucial to encourage partnerships.

Is there an effort from industry to collaborate with academia early on?

Mr. Vijay Bhaskar S: Schneider Electric's collaboration with academia on microgrid development showcases structured engagement from the proof-of-concept stage to scalability.

How do we build trust in research collaborations to benefit people?

Mr. Abhishek Agarwal: Mutual trust and confidence are key. Early partnerships and showcasing ongoing research can foster stronger relationships.

How can we bridge the gap between industry and academia?

Ms. Mayurika Singh: Advocated for practical, co-designed, and agile collaborations with clear ROI considerations for both sides.

What are the key factors for successful industry-academia collaborations?

Mr. Dheeraj Saxena: Connection and visibility are pivotal. Events like IITK Samanvay enhance visibility, leading to better partnerships.



INTERNAL ENAGEMENT

One of the event's highlights was the active participation of over 200 esteemed faculty members, who showcased their expertise, groundbreaking innovations, and contributions across diverse fields. The event underscored IIT Kanpur's research excellence, fostering meaningful interactions between faculty and industry leaders while opening doors for collaborations in research, sponsored projects, and consultancy. Through these engagements, IITK Samanvay effectively amplified the institute's strengths and capabilities, leaving a lasting impression on its corporate participants.

Over 50 faculty-led stalls displayed cutting-edge research, prototypes, and innovations across disciplines, supported by department brochures and interdisciplinary research showcases. Live demonstrations of prototypes, such as MedTech devices, renewable energy solutions, and healthcare innovations, highlighted the real-world applications of faculty research.

Faculty and research groups presented more than 60 posters highlighting recent projects.

Thematic sessions featured presentations on key areas such as the C3i Hub, Start-up Incubation & Innovation Centre, Technopark, DRDO Industry Academia Center, Office of Translational Research, Kotak School of Sustainability, Gangwal School of Medical Sciences & Technology.

More than 50 Faculty participated in one-on-one corporate meetings, focusing on strategic collaborations, including joint research and CSR projects.









