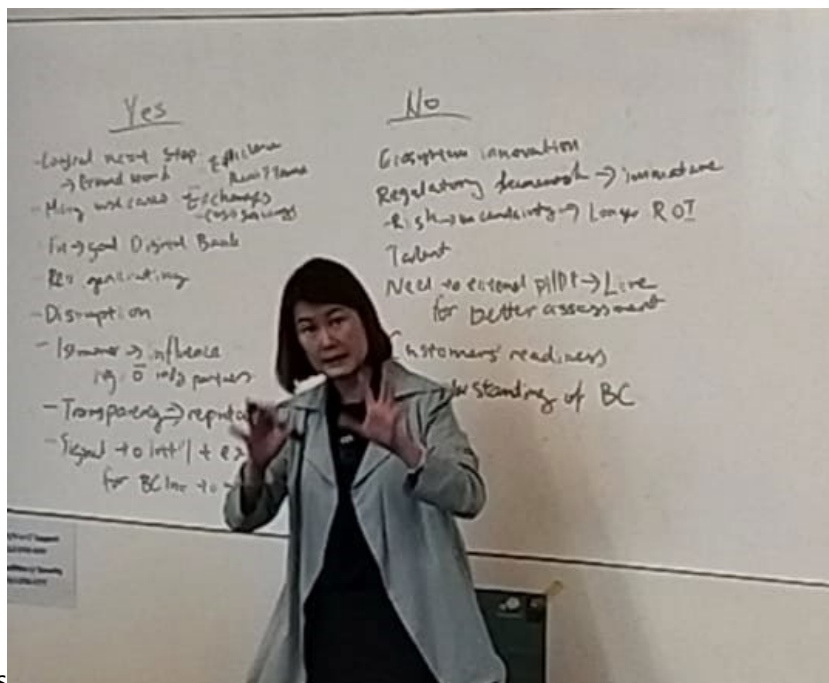


**WEEK 02 DAY 04 REPORT | 2<sup>ND</sup> NOVEMBER 2023**

Course Name:	<b>A Short Course on Blockchain Technologies</b>
Faculty:	<b>Prof Boh Wai Fong</b> Deputy Dean, College of Business (Nanyang Business School) President's Chair in Information Systems Professor, College of Business (Nanyang Business School) - Division of Information Technology & Operations Management Co-Director for NTU Centre in Computational Technologies for Finance (CCTF), College of Engineering Director, Information Management Research Centre (IMARC)

**WEEK 02 DAY 04 SESSION 01****CASE STUDY DISCUSSION ON DEUTSCHE BANK: PURSUING  
BLOCKCHAIN OPPORTUNITIES**

SSS

**Introduction**

Deutsche Bank, a leading global financial institution, has been considering the potential of blockchain technology. Despite the hype and experimental nature of blockchain, it presents numerous opportunities for efficiency, cost savings, and innovation in the banking sector.

## Is Blockchain Worthwhile for Deutsche Bank?

The class discussion brought up several points in favour of Deutsche Bank investing in blockchain technology:

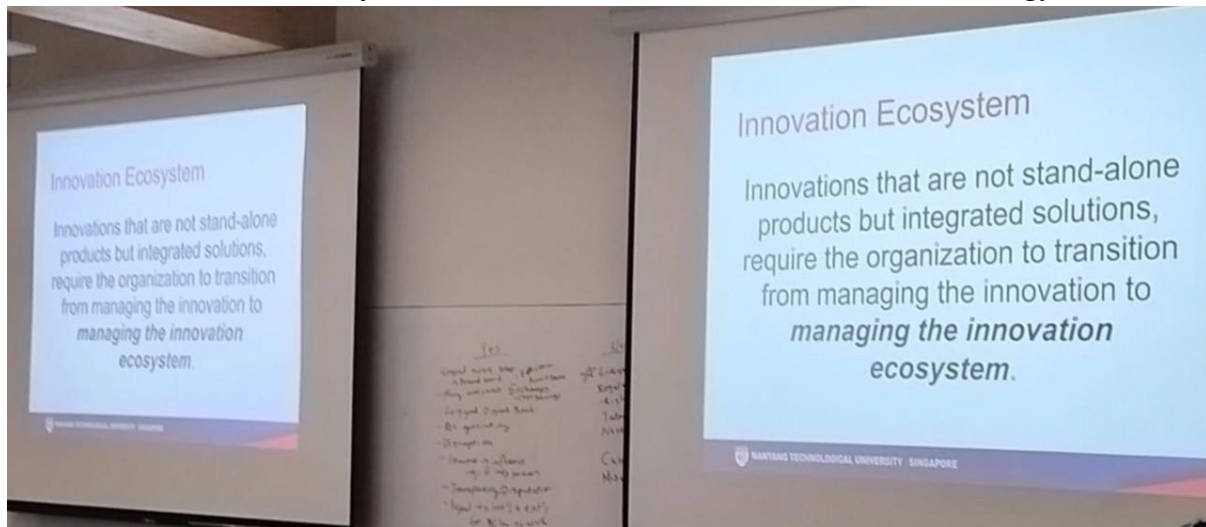
- **Efficiency:** Blockchain could be a logical next step to increase efficiency.
- **Cost Savings:** There are many use cases, such as exchanges, that could lead to significant cost savings.
- **Fit:** As a global digital bank, blockchain could be a good fit for Deutsche Bank.
- **Revenue Generation:** Blockchain could potentially generate additional revenue.
- **Disruption:** Blockchain is a disruptive technology that could give Deutsche Bank a competitive edge.
- **First Mover Advantage:** By being a first mover, Deutsche Bank could influence regulations.
- **Transparency:** Blockchain could increase transparency and build reputation, although this could backfire due to misunderstandings around blockchain.
- **Signalling:** Investing in blockchain could signal to internal and external partners that Deutsche Bank is committed to innovation.

However, there are also points against investing in blockchain:

- **Ecosystem Innovation:** The blockchain ecosystem is still evolving.
- **Regulatory Framework:** The regulatory framework for blockchain is still immature.
- **Risk and Uncertainty:** The return on investment could take a long time due to the uncertain nature of blockchain.
- **Talent:** There could be challenges in acquiring talent with expertise in blockchain.
- **Need for Extended Pilot:** There is a need to extend the pilot for better assessment.
- **Customer Readiness:** Customers may not be ready for blockchain-based services.
- **Misunderstanding:** There is a general misunderstanding around blockchain.

Given these points, **the class concluded that it might not have been worthwhile for Deutsche Bank to invest significantly in blockchain in 2017.** The primary reason was the

**lack of a mature ecosystem, which is crucial for such a technology to thrive.**



## **Innovation Ecosystem**

Innovations that are not stand-alone products but integrated solutions, require the organization to transition from managing the innovation to managing the innovation ecosystem.

However, the situation has changed significantly by 2023. Regulations related to blockchain have started to take shape, providing a clearer legal environment for operations. For instance, countries like Singapore and Switzerland have made significant strides in creating a regulatory framework for blockchain technologies.

Moreover, major players in the financial sector, such as JPMorgan Chase and Goldman Sachs, have begun investing in blockchain, signalling its growing acceptance. Customer readiness has also increased, with a surge in the use of digital wallets and cryptocurrencies.

**Therefore, considering these developments, it would be worthwhile for Deutsche Bank to make a significant investment in blockchain in 2023.**

## **How Did Deutsche Bank Lay the Foundations for Commercializing Blockchain?**

Deutsche Bank managers laid the foundations for commercializing blockchain through:

- **Open-mindedness:** Being open to new technologies and ideas.
- **Securing Funding:** Ensuring they had the necessary resources to invest in blockchain.
- **Establishing a Lab:** Creating a space to experiment with and develop blockchain technology.
- **Educating Staff:** Ensuring staff understand blockchain and can contribute to its development.

- **Accepting New Technologies:** Being willing to embrace blockchain despite its disruptive nature.
- **Being a Pioneer:** Wanting to be a leader in innovation and a first mover in the use of blockchain.

In conclusion, Deutsche Bank's exploration of blockchain opportunities presents a case study in how a major financial institution can navigate the challenges and opportunities presented by a disruptive technology. By carefully considering the pros and cons, and by laying a solid foundation for commercialization, Deutsche Bank is well-positioned to leverage blockchain technology for future success.

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## KEY TAKE AWAYS FROM THE SESSION

**Understanding Blockchain:** The class discussion helped us understand the complexities of blockchain technology, its potential impact on the banking sector, and the challenges it presents.

**Analysing Case Studies:** The Deutsche Bank case study provided us with a real-world example of how a major financial institution is navigating the opportunities and challenges presented by blockchain technology.

**Critical Thinking:** The discussion required us to critically analyze the pros and cons of investing in an emerging technology like blockchain, considering various factors such as regulatory environment, market readiness, and return on investment.

**Future Trends:** The shift in opinion from 2017 to 2023 highlighted the importance of staying updated with current trends and developments in the technology and financial sectors.

**Collaborative Learning:** The class discussion fostered a collaborative learning environment where everyone could contribute their ideas and learn from each other.

**Applying Theory to Practice:** The discussion allowed us to apply theoretical knowledge about blockchain to a practical question - should Deutsche Bank invest in blockchain technology?

These takeaways not only enrich our understanding of blockchain technology but also enhance our analytical and critical thinking skills. They also highlight the importance of staying updated with current trends and being able to apply theoretical knowledge to real-world scenarios.

## CLASS REPORT ON BLOCKCHAIN APPLICATIONS

### Introduction

The class focused on the concept of **Tokenization** and creating **Digital Twins**, as well as the application of blockchain in **Identity & Security**.

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#### TOKENIZATION

Tokenization is a process that creates a digital representation (a digital asset, or token) of something that exists in the real world. It's possible to create digital assets and tokens with smart contract programming. The concept of tokenization is not new - it is the concept behind loyalty programs, or standard medium of exchange in video games and gambling.

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#### DIGITAL TWINS

Creating 'Digital Twins' involves synchronizing the status of a physical, real-world item, which is crucial to decision-making, contractual settlement, and hedging. The real object and/or process is first tokenized, and key values are then synchronized between real and digital forms. This optimizes both processes as well as individual transactions.

For instance, consider a Tesla car. Its physical attributes and status can be tokenized to create a digital twin on the blockchain. This digital twin can then be used for various purposes such as tracking the car's history, verifying its authenticity, and even facilitating transactions such as sales or leases.

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#### IDENTITY & SECURITY

The class also discussed the application of blockchain in identity and security. Blockchain, as a cryptographic and consensus-based technology, can eliminate some of the most egregious security issues within enterprises. The improvements include:

1. Passwords replaced by sophisticated cryptographic private keys.
2. Private key authentication requiring additional credentials (biometric, passphrase) and/or other signatures (multi-sig).
3. All data is encrypted by default.
4. Transactions require confirmation by decentralized consensus.
5. The ledger is nearly immutable so cannot be easily changed.

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## GROUP PRESENTATIONS

Five groups were formed and were told to pick a topic and present it. The topics were the use of Blockchain in Healthcare, Finance, Insurance, Manufacturing, and Energy Management.



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### GROUP 1: MANUFACTURING

The group discussed the application of blockchain in manufacturing, focusing on:

1. Authenticity
2. Maintainability
3. Supply chain management
4. Smart contracts
5. Tokenization & Digital Twin
6. Energy efficiency
7. Warranty & Recall management
8. Waste (Recycle) management (Green Product claims)





## GROUP 2: MANUFACTURING

The group chose the topic of Product Life-cycle Management in the Automobile Sector. They identified the problem of inefficient and fragmented product life-cycle management in the automobile industry and proposed a solution for improving traceability and transparency in recalls and defects in automobiles through Recall Management, Immutable Records, and Enhanced Customer Trust



### GROUP 3: ENERGY MANAGEMENT

The group discussed the application of blockchain in energy management, focusing on:

- Energy Certificate Trading Tracking (e.g., Carbon Credits)
- Blockchain Applications in Energy Trading
- Consumer Benefits: Choice of source, Tracking green source, Avail Carbon credits, Better Demand Response
- Supplier Benefit: Reduced losses, Reduced expenses, Transparency, Better Supply management, P2P Energy trading





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## GROUP 4: INSURANCE

The group discussed the application of blockchain in the insurance sector, focusing on:

- Smart Contracts
- Fraud Detection and Prevention
- Data Sharing and Verification
- Claims Processing
- Regulatory Compliance
- Parametric Insurance
- Customer Identity Verification
- Reinsurance and Risk Management
- Policy Management and Administration



## GROUP 5: FINANCE

The group discussed the application of blockchain in finance, focusing on:

- Usage of Smart Contracts to automate various processes, such as settlement & clearing trades in Share Market
- Reduction of settlement time to instantaneous instead of T+1 day
- Improvement of Record Keeping
- Tokenization of assets - breaking them into smaller, more tradable units
- Cross-Border Transactions: International investments, SWIFT system - Settlement days and high fees
- Regulatory compliance & help in reporting and crediting

The solution proposed by the group involved the use of smart contracts with pre-established rules, improved KYC, better regulatory compliance, and facilitation of Anti-Money Laundering / Combating Finance for Terrorism.

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## KEY TAKEAWAYS

The class provided a comprehensive understanding of the application of blockchain technology across various sectors. The presentations highlighted the potential of blockchain in optimizing processes, enhancing transparency, and improving efficiency. The insights gained from these discussions will be instrumental in further exploring and implementing blockchain solutions in these domains.

The key takeaways from the session include the versatility of blockchain applications across different sectors, the importance of tokenization and digital twins in representing real-world entities on the blockchain, and the potential of blockchain to enhance transparency, improve efficiency, and facilitate secure transactions.

## CERTIFICATE PRESENTATION

From October 23rd to November 3rd, 2023, we embarked on an enriching journey through the International Immersion Programme. This programme offered us the opportunity to delve into two pivotal areas of technology: Blockchain Technologies and Cybersecurity.

The Blockchain Technologies course demystified the complexities of blockchain and distributed ledger technologies. We explored its transformative potential across various industries, moving beyond its well-known application in cryptocurrencies.

In the Cybersecurity course, we focused on Cyber-Physical Systems & Hardware Security. We learned about the inherent vulnerabilities in hardware systems, the potential threats they pose, and the strategies to mitigate these risks.

The culmination of this programme was the certification presentation. This event was not just a formal recognition of our successful completion of these courses, but also a celebration of the knowledge and skills we acquired. These experiences have broadened our horizons, and we are eager to apply our newfound knowledge in our future endeavours.











## REPORT ON CONVERGENCE 2023



### Introduction

Convergence 2023, a part of the International Immersion Programme, was a networking session and panel discussion organized by Jio Institute. The event took place on November 2nd, 2023, in Singapore. The theme of the event was “Converging Realms: AI, Marketing and Sports Management”. The event aimed to provide a platform for knowledge exchange and collaboration between industry professionals and academia, as well as to inspire the next generation of leaders and entrepreneurs.

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### KEY PARTICIPANTS

The event was attended by a diverse group of participants from various sectors and backgrounds. Some of the confirmed participants included Prof Adrian Kee from NIE, NTU, Michael Ranasinghe from DBS Institutional Banking Group, Dr Navin Rajagobal from SMU, and Neil Parekh, a Member of Parliament in Singapore.

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### KEY OBJECTIVES

The event had four key objectives:

1. Gain a deeper knowledge and understanding of emerging trends and opportunities in key industry segments.

2. Provide a platform for exceptional industry leaders to share their inspiring journey, which can inspire the next generation of leaders.
3. Identify and engage with stakeholders for several career enhancement opportunities.
4. Foster a network and collaboration between industry and academia.

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## KEY FOCUS AREAS

The event focused on five key areas:

1. Artificial Intelligence and Data Science
2. Sports Management
3. Digital Media and Marketing Communications
4. New-age Tech Start-ups
5. Convergence of Realms



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#### OPENING ADDRESS BY DR. PALAK SHETH



Dr. Palak Sheth, Project Director of Jio Institute, opened the event with an address that outlined the vision of Jio Institute. He emphasized the institute's commitment to being an exemplary Indian academic institution with international repute. He spoke about the institute's aim to build a vibrant ecosystem for research, innovation, and entrepreneurship. He also highlighted the institute's mission to prepare the next generation of leaders and entrepreneurs through holistic development. Dr. Sheth stressed the institute's goal to significantly contribute to the advancement of the Indian society and to solve India's problems quickly. He concluded his address by emphasizing the importance of providing a lifelong learning experience.

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#### WELCOME ADDRESS BY DR. DIPAK JAIN



Dr. Dipak Jain, Vice-Chancellor of Jio Institute, welcomed the participants and discussed the importance of understanding the global landscape alongside academic learning. He mentioned how the International Immersion Programme and Convergence 2023 would aid in this learning process. He also highlighted how Convergence 2023 would serve as a great platform for learning and networking.



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## INAUGURAL ADDRESS BY MR. NEIL PAREKH



Mr. Neil Parekh, a Nominated Member of Parliament in Singapore and CEO of Pegasus Asia Partner at Tikehau Capital, Tikehau Investment Management, gave the inaugural address. He discussed the importance of India as a global partner, particularly in Southeast Asia. He touched upon global issues such as the Israel-Hamas conflict and the Russia-Ukraine war, emphasizing the need for common sense to prevail and the potential role India could play in these situations.



## PANEL DISCUSSION



The panel discussion was moderated by Ritu Mishra, Marketing & Outreach Manager of Jio Institute, and featured three speakers from different fields: Dr. Yonggang Wen, President's Chair in Computer Science and Engineering at Nanyang Technological University, Singapore, Mr. Bjoern Kroog, Head of Product Management, Advanced Analytical Products, GfK - An NIQ Company, and Mr. Unmish Parthasarathi, Founder & Executive Director, Picture Board Partners.

The panellists shared their insights and experiences on how technology, especially artificial intelligence, and data science, is transforming various industries and domains, such as finance, health, marketing, sports, and media. They also discussed the challenges and opportunities in these fields and gave some advice for aspiring professionals and entrepreneurs.

Some of the key points from the panel discussion are:

- Dr. Yonggang Wen discussed the importance of technology and how it has become integral to various industries. He shared a personal anecdote about learning to code at the age of 31 and how he encourages his son to learn at least one programming language by the age of 5. He also introduced the concept of “AI Wears PRADA”, a framework for implementing AI in businesses. He explained that PRADA stands for Platform, Research, Algorithm, Data, and Application, and that these are the five factors that need to be considered before adopting AI solutions. He also gave some examples of how AI can be used to enhance customer experience, optimize operations, and generate new revenue streams. He mentioned that the ABCDs of the modern world have changed, with A now standing for AI, B for Blockchain, C for Cloud, and D for Data. He also referenced a study indicating that the window for impulse purchases is typically 35-40

seconds. He has been exploring the use of AI to capitalize on this brief period. He noted that TikTok, the largest social media and marketing platform, employs this strategy, as do numerous television ads promoting flash sales or immediate purchases. He also acknowledged that there is a high return rate, as he talked about it with Alibaba's owner, who said it is about 40%, but it is still good for business. He also emphasized the importance of developing computational thinking and being agile in this ever-changing new tech world. He said that 60% of the graduates from MIT have a minor in computer science, regardless of their major.

- Mr. Bjoern Kroog agreed with Dr. Wen's points on the importance of technology and discussed its relevance in his area of work. He said that he works in the field of marketing intelligence, which involves using data and analytics to understand consumer behavior and preferences, and to design effective marketing strategies. He said that AI and data science can help marketers to segment customers, personalize offers, measure outcomes, and optimize campaigns. He also mentioned some of the challenges and limitations of using AI and data science in marketing, such as data quality, privacy, ethics, and human judgment. He also said that he sees two splits in marketing: performance marketing, which focuses on data and metrics, and storytelling marketing, which focuses on emotional content and humour. He said that the latter can be more memorable and impactful, as people may forget the advertisement but remember the story.
- Mr. Unmish Parthasarathi brought a unique perspective to the panel as he discussed the emotional aspect of the sports industry and the potential for fan engagement. He said that sports is an emotion-driven industry, where fans are not just consumers, but also customers and citizens. He said that technology can help to address the inequality in fan engagement, which is the gap between the demand and supply of fan experiences. He introduced the concept of "Fan Engagement 2.0", which is a framework for creating immersive, interactive, and inclusive fan experiences using technology. He said that fan engagement has three dimensions: fan as consumer, fan as customer, and fan as citizen. He said that fan as consumer is about providing content and information, fan as customer is about providing services and products, and fan as citizen is about providing social and environmental impact. He also said that fan engagement has three drivers: relevance, reach, and revenue. He said that relevance is about creating content and services that match the fan's interests and needs, reach is about expanding the fan base and increasing the frequency and duration of engagement, and revenue is about monetizing the fan engagement and creating value for the stakeholders. He also said that he uses three T's to create a successful fan engagement campaign: team, timing, and talent. He said that team is about having a diverse and collaborative group of people, timing is about choosing the right moment and occasion, and talent is about having the right skills and creativity. He gave an example of how California is focusing on flash sale in sport events, such as using 30 seconds during the 100m race in the Olympics, to capture the attention and emotion of the fans. He also mentioned that since sports is an emotion and most of the people who are in sports management are a fan indirectly a consumer but while in business this consumer should be out of the room and should truly professional. They should also always think in two ways: how can they optimize/improve the existing model and how can they disrupt the existing model. Relationship matter and reputation matter both are in a virtue cycle. Build reputation and the relationship and will be in the game for the longer period.

The panellists also discussed the career prospects and future trends in AI, marketing, and sports management. They emphasized the importance of curiosity, computational thinking, agility,



and professionalism. They also discussed the importance of optimizing existing models and disrupting them. They advised the participants to keep learning and adapting to the changing world, and to find their passion and purpose. They also encouraged the participants to network and collaborate with each other.



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## CONCLUDING REMARKS



Dr. Dipak Jain, Vice-Chancellor of Jio Institute, concluded the event with a powerful address that underscored the importance of continuous learning and adaptability in today's rapidly evolving world. He shared his personal journey of transitioning from the field of mathematics to management, a shift that was initiated by a student's suggestion and led him to one of the world's leading schools, Kellogg.

During his time at Kellogg, he presented his research on matrices and submatrices to a panel of esteemed professors. Despite initial scepticism about his mathematical approach to management, he defended his perspective, asserting that mathematics is integral to the future of management. This experience taught him the value of standing firm in his convictions while remaining open to feedback.

Dr. Jain also shared an enlightening anecdote about his early teaching experiences. His students, unsatisfied with his teaching style, offered to assist him in improving his methods. They provided him with stories from various business magazines to discuss in class, demonstrating the practical application of theoretical models. This experience reinforced his belief in the value of lifelong learning and the importance of being open to feedback and new ideas.

He expressed his gratitude to the speakers for their insightful and inspiring presentations, acknowledging that he had gained substantial insights from their discourse. He emphasized the significance of curiosity, computational thinking, agility, and professionalism in the fields of AI, marketing, and sports management. He also highlighted the need for optimization and disruption of existing model

In his final remarks, Dr. Jain encouraged the participants to continue their pursuit of knowledge and innovation. He stressed the importance of networking and collaboration, stating that these are key to success in any field. His address served as a reminder that everyone has something to learn and something to teach, and that every interaction is an opportunity for growth and development.

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## NETWORKING SESSION AND DINNER



The event was followed by a networking session and dinner, where the participants had the opportunity to interact with each other and exchange their views and feedback. The networking session and dinner were well-organized and catered, and the participants enjoyed the food and the ambiance. The networking session and dinner also facilitated the formation of new connections and partnerships among the participants and opened new avenues for future collaboration and engagement.

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## CONCLUSION: A SUCCESSFUL CONVERGENCE

Overall, Convergence 2023 was a successful event that provided valuable insights and networking opportunities for the participants. It was a great platform for knowledge exchange and collaboration between industry professionals and academia, and it inspired the next generation of leaders and entrepreneurs. The event also highlighted the importance of staying updated with the latest trends and developments in the industry, and the need for continuous learning and adaptation in the face of a rapidly changing world. The event was a testament to Jio Institute's commitment to fostering a vibrant ecosystem for research, innovation, and entrepreneurship, and to preparing the next generation of leaders and entrepreneurs through holistic development. The event also significantly contributed to the advancement of the Indian society, and it provided a lifelong learning experience for the participants. The success of the event reflected the vision of Jio Institute, and it was a step towards solving India's problems and solving them fast. The event was a great example of how education is all about igniting young minds and enabling them to attain their fullest potential, and how institutions like Jio Institute are strengthening their mission to empower young Indians, and young people from across the globe, to develop solutions for a sustainable and better future for mankind. The event was a great success, and it was a great opportunity for the participants to learn, network, and collaborate. The event was a great success, and it was a great opportunity for the participants to learn, network, and collaborate.