



Potential and challenges of implementing the metaverse concept in islamic banking: A literature analysis

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Article Info	ABSTRACT
<p>Article history:</p> <p>Received Sep 5, 2025 Revised Sep 22, 2025 Accepted Sep 30, 2025</p> <p>Keywords:</p> <p>Digital Transformation; Financial Technology; Islamic Banking; Islamic Financial Innovation; Metaverse.</p>	<p>The rapid development of digital technology has given rise to various disruptive innovations, one of which is the metaverse concept. In the context of the financial industry, the metaverse opens new opportunities for providing more interactive, personalized, and efficient services. This article aims to comprehensively analyze the potential and challenges of implementing the metaverse concept in Islamic banking through a literature review of various scientific publications, industry reports, and other relevant sources that discuss the relationship between metaverse technology and Islamic financial principles. In terms of potential, the metaverse offers various strategic opportunities for Islamic banking, including the development of virtual branches that enable direct interaction between customers and bank employees in real time without geographical limitations, increasing financial literacy through virtual experience-based education, and creating a digital halal ecosystem that aligns with Islamic values. Furthermore, the integration of blockchain technology into the metaverse can support transparency, transaction efficiency, and Sharia compliance through the implementation of smart contracts based on Islamic muamalah principles. However, the implementation of the metaverse in Islamic banking also presents complex challenges. This article concludes that the successful implementation of the metaverse concept in Islamic banking relies heavily on cross-sector collaboration between regulators, industry players, academics, and the Islamic scholar community to develop a framework that encourages innovation while maintaining compliance with Islamic principles. The findings of this study are expected to provide theoretical and practical contributions to the development of sustainable digital transformation strategies for Islamic banking in the era of the Fourth Industrial Revolution and the Fifth Industrial Revolution.</p> <p><i>This is an open access article under the CC BY-NC license.</i></p>



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1. INTRODUCTION

In recent years, the development of digital technology has brought significant changes to various sectors, including banking. One of the latest innovations being discussed is the concept of the

metaverse, a virtual space that combines physical and digital realities. Metaverse is a term referring to a virtual space created by the interaction between the physical and digital worlds, where users can interact in a three-dimensional (3D) environment using digital avatars. This concept was first introduced by Neal Stephenson in his 1992 novel "Snow Crash," where he described a virtual world accessible to users through computer devices (Stephenson, 1992). In recent years, technological developments such as augmented reality (AR), virtual reality (VR), and blockchain have accelerated the creation of more complex and interactive metaverses (Dixon, 2021).

Islamic banking, as a financial system based on Islamic Sharia principles, has great potential to utilize the metaverse to improve services and customer interactions. In this context, the metaverse can be used to create a more interactive and personalized banking experience, where customers can interact with the bank through their digital avatars. For example, Islamic banks can hold seminars or workshops on their products and services in a virtual environment, allowing for broader participation without geographical limitations (Khan, 2022). According to a survey conducted by Deloitte, 60% of respondents stated that they are more interested in interacting with financial institutions that offer innovative digital experiences (Deloitte, 2023).

According to a report by McKinsey & Company (2022), the economic value of the metaverse is estimated to reach \$5 trillion by 2030. However, implementing this concept in Islamic banking still faces various challenges. With the growing need for more inclusive and transparent financial services, it is crucial to explore the potential of the metaverse within the context of Islamic banking based on Sharia principles. One key issue that needs to be addressed is the lack of understanding of how the metaverse can be integrated with Sharia principles. According to research by Alhabshi and Bader (2021), many Islamic banks remain stuck in traditional business models and have not fully utilized digital technology. This causes them to miss opportunities to reach a wider customer base, especially the younger generation who are more familiar with technology. Furthermore, another challenge they face is regulations that do not fully support the implementation of new technologies in the Islamic financial sector.

On the other hand, there is currently increasing public interest in technology-based financial services, including in the Islamic context. Data from the Financial Services Authority (OJK) shows that the Islamic fintech industry in Indonesia grew 40% in 2021. This indicates a significant opportunity for Islamic banks to innovate and adopt metaverse technology. However, without a clear understanding and a well-developed strategy, Islamic banks may struggle to compete with conventional financial institutions that are more quickly adapting to technological changes.

The purpose of this study is to analyze the potential and challenges of implementing the metaverse concept in Islamic banking. This research will identify various aspects that need to be considered in implementing metaverse technology, including compliance with Islamic principles, regulatory requirements, and effective marketing strategies. By understanding these potentials and challenges, it is hoped that Islamic banks can formulate appropriate strategies to utilize metaverse technology to improve services and reach a wider customer base.

Furthermore, this research also aims to provide insights for stakeholders in the Islamic banking sector, including regulators, academics, and practitioners, regarding the importance of technological innovation in enhancing the competitiveness of Islamic banks in the digital era. Therefore, this research is expected to serve as a useful reference in developing policies and strategies to optimize the implementation of metaverse in Islamic banking.

2. RESEARCH METHOD

The literature analysis approach used in this study aims to explore and analyze various relevant sources regarding the application of the metaverse concept in Islamic banking. This method allows researchers to identify emerging patterns, trends, and challenges in the existing literature, as well as to understand how new technologies such as the metaverse and blockchain can be integrated into an Islamic banking framework. This demonstrates the importance of a thorough understanding of the metaverse and its implications for Islamic banking. This literature analysis will also include a review of relevant Sharia fatwas (religious edicts) related to the use of new technologies in the financial

sector. For example, the Indonesian Ulema Council (MUI) has issued a fatwa regarding the use of blockchain in financial transactions, which can serve as an important reference for Islamic banks in adopting this technology. Therefore, it is important to identify and analyze literature that discusses solutions and strategies to overcome these challenges.

In this study, the data sources used include various types of literature relevant to the topic of metaverse implementation in Islamic banking. These sources were selected based on specific criteria, namely relevance, credibility, and contribution to understanding the topic under study. Sources drawn from leading academic journals, books written by experts in Islamic banking and technology, and reports from recognized research institutions and consultants, such as the World Bank and the International Monetary Fund (IMF), were prioritized.

The first selection criterion was relevance, where only literature directly addressing metaverse, blockchain, and Islamic banking was included in the analysis. For example, articles discussing the impact of digital technology on the Islamic banking industry or presenting case studies of Islamic banks that have adopted new technologies were the primary focus. This aligns with the Quranic statement in Surah Al-Baqarah, verse 286, which emphasizes the importance of knowledge and understanding in making wise decisions. Furthermore, the credibility of the sources was also an important consideration.

The final criterion is contributing to the understanding of the potential and challenges of implementing metaverse in Islamic banking. Sources offering new insights, in-depth analysis, or relevant case studies will be prioritized. For example, research by Zainuddin and Rahman (2023) examining the use of augmented reality technology in Islamic banking services can provide valuable perspectives on how new technologies can enhance the customer experience. By applying these stringent selection criteria, it is hoped that the results of the literature analysis will provide a comprehensive overview of the potential and challenges of implementing metaverse in Islamic banking, as well as provide useful recommendations for the future development of this sector.

3. RESULTS AND DISCUSSIONS

The development of information and communication technology has brought significant changes to various sectors, including Islamic banking. Previous studies have shown that the implementation of digital technology in Islamic banking has improved operational efficiency and service accessibility. According to a study by Ali and Zain (2021), the use of mobile banking applications in Islamic banking in Indonesia has increased by 40% in the past two years. However, while numerous studies highlight the benefits of digitalization, few have addressed the potential of the metaverse as a new platform that could transform Islamic banking.

Previously, research conducted by Rahman and Sari (2020) emphasized the importance of integrating blockchain technology into Islamic banking transactions to ensure transparency and accountability. However, that study did not explore how the metaverse, as an immersive virtual environment, could offer a new experience in interacting with Islamic banking services. Thus, there is a significant gap in the literature that this research needs to fill. While many studies have addressed the impact of digitalization, there is a lack of understanding of how the metaverse can be integrated with Islamic principles. For example, research by Hasan and Asari (2022) shows that many Islamic financial institutions are still hesitant to adapt to new technologies due to concerns about Sharia compliance. This research will address this gap by analyzing how the metaverse can be implemented within an Islamic banking framework, as well as the potential challenges.

From a social perspective, previous research by Nugroho (2019) showed that the Muslim community in Indonesia is increasingly open to digital innovation, but uncertainty remains regarding the security and halal status of digital transactions. Therefore, this research will highlight how the metaverse can offer safer and Sharia-compliant solutions, while increasing consumer trust in Islamic banking services.

The Metaverse Concept in Islamic Banking

Metaverse is a term that has gained popularity in recent years, referring to a virtual space that combines various elements from the real and digital worlds. In the context of Islamic banking, the application of the metaverse concept can open up new opportunities for service innovation and customer interaction. According to a report by McKinsey & Company (2022), the metaverse market is estimated to reach USD 5 trillion by 2030, demonstrating the enormous potential that can be exploited by the financial sector, including Islamic banking. One key aspect of implementing the metaverse in Islamic banking is its ability to create a more interactive and personalized customer experience. For example, Islamic banks can use VR (Virtual Reality) technology to provide learning simulations about their products and services, so customers can understand the Sharia principles underlying each transaction. This aligns with the principles of education in Islam, which emphasize knowledge and understanding (Quran, Surah Al-Mujadila: 11).

However, despite the considerable potential, challenges also arise in implementing the metaverse in Islamic banking. One of the main challenges is compliance with Sharia principles. Islamic banks must ensure that all transactions and services offered in the metaverse do not violate Sharia law, such as the prohibition of usury (riba) and gharar (uncertainty). Therefore, it is crucial for Islamic banks to collaborate with Islamic scholars and experts in formulating appropriate policies and procedures. Furthermore, regulation is also a crucial factor to consider. Currently, there is no clear regulatory framework regarding the use of the metaverse in the financial sector, including Islamic banking. This can create uncertainty for Islamic banks in implementing this technology. For example, in a country like Indonesia, the Financial Services Authority (OJK) is still in the early stages of developing regulations related to blockchain-based financial technology and the metaverse.

In this context, an effective marketing strategy is also key to attracting new customers to the metaverse ecosystem. Islamic banks need to develop innovative marketing approaches tailored to their customers' characteristics, including millennials and Gen Z, who are more familiar with digital technology. By understanding customer behavior and preferences, Islamic banks can design engaging and relevant campaigns.

The Potential of Metaverse Application in Islamic Banking Services

The application of metaverse in Islamic banking services offers various potentials that can improve operational efficiency and customer experience. One key potential is the ability to provide more inclusive and accessible financial services. According to a 2021 World Bank survey, approximately 1.7 billion people worldwide still lack access to formal financial services. By utilizing metaverse, Islamic banks can reach customers in remote areas that were previously difficult to reach. Within the metaverse, Islamic banks can create virtual spaces where customers can conduct transactions, consult with financial advisors, or attend educational seminars on Islamic products. For example, Bank Negara Indonesia (BNI) has utilized digital technology to provide more accessible banking services, but the implementation of metaverse can take this innovation to the next level by creating a more immersive experience.

Furthermore, the implementation of metaverse can also increase efficiency in Islamic banks' internal business processes. Technologies such as AI (Artificial Intelligence) and blockchain can be integrated into metaverse systems to accelerate verification processes and enhance transaction security. A study by Deloitte (2022) showed that the use of blockchain technology can reduce transaction costs by up to 30%, a significant advantage for Islamic banks in managing operational costs. The importance of social interaction in the metaverse cannot be overlooked. Islamic banks can leverage virtual spaces to build stronger customer communities, where they can share experiences and knowledge about Islamic financial products and services. This aligns with Islamic principles that encourage cooperation and mutual assistance within the community (Quran, Surah Al-Hujurat: 10).

However, to capitalize on this potential, Islamic banks need to invest in adequate technological infrastructure and human resources. Employee training and the provision of appropriate tools will be key to ensuring that services provided in the metaverse run smoothly and meet customer expectations. The metaverse, as a virtual space that combines real-world and digital

elements, offers a wide range of potential for the Islamic banking sector. One key opportunity is the instant and geographically restrictive opening of virtual accounts. According to a report by McKinsey (2022), more than 50% of internet users worldwide have expressed interest in interacting in virtual environments. This indicates a significant opportunity for Islamic banks to attract new customers through innovative digital services. By leveraging blockchain technology, Islamic banks can ensure the security and transparency of every transaction conducted in the metaverse (Khan et al., 2023).

Furthermore, financial consultations in the metaverse can provide a more interactive and personalized experience for customers. By using avatars and virtual spaces, customers can interact directly with financial consultants in a more relaxed and comfortable atmosphere. A study by Al-Qudah and Al-Saleh (2023) showed that virtual interactions during financial consultations can improve customer understanding of Islamic financing products. Thus, Islamic banks can increase customer satisfaction levels and strengthen the relationship between the bank and its customers.

Digital asset transactions also offer significant potential for implementing the metaverse in Islamic banking. With the growing interest in digital assets such as cryptocurrencies, Islamic banks can offer Sharia-compliant services for these transactions. According to a report from Statista (2023), the cryptocurrency market value is estimated to reach \$2 trillion by the end of 2023. This creates an opportunity for Islamic banks to develop Sharia-compliant investment products, such as digital sukuk or other digital asset-based investment products. By utilizing the metaverse, Islamic banks can create platforms that enable customers to conduct digital asset transactions safely and efficiently.

Furthermore, the metaverse can also help Islamic banks improve financial education for customers. By utilizing virtual spaces, banks can hold interactive seminars or workshops on Sharia products and services. Research by Junaidi and Rahman (2023) shows that interactive financial education can increase customers' understanding and awareness of Sharia principles in transactions. This will not only improve customer financial literacy but also strengthen the image of Islamic banks as institutions that care about public financial education.

Sharia Compliance Challenges in Metaverse Implementation

Compliance with Sharia principles is a key challenge in implementing the metaverse in Islamic banking. Islamic banks must ensure that all aspects of the services offered in the virtual space remain compliant with Islamic law. In this context, it is crucial for banks to conduct in-depth studies on each product and service they plan to introduce in the metaverse. One issue that requires attention is transactions involving digital assets, such as cryptocurrencies. Although some Islamic scholars argue that cryptocurrencies are acceptable within a Sharia context, debate remains regarding their legality and compliance with Sharia principles. A study by KPMG (2021) showed that 60% of respondents from Islamic scholars remain uncertain about the acceptance of cryptocurrencies in Islamic financial transactions. Therefore, Islamic banks need to take a cautious approach and involve Sharia experts at every step. Furthermore, other challenges faced are supervision and regulation. Currently, many countries lack a clear legal framework regarding the use of metaverse technology in the financial sector. In Indonesia, the Financial Services Authority (OJK) has begun formulating regulations related to fintech, but there are no specific provisions governing the use of metaverses. This can create uncertainty for Islamic banks in implementing this technology.

Islamic banks must also consider ethical aspects in implementing metaverses. In Islam, transactions must be conducted fairly and transparently, while avoiding elements of fraud and uncertainty. Therefore, Islamic banks need to ensure that all services offered in metaverses not only comply with Sharia law but also meet high ethical standards. To address this challenge, collaboration between Islamic banks, regulators, and religious scholars is crucial. By establishing constructive dialogue, all parties can jointly formulate policies and regulations that support the implementation of metaverses in Islamic banking, while maintaining compliance with Sharia principles.

The Need for Regulation in Metaverse Implementation

Clear and comprehensive regulations are crucial to support the implementation of the metaverse in Islamic banking. Without an adequate legal framework, Islamic banks will face legal

risks and uncertainty that can hinder innovation. According to a 2022 World Bank report, sound regulations can encourage the growth of the fintech sector, including Islamic banking. One regulatory aspect that requires attention is customer data protection and privacy. In the metaverse, interactions between customers and banks will intensify, making it crucial to ensure that customer personal data is properly protected. Strict regulations regarding data protection, such as those stipulated in the General Data Protection Regulation (GDPR) in Europe, can serve as a reference for other countries, including Indonesia, in formulating similar policies. Furthermore, regulations also need to address cybersecurity aspects. With the increasing use of digital technology, the risk of cyberattacks also increases. According to a 2021 report by Cybersecurity Ventures, losses from cyberattacks are estimated to reach USD 6 trillion in 2021. Therefore, Islamic banks need to ensure they have robust security systems and comply with existing regulations to protect customer assets and information. Clear regulations will also help create a more transparent and fair business environment. This is crucial for building customer trust in the services offered in the metaverse.

According to a 2021 survey by PwC, 82% of consumers said transparency is very important when choosing a financial service provider. With regulations that ensure transparency, Islamic banks can attract more customers and increase their loyalty. Finally, collaboration between the government, regulators, and industry is also crucial in formulating effective regulations. Through constructive dialogue, all parties can share views and experiences to create regulations that support innovation while maintaining compliance with Sharia principles.

Effective Marketing Strategies in the Metaverse

In the increasingly digital era, effective marketing strategies are key for Islamic banks to attract new customers to the metaverse ecosystem. One approach is to leverage social media and digital platforms to reach a wider audience. According to a 2022 report from Hootsuite, more than 4.6 billion people worldwide use social media, making it a highly effective marketing channel. Islamic banks can use creative content, such as interactive videos and webinars, to explain their products and services in the metaverse context. For example, they can hold virtual events where customers can interact directly with financial experts and learn about Islamic products. This not only increases customer understanding but also fosters a closer relationship between the bank and its customers. Furthermore, utilizing influencers on social media platforms can also be an effective marketing strategy. By partnering with influencers who have influence in their target communities, Islamic banks can increase visibility and attract new customers. According to research by Nielsen (2021), 92% of consumers trust recommendations from individuals more than traditional advertising, so collaboration with influencers can have a significant impact.

Islamic banks also need to consider market segmentation in their marketing strategies. By understanding customer characteristics and preferences, banks can design more relevant and engaging campaigns. For example, they can target millennials and Gen Z, who are more familiar with digital technology and have a high interest in Sharia-compliant financial products. Finally, evaluating and measuring the results of each marketing campaign is also crucial. By using analytical tools, Islamic banks can monitor the effectiveness of their marketing strategies and make necessary adjustments to achieve optimal results. With the right approach, Islamic banks can harness the potential of the metaverse to improve services and reach a wider customer base.

Sharia, Ethical, and Regulatory Challenges That Must Be Addressed

The implementation of the metaverse concept in Islamic banking faces significant challenges related to Sharia principles, ethics, and regulations. One key challenge is ensuring that all transactions conducted in the metaverse comply with Sharia principles, such as the prohibition of usury (riba) and uncertainty (gharar). A study by Alhabshi and Ahamed (2021) shows that many Islamic banking institutions still lack a thorough understanding of how new technologies, such as blockchain and the metaverse, can be integrated with Sharia principles. Therefore, it is crucial for Islamic financial institutions to conduct in-depth studies and obtain fatwas (religious edicts) from religious authorities regarding the implementation of this technology.

Furthermore, the ethics of using the metaverse are also a crucial concern. In the context of Islamic banking, ethics play a role in maintaining customer trust and preventing harmful practices. For example, the use of avatars in the metaverse to interact with customers must be transparent and not misleading. According to a report from the National Sharia Council (2022), Islamic financial institutions must ensure that all interactions in the metaverse reflect the values of honesty and fairness.

Regulation is also a significant challenge. Currently, many countries still lack clear regulations regarding the use of metaverse technology in the financial sector. A survey conducted by Deloitte (2023) showed that 60% of financial institutions feel that existing regulations are inadequate to regulate the rapid innovation in digital technology. Therefore, collaboration between regulators, academics, and practitioners in the Islamic banking sector is essential to create a comprehensive regulatory framework that aligns with Sharia principles.

Furthermore, data security challenges must also be addressed. In the metaverse, user data is highly vulnerable to theft and misuse. According to a report by Cybersecurity Ventures (2023), losses from cyberattacks in the financial sector are estimated to reach \$6 trillion in 2021. Islamic banking institutions must invest more in security technology to protect their customer data and ensure that all security practices are Sharia-compliant. Considering these challenges, it is crucial for Islamic banks to take a cautious and deliberate approach to adopting the metaverse. This includes developing clear internal policies, training employees on relevant Sharia principles, and collaborating with regulatory authorities to ensure compliance with applicable laws.

The Potential of Islamic Banking Services in the Metaverse

The potential for Islamic banking services in the metaverse is enormous, particularly in terms of increasing accessibility and financial inclusion. With the metaverse, Islamic financial institutions can reach customers worldwide without geographical boundaries. According to a 2022 World Bank report, approximately 1.7 billion people worldwide still lack access to formal banking services. Through the metaverse platform, Islamic banks can offer products and services to previously unreachable market segments.

One innovative example is the development of metaverse-based financing products that comply with Sharia principles. For example, Islamic financial institutions can offer financing for sustainable and environmentally friendly projects within the metaverse, which aligns with Sharia principles of social and environmental responsibility. A study of the Quran (2:275) emphasizes the importance of fair and equitable transactions, which can serve as a foundation for product development in the metaverse. Furthermore, the metaverse also provides opportunities to enhance the customer experience through more interactive services. Islamic financial institutions can use augmented reality (AR) and virtual reality (VR) technology to provide education about Islamic financial products, enabling customers to better understand and directly experience their benefits. According to research by PwC (2023), 70% of consumers prefer interactive learning experiences over traditional methods. Furthermore, the metaverse can be a platform for collaboration between Islamic financial institutions and technology startups. By working together, they can develop innovative solutions that not only meet customer needs but also comply with Sharia principles. For example, developing a Sharia-compliant blockchain-based payment application could increase efficiency and transparency in financial transactions.

However, to capitalize on this potential, Islamic financial institutions must be prepared to invest in technology and human resources. Proper education and training will be key to ensuring that employees have the necessary skills to operate in a metaverse environment. With the right approach, Islamic banks can be pioneers in adopting new technologies and providing innovative services to their customers.

4. CONCLUSION

In the increasingly advanced digital era, the application of the metaverse concept in the Islamic banking sector offers enormous potential, but also faces various challenges that need to be

addressed. The metaverse, as a virtual space that combines social, economic, and technological aspects, provides an opportunity for Islamic banks to expand their service reach, enhance customer experience, and create innovations in financial products that comply with Sharia principles.

The first potential that can be identified is the metaverse's ability to enhance interactions between banks and customers. A study conducted by McKinsey & Company (2022) found that over 70% of consumers feel more connected to brands that offer immersive digital experiences. In the context of Islamic banking, this means that banks can create virtual environments where customers can interact directly with financial advisors in a more comfortable and intimate setting, without physical barriers. This aligns with Sharia principles, which encourage openness and transparency in financial transactions.

However, the challenges faced in implementing the metaverse in Islamic banking cannot be ignored. One of the main challenges is data security and privacy. According to a report by Cybersecurity Ventures (2021), losses from cyberattacks are estimated at \$6 trillion annually, and this figure is expected to continue to rise. In the context of Islamic banking, where customer trust is paramount, any data breach can damage a bank's reputation and undermine public confidence in Sharia-compliant financial services. Therefore, the implementation of secure blockchain technology can be a solution to address this issue, while ensuring that all transactions and customer data are properly protected. Furthermore, Sharia regulations and fatwas related to new technologies also pose significant challenges. Although many Islamic scholars and financial institutions are beginning to recognize the potential of digital technology, uncertainty remains regarding how technologies such as the metaverse and blockchain can be implemented within the Sharia legal framework. The fatwas from the National Sharia Council (DSN) of the Indonesian Ulema Council (MUI), for example, need to be updated to include these new aspects to provide clear guidance for Islamic banking institutions in implementing new technologies (MUI, 2021).

Addressing these challenges requires collaboration between all stakeholders, including government agencies, regulators, and Islamic financial institutions. A study conducted by the World Bank (2022) shows that cross-sector collaboration can enhance innovation and accelerate the adoption of new technologies in the financial industry. By creating a clear and comprehensive framework, Islamic banks can more easily adopt metaverse and blockchain technologies, while ensuring that all operational activities comply with Sharia principles. Overall, the implementation of metaverse in Islamic banking has enormous potential to improve customer service and experience. However, to realize this potential, existing challenges must be addressed with a holistic and collaborative approach. With the right steps, Islamic banks can become pioneers in the implementation of new technologies that are not only innovative but also compliant with Sharia principles.

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