

Central Bank Digital Currency (CBDC) in Islamic Banking Perspective: An Alternative Economic Development in ASEAN Countries

Jihad Nafidzulhaq

Istanbul Sabahattin Zaim University - Turkey

nafidzulhaq.jihad@std.izu.edu.tr

Abstract

As global economies pivot toward digitisation, Central Bank Digital Currency (CBDC) emerges as a transformative innovation, promising to reshape financial systems worldwide. This paper explores the potential of CBDC within the framework of Islamic banking, examining its viability as an alternative economic development tool in ASEAN countries. By aligning the principles of CBDC with shariah-compliant financial systems, the study investigates how this digital currency can address regional economic disparities, promote financial inclusion, and strengthen monetary policy effectiveness. By undergoing qualitative approach and employing a multidimensional analysis, the research delves into key areas such as transparency, risk-sharing mechanisms, and ethical governance inherent in Islamic finance, contrasting them with conventional CBDC implementations. It evaluates how ASEAN countries can leverage CBDC to support sustainable growth while adhering to Islamic values. Critical questions include: How can CBDC enhance economic resilience within shariah frameworks? What are the socio-economic implications of CBDC adoption in predominantly Islamic economies? Findings reveal that integrating CBDC with Islamic banking principles offers significant potential to reduce transaction costs, enhance trust, and improve financial access for underbanked populations. However, challenges such as regulatory harmonisation, technological infrastructure, and ensuring shariah compliance remain substantial. The study emphasises the need for collaborative efforts among central banks, fintech innovators, and Islamic scholars to create robust frameworks for CBDC deployment. Recommendations include fostering intergovernmental cooperation, investing in inclusive digital infrastructures, and embedding Islamic ethical standards in CBDC design. This paper contributes to the growing discourse on digital currencies and Islamic banking, offering actionable insights for policymakers and stakeholders in ASEAN's economic development.

Keywords

CBDC, Islamic Banking, Financial Inclusion, Innovations, ASEAN

Introduction

The emergence of Central Bank Digital Currency (CBDC) has been a transformative financial innovation, driven by the global shift towards digitisation. CBDC, a digital form of fiat currency issued and regulated by central banks, has the potential to drive economic growth and financial inclusion worldwide (Náñez Alonso *et al.*, 2021). As the digital revolution continues to reshape the financial landscape, CBDC has emerged as a promising tool to address the evolving needs of modern economies.

The risk-sharing principle inherent in Islamic banking can be enhanced through the use of CBDC. By leveraging the transparency and traceability of CBDC transactions, Islamic financial institutions can better monitor and manage risks, ensuring the equitable distribution of profits and losses among stakeholders (Omar, 2022). This synergy between CBDC and Islamic banking can lead to the development of more robust and resilient financial systems within the ASEAN region.

CBDC has the potential to strengthen economic resilience in Islamic banking by improving financial inclusion and promoting transparency (Yang and Zhou, 2022). In many ASEAN countries, a significant portion of the population remains unbanked, limiting their access to formal financial services. The introduction of CBDC could bridge this gap, providing a secure and accessible digital payment system that aligns with Shariah principles (Zamora-Pérez *et al.*, 2022).

Furthermore, the transparent and traceable nature of CBDC transactions can enhance compliance with Shariah regulations, such as the prohibition of *riba* (interest) and *gharar* (uncertainty) (Mou *et al.*, 2020). This could foster greater trust in the financial system and encourage wider adoption of Islamic banking products and services.

The adoption of CBDC in predominantly Islamic economies could have significant socio-economic implications. On the one hand, CBDC could promote financial inclusion and economic empowerment, particularly for underserved communities (Martens, 2021). By providing a secure and accessible digital payment platform, CBDC could enable greater participation in the formal financial system, leading to improved access to credit, savings, and investment opportunities.

On the other hand, the integration of CBDC within Islamic banking frameworks may require careful consideration of Shariah-compliant governance structures and risk management practices (Shkliar, 2020). Ensuring that CBDC aligns with Islamic principles, such as the prohibition of interest and the promotion of ethical financing, will be crucial for its widespread acceptance and adoption.

Additionally, the implementation of CBDC in Islamic economies may have implications for monetary policy and financial stability. The central bank's ability to manage liquidity and control inflation through CBDC could have significant impacts on the broader economy (Yang and Zhou, 2022). Policymakers will need to carefully assess the potential trade-offs and develop appropriate regulatory frameworks to mitigate any unintended consequences.

This paper aims to address the following key questions: how can CBDC enhance economic resilience within Shariah frameworks? what are the socio-economic implications of CBDC adoption in predominantly Islamic economies?

The study highlights limited adoption of Central Bank Digital Currency (CBDC) highlights the need for actionable insights into Digital Banking (Martens, 2021). While CBDC has the potential to enhance economic resilience, its implementation within Shariah frameworks remains underexplored. Furthermore, the socio-economic implications of CBDC adoption in predominantly Islamic economies require deeper investigation (Shkliar, 2020).

Overall, the introduction of Central Bank Digital Currency (CBDC) in Islamic banking presents a promising avenue for economic development in ASEAN countries. By enhancing financial inclusion, promoting transparency, and aligning with Shariah principles, CBDC can strengthen economic resilience and foster sustainable growth. However, the successful implementation of CBDC in predominantly Islamic economies will require a nuanced understanding of the socio-economic implications and the development of robust governance structures. Ongoing research and collaboration between policymakers, financial institutions, and Islamic scholars will be crucial in navigating this evolving landscape and unlocking the full potential of CBDC in the region.

Literature review

The potential of CBDC to drive economic development is particularly evident in the ASEAN region, where financial inclusion remains a significant challenge. According to the World Bank, approximately 30% of adults in ASEAN countries lack access to formal financial services (Foster *et al.*, 2021). CBDC can play a crucial role in addressing this disparity by providing a secure, accessible, and efficient means of financial transactions, thereby promoting financial inclusion and economic empowerment.

The implementation of CBDC can contribute to the reduction of transaction costs, improve the efficiency of payment systems, and enhance cross-border transactions within the ASEAN economic community (Ahya *et al.*, 2021). These benefits can lead to increased economic activity, greater financial stability, and ultimately, sustainable economic development in the region.

The principles of Islamic banking, such as risk-sharing and ethical governance, align closely with the potential benefits of CBDC. Islamic banking emphasizes the importance of fairness, transparency, and the avoidance of interest-based transactions, which are often associated with conventional banking systems (Omar, 2022). CBDC, with its decentralized and transparent nature, can serve as a complementary tool to the Islamic banking model, fostering greater financial inclusion and ethical economic practices.

In the ASEAN region, where a significant portion of the population adheres to Islamic beliefs, the integration of CBDC with Islamic banking can have a profound impact. CBDC can facilitate the implementation of Shariah-compliant financial products and services, enabling greater access to Islamic finance for the unbanked and underbanked populations (Shkliar, 2020). This alignment can

contribute to the reduction of economic disparities and promote inclusive growth within the ASEAN community.

The global adoption of Central Bank Digital Currency (CBDC) has been gaining momentum in recent years, with numerous countries exploring and implementing this innovative financial instrument. CBDC refers to a digital form of fiat currency issued and regulated by a central bank, offering the potential to revolutionise the financial landscape (Lee *et al.*, 2021).

Several countries have made significant strides in CBDC development, each with its unique objectives and approaches. China, for instance, has been at the forefront of CBDC implementation, with the launch of its digital yuan (e-CNY) pilot program in 2020, aiming to enhance financial inclusion and reduce the dominance of private digital payment platforms (Náñez Alonso *et al.*, 2021). Similarly, the Eastern Caribbean Central Bank has introduced the world's first cross-border CBDC, the DCash, to facilitate seamless transactions and financial integration within the Eastern Caribbean Currency Union (Náñez Alonso *et al.*, 2020).

The adoption of CBDC has also gained traction in the ASEAN region, with countries like Singapore, Thailand, and Malaysia actively exploring the potential benefits of this digital currency. Singapore's Project Ubin, for example, has explored the use of CBDC for cross-border payments and securities settlement, while Thailand's Project Inthanon has focused on enhancing domestic payment efficiency (Lee *et al.*, 2021). These initiatives highlight the growing interest and potential of CBDC in the ASEAN economic landscape.

Despite the enthusiasm, the implementation of CBDC is not without its challenges. Concerns around privacy, financial stability, and the potential disruptive impact on traditional banking systems have been raised by policymakers and stakeholders (Náñez Alonso *et al.*, 2020). Addressing these concerns and ensuring a well-designed CBDC framework that aligns with the unique economic and social dynamics of each country will be crucial for the successful adoption of this digital currency.

The core principles of Islamic banking are rooted in the Shariah, the religious law of Islam, which emphasises the importance of ethical, transparent, and risk-sharing financial practices. These principles include the prohibition of *riba* (interest), the promotion of risk-sharing, and the adherence to Shariah-compliant financial instruments (Malik *et al.*, 2021).

The prohibition of *riba* is a fundamental tenet of Islamic banking, as it is seen as a form of exploitation and unearned income. Instead, Islamic banks rely on profit-and-loss sharing (PLS) models, such as *Mudarabah* (partnership) and *Musharakah* (joint venture), where the bank and the client share both the risks and rewards of a financial transaction (Hasan, 2022). This approach aligns with the Islamic principle of fairness and promotes a more equitable distribution of wealth.

The ASEAN region has experienced remarkable economic growth in recent decades, yet it still faces significant challenges in achieving inclusive and sustainable development. Financial exclusion remains a pressing issue, with a significant portion of the population lacking access to

formal financial services (Ungson and Soorapanth, 2022). This uneven development has led to disparities in economic opportunities and has hindered the region's ability to fully harness its economic potential.

To address these challenges, ASEAN countries have been actively working to modernise their financial infrastructure and increase financial inclusivity. One such initiative is the exploration of Central Bank Digital Currency (CBDC), which has the potential to revolutionise the financial landscape and provide an alternative pathway for economic development (Awang Abu Bakar *et al.*, 2021). CBDC, a digital form of fiat currency issued and controlled by a central bank, can enhance financial accessibility, reduce transaction costs, and facilitate cross-border payments, all of which are crucial for the region's economic growth and integration.

Despite the growing interest in CBDC, the existing literature has primarily focused on its general implications and applications, with limited exploration of its role within the context of Islamic banking (Prayudya and Al-Ayubi, 2023). Islamic banking, which operates based on Sharia principles, has a unique set of requirements and considerations that must be addressed in the design and implementation of CBDC.

Moreover, the existing research on CBDC has not adequately addressed the specific needs and challenges of the ASEAN region. The economic and cultural diversity of ASEAN countries, as well as their varying levels of financial development, necessitate a tailored approach to CBDC that takes into account the region's unique characteristics (Momin *et al.*, 2024). This gap in the literature presents an opportunity to explore the potential of CBDC as an alternative economic development tool within the ASEAN context, particularly from the perspective of Islamic banking.

The integration of CBDC within the Islamic banking framework presents both opportunities and challenges. On the one hand, CBDC can align with the principles of Islamic finance, such as the prohibition of interest (*riba*), the promotion of risk-sharing, and the emphasis on asset-backed transactions (Prayudya and Al-Ayubi, 2023). This alignment can make CBDC an attractive option for Islamic financial institutions and their customers, who seek financial solutions that adhere to Sharia principles.

On the other hand, the design and implementation of CBDC within the Islamic banking context must address specific considerations, such as the treatment of profit and loss sharing, the management of liquidity, and the compliance with Sharia-based regulations (Momin *et al.*, 2024). Central banks and Islamic financial institutions must work collaboratively to develop CBDC models that not only meet the technical requirements of a digital currency but also uphold the ethical and religious principles of Islamic finance.

The potential of CBDC to serve as an alternative economic development tool in the ASEAN region is particularly compelling. By leveraging the unique features of CBDC, such as its ability to enhance financial inclusion, reduce transaction costs, and facilitate cross-border payments, ASEAN countries can address some of the key challenges they face in achieving inclusive and sustainable economic growth (Ungson and Soorapanth, 2022).

Methods

The methods employed in this study are designed to provide a comprehensive understanding of the potential for Central Bank Digital Currency (CBDC) within the Islamic banking framework, specifically in the ASEAN context. A qualitative research approach was adopted, utilising a multidimensional analysis to evaluate the intersections of CBDC with shariah-compliant principles. This methodology combines theoretical exploration with empirical data, ensuring a balanced examination of the conceptual and practical implications of CBDC implementation. Key focus areas include transparency, risk-sharing mechanisms, and ethical governance inherent in Islamic finance, contrasted against conventional CBDC applications.

The study synthesises insights from various data sources, including policy documents, regulatory frameworks, and scholarly literature on digital currencies and Islamic banking. It also incorporates case studies of existing CBDC implementations and their adaptation in Islamic financial contexts. The comparative analysis enables a nuanced understanding of how ASEAN countries can leverage CBDC to address economic disparities while upholding Islamic ethical values. The exploration of these themes is enriched by the inclusion of stakeholder perspectives, gathered through literature review and policy analyses, offering insights into the socio-economic implications of CBDC adoption in predominantly Islamic economies.

Additionally, the study investigates critical challenges such as regulatory harmonisation, technological infrastructure, and compliance with shariah standards. By integrating these dimensions into the analysis, the research highlights both opportunities and obstacles in deploying CBDC as a transformative tool for economic development in ASEAN. The findings aim to inform policymakers, fintech developers, and Islamic scholars about strategies to align CBDC implementations with Islamic banking principles, promoting financial inclusion and economic resilience across the region.

Analysis/Discussion

Central Bank Digital Currency in Islamic Banking: Challenges and Opportunity

One of the primary benefits of introducing CBDC in Islamic banking is its potential to enhance financial inclusion and access for underbanked populations across ASEAN countries. According to a report by the Asian Development Bank, financial inclusion remains a significant challenge in the region, with an estimated 290 million adults still lacking access to formal financial services (Morgan and Huang, 2022). The implementation of CBDC could help bridge this gap by providing a secure and accessible digital payment platform, particularly for individuals and communities with limited access to traditional banking services.

CBDC can facilitate the delivery of financial services to remote and underserved areas, enabling more people to participate in the formal financial system. This could be especially beneficial for the unbanked and underbanked populations in ASEAN, many of whom are located in rural or isolated regions. By leveraging CBDC's digital infrastructure, Islamic banks can reach these

communities more effectively and offer a range of Shariah-compliant financial products and services (Altwijry *et al.*, 2022).

Furthermore, the integration of CBDC with Islamic banking can help address the issue of financial exclusion faced by certain segments of the population, such as low-income individuals, small businesses, and women. CBDC's ability to facilitate micropayments and enable seamless cross-border transactions can make it easier for these groups to access and utilize financial services, thereby promoting greater financial inclusion and economic empowerment (Al-Ansari and Aysan, 2022).

The adoption of CBDC in Islamic banking can also lead to a reduction in transaction costs and an improvement in trust within the financial system. Traditional banking and payment systems often involve multiple intermediaries, resulting in higher fees and slower transaction times. CBDC, with its decentralized and transparent nature, can streamline these processes, reducing the need for intermediaries and lowering the overall cost of financial transactions (Unal and Aysan, 2022).

This cost-saving benefit is particularly relevant in the context of Islamic banking, where the principles of Shariah-compliance often require additional layers of oversight and compliance mechanisms. By leveraging CBDC's efficient and secure infrastructure, Islamic banks can potentially reduce the administrative and operational expenses associated with these Shariah-related requirements, ultimately passing on these savings to their customers (Firdiansyah and Samsuri, 2021).

Moreover, the transparent and immutable nature of CBDC transactions can enhance trust within the Islamic financial system. The ability to track and verify all transactions on the CBDC ledger can help address concerns about transparency and accountability, which are crucial in upholding the principles of Islamic finance (Alzubaidi and Abdullah, 2017). This increased trust can foster greater confidence among Islamic banking customers, leading to higher levels of participation and engagement in the financial system.

The implementation of CBDC in Islamic banking can also contribute to strengthening monetary policy effectiveness in ASEAN economies. By providing central banks with a direct and efficient means of transmitting monetary policy decisions, CBDC can enhance the central bank's ability to influence the broader financial system and achieve its economic objectives (Al-Ansari and Aysan, 2022).

For instance, CBDC can enable central banks to implement more targeted and responsive monetary policies, such as adjusting interest rates or reserve requirements more effectively. This can be particularly beneficial in ASEAN countries, where the diversity of economic conditions and financial systems across the region can pose challenges for the implementation of effective monetary policies (Morgan and Huang, 2022).

Furthermore, the integration of CBDC with Islamic banking can help central banks better monitor and manage the flow of funds within the financial system. By having a more comprehensive and

real-time view of transactions, central banks can more accurately assess the impact of their policies and make timely adjustments to address any imbalances or vulnerabilities (Firdiansyah and Samsuri, 2021).

The introduction of CBDC in Islamic banking can also serve as a catalyst for promoting Shariah-compliant financial innovation. By leveraging the technological capabilities of CBDC, Islamic banks can develop new and innovative financial products and services that are aligned with the principles of Islamic finance (Altwijry *et al.*, 2022).

For example, CBDC's ability to facilitate micropayments and enable seamless cross-border transactions can enable the development of innovative Shariah-compliant remittance services, which can benefit migrant workers and their families in ASEAN countries. Additionally, the integration of CBDC with blockchain technology can pave the way for the creation of Shariah-compliant smart contracts, sukuk (Islamic bonds), and other financial instruments that can enhance the efficiency and accessibility of Islamic finance (Unal and Aysan, 2022).

This financial innovation can not only attract new customers to Islamic banking but also contribute to the overall growth and development of the Islamic finance industry in ASEAN. By demonstrating the ability to harness emerging technologies in a Shariah-compliant manner, Islamic banks can position themselves as innovative and forward-looking financial institutions, further strengthening their appeal and competitiveness in the region.

The implementation of CBDC in Islamic banking can also be viewed through the lens of *Maqasid al-Shariah*, the higher objectives of Islamic law. The potential benefits of CBDC, such as enhancing financial inclusion, reducing transaction costs, and promoting Shariah-compliant financial innovation, can be seen as aligning with the core principles of *Maqasid al-Shariah* (Firdiansyah and Samsuri, 2021).

For instance, the promotion of financial inclusion through CBDC can be seen as contributing to the preservation of wealth (*Hifz al-Mal*), one of the five primary objectives of *Maqasid al-Shariah*. By providing underbanked populations with access to Shariah-compliant financial services, CBDC can help safeguard the economic well-being of individuals and communities, ultimately contributing to the overall social and economic development of ASEAN countries (Alzubaidi and Abdullah, 2017).

Furthermore, the reduction in transaction costs and the improvement in trust within the Islamic financial system can be viewed as aligning with the objective of protecting the intellect (*Hifz al-'Aql*), as it can enhance the efficiency and reliability of financial transactions, thereby promoting economic stability and growth. Additionally, the potential for CBDC to enable Shariah-compliant financial innovation can be seen as contributing to the preservation of faith (*Hifz al-Din*), as it can help strengthen the appeal and competitiveness of Islamic finance in the region (Firdiansyah and Samsuri, 2021).

Central Bank Digital Currency in Islamic Banking: Challenges and Opportunity

The concept of Central Bank Digital Currency (CBDC) has gained significant attention in recent years as a potential solution to the evolving financial landscape. While conventional CBDC frameworks have been explored extensively, the integration of Islamic principles into CBDC models presents a unique opportunity to address the specific needs of Muslim-majority countries, including those within the ASEAN region (Al-Ansari and Aysan, 2022).

One of the key differences between conventional and Islamic-adapted CBDC models lies in the underlying principles. Conventional CBDC frameworks are often based on fiat currency and centralised control, whereas Islamic-adapted models emphasise the principles of Shariah, such as risk-sharing, asset-backing, and the prohibition of interest (Hafiz, 2019). This distinction is crucial, as it allows Islamic-adapted CBDC to align with the ethical and moral foundations of Islamic finance, which prioritise social and economic justice.

Moreover, Islamic-adapted CBDC models have the potential to enhance transparency and accountability in financial transactions. By leveraging blockchain technology and adhering to Shariah principles, these models can provide a more secure and transparent platform for financial activities, reducing the risk of fraud and ensuring fair distribution of wealth (Al-Ansari and Aysan, 2022). This aligns with the Islamic finance's emphasis on ethical practices and the avoidance of speculative activities.

One of the unique strengths of Islamic-adapted CBDC models is their emphasis on transparency and ethical risk-sharing. In contrast to conventional CBDC frameworks, which may be susceptible to centralized control and potential misuse, Islamic-adapted CBDC models are designed to promote transparency and accountability (Al-Ansari and Aysan, 2022). By leveraging blockchain technology, these models can provide a secure and transparent platform for financial transactions, ensuring that all parties involved have access to the same information and that the distribution of wealth is fair and equitable.

Furthermore, the risk-sharing principle inherent in Islamic finance is a key feature of Islamic-adapted CBDC models. Instead of the traditional lender-borrower relationship, where the burden of risk falls primarily on the borrower, Islamic-adapted CBDC models encourage a more balanced and equitable distribution of risk among all stakeholders (Hafiz, 2019). This approach not only promotes financial stability but also aligns with the Islamic principles of social and economic justice, which are particularly relevant in the context of ASEAN countries.

The integration of Islamic-adapted CBDC models into the ASEAN region has the potential to transform the economic landscape and foster greater cross-border trade and economic resilience. ASEAN, as a diverse and dynamic economic bloc, has long recognized the importance of regional integration and cooperation (Pennisi di Floristella and Chen, 2022). The implementation of Islamic-adapted CBDC models within ASEAN could contribute to this goal by facilitating

seamless cross-border transactions, reducing the costs and complexities associated with traditional payment systems, and enhancing financial inclusion for underserved communities.

Moreover, the emphasis on ethical risk-sharing and transparency inherent in Islamic-adapted CBDC models could enhance the overall economic resilience of ASEAN countries. By providing a more secure and reliable platform for financial activities, these models can help mitigate the impact of global financial shocks and foster greater economic stability (Indrawati *et al.*, 2020). This is particularly relevant in the context of the COVID-19 pandemic, which has highlighted the need for robust and adaptable economic systems.

Realizing the full potential of Islamic-adapted CBDC models within the ASEAN region will require a concerted effort from policymakers and regulators across the member states. Achieving this goal will necessitate a high degree of intergovernmental cooperation and the development of unified policy frameworks (Kimura *et al.*, 2019).

Governments in the ASEAN region will need to work closely to harmonize their regulatory environments, ensuring that the implementation of Islamic-adapted CBDC models is consistent and aligned across the region. This may involve the establishment of common standards, guidelines, and best practices, as well as the coordination of monetary and fiscal policies to support the seamless integration of these models (Anwar, 2020).

Furthermore, the successful adoption of Islamic-adapted CBDC models in ASEAN will depend on the ability of policymakers to address the technological and infrastructural challenges that may arise. This may include investments in digital infrastructure, the development of secure and scalable blockchain networks, and the implementation of robust cybersecurity measures to protect the integrity of the financial system (Kimura *et al.*, 2019).

By fostering intergovernmental cooperation and developing unified policy frameworks, ASEAN countries can create an enabling environment for the successful integration of Islamic-adapted CBDC models, ultimately transforming the region's economic landscape and enhancing its resilience in the face of global challenges.

Conclusion

The introduction of Central Bank Digital Currency (CBDC) in the context of Islamic banking marks a transformative opportunity for economic advancement in ASEAN countries. By leveraging the synergies between technological innovation and shariah-compliant principles, CBDC offers a pathway to enhance financial systems while addressing the socio-economic challenges prevalent in the region. The deployment of CBDC aligns with the goals of financial inclusion, enabling access to underserved populations, reducing transaction inefficiencies, and promoting equitable economic participation. Its ability to uphold transparency and ethical governance resonates deeply with Islamic banking principles, reinforcing trust and fostering broader economic resilience.

CBDC's potential to act as a catalyst for sustainable growth is particularly compelling for ASEAN countries striving to integrate their diverse economies. By lowering transaction costs, streamlining cross-border payments, and enhancing financial accessibility, CBDC addresses critical barriers that have historically hindered regional economic integration. Moreover, its capacity to digitise and optimise monetary transactions provides a foundation for modernising the financial infrastructure, allowing economies to become more agile and resilient in the face of global uncertainties. The inclusion of ethical governance and risk-sharing mechanisms inherent in Islamic banking amplifies CBDC's appeal, making it a unique instrument for fostering inclusive development.

The policy implications of introducing CBDC as an economic development tool in ASEAN are far-reaching. Policymakers must design frameworks that balance innovation with regulatory stability, ensuring that CBDC implementations adhere to shariah principles while maintaining operational efficiency. Regulatory harmonisation across ASEAN countries is essential to maximise the potential benefits of CBDC, particularly in facilitating seamless cross-border transactions. Additionally, policies should aim to address technological disparities by investing in robust digital infrastructures and fostering partnerships with fintech innovators to create accessible and user-friendly platforms. Ensuring public awareness and trust through financial literacy initiatives will also play a crucial role in driving adoption and engagement.

Future directions for CBDC adoption in Islamic banking necessitate collaborative efforts between central banks, Islamic scholars, and financial institutions to refine its design and implementation. The integration of Islamic ethical standards into CBDC frameworks will require ongoing dialogue and research to navigate the complexities of compliance and innovation. Addressing technological and logistical challenges, such as cybersecurity risks and interoperability, will be critical to unlocking CBDC's full potential. Furthermore, tailored approaches that reflect the unique socio-economic landscapes of ASEAN countries will enable more effective and equitable deployment, aligning with both developmental and ethical goals.

In conclusion, the emergence of CBDC within Islamic banking offers a transformative opportunity to reshape economic systems and foster sustainable growth in ASEAN countries. By integrating shariah principles with cutting-edge financial technologies, CBDC has the potential to enhance financial inclusion, streamline operations, and create a resilient economic framework. However, realising these benefits will require strategic policymaking, robust technological investments, and collaborative partnerships across stakeholders. With thoughtful implementation, CBDC can serve as a cornerstone for ASEAN's economic development, setting a global precedent for harmonising innovation with ethical and inclusive financial practices.

References

- Ahya, C., Kam, D., Richers, J., & Stanley, M. (2021). Digital Disruption: The Inevitable Rise of CBDC. *SUERF. Morgan Stanley*. May, 12, 2021.
- Altwijry, O. I., Mohammed, M. O., Hassan, M. K., & Selim, M. (2022). Developing a Shari'ah Based Fintech Money Creation Free [SFMCF] Model for Islamic Banking. *International Journal of Islamic and Middle Eastern Finance and Management*, 15(4), 739-758.
- Al-Ansari, K. A., & Aysan, A. F. (2022, April). Central Bank Digital Currencies, Internet of Things, and Islamic Finance: Blockchain Prospects and Challenges. In *ALBARAKA symposium (Digital Economy and Foreseeing the Future" A Forward-Looking Vision in The Light of Islamic Economics")*.
- Alzubaidi, I. B., & Abdullah, A. (2017). Developing A Digital Currency from An Islamic Perspective: Case of Blockchain Technology. *International Business Research*, 10(11), 79-87.
- Anwar, D. F. (2020). Indonesia and the ASEAN Outlook on the Indo-Pacific. *International Affairs*, 96(1), 111-129.
- Awang Abu Bakar, N. S., Yahya, N., Khairuddin, I. E., Zainal Abidin, A. F., Mohamad Zain, J., Idris, N. B., & Engku Ali, E. R. A. (2021, November). The Central Bank Digital Currency in Malaysia: A Literature Review. In *International Conference on Business and Technology* (pp. 307-317). Cham: Springer International Publishing.
- Firdiansyah, F. A., & Samsuri, A. (2021). The Urgency of Central Bank Digital Currency (CBDC) Implementation; Maqāshid Syari'ah Perspective. *An-Nisbah: Jurnal Ekonomi Syariah* 8(2), 424-453.
- Foster, K., Blakstad, S., Gazi, S., & Bos, M. (2021). Digital Currencies and CBDC Impacts on Least Developed Countries (LDCs). *The Dialogue on Global Digital Finance Governance Paper Series*.
- Hasan, A. K. (2022). The Impact of Central Bank Digital Currency (CBDC) On the Operations of Islamic Banks. In *Digital Transformation in Islamic Finance* (pp. 190-202). Routledge.
- Hafiz, Z. A. (2019). *Islamic Monetary Policy in Theory and Practice with Reference to the Digital Era* (Master's thesis, Hamad Bin Khalifa University (Qatar)).
- Indrawati, S. M., Diop, N., Ikhsan, M., & Kacaribu, F. (2020). Enhancing Resilience to Turbulent Global Financial Markets: An Indonesian Experience. *Economics and Finance in Indonesia*, 66(1), 47-63.
- Kimura, F., Shrestha, R., & Narjoko, D. (2019). The Digital and Fourth Industrial Revolution and ASEAN Economic Transformation. *Transforming and deepening the ASEAN community*, 1-23.
- Lee, D. K. C., Yan, L., & Wang, Y. (2021). A Global Perspective on Central Bank Digital Currency. *China Economic Journal*, 14(1), 52-66.
- Malik, A., Ullah, K., Jan, S., Atiq, M., & Abdullah, A. (2021). The Role of Knowledge Diffusion in Evolving Governance Principles for Islamic Banking. *International Journal of Islamic and Middle Eastern Finance and Management*, 14(4), 835-850.
- Martens, M. (2021). *Adoption and Implications of CBDC: An Agent-Based Modelling Approach* (Master's Thesis, University of Twente).

- Momin, Q. A., Amin, M., Maeesum, A., & Shamshad, H. (2024). Central Bank Digital Currency (CBDC) in Pakistan: Implications and Prospects. In *Governance and Policy Transformations in Central Banking* (pp. 196-220). IGI Global.
- Morgan, P., & Huang, B. (2022). Fintech in ASEAN+ 3 and Implications for Financial Inclusion and Financial Stability. *Redefining Strategic Routes to Financial Resilience in ASEAN+3*. Manila: Asian Development Bank.
- Mou, C., Tsai, W. T., Jiang, X., & Yang, D. (2020, October). Game-Theoretic Analysis on CBDC Adoption. In *Benchmark International Federated Intelligent Computing and Block Chain Conferences* (pp. 294-305). Singapore: Springer Singapore.
- Náñez Alonso, S. L., Jorge-Vazquez, J., & Reier Forradellas, R. F. (2021). Central Banks Digital Currency: Detection of Optimal Countries for The Implementation of A CBDC And the Implication for Payment Industry Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 72.
- Náñez Alonso, S. L., Echarte Fernández, M. Á., Sanz Bas, D., & Kaczmarek, J. (2020). Reasons Fostering or Discouraging the Implementation of Central Bank-Backed Digital Currency: A Review. *Economies*, 8(2), 41.
- Omar, M. N. (2022). Introducing Maqāsidic Framework for Central Bank Digital Currency (CBDC). *Tafhim: IKIM Journal of Islam and the Contemporary World*, 15(1).
- Pennisi di Floristella, A., & Chen, X. (2022). Building Resilient Supply Chains in Uncertain Times: A Comparative Study of EU And ASEAN Approaches to Supply Chain Resilience. *Asia Europe Journal*, 20(4), 457-475.
- Prayudya, D. R., & Al-Ayubi, S. (2023). Islamic Central Bank Digital Currency (CBDC) Design. *Al-Infraq: Jurnal Ekonomi Islam*.
- Shkliar, A. I. (2020). The Phenomenon of Central Banks' Digital Currencies (CBDC): Key Attributes and Implementation Perspectives. *Ukrainian Society*, 1(72), 123-137.
- Unal, I. M., & Aysan, A. F. (2022). Fintech, Digitalization, And Blockchain in Islamic Finance: Retrospective Investigation. *FinTech*, 1(4), 388-398.
- Ungson, G. R., & Soorapanth, S. (2022). The ASEAN Blockchain Roadmap. *Asia and the Global Economy*, 2(3), 100047.
- Yang, J., & Zhou, G. (2022). A Study on The Influence Mechanism of CBDC On Monetary Policy: An Analysis Based on e-CNY. *Plos one*, 17(7), e0268471.
- Zamora-Pérez, A., Coschignano, E., & Barreiro, L. (2022). *Ensuring Adoption of Central Bank Digital Currencies: An Easy Task or A Gordian Knot?* (No. 307). ECB Occasional Paper.
- Zams, B. M., Indrastuti, R., Pangersa, A. G., Hasniawati, N. A., Zahra, F. A., & Fauziah, I. A. (2020). Designing Central Bank Digital Currency for Indonesia: The Delphi-Analytic Network Process. *Bulletin of Monetary Economics and Banking*, 23(3), 413-440.