Contemporary Management Practices

NAVIGATING THE FUTURE OF FINANCE

MARKET TRENDS AND TURBULENCE

Edited by
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Vijay Prakash Gupta, and Dipak Saha

Financial Markets, Technology and Innovation in Financial Services, Sustainable Finance and Investment, Global Financial Systems and Crises, Risk Management and Financial Resilience.

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Biography

Ranjan Chaudhuri is Director and Full Professor of Digital Marketing Business at EMLV Business School, Paris. With over 25 years of industry, teaching, and research experience, he holds an MBA in Marketing and a PhD in Management Sciences. A Fulbright Fellow at the University of Alabama in Huntsville, he previously taught at IIM Ranchi, IIM Mumbai, IIT Kharagpur, and IIT Delhi. He has worked academically across multiple countries, earned notable honors, and published over 170 works in marketing.

Vijay Prakash Gupta, Associate Professor and Area Co-Chair of Economics at GLA University, Mathura, has two decades of academic and research experience. He holds a PhD in Management, an MBA, an MA in Economics, and the UGC NET qualification. He has edited around 13 books with leading publishers, all indexed in major databases, and reviews for international journals. Dr. Gupta has authored over 30 papers in reputed national and international journals, including ABDC, Scopus, Web of Science, and UGC CARE.

Navita Nathani, Professor and Director at Amity Business School, Gwalior, has nearly twenty years of expertise in teaching, training, and academic administration. Specializing in core finance, cognitive finance, and entrepreneurship, she serves on academic and editorial boards of reputed institutions. She has produced 82 research works, including papers, case studies, and book chapters. Dr. Nathani also mentors start-ups through Smart City Incubation Centre and MSME, conducts Management Development Programs, and supervises PhD scholars, with thirteen having completed research under her guidance.

Dipak Saha, Professor of Marketing at the Institute of Engineering and Management, Kolkata, brings over 20 years of corporate and academic experience. Holding a PhD from the University of North Bengal, he has published widely in respected journals. He co-authored the textbook *Marketing: A Conceptual Framework* and consults in Critical Thinking @ Workplace and Strategic Management Decisions. Recipient of the Academic Excellence Award 2020, his primary interests include marketing analytics, consumer behaviour, and brand management, supported by extensive teaching and training contributions.

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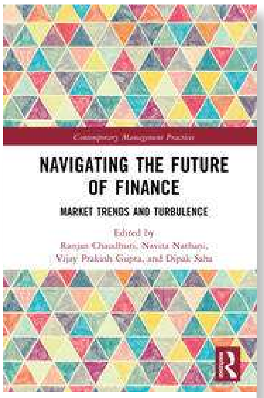

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A Comprehensive Study of the Correlation between Blockchain Dynamics and Cybersecurity: Complementing Digital Trust and Security for Cryptocurrency Transactions

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***Abstract*—In this paper, a critical review has been conducted to address the knowledge gap behind implementing the traditional data tracking system instead of using cloud-based technologies. The focus is on blockchain technology, which has emerged as a highly promising cloud-based technology with high potential. The fundamentals and superiority over traditional systems of this technology are documented here. The two key challenges that are hindering the adoption of such technology in developing countries in recent times are data piracy and different cyber-attacks which can be overcome using cybersecurity remedies. Additionally, a framework was studied and presented consisting of one hashing algorithm (SHA-256) and an encryption algorithm (RSA), implemented to store the transaction details of bitcoin which could help to secure data and safeguard it from any kind of piracy or unknown decryption.**

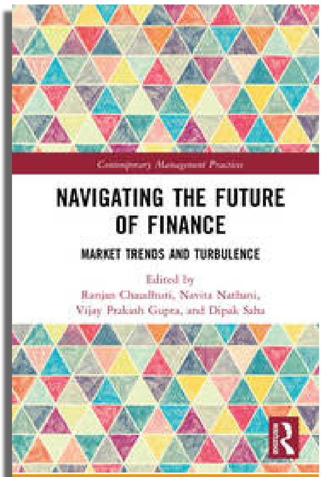
Keywords—Cryptocurrency, SHA-256, RSA, Merkle tree, Hash

I. INTRODUCTION

The most promising data-storing technique in recent times is cloud-based technology. In this system, data is stored in the cloud and encrypted using various algorithms, preventing unauthorized access and intervention [1]. Blockchain, a leading cloud-based technology, is an organized database of entrenched records called blocks which are encrypted using cryptography. These blocks form a chain as a linked list where each block is a record book containing details of tasks in enciphered form which can be data, assets, or transaction history of any cryptocurrency along with the hashing address of the previous block [2]. However, data piracy is one of the most significant problems of this system arising across the globe in recent times. It revolves around unauthorized interventions on data leading to copying, manipulation, monitoring, and distribution of data or a piece of digital information without proper access to the owner [3]. Cybersecurity is one troubleshooting way to secure the interconnected networks among these blocks and encrypted data from unknown and unauthorized access. It comprises scientific methods and layers of encryption to maintain the uniqueness and integrity of data [4].

In this theoretical study, Aguilar et al. critically analyzed the common threats specific to blockchain technologies, including 51% device attacks and various smart contract vulnerabilities. They emphasized various blockchain security schemes encompassing different encryption algorithms and other service protocols [5]. Rathore et al. designed a novel framework encompassing blockchain technology with deep learning algorithms for real-time identification of threats, including data piracy, and proposed a framework to enhance extensive security in Industrial Cyber-Physical Systems (ICPS) [6]. Zhuang et al. critically surveyed the cybersecurity problems faced in smart grid systems, including duplication and unknown tampering of data leading to data manipulation, and hence included blockchain technology to ensure proper and secure data management [7]. Patil et al. critically compared the performance metrics including encoding and decoding speed, size of keys, and security level of various encrypting algorithms like Data Encryption Standard (DES), Advanced Encryption Standard (AES), and Rivest-Shamir-Adleman (RSA) ensuring cybersecurity [8]. Kumar et al. integrated blockchain technology with the Interplanetary File System (IPFS) to create a novel framework for proper data storage ensuring proper authorization and securing the interconnected network [9]. Porkodi et al. formulated a conceptual framework that united the Internet of Things (IoT) and the blockchain technology to ensure reliability and centralized control over secured data [10]. N. Gupta examined specific attack vectors causing severe threats to data in blockchain technology such as double-spending and Sybil attacks and formulated different consensus algorithms like Proof of Work (PoW) and Proof of Stake (PoS) [11]. Sharma et al. critically analyzed the overview of the fundamental concepts of cryptocurrencies and the importance of blockchain technology in ensuring transparency and security [12].

In this paper, blockchain technology and cybersecurity were deeply reviewed based on their importance, features with probable attacks, and remedies. Also, a parallelism between blockchain technology and cybersecurity was critically analyzed with the help of two cutting-edge algorithms viz, (1) Secure Hash Algorithm-2 (SHA-256) to encrypt the stored data and (2) encryption algorithm (RSA) to generate a pair of private and public keys.



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Edited By Ranjan Chaudhuri, Navita Nathani, Vijay Prakash Gupta, Dipak Saha

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Description

Navigating the Future of Finance takes readers on a comprehensive journey through the converging forces of economic disruption, technological advancement, and evolving market dynamics that are fundamentally transforming today's financial ecosystem.

Offering a forward-thinking perspective, the book explores how unexpected global events—like pandemics and geopolitical crises—are influencing financial systems, and how emerging technologies, such as artificial intelligence, blockchain, and digital currencies, are disrupting traditional financial models. It explores a fresh perspective on how financial institutions, investors, and policymakers can adapt and thrive in an environment where change is the only constant. The book also emphasizes the importance of sustainability, demonstrating how responsible investment practices and ESG considerations are becoming central to the future of finance.

Part of the Contemporary Management Practices series, this book is for anyone interested in understanding the complex, fast-changing world of finance—whether a student, professional, or simply someone curious about how technological and economic forces are shaping the financial systems that impact us all. It will be of interest to those working with finance, economics, business, Sustainable Finance or ESG Investing, Financial Technology (Fintech), Advanced Financial Markets, Technology and Innovation in Financial Services, Sustainable Finance and Investment, Global Financial Systems and Crises, Risk Management and Financial Resilience.

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