



NAVIGATING THE METAVERSE BANKING LANDSCAPE - A REVIEW OF LITERATURE.

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Abstract: The banking sector has undergone remarkable transformations over the decades, enhancing its reliability and accessibility. Innovations such as ATM services, internet banking, and mobile applications have significantly altered the landscape, providing customers with unprecedented convenience. However, the latest frontier in banking evolution lies within the Metaverse, where virtual reality (VR) technologies are revolutionizing the way financial services are accessed and delivered.

This study aims to delve into the challenges, opportunities, and transformative potential of Metaverse banking through an extensive literature review. By analyzing international and national research papers published in reputable journals, we seek to provide a comprehensive understanding of this emerging phenomenon. The research employs a descriptive analysis approach to delineate the current state of Metaverse banking and identify avenues for future exploration.

The findings of this study shed light on the scope of Metaverse banking, elucidating its implications for both financial institutions and consumers. By synthesizing existing knowledge, we aim to offer insights into the intricacies of this nascent field and stimulate further research endeavors. As the Metaverse continues to shape the digital landscape, understanding its implications for banking is imperative for industry stakeholders and researchers alike.

Introduction

The rapid advancements in technology have fundamentally transformed the banking industry, ushering in a new era of digital banking that extends far beyond the traditional brick-and-mortar institutions. The digitalization of banking services has not only streamlined operations and improved customer experiences but has also paved the way for the emergence of innovative financial solutions, particularly in the realm of the metaverse. The COVID-19 pandemic has been a significant catalyst in accelerating this digital transformation, as the need for remote and contactless banking services has become increasingly crucial. (Andrews, 2021) Online banking has become the primary touchpoint for customers, with digital-born fintech startups disrupting the traditional banking landscape and challenging the status quo. (Thota & Andrews, 2021) The integration of cutting-edge technologies, such as artificial intelligence, biometrics, and robotics, has enabled banks to offer more personalized and efficient services, catering to the

evolving needs and preferences of their customers (Coetzee, 2018)

The ongoing fintech revolution has had profound implications on the banking industry, redefining the way financial institutions operate, the solutions they provide, and the nature of their interactions with clients. (Coetzee, 2018) The emergence of blockchain, cryptocurrency, and decentralized finance (DeFi) has further expanded the boundaries of traditional banking, opening new avenues for innovation and exploration in the metaverse. (LendTech Revolution: Rethinking Business Loans in the Digital Age, 2024)

Banking in the Metaverse represents a paradigm shift towards immersive digital experiences, where financial services exist in a networked, three-dimensional virtual environment echoing real-world functionalities. In this space, leveraging technologies such as Blockchain and Artificial Intelligence, banks are poised to offer enhanced customer services like virtual branches, advanced security protocols through smart contracts, and seamless cross-border transactions (M.Roffi hasta angara, 2022). Digital twins facilitate a mirrored

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representation of banking assets and activities, enabling greater efficiency and a deeper understanding of customer behaviors. As traditional banking intersects with these virtual platforms, the result is an innovative financial ecosystem that transcends physical barriers, offers personalized banking experiences, and potentially lowers operational costs. Financial technology in the Metaverse also has the potential to democratize access to financial services and foster global financial inclusivity by removing geographical constraints, setting the stage for a future where banking is more accessible, efficient, and integrated into the fabric of our digital lives (Mohamed & Faisal, 2024) (Vakiti & L, 2023). (Mohamed, 2023)

Theoretical Framework

The metaverse is a collective term for immersive, interactive, and persistent 3D virtual environments (7 Essential Ingredients of a Metaverse, 2022). It functions as a network of interconnected digital spaces, often accessed through virtual reality and augmented reality technologies, though not exclusively. Users, represented by avatars, can navigate these spaces, interact with each other, engage in experiences like attending concerts or visiting art galleries, and even participate in economic activities. Blockchain technology often underpins the metaverse's functionality, enabling digital ownership of virtual assets like land, clothing, or art through NFTs (non-fungible tokens) (Chamola et al., 2023). This convergence of technologies aims to create a seamless blend of the physical and digital worlds, fostering new forms of social interaction, entertainment, commerce, and potentially even work. (Elisa Indriasari) Banking in the metaverse represents an emerging frontier where financial services are integrated into virtual environments, offering new opportunities and challenges. As virtual worlds like Decentraland and The Sandbox gain popularity, banks are exploring ways to establish a presence in these digital spaces to engage with tech-savvy customers. In the metaverse, banks can provide immersive experiences, such as virtual branches where customers interact with avatars of financial advisors, and offer services like virtual real estate mortgages or cryptocurrency transactions. This evolution is driven by advancements in blockchain technology, which ensure secure and transparent transactions in these virtual realms (Kshetri, 2021).

Additionally, the metaverse's potential for creating new revenue streams and enhancing customer experience is prompting traditional financial institutions to innovate and adapt. However, this also raises regulatory and security concerns, requiring a balanced approach to harnessing the benefits of this digital transformation (Deloitte, 2022).

Challenges

The transformation of banking in the metaverse represents a significant shift in the financial industry, characterized by the integration of advanced digital technologies and the creation of immersive, user-centric experiences. Banks are leveraging blockchain, virtual reality (VR), and augmented reality (AR) to establish virtual branches and offer innovative services such as digital asset management, virtual real estate financing, and seamless cryptocurrency transactions (Barnes, 2021). This shift is driven by the need to meet the evolving demands of digital-native consumers who seek convenience and engagement in virtual environments (Gupta, 2022). However, this transformation is not without its challenges. Regulatory compliance and cybersecurity are paramount concerns, as the decentralized nature of the metaverse complicates traditional regulatory frameworks and increases the risk of fraud and data breaches (PwC, 2022). Additionally, the interoperability between different virtual worlds and financial systems poses technical challenges that require robust solutions to ensure a seamless user experience. Addressing these issues is crucial for banks to capitalize on the opportunities presented by the metaverse while maintaining trust and security (Accenture, 2023).

Adaptability

The adaptability of banking in the metaverse presents a compelling area of inquiry within the evolving landscape of financial technology. While the metaverse promises immersive experiences and novel financial applications, the successful integration of traditional banking services hinges on addressing key challenges. As highlighted by (Impact of the Metaverse on financial services, 2022), financial institutions must navigate the complexities of digital asset adoption, regulatory frameworks surrounding virtual economies, and ensuring robust security measures to mitigate risks associated with fraud and data breaches in virtual environments.



Furthermore(Why the metaverse needs banks to do more than show up, 2023) emphasizes the need for banks to move beyond mere marketing ploys and develop tangible value propositions within the metaverse that cater to evolving user needs and behaviors. Therefore, successful adaptation necessitates a strategic alignment between technological innovation, regulatory compliance, and a customer-centric approach that fosters trust and delivers tangible benefits within these nascent virtual ecosystems.

Research on Banking in Metaverse (Literature Review)

International Papers

1. The document (Kevin Giang Barrera, 2023) "Marketing in the Metaverse: Conceptual understanding, framework, and research agenda" by Kevin Giang Barrera and Denish Shah explores the growing influence of the metaverse on consumer behavior and marketing strategies. The authors provide a comprehensive definition of the metaverse, moving beyond the narrow view of a single virtual world to encompass a network of interconnected virtual and mixed reality environments. They offer a framework for understanding the metaverse's implications for marketing practice, drawing on a review of existing literature and insights from industry leaders. The authors conclude by proposing a research agenda to guide future academic studies on this evolving digital landscape.

2. The article "Metaverse Banking Service: Are We Ready to Adopt? A Deep Learning-Based Dual-Stage SEM-ANN Analysis" (Luan-Thanh Nguyen, 2023) explores the potential adoption of banking services within the metaverse. **Metaverse Banking Service:** The article defines metaverse banking as the transition from online banking to a metaverse environment. This allows customers to access services and interact with bank representatives virtually through avatars and immersive technologies. The study investigates the factors that influence the adoption of metaverse banking. While it doesn't explicitly name a "UTAUMT" model, it draws upon the Unified Theory of Acceptance and Use of Technology as a framework. The authors use a two-stage analytical approach. First, they employ Structural Equation Modelling to understand the relationships between factors influencing adoption. Second, they utilize an Artificial Neural Network for a

deeper analysis of customer intentions to use metaverse banking. The research focuses on Vietnam as a prime location to study metaverse banking adoption due to the country's emphasis on digital transformation and the increasing global interest in virtual technologies.

In essence, the article investigates the emerging concept of metaverse banking, examines the factors driving its potential adoption, and employs a sophisticated analytical approach to understand customer behaviour in the novel context.

3. The author (Coetzee, 2018) states that South African retail banks acknowledge the significant impact of technology on their operations. They have embraced the technological revolution, making it central to their strategic direction. Specifically, the study highlights that: Banks view technology as essential for achieving strategic goals such as economies of scale, efficiency, cost reduction, innovation, competitiveness, and simplicity. Banks recognize the competitive threat from non-traditional Fintech disruptors and are adapting their strategies accordingly. The study emphasizes the need for banks to prioritize customer-centricity in their digital transformation efforts.

4. "Digital Transformation in Banking: Exploring Value Co-Creation in Online Banking Services in India" explores the impact of online banking on value co-creation between banks and customers in India. The authors utilize a Service-Dominant Logic perspective, emphasizing the customer's role as a co-creator of value. The article highlights the potential of IT to enhance value creation in banking but also acknowledges potential risks and challenges. While the abstract doesn't delve into specific findings, it suggests that the study examines both the positive and negative aspects of online banking adoption in India. (Dhanalakshmi Arumugam Malar a, 2019)Overall, the article promises a nuanced analysis of digital transformation in banking, moving beyond a purely celebratory narrative to consider the complexities and potential downsides. A deeper dive into the full text would reveal the specific risks and challenges identified and offer insights into mitigating them.

5. "Metaverse" (; Madiega, 2022) outlines the following opportunities:

- **New avenues for various activities:** The metaverse could host a range of activities from leisure



and gaming to professional and commercial interactions, even health interventions.

- **Economic growth:** Major tech companies are investing heavily in the metaverse, indicating potential for economic growth and job creation. Existing regulations might need adjustments to address issues like ownership of digital assets, misuse of NFTs, and antitrust concerns. The metaverse's reliance on vast amounts of data raises concerns about user privacy, data security, and potential misuse. The immersive nature of the metaverse could facilitate illegal activities and harmful behaviours, requiring new approaches to law enforcement and user protection. Excessive digital immersion could negatively impact mental and physical health, especially for vulnerable groups like children.

NATIONAL PAPERS

1. "Fintech," or financial technology, (Tandon, 2023) represents a new era in the financial services industry, driven by technological revolutions. One such technological paradigm is the "Metaverse," a term coined by Neal Stephenson in his 1992 novel *Snow Crash*. The Metaverse offers a unique and immersive experience, setting it apart from anything else on the Internet.

The study, maps the existing literature on the new incarnation of financial services, fintech. It conducted a bibliometric analysis using documents extracted from the Scopus database. After excluding incomplete information, a set of 432 documents were analyzed, the analysis included basic performance metrics and science mapping to identify key areas and themes in this domain. The impact analysis highlighted the most influential authors in fintech research. The findings reveal an exponential increase in fintech studies since 2016, with a peak during the COVID-19 pandemic. Key research areas include blockchain, innovation, financial services, fintech, and banking. The studies suggest several key areas for further exploration in the fintech field.

2. Digitization has transformed innovation processes, with some experts predicting it will reshape entire markets. (Begum, 2019) The accounting industry has seen significant growth in digitalization and is expected to expand further. The article explores how technology has brought recent changes, transitioning from traditional, manual methods to advanced, automated systems. The study examines the current state

and developmental trends of digitalization in accounting, the responsibilities for its implementation, and any emerging obstacles. A maturity level model was developed, categorizing companies into defined clusters to reflect the status of digitalization in their accounting systems. Like many other industries, the accounting sector is undergoing changes due to digital technologies. Therefore, this study aims to investigate how digital accounting businesses can establish a general business model to achieve successful digitalization. The study concludes that there is a significant lack of knowledge about digital transformation in accounting and finance among employees in various organizations. Currently, the status quo is at an average level, while future aspirations and expectations are high. The study highlights that technological development is essential for advancing digital accounting and finance nationwide, ultimately helping to transform the country into a hub of digitalization expertise.

3. (Dubey, 2022)The study explores the potential of the Metaverse to revolutionize the banking industry by leveraging various technologies, such as NFTs, blockchain, and smart contracts, to enhance operational efficiency. It examines the practical implementation of the Metaverse in banking and financial services, covering topics from the Metaverse definition to its business implications. The paper identifies numerous business opportunities within customer communication, cross-border transactions, mortgages, digital assets, green loans, and efforts to achieve carbon net-zero. Additionally, it discusses the crucial role of Innovation Leaders in fostering an appreciation for innovation in the rapidly evolving technological landscape. The paper argues that banks must proactively drive Metaverse adoption, support the circular economy, and reduce waste through the implementation of web3.0 technology in the banking sector.

4. (Jaya Lakshmi Vakiti, 2023)The study analyzes 454 papers retrieved from the Web of Science, Scopus, and Dimensions databases, covering the period from 2003 to 2023, to understand the emergence and progression of Fintech in the Metaverse banking sector. The analysis utilized software programs such as Vos Viewer for network visualization and Bibliophagy in R software. The article aims to address various concerns regarding the development of Fintech in the Metaverse banking sector. The findings of this study could help



pinpoint specific differences between traditional banking and Fintech in the Metaverse banking sector. Bank managers may use this information to guide their investment decisions in these various branches of banking. Fintech is expected to have a wide range of applications in the Metaverse, particularly starting in 2023. From 2023 to 2030, the anticipated future of Fintech in the Metaverse includes new regulations that foster innovation, increased adoption by sectors outside financial services, and enhanced collaboration between banks and fintech companies. These advancements could streamline compliance processes, reduce fraud, and facilitate international payments. Additionally, the Metaverse could enable the creation of digital assets representing fiat money or other assets like bonds and commodities. These digital assets can be traded on the Metaverse's decentralized exchange, providing high security and transparency. This transformation would offer significant benefits for both customers and institutions, revolutionizing banking operations.

5. The purpose of the research was to investigate how bankers and clients in rural and semi-urban areas of India perceive green banking. Using the snowball sampling technique, data from 807 clients and 200 representatives of commercial banks were gathered via a standardized questionnaire. Factor analysis and chi-square were used in the investigation. The findings of the chi-square test showed a relationship between the customer's perception of green banks and their level of education. Three major factors—financial and technological advantages, client retention and prestige, and convenience and environmental sustainability—were identified through factor analysis as driving the adoption of green banking. The results show that clients gain more from green banking services than from standard banking. (Sonal devesh, 2024)

CONCLUSION

Decentralized Finance, the Metaverse, and Web 3.0 do not currently pose an immediate threat to commercial banks or the global financial system. While these underlying technologies have the potential to drive significant change, their practical application and implementation face substantial challenges that require paradigm-shifting changes to overcome. Future research could focus on exploring the various frameworks of financial technology related to payments, lending, asset

management, and social trading, as well as the necessary and supporting financial technologies required to conduct Fintech operations within the Metaverse virtual banking space. Additionally, research could investigate the scope of Metaverse banking, examining its potential to redefine customer interactions, regulatory frameworks, security protocols, and the overall user experience in a decentralized virtual environment. However, present research on Metaverse banking is limited by factors such as the nascent stage of the technology, regulatory uncertainties, security concerns, and the need for substantial infrastructure development, which must be addressed to fully realize its potential.

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