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Blockchain AVENIR

IMI INTERNATIONAL MANAGEMENT INSTITUTE KOLKATA

By Applied Blockchain Centre of IMI-K

Industry Expert Interview

Voruganti Aravind
Global Vice President-Blockchain
Head of Product Polyversity Metaverse & Bharat Blockchain Network

This report encapsulates a detailed conversation of the interviewer with a blockchain technology expert.

Deepak: What sparked your interest in blockchain technology, and how has your journey been so far?

Mr. Aravind: My blockchain journey began with a serendipitous encounter with Bitcoin through an MIT Technology Review article. This introduction to blockchain sparked my curiosity, meshing well with my existing experience in IoT and distributed systems. The decentralized and distributed nature of blockchain, similar yet distinct from IoT, intrigued me. This led me to a decisive turn in my career in 2018 when I chose to delve deeper into the blockchain, pursuing executive education at IIT Hyderabad. My professional shift from IoT to blockchain was marked by a series of projects, including work with a Singapore-based company, emphasizing the versatility and expansive nature of blockchain applications.

Deepak: Could you provide updates on the Polyversity Metaverse project?

Mr. Aravind: *The Polyversity Metaverse Project*, structured in three technical layers, represents a cutting-edge fusion of blockchain with virtual reality. The project has evolved significantly, featuring a robust 49-node network based on Hyperledger PESU. Recent advancements include the development of a wallet now in beta testing, enhancing the functionality and user experience. The Metaverse itself has seen remarkable progress from initially using third-party tools for showcasing the virtual campus, we have now developed our proprietary platform, enabling dynamic and immediate user access. This marks a significant milestone in creating a comprehensive, interactive virtual educational environment.

Deepak: What were the recent developments or emerging trends discussed at the India Blockchain Week 2023 in Dubai?

Mr. Aravind: *India Blockchain Week 2023* was a hotbed for discussing blockchain's evolving landscape. One of the dominant themes was interoperability among various blockchain networks, which is crucial for breaking down silos within the blockchain ecosystem. Security concerns in multi-chain environments were a hot topic, given the rising instances of security breaches Furthermore, the event highlighted regulatory advancements, particularly in asset tokenization, signalling a maturing of the discussions also delved into the evolution of blockchain and the architecture, focusing on the development of Layer 3, or app-based chains, which raised questions about the necessity and functionality of these new layers in the blockchain ecosystem.

Deepak: How can management students utilize blockchain technology in their field?

Mr. Aravind: For management students, blockchain technology offers a unique lens for viewing and solving business challenges. It's not just about understanding the technology but about leveraging it to identify and address inefficiencies in various business processes. For instance, in supply chain management, blockchain can enhance transparency and efficiency, revolutionizing traditional practices. The technology's application in trade finance and operations management can significantly streamline cross-organizational interactions, data, and document reconciliation. Understanding blockchain enables future business leaders to spearhead digital transformation initiatives, blending domain knowledge with technical acumen.

Academicians' Interview

Relevance Of Blockchain in Management Research

Tirthankar Nag
Dean Research and Professor
IMI Kolkata, Editor JOSP

Shruti: How does blockchain technology redefine the traditional roles and functions in management, and what does this mean for future managers?

Dr. Nag: Implementation of blockchain in organizations will lead to more transparency across transactions as these are stored in a decentralized public ledger. Reducing information asymmetry will essentially lead to better accountability and responsibility for managers. We may hope to see more decentralized decision-making and productivity increases across organizations.

Shruti: How can blockchain technology provide a strategic advantage to businesses, and what should management students learn about leveraging this technology for competitive gain?

Dr. Nag: Blockchain has many benefits to offer towards gaining strategic advantage. Before directly delving into it, blockchain leads to transparent and secure data management, which has - multiple benefits for better productivity, streamlined processes, and distributed decision rights, all of which are expected to translate to lower costs. Along with lower costs, better processes,

pinpointed responsibility, and disaggregated decision rights without compromising on responsibility and security are expected to lead to higher value.

Shruti: How should businesses incorporate blockchain technology into their long-term strategic planning, and what role do management students play in this process?

Dr. Nag: Blockchain has the potential to transform how industries operate. Being a new and developing technology, this brings both students and experienced professionals on the same level of platform with huge potential in the job market for fast learners. With several business applications emerging, this is also a potent area for entrepreneurship. Students should make the most of their exposure to and access to blockchain events, learning opportunities, and practice-oriented interfaces.

Shruti: What are the implications of blockchain technology for global business strategies, especially in terms of cross-border transactions?

Dr. Nag: Blockchain technology is expected to influence global transactions in payments. With an almost instant movement of digitized assets, it would be easy to move funds quickly at a fraction of the cost. This would benefit businesses and individuals alike. Banking and e-commerce are expected to benefit most from these transactions. Other diverse areas include land registration, etc.

Shruti: How does blockchain technology optimize or transform the value chain in different business sectors?

Dr. Nag: The primary and secondary value chain activity elements work in tandem with each other to provide the ultimate value to the customer. Blockchain helps in unifying and linking these value chain elements through seamless, transparent, and trusted transactions, thereby resulting in value chain efficiencies, improved processes, reduced costs, and better forward and backward linkages from suppliers to customers.

Academicians' Viewpoint

Blockchain Applications in Management

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Blockchain technology, initially associated with Bitcoin, has undergone substantial growth in the last five years, extending its applications beyond cryptocurrency transactions. A Statista report indicates the global blockchain technology market is poised to exceed USD 39 billion by 2025. This growth is attributed to blockchain's capacity to establish transparent, trustworthy platforms for digital transactions, eliminating unnecessary intermediaries. Acknowledged as a foundational technology, blockchain has prompted increased research attention, revealing two significant gaps in existing literature. Prior research predominantly focuses on blockchain in financial transactions and cryptocurrency, limiting our understanding of its broader applications. This gap necessitates an expansion of the research scope to incorporate the manifold ways blockchain contributes to management and other domains. Additionally, there is a lack of a holistic perspective in studying specific contexts of blockchain applications. Existing systematic literature reviews have either explored cross-sectoral applicability or evaluated specific blockchain platforms for particular sectors, leaving a gap in understanding emergent research themes, focal application areas, and potential avenues for future blockchain technology applications.

The study focuses on blockchain applications in business management across diverse sectors. Articles from reputable journals, covering domains like economics, accounting, finance, decision sciences, social sciences, energy management, and environmental science, were curated for analysis.

Key Findings:

1. Blockchain technology has gained recognition for transforming and innovating existing business models, particularly in finance and supply chain management.

2. Despite increasing interest, research on blockchain in management is fragmented, with a focus on specific sectors, leaving gaps in conceptual evolution, especially in areas like luxury goods and counterfeit product management.

3. Bibliometric analyses reveal four major research themes: strategy and regulation, enablement and implication, multi-domain deployment, and inefficiencies of Bitcoin.

4. The study suggests future research directions, emphasizing the need for methodological advancement and theoretical grounding in the evolving field of blockchain in management.

Note - An important portion from the main article "A Bibliometric Analysis and Literature Review" has been taken for this newsletter based on permission from the author.

Industry Expert Column

Re - Evaluating the Audit Processes using Blockchain.

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In the realm of emerging technologies, blockchain has taken center stage, offering innovative solutions to various industries., and understanding its complexities from a layman's perspective. We will focus on the application of blockchain in audit processes, unraveling its potential impact on efficiency and transparency.

Blockchain operates by enabling the secure transfer of virtual digital currency between parties. In the case of cryptocurrency, such as Bitcoin, transactions undergo validation and authentication. The technology, however, extends beyond monetary transactions to encompass databases, contracts, and more. Two primary classifications of blockchain networks exist permission and permissionless, each dictating the accessibility of participants.

One significant aspect of blockchain is the introduction of smart contracts, which automate tasks on the network, reducing operational errors and expediting processes. These contracts find application in scenarios like Bharat Blockchain Network setting up a smart contract for a business transaction. In the context of audit processes, blockchain offers a transformative approach. Traditional audits often involve time-consuming tasks such as

reconciliations and manual data extraction. Blockchain provides auditors with real-time access to data through read-only nodes on the network, eliminating labour-intensive preparation activities. The positive impacts of blockchain in audits include cost-effectiveness, continuous real-time assessment, prevention of duplicate transactions, and transparency. However, challenges accompany the integration of blockchain into audit processes. Issues such as the irreversible nature of transactions, lack of reporting authority, and the impossibility of account recovery in case of lost private keys pose an issue for the auditors. In conclusion, the adoption of blockchain technology in audit processes brings both opportunities and challenges. The efficiency gains, cost-effectiveness, and real-time assessment offered by blockchain can revolutionize traditional audit methodologies. As blockchain continues to shape the landscape of audit practices, the need for agile and knowledgeable auditors becomes increasingly paramount. The journey towards blockchain integration may be complex, but its potential to enhance the trust and efficiency of global audit firms is undeniable.

Blockchain Technology Article

Kamlesh Nagware
Co-Founder FSV,
Blockchain Influencer
TEDx Speaker
Co-Chair Hyperledger

In the ever-evolving landscape of digital identity, governments worldwide are increasingly adopting the concept of "digital identity" to enhance trust in both online and offline services. The issuance of digital identity credentials, encompassing personal information such as legal names, dates of birth, and citizenship details, presents a unique opportunity for governments to foster a resilient and privacy-conscious digital ecosystem. Trust, a multifaceted concept that requires collaboration between governments, technology experts, civil society, and citizens to address both technical and societal aspects.

Legislations like the General Data Protection Regulation in the European Union and Brazil, the Data Protection Authority in the UK, the Central Consumer Protection Authority in California and recently approved DPDP in India is reshaping the digital identity landscape by focusing on the protection of personal identifiable information (PII). The enactment of such laws adds complexity of digital trust, requiring organizations to uphold trust while complying with stringent privacy regulations.

The Digital Personal Data Protection (DPDP) India Bill 2023 is a significant development in this context. It aims to regulate the processing of digital personal data, recognizing individuals' rights to protect their data while acknowledging the need for lawful processing. Compliance with this bill is crucial, and Identity Management (IDM) solutions and blockchain-based verification is seen as an essential tool to achieve this.

Decentralized Identity (DID) and self-sovereign identity (SSI) are concepts that empower individuals with more control over their digital identities. DID utilizes technologies to reduce reliance on centralized identity providers, offering increased security, privacy, and user control in online interactions. SSI, a subset of decentralized identity, focuses on privacy preservation and user-centricity through verifiable credentials, giving individuals control over their personally identifiable information.

The implementation of blockchain-based Decentralized Identity, particularly through Self-Sovereign Identity (SSI), addresses key aspects crucial for enabling the Digital Personal Data Protection (DPDP) Bill in India. Various mechanisms contribute to the effectiveness of this approach. Firstly, employing irreversible encryption or hashing ensures that data is pseudonymized, making it unintelligible and unlinkable to individuals. Smart contracts play a vital role in fine-grained access control, allowing individuals to manage consent to specific nodes for accessing temporal fragments of data. The concept of Self-Sovereign Identity (SSI) further enhances privacy and user-centricity by enabling users to present verifiable credentials instead of that it is revealing granular personal data. Additionally, the use of Zero-Knowledge Proofs (ZKPs) ensures consensus generation without exchanging specific data during blockchain transactions, maintaining user privacy. This approach enhances data privacy and control, allowing users to selectively share information, and approve or deny data access requests through explicit and granular consent management.

Emphasizing data minimization aligns with the DPDP's principle of collecting only the necessary information. The use of blockchain technology guarantees security and tamper-resistant records, enhancing data integrity, while features like auditing and accountability, including audit trails and transparency, support regulatory monitoring. Furthermore, SSI/DID systems reduce dependence on centralized authorities, aligning with the DPDP's objective of decentralizing data control. Collectively, these elements make blockchain-based Decentralized Identity an ideal and comprehensive approach for effectively implementing the DPDP Bill in India.

In conclusion, blockchain-based Decentralized Identity, particularly Self-Sovereign Identity, presents an ideal approach for enabling the Digital Personal Data Protection Bill in India. It addresses critical aspects of data protection, privacy, and security, aligning with the bill's objectives, and fostering a trustworthy digital identity landscape. This approach enhances user control, reduces privacy concerns, and contributes to a more secure and decentralized digital ecosystem.

Articles From Students

Unleashing Potential: The Impact of Blockchain

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Blockchain technology has become a pivotal force in reshaping the business landscape, challenging conventional norms, and fostering innovation across industries. Its decentralized and transparent nature, coupled with cryptographic security, has propelled a paradigm shift in how transactions are conducted, and trust is established.

Blockchain's fundamental features, including decentralization, security, transparency, immutability, and smart contracts, collectively redefine operational frameworks in various sectors. In finance, the rise of cryptocurrencies exemplifies blockchain's impact, prompting financial institutions to explore cost-effective and expeditious cross-border transactions.

Supply chain management leverages blockchain's transparent ledger, diminishing fraud, and optimizing logistics. In healthcare, blockchain enhances data security and streamlines processes while prioritizing patient privacy. The decentralized finance

(DeFi) movement pioneer's alternatives for lending, borrowing, and trading, bypassing traditional intermediaries.

In conclusion, blockchain technology stands as a transformative force with broad-reaching implications for diverse sectors. Embracing its decentralized, secure, and transparent attributes opens avenues for innovation, collaboration, and sustainable growth in the ever-evolving business landscape. As industries adapt to embrace blockchain, the potential for streamlining the processes, heightened security, and unprecedented opportunities become increasingly evident, shaping a dynamic and promising era of technological evolution.

Embracing the Revolution: My Perspective on Blockchain Technology

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Ex Student Ambassador BBN
Chapter IMI- K

In the rapidly evolving landscape of technology, one innovation that has left an indelible mark on various industries is blockchain technology. My perspective on blockchain is one filled with awe and appreciation for its transformative potential. Beyond the hype of cryptocurrencies, blockchain has become a catalyst for positive change, impacting lives and reshaping the way we perceive security in the digital realm.

The influence of blockchain on everyday lives cannot be overstated. Its decentralized nature ensures transparency and trust, diminishing the need for intermediaries in transactions. This not only expedites processes but also minimizes the risk of fraud. The financial sector has witnessed a revolution with the advent of blockchain, making cross-border transactions faster, cost-effective, and more secure.

Looking ahead, the future of blockchain in India appears promising. As the government embraces digitalization, blockchain could play a pivotal role in ensuring the integrity of data and streamlining administrative processes. The potential applications are vast, from improving land registries to enhancing the efficiency of public services.

In conclusion, my views on blockchain technology are rooted in its ability to revolutionize the status quo. It has already left an indelible mark on lives by enhancing security and transparency. As we navigate the future, embracing blockchain in India holds the promise of fostering innovation, bolstering security, and ushering in a new era of digital transformation. The journey has just begun, and the potential for positive change is boundless.

Signing of MoU with IDS to set-up Applied Blockchain Centre at IMI-K

On December 15, 2023, IMI Kolkata, in partnership with Information Data Systems (IDS), signed the Memorandum of Understanding for a collaborative initiative towards enhancing a blockchain-based ecosystem. A dedicated, formal Blockchain center named "Applied Blockchain Centre" is set up. This agreement also aims to facilitate IMI-Kolkata to host blockchain-based startup conclaves and provide mentorship for New Venture Developments. This MOU outlines objectives like advising students on the development of new ventures focused on Blockchain-based solutions, organizing and conducting Blockchain-related programs along with faculty and executive visits at IMI-Kolkata by collaborating on joint research projects that contribute to the advancement of Blockchain knowledge and applications. Students voluntarily can register and pursue advanced global certifications from IDS along with complimentary access to its vibrant community. Students shall be eligible to avail paid internship opportunities as well. IDS, in its future initiative, will also guide IMI-Kolkata in establishing a cutting-edge Blockchain Lab facility, empowering internal faculties with consulting projects and paid training. It will serve as a resource for budding entrepreneurs, inviting them for Blockchain-based consulting support.

Recent Activities in Blockchain

- Quant launches code-free automation tool for blockchain: Simplifying smart contract development.
- Researchers propose Web 3.0 streaming architecture and marketplace: Leveraging blockchain for decentralized streaming services.
- IDC estimates $19 billion in global spending on blockchain solutions in 2024: Continued growth and investment in the technology.
- Ethereum co-founder warns about merging AI and blockchain: Highlighting potential risks and uncertainties.

Companies that are Hiring for Blockchain-Related Jobs :

- Blockchain Developer - Tech Mahindra
- Cryptocurrency Developer- Coinbase and Ripple
- Blockchain Security Engineer- Trail of Bits
- Blockchain Consultant- Deloitte, PwC, IBM
- Blockchain Business Analyst- IBM, Accenture, Deloitte
- Blockchain Architect- IBM, R3 Chain, Hyperledger

Meet the Team:

- Dr. Mohua Banerjee (Director, IMI Kolkata)
- Dr. Arghya Ray (Chair, BBN IMI-K) (EIC, Blockchain Avenir)
- Ritayan Jana - Coordinator
- Vidushi Poddar - Co-coordinator
- Deepak Kumar Pradhan - Newsletter Head
- Devang Bheda - Social Media Head
- Shruti Raj - Creative Head
- Harshita Dugar – Social Media & PR Head
- Vipul Jain - Student Relations Head