

Achmad Nurdany, Lucky Nugroho, Nur Afiqah Shahirah, Nikamtuzzahra,
Ayulyn Nisail Musyarofah, Agustin Nasa Bandiyah, Jawwad Ali, Rahmat Kurnia, Asthma Nafisa,
Alvera Zahvania Putri, Muhammad Rezaul Haider, Nasheerah Rahman, Hanifah Kutia, Anais Pavitasari,
Achmad Shidiq, Widya Rizki Wulandari, Haura Hamizah Melzatia, Rozita Julian Azmita,
Atif Yaseen, Shaban Nassor Shaban, Saharani

DIGITAL ECONOMY DISRUPTION

(Unveiling the Dynamic View of Islamic Finance, Digital
Asset, Financial Crime and Cybersecurity)



DIGITAL ECONOMY DISRUPTION

**(Unveiling the Dynamic View of Islamic Finance, Digital
Asset, Financial Crime and Cybersecurity)**

**Achmad Nurdany, Lucky Nugroho, Nur Afiqah Shahirah, Nikamtuzzahra,
Ayulyn Nisail Musyarofah, Agustin Nasa Bandiyah, Jawwad Ali, Rahmat Kurnia, Asthma Nafisa,
Alvera Zahvania Putri, Muhammad Rezaul Haider, Nasheerah Rahman, Hanifah Kutia, Anais Pavitasari,
Achmad Shidiq, Widya Rizki Wulandari, Haura Hamizah Melzatia, Rozita Julian Azmita,
Atif Yaseen, Shaban Nassor Shaban, Saharani**



DIGITAL ECONOMY DISRUPTION

(Unveiling the Dynamic View of Islamic Finance, Digital Asset, Financial Crime and Cybersecurity)

Penulis:

**Achmad Nurdany, Lucky Nugroho, Nur Afiqah Shahirah, Nikamtuzzahra, Ayulyn Nisail Musyarofah,
Agustin Nasa Bandiyah, Jawwad Ali, Rahmat Kurnia, Asthma Nafisa, Alvera Zahvania Putri,
Muhammad Rezaul Haider, Nasheerah Rahman, Hanifah Kutia, Anaïs Pavitasari, Achmad Shidiq,
Widya Rizki Wulandari, Haura Hamizah Melzatia, Rozita Julian Azmita, Atif Yaseen,
Shaban Nassor Shaban, Saharani**

Desain Cover:

Fawwaz Abyan

Sumber Ilustrasi:

www.freepik.com

Tata Letak:

Handarini Rohana

Editor:

Achmad Rizal

ISBN:

978-623-500-012-1

Cetakan Pertama:

Maret, 2024

Hak Cipta Dilindungi Oleh Undang-Undang

by Penerbit Widina Media Utama

Dilarang keras menerjemahkan, memfotokopi, atau memperbanyak sebagian atau seluruh isi buku ini tanpa izin tertulis dari Penerbit.

PENERBIT:

WIDINA MEDIA UTAMA

Komplek Puri Melia Asri Blok C3 No. 17 Desa Bojong Emas
Kec. Solokan Jeruk Kabupaten Bandung, Provinsi Jawa Barat

Anggota IKAPI No. 360/JBA/2020

Website: www.penerbitwidina.com

Instagram: @penerbitwidina

Telepon (022) 87355370

NOTE FROM THE EDITOR ABOUT CLARIFICATION OF AUTHORIAL VIEWS

DIGITAL ECONOMY DISRUPTION: Unveiling the Dynamic View of Islamic Finance, Digital Asset, Financial Crime and Cybersecurity

In presenting this collection of essays, it is crucial to emphasize that the views expressed by individual authors are of a personal nature and do not necessarily reflect the official stance of any institution. Each author bears sole responsibility for the content and opinions presented herein. We kindly ask readers to recognize that any interpretations or errors in understanding should not be attributed to the affiliated institutions. This compilation is a testament to the diverse perspectives of our contributing authors, and we hope it enriches the discourse on this topic.

ISLAMIC DIGITAL FINANCE, CYBERSECURITY, AND DATA PROTECTION: AN EDITORIAL VIEW

Achmad Nurdany, Indonesia

The current phase of technological development has reached an advanced stage, ushering in disruptions across various facets of human life. The financial sector stands as one of the domains most profoundly impacted by this digital transformation. Digital finance introduces a fresh perspective on financial products, financial business operations, software related to finance, and customer communication (Gomber et al., 2017). Concurrently, the ongoing evolution of financial technology gives rise to two principal technological challenges: cybercrime and data security.

According to Bossler & Berenblum (2019), the progression of technology not only presents opportunities for innovation but also provides a more expansive platform for malevolent actors to engage in illicit activities online. This phenomenon is intricately connected to the security of customer data, particularly for companies operating within the realm of financial technology. Ensuring the robust security of digital data emerges as a fundamental imperative for fostering a society resilient to cyber threats (Sule et al., 2021). As digital finance continues to revolutionize the global financial landscape, it is essential to consider its implications within an Islamic worldview. With the integration of technology, Islamic financial institutions are increasingly adopting digital platforms to provide services that align with Islamic principles. However, this transition also calls for addressing critical aspects such as cybersecurity and data protection to safeguard the integrity, confidentiality, and trustworthiness of financial transactions. In this course, we will explore the enhanced role of digital finance, cybersecurity, and data protection within an Islamic worldview. Hence, our 4th International Short Course (ISC) 2023 was a good place to share knowledge in this field.

The 4th International Short Course (ISC) 2023, hosted by FEBI UIN Sunan Kalijaga in Yogyakarta, Indonesia, focuses on the intersection of Islamic digital finance, Cybersecurity and Data Protection. The course covers various topics, including Islamic Digital Finance, Islam's Worldview in Indonesia, Crypto Assets & Stable Coin, Financial Crime & Cybersecurity, Data Protection Law, and Digital Banking & Digital Currency. Participants can benefit from a certificate of attendance, international exposure, networking opportunities, and cultural exchange.

The course, set to transpire from October 15 to 20, 2023, in Yogyakarta, boasts an insightful program. Activities commence on Sunday, October 15, with participant arrivals, paving the way for a stimulating week of exploration and discourse.

On Monday, October 16, the seminar formally begins with an opening ceremony and keynote speeches. Dr. Afdawaiza M. Ag., Dean of FEBI UIN Sunan Kalijaga, articulates a welcoming speech, setting the tone for the event. Subsequently, Prof. Dr. Phil. Al Makin, the

Rector of UIN Sunan Kalijaga Yogyakarta, expounds on the university's role in the Islamic world. Prof. Suahasil Nazara, Vice Minister of Finance, Republic of Indonesia, who then be transferred to Special Staff of the Minister of Finance for Regional Fiscal Policy Formulation, Mrs. Titik Anas, SE., M.Econ.Dev., Ph.D., delivers a keynote speech elucidating the introduction to Islamic Digital Finance, Cybersecurity, and Data Protection.

The subsequent days feature a myriad of parallel courses led by esteemed experts. Noteworthy sessions include Rama Yurindra's exploration of Islamic digital finance, Prof. Dr. Phil. Sahiron's discourse on the Islamic worldview in Indonesia, and Tuhu Nugraha's insights into blockchain technology, crypto assets, and stable coins. Dr. Abdul Qoyyum, Head of the Sharia Department at UIN Sunan Kalijaga, delves into the Islamic perspective on crypto assets and stable coins. Christopher Cason from the University of Washington, School of Law, USA, addresses financial crime in the cyber world. M Edhie Purnawan, Head of Bank Indonesia Supervision Board, explores the role of central banks in digital currency and cryptocurrency.

Wednesday, October 18, features sessions on technology innovation in the financial sector with insights from the Financial Service Authority, a tandem class on digital banking transformation, and a session on cybersecurity and cyber resilience led by M Andri Setiawan. Beyond the academic agenda, Thursday, October 19, offers participants a Yogyakarta city tour, company visits, and cultural exchanges. The week culminates on Friday, October 20, with in-depth sessions on digital privacy and data protection law by Prof. Abu Bakar Munir from the University of Malaya, Malaysia, and a writing skill enhancement workshop by Adrian Coen from the United Kingdom.

The ISC 2023, however, drew a diverse assembly of 35 participants representing 11 countries: Madagascar, Brunei Darussalam, India, Pakistan, Afghanistan, Gambia, Bangladesh, Sierra Leone, Egypt, Tanzania, and Indonesia. Notably, participants comprised professionals, practitioners, academics, lecturers, students, and FEBI internal students, contributing to a rich mix of perspectives. The event, conducted entirely offline, witnessed participants arriving either directly from their home countries or already being present in Indonesia. This international convergence facilitated a comprehensive exploration of pertinent themes within the course, fostering a collaborative and multifaceted learning environment.

This collection of essays serves as a reflective exploration by ISC participants who underwent a rigorous five-day course. The essays delve into the individual perspectives of contributors regarding the dynamic landscape of technological advancements. Each essay, presented in an academically formal manner, offers a thoughtful examination of various facets of technological evolution. In doing so, these contributions enrich the scholarly discourse on contemporary technological paradigms in a manner accessible to a broad audience.

REFERENCES

- Gomber, P., Koch, J.A. & Siering, M. Digital Finance and FinTech: current research and future research directions. *J Bus Econ* 87, 537–580 (2017). <https://doi.org/10.1007/s11573-017-0852-x>
- Bossler, A.M., & Berenblum, T. (2019) Introduction: new directions in cybercrime research, *Journal of Crime and Justice*, 42:5, 495-499, DOI: 10.1080/0735648X.2019.1692426
- Sule, M.J., Zennaro, M., & Thomas, G. (2021). Cybersecurity through the lens of Digital Identity and Data Protection: Issues and Trends. *Technology in Society*, 67 (Nov 2021), Doi: <https://doi.org/10.1016/j.techsoc.2021.101734>

TABLE OF CONTENTS

NOTE FROM THE EDITOR ABOUT CLARIFICATION OF AUTHORIAL VIEWS	iii
ISLAMIC DIGITAL FINANCE, CYBERSECURITY, AND DATA PROTECTION: AN EDITORIAL VIEW ..iv	iv
TABLE OF CONTENTS.....	vii
CHAPTER ONE - ISLAMIC FINANCE AND DIGITAL ASSET	1
1. Islamic Banking VIS A VIS Information Technology	1
2. Technology Innovation in Financial Sector: Open Banking in Southeast Asia.....	10
3. Paypalminclusive Closed Loop: Innovation Shariah Fintech in Supporting Productivity of Sumatera Palm Farmers	16
4. Islamic Finance Innovation: Strategies For Facing Challenges and Capitalizing Opportunities In Indonesia	23
5. Islamic Fintech as a New Engine of Economic Growth.....	30
6. Application of a Waqf Based Ijarah Smart Sukuk for The Development of Waqf Properties.....	36
7. Cryptocurrency Investment in Islam	42
CHAPTER TWO - FINANCIAL CRIME AND CYBER SECURITY	55
1. Crypto Asset in Our Society	55
2. Crime in Finance under the Cyber World	61
3. Environmental Financial Crime: The Dark Side of Green Investments.....	66
4. Financial Cybercrime	75
5. I Do Want to Invest in Crypto currency, But I Need More Reassurance	82
CHAPTER THREE - BLOKCHAIN TECHNOLOGY AND DIGITAL CURRENCY	89
1. Blockchain as a Solution to Overcoming Information Security Problems in the Digital Era	89
2. Central Bank Digital Currency (CBDC) as a New Monetary Instrument In Response to the Growth of Digital Money In Indonesia	97
3. The Technological Innovation Behind CBDC: Blockchain and Distributed Ledger Technology	105
4. CBDCs Unleashed: Potential Impacts on Financial Intermediaries	110
5. The Distinction of CBDC among Cryptocurrencies: Risk, Benefit, and Trend in Indonesia	117
CHAPTER FOUR – DIGITAL ECONOMY DISRUPTION	125
1. Role of Digital Economy in Indonesia: an Economic Perspective, Challenges, and Opportunities	125
2. Machine Learning in Financial Innovation.....	131
3. CBDC In the Revolution of National Currency Digitization and its Impact on the Global Economy.....	138

CHAPTER ONE - ISLAMIC FINANCE AND DIGITAL ASSET

ISLAMIC BANKING VIS A VIS INFORMATION TECHNOLOGY

Lucky Nugroho (Mercu Buana University), Indonesia

In Islamic economics there are five universal values that become important principles that form the foundation of economics in an Islamic perspective which can be illustrated as follows:

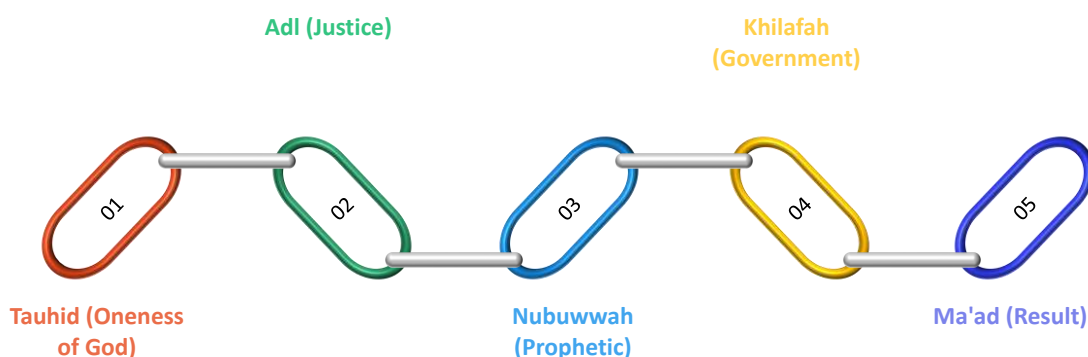


Figure 1. Universal Values in Islamic Economy

Source: Various processed data sources

In accordance with figure 1 above and previous research, it can be explained that universal Islamic values in Islamic economics are as follows:

- **Tawhid (Oneness of God):** Tawhid is a basic concept in Islam that affirms that there is only one God, namely Allah. In an economic context, this concept reminds people that all economic and financial actions they take must be carried out with the awareness that they will be accountable to Allah in the Hereafter. Therefore, economic actions must be carried out in good faith, honesty and integrity.
- **Adl (Justice):** Justice is an important principle in Islamic economics. God commands man to behave justly in all aspects of life, including economic affairs. This means there is no oppression or exploitation of others for personal gain. Fairness in the distribution of resources and opportunities is strongly emphasized in Islamic economics.
- **Nubuwwah (Prophethood):** In Islam, prophets are regarded as role models and role models in daily life, including in economic affairs. The nature and attitude of the prophet are considered guidelines in behaving fairly, generously, and conducting business with integrity.

REFERENCES

- Abad-Segura, E., González-Zamar, M. D., López-Meneses, E., & Vázquez-Cano, E. (2020). Financial Technology: Review of trends, approaches and management. *Mathematics*, 8(6), 1–36. <https://doi.org/10.3390/math8060951>
- Alzahrani, S., Xiao, Y., & Sun, W. (2022). An Analysis of Conti Ransomware Leaked Source Codes. In *IEEE Access* (Vol. 10, Issue September, pp. 100178–100193). IEEE. <https://doi.org/10.1109/ACCESS.2022.3207757>
- Badawi, A., Nugroho, L., & Hidayah, N. (2023). Determinant Factors of Islamic Bank Financial Performance and Competitive Advantage as Moderating Variables in Islamic Banks in Indonesia. *International Journal of Environmental, Sustainability and Social Science*, 4(1), 37–44.
- Beaman, C., Barkworth, A., Akande, T. D., Hakak, S., & Khan, M. K. (2021). Ransomware: Recent advances, analysis, challenges and future research directions. *Computers and Security*, 111, 102490. <https://doi.org/10.1016/j.cose.2021.102490>
- Bilgies, A. F., Fauzan, R., Wahyudi, I., Syahrir, N., Nugroho, L., Aziz, R. M., Usadha, I. D. N., & Maulidizen, A. (2023). *Manajemen Keuangan Islam*. PT GLOBAL EKSEKUTIF TEKNOLOGI. https://books.google.co.id/books?hl=en&lr=&id=eq3FEAAQBAJ&oi=fnd&pg=PA181&ots=Dqa6Lzt7y1&sig=w9Tv_RPIP_5f7wpMawSAGxUIPml&redir_esc=y#v=onepage&q&f=false
- Bravo, R., Montaner, T., & Pina, J. M. (2009). The role of bank image for customers versus non-customers. *International Journal of Bank Marketing*, 27(4), 315–334. <https://doi.org/10.1108/02652320910968377>
- Bravo, R., Montaner, T., & Pina, J. M. (2012). Corporate brand image of financial institutions: A consumer approach. *Journal of Product & Brand Management*, 21(4), 232–245. <https://doi.org/10.1108/10610421211246649>
- Chen, P. H., Bodak, R., & Gandhi, N. S. (2021). Ransomware Recovery and Imaging Operations: Lessons Learned and Planning Considerations. *Journal of Digital Imaging*, 34(3), 731–740. <https://doi.org/10.1007/s10278-021-00466-x>
- Dameff, C., Tully, J., Chan, T. C., Castillo, E. M., Savage, S., Maysent, P., Hemmen, T. M., Clay, B. J., & Longhurst, C. A. (2023). Ransomware Attack Associated With Disruptions at Adjacent Emergency Departments in the US. *JAMA Network Open*, 6(5), e2312270. <https://doi.org/10.1001/jamanetworkopen.2023.12270>
- Eliando, & Warsito, A. B. (2023). LockBit Black Ransomware On Reverse Shell: Analysis of Infection. *Cogito Smart Journa*, 9(2), 228–240.
- Herbane, B., Elliott, D., & Swartz, E. M. (2004). Business Continuity Management: time for a strategic role? *Long Range Planning*, 37(5), 435–457. <https://doi.org/10.1016/j.lrp.2004.07.011>
- Homayoun, S., Dehghantanha, A., Ahmadzadeh, M., Hashemi, S., & Khayami, R. (2020). Know Abnormal, Find Evil: Frequent Pattern Mining for Ransomware Threat Hunting and Intelligence. *IEEE Transactions on Emerging Topics in Computing*, 8(2), 341–351. <https://doi.org/10.1109/TETC.2017.2756908>
- Imani, S., Zulfikar, M., Mahmudah, S. N., Nugroho, L., Ardana, Y., Sudarmanto, E., Ernayani, R., & Kinanti, R. A. (2022). *Dasar-Dasar Ekonomi Islam*. Global Eksekutif Teknologi.

- https://books.google.co.id/books?hl=id&lr=&id=OLaYEAAQBAJ&oi=fnd&pg=PR1&ots=219Zylj_jx&sig=_pwjplfx_bDxCq2FyYoEa8MD4s8&redir_esc=y#v=onepage&q&f=false
- Jegede, A., Fadele, A., Onoja, M., Aimufua, G., & Mazadu, I. J. (2022). Trends and Future Directions in Automated Ransomware Detection. *Journal of Computing and Social Informatics*, 1(2), 17–41. <https://doi.org/10.33736/jcsi.4932.2022>
- Kusjuniati. (2020). Strategi dan Peran Penting Komite Nasional Ekonomi dan Keuangan Syariah (KNEKS) dalam Mendukung Ketahanan Ekonomi Nasional. *Widya Balina*, 5(9), 112–122. <http://marefateadyan.nashriyat.ir/node/150>
- Lee, K., Lee, J., Lee, S. Y., & Yim, K. (2023). Effective Ransomware Detection Using Entropy Estimation of Files for Cloud Services. *Sensors*, 23(6). <https://doi.org/10.3390/s23063023>
- Lisa, O., Nugroho, L., Ildiko, O., Utami, W., & Nugraha, E. (2023). The Performance of Islamic Microfinance Institutions in the COVID-19 Pandemic: Is Asset Quality Important? *Sosyoekonomi*, 31(58), 145–160. <https://doi.org/10.17233/sosyoekonomi.2023.04.07>
- Melzatia, S., Mahroji, Wahyudi, I., & Nugroho, L. (2023). Analysis of the Ideal Sukuk Structure from the Perspective of Maqasid Sharia of Wealth (Indonesia Case). *International Journal of Commerce and Finance*, 9(1), 21–39.
- Monika, A., & Eswari, R. (2023). An ensemble-based stegware detection system for information hiding malware attacks. *Journal of Ambient Intelligence and Humanized Computing*, 14(4), 4401–4417. <https://doi.org/10.1007/s12652-023-04559-z>
- Muhtadi, R., Luthfi, F., Jasri, Rukmana, A. Y., Hamilunniám, M., Mutmainah, L., Wahidah, R. W., Nugroho, L., & Sunjoto, A. R. (2023). *MENELUSURI JEJAK SEJARAH PEMIKIRAN EKONOMI ISLAM* (1st ed.). Getpress Indonesia. https://books.google.co.id/books?hl=id&lr=&id=gvLMEAAQBAJ&oi=fnd&pg=PR1&ots=eVkcBpfsmi&sig=iKoV4nJcMp2qNrzbvtUwve4ul0&redir_esc=y#v=onepage&q&f=false
- Ng, A. W., & Kwok, B. K. B. (2017). Emergence of Fintech and cybersecurity in a global financial centre: Strategic approach by a regulator. *Journal of Financial Regulation and Compliance*, 25(4), 422–434. <https://doi.org/10.1108/JFRC-01-2017-0013>
- Nugroho, L. (2023). Reshaping the Mindset of Halal Entrepreneurs Toward Sustainable Business: The Case of Indonesia. In L. Raimi, S. M. Adekunle, & M. S. Shabbir (Eds.), *Contemporary Discourse of Halal and Islamic Entrepreneurship: Trends and Future Opportunities* (pp. 207–221). Springer Nature.
- Nugroho, L. (2024). *Pentingnya Business Continuity Plan (BCP) pada Kejadian Gangguan IT di Bank Syariah Indonesia*. [www.kompasiana.com](https://www.kompasiana.com/luckynugroho9529/645bd35c4addee2b2879b3f2/pentingnya-business-continuity-plan-bcp-pada-kejadian-gangguan-information-technology-it-di-bank-syariah-indonesia-bcp). <https://www.kompasiana.com/luckynugroho9529/645bd35c4addee2b2879b3f2/pentingnya-business-continuity-plan-bcp-pada-kejadian-gangguan-information-technology-it-di-bank-syariah-indonesia-bcp>
- Nugroho, L., Badawi, A., & Hidayah, N. (2019). Indonesia Islamic Bank Profitability 2010-2017. *Shirkah Journal of Economics and Business*, 4(1), 75–99.
- Nugroho, L., Cetin, G., & Doktorlina, C. M. (2023). Discourses of Islamic Finance Supporting in Muslim-Friendly Tourism in the New Normal Era (Indonesia Cases). *KnE Social Sciences*, 8(12), 699–714. <https://doi.org/10.18502/kss.v8i12.13717>
- Nugroho, L., Doktorlina, C. ., & Ali, A. J. (2023). Contemporary Issues of Waqf in Indonesia. *BİLTÜRK Journal of Economics and Related Studies*, 5(3), 187–198. <https://doi.org/10.47103/bilturk.1260151.1>
- Nugroho, L., Miglietta, F., & Nugraha, E. (2022). Islamic Bank Profitability: Financing Micro and

- Small Segment, Promotion, Financing Quality, Labor Aspects (Indonesia Cases). *European Journal of Islamic Finance*, 9(3), 38–46. <https://doi.org/10.13135/2421-2172/6714>
- Oye, D. (2020). Analysis of Impacts of Operational Risk Management Practices on Banks' Financial Performance: Study of Selected Commercial Banks in Nigeria. *International Journal of Finance & Banking Studies* (2147-4486), 9(1), 22–35. <https://doi.org/10.20525/ijfbs.v9i1.634>
- Priyambodo, A. G., Nugroho, L., & Sugiarti, D. (2023). Kajian Penghimpunan Zakat Profesi (Studi Kasus Badan Amil Zakat Nasional Provinsi Kalimantan Timur). *Trending: Jurnal Manajemen Dan Ekonomi*, 1(1), 20–28.
- Priyonggo, S., Nugroho, L., & Zulfahmi. (2024). Kajian Kebijakan Publik Pada Masa Khalifah Umar Bin Abdul Aziz dan Relevansinya dengan Kebijakan Publik Pemerintah Indonesia Saat ini (Perspektif Pengangguran dan Pengentasan Kemiskinan). *Moneter : Jurnal Ekonomi Dan Keuangan*, 2(1), 273–290.
- Ridwan, M., Zebua, R. S. Y., Abasir, M. A., Sari, I. F., Muhsin, S., Nugroho, L., Yahya, A. M., & Soeharjoto. (2023). *Maqashid syariah*. Getpress Indonesia.
- Santika, E. F. (2024). *5 Bank dan Unit Syariah dengan Aset Jumbo di Indonesia 2023*. Databoks.Katadata.Co.Id.

TECHNOLOGY INNOVATION IN FINANCIAL SECTOR:

OPEN BANKING IN SOUTHEAST ASIA

Nur Afiqah Shahirah, Brunei Darussalam

In the ever-evolving landscape of the financial sector, innovation has emerged as a driving force, reshaping the way we conduct financial transactions, manage our assets, and access banking services. The integration of advanced technologies, including blockchain, artificial intelligence (AI), big data analytics, and open banking, has fundamentally changed the dynamics of the industry. In this essay, we will explore the profound impact of technology innovation in the financial sector, with a primary focus on open banking and how this transformation is unfolding in Southeast Asia, particularly in Indonesia and Singapore.

The financial sector's evolution is not a singular event, but a continuous journey shaped by technological advancement and changing consumer demands. Over the years, innovations such as electronic trading platforms have not only revolutionized trading practices but have also introduced high-frequency trading algorithms, fundamentally altered the dynamics of the financial markets. The rise of digital banking has enabled customers to conduct financial transactions with unprecedented convenience, offering services such as mobile banking apps, remote check deposits, and peer-to-peer payments. The introduction of cryptocurrencies, spearheaded by Bitcoin, have not only introduced the concept of decentralized digital currencies but have also brought blockchain technology into the spotlight, offering potential innovation for a wider range of financial services (Palmié et al., 2020).

Digital banking has revolutionized the way customers interact with their financial institutions. The advent of mobile banking apps, which offer a wide range of services, has made banking more convenient and accessible than ever before. Customers can now deposit checks remotely, pay bills with a few taps and send money to friends through peer-to-peer payment systems. This innovation has not only improved customer experiences but has also driven financial institutions to invest heavily in their digital infrastructure.

Technology innovation in the financial sector is a multifaceted journey that encompasses a wide range of disruptive technologies, including blockchain, artificial intelligence (AI), big data analytics, cloud computing, and more. These innovations have not only streamlined processes within financial institutions but have also opened the door to entirely new models of financial service delivery. Whether it's improving customer experiences, enhancing security, optimizing risk management, or increasing financial inclusion, technology has played an integral role in propelling the financial sector forward.

One prominent facet of technological innovation in the financial sector is the rise of open banking. Open banking, driven by the integration of innovative technologies like blockchain, artificial intelligence, and application programming interfaces (APIs), is transforming traditional financial services. It is a revolutionary concept in the financial industry, and it represents a

REFERENCES

- Fintech News Singapore. (2023, March 22). *Open Banking*. fintechnews.sg. Retrieved October 19, 2023,
- Oi, O. (2022, October 20). *Digital Transformation Open Banking*. fintechnews.sg. Retrieved October 19, 2023,
- Palmié, M., Wincent, J., Parida, V., & Caglar, U. (2020). The evolution of the financial technology ecosystem : an introduction and agenda for future research on disruptive innovations in ecosystems. *Technological Forecasting and Social Change*, 151. <https://doi.org/10.1016/j.techfore.2019.119779>
- Scott, S. (2022, March 28). *Application Programming Interface (API): Definition and Examples*. Investopedia. Retrieved October 19, 2023, from <https://www.investopedia.com/terms/a/application-programming-interface.asp>
- Shirazi, N., Aysan, A. F., & Nanaeva, Z. (2023, January). Open Banking for Financial Inclusion: Challenges and Opportunities in Muslim-Majority Countries. In *Islamic Finance, Fintech, and the Road to Sustainability. Reframing the Approach in the Post- Pandemic Era* (pp. 259–280). Palgrave macmillan. <https://doi.org/10.1007/978-3-031-13302-2>
- The Investopedia Team. (2022, April 4). *Open Banking: Definition, How It Works, and Risks*. Investopedia. Retrieved October 19, 2023,

PAYPALMINCLUSIVE CLOSED LOOP: INNOVATION SHARIAH FINTECH IN SUPPORTING PRODUCTIVITY OF SUMATERA PALM FARMERS Nikamtuzzahra, Indonesia

Sumatra is the largest palm oil producing island in Indonesia, around 53 percent of national palm oil production is produced on Sumatra Island, namely 24.4 million tons in 2021(BPS, 2023). Palm oil is able to produce vegetable oil which is much needed by the industrial sector so that palm oil has a great opportunity to improve the community's economy if it has good productivity in its management. In 2021, the island of Sumatra has an area of 442072 hectares of oil palm land with production reaching 7451

Even though there is great potential, low levels of productivity and quality of produce are the main problems in plantations. This is caused by several factors, including maximum management of plantation farming businesses in the application of advanced technology, especially the use of quality superior seeds, fertilizer, control of pests, diseases and weeds, as well as harvest and post-harvest handling, as well as the low level of human resource capacity, weak institutional farmers (Chris Michael, 2020). So, in this situation, farmers have not been able to enjoy adequate added value from both production activities and post-production activities. Considering the strategic geographical condition of the island of Sumatra, the large production of palm oil, and the importance of oil palm plantations for the economy, this topic should be the government's attention and agenda for increasing palm oil productivity. With an increase in productivity, it is hoped that this will increase.

Farmers play an important role in the development of oil palm plantations. However, on the other hand, farmers have difficulty accessing capital to develop oil palm plantations. An alternative additional capital that could be a way out is borrowing from a banking institution. However, in the process of borrowing from banks, farmers also experience difficulties due to the principle of prudential banking adhered to by banks, which makes it difficult for farmers to obtain capital loans, plus farmers' managerial abilities are still minimal (Setyowati, 2020). The physical condition of banking services can also be said to be still relatively weak, such as the procedure for applying for a bank loan often takes time, the process is complicated and the conditions are not easy to fulfill, there is no collateral, there is a lack of information and there is no micro credit service (Sampoerna, 2017) which in the end affecting the level of public access to various types of banking services, including credit services, as well as the bank's thoroughness in selecting borrowers and the level of financial literacy of the Indonesian people which is still quite low are also obstacles that many farmers experience in obtaining loans. This means that the loan services provided by Indonesian banks are still not fully accessible to all levels of society, especially farmers. On the other hand, farmers are also unable to finance with personal capital, so funding sources that come from external farmers are needed.

REFERENCES

- BPS, B. P. (2023). *Beranda, Kegiatan Statistik, Perkebunan Masih Jadi Andalan*. Diambil Kembali dari Badan Pusat Statistik Provinsi Jambi: <https://jambi.bps.go.id/news/2022/08/10/237/perkebunan-masih-jadi-andalan.html>
- Muhamad Rizal1, E. M. (2018). FINTECH SEBAGAI SALAH SATU SOLUSI PEMBIAYAAN BAGI UMKM. Departemen Administrasi Bisnis, Fakultas Ilmu Sosial dan Ilmu Politik, UNPAD, 90.
- Novitasari Agus Saputri, A. D. (2022). Digitalisasi Pembiayaan: Atensi UMKM Dalam Memanfaatkan . Ekonomi, Keuangan, Investasi dan Syariah (EKUITAS), 604.
- Setyowati, H. E. (2020, 11 18). Pemerintah Dorong Peningkatan Sektor Pangan dan Pertanian untuk Kesejahteraan Masyarakat Indonesia. Diambil kembali dari Kementerian Koordinator Bidang Pertanian Republik Indonesia: <https://www.ekon.go.id/publikasi/detail/647/pemerintah-dorong-peningkatan-sektor-pangan-dan-pertanian-untuk-kesejahteraan-masyarakat-indonesia>
- Utara, B. P. (2021). uas Tanaman dan Produksi Kelapa Sawit Tanaman Perkebunan Rakyat menurut Kabupaten/Kota 2016-2018. Diambil kembali dari BPS Provinsi Sumatera Utara: <https://sumut.bps.go.id/indicator/54/204/2/luas-tanaman-dan-produksi-kelapa-sawit-tanaman-perkebunan-rakyat-menurut-kabupaten-kota.html>
- Chris Michael, P. M. (2020). ANALISIS HUBUNGAN BIAYA PRODUKSI KELAPA SAWIT TERHADAP PENDAPATAN PETANI DI DESA PULO BAYU KECAMATAN HUTABAYU RAJA KABUPATEN SIMALUNGUN ORGANIK. Jurnal Agroteknosains, 8.
- Tampubolon, H. R. (2019). SELUK-BELUK PEER TO PEER LENDING SEBAGAI WUJUD BARU KEUANGAN DI INDONESIA. Jurnal Bina Mulia Hukum, 190.
- Yuneline, M. H. (2022). EDUKASI PEER-TO-PEER LENDING SYARIAH SEBAGAI ALTERNATIF PERMODALAN BAGI USAHA MIKRO KECIL DAN MENENGAH DESA CIWALEN PANJALU. Jurnal Berdaya Mandiri, 823.
- Sampoerna, P. M. (2017, 8 7). Mekar. Diambil kembali dari Kenapa UMKM Indonesia Kesulitan Mengakses Pinjaman Bank?: <https://blog.mekar.id/kenapa-umkm-indonesia-kesulitan-mengakses-pinjaman-bank/>

ISLAMIC FINANCE INNOVATION: STRATEGIES FOR FACING CHALLENGES AND CAPITALIZING OPPORTUNITIES IN INDONESIA

Ayulyn Nisail Musyarofah, Indonesia

The 4th Industrial Revolution has spurred the rapid advancement of digital technology. Nowadays, people cannot be separated from technology in their daily lives. Digital technology makes it easier for people to access information and manage resources efficiently. Most people prioritize the advancement of digital technology, especially in terms of internet usage. The Indonesian Internet Service Providers Association (APJII) reported that 78% of Indonesia's total population had used the internet by March 2023 (Asosiasi Penyelenggara Jasa Internet Indonesia, 2023). The large number of internet users in Indonesia supports the development of the digital economy, one of which is characterized by the emergence of financial technology. Financial Technology (fintech) emerges and develops along with changes in people's lifestyles which are currently dominated by information technology users with fast-paced life demands. The use of fintech can further maximize banking product services so that the payment system in buying and selling transactions becomes more effective and efficient.

Fintech is a term for innovation in financial services, where technology is key. According to Bank Indonesia financial technology/fintech is the result of a combination of financial services with technology which ultimately changes the business model from conventional to moderate, which initially in paying must be face to face and carry a certain amount of cash, can now make remote transactions by making payments that can be made in just seconds. According to Ansori (2019), fintech is a service that provides financial products using and utilizing emerging information technology.

The fintech industry in Indonesia is showing rapid growth. Based on data from Bank Indonesia, there are already 38 e-wallets that have received official licenses. In 2018, e-wallet transactions in Indonesia reached USD1.5 billion and are predicted to increase to USD25 billion by 2023 (Bank Indonesia, 2020). There are 5 most popular e-wallet applications in Indonesia since 2017-2019, namely GoPay, OVO, DANA, ShopeePay, and LinkAja. In addition, it is also reported that people are increasingly aware of the importance of fintech regulation. Therefore, the government must respond by providing regulations that provide more certainty for the industry, to a better level of financial literacy. It is undeniable that the development of fintech cannot be separated from the development of the digital economy, ranging from e-commerce to online transportation. The financial industry is required to continuously adapt and make adjustments in its business processes, as the dynamics of the industry are changing rapidly. If these dynamics and transformations are not well managed, there is a concern that they could disrupt the financial system and the economy. The aspect of economic stability remains important and should remain a major concern, including when the role of fintech and digital

REFERENCE

- Ansori, M. (2019). Perkembangan dan Dampak Financial Technology (Fintech) terhadap Industri Keuangan Syariah di Jawa Tengah. *Wahana Islamika: Jurnal Studi Keislaman*, 5(1), 31–45.
- Asosiasi Penyelenggara Jasa Internet Indonesia. (2023). *Survei APJII Pengguna Internet di Indonesia Tembus 215 Juta Orang*. <https://apjii.or.id/berita/d/survei-apjii-pengguna-internet-di-indonesia-tembus-215-juta-orang>
- Bank Indonesia. (2020). *Sistem Pembayaran & Pengelolaan Uang Rupiah*. <https://www.bi.go.id>
- Hiyanti, H., Sukmadilaga, C., Fitrijanti, T., & Nugroho, L. (2022). *Peluang dan Tantangan Fintech (Financial Technology) Syariah di Indonesia*. 107–118.
- Kemenkeu. (2023). *Keuangan Syariah Sangat Berperan dalam Pemulihan Ekonomi Nasional*. <https://fiskal.kemenkeu.go.id/baca/2021/08/25/4308-keuangan-syariah-sangat-berperan-dalam-pemulihan-ekonomi-nasional>
- Winarsih, T. (2022). *Memaknai Perkembangan Fintech Syariah melalui Sistem Akad Syariah*. 1(3), 130–142.

ISLAMIC FINTECH AS A NEW ENGINE OF ECONOMIC GROWTH

Agustin Nasa Bandiyah, Indonesia

The development of increasingly sophisticated technology will make it easier and open up opportunities for everyone to open a business. Year after year technology will always experience significant developments where the goal is to be able to create a technology that is more sophisticated and able to bring about major changes in helping to alleviate every human task. according to Muhammad & Rakmat Kurniawan (2014: 61) Nowadays the role of digital is extraordinary, almost all economies use technology and communication or digitalization, both in packaging products and in marketing products, making it easier and faster to distribute information used to make economic growth faster and unlimited with the support of digital technology and information technology.

Kennedy (FKBI Journal, No.6, 2017: 172) states that the development of technology in Indonesia is currently growing rapidly along with the discovery and development of science in the field of information and communication so as to create tools that support the development of information technology such as communication systems with unidirectional and two-way (interactive) communication tools. Currently Indonesia has reached the industrial revolution 4.0, which has an impact on the increasing number of internet users from various ages and certain groups of society. Internet users in Indonesia in 1998 only reached 500 thousand while by the end of 2017 it had reached more than 100 million users. According to APJII survey data, internet access in 2017 grew by 7.9% from the previous year and grew more than 600% in the last 10 years. The rapid development of technology in Indonesia and the wide range of internet services and the increasingly affordable price of devices for access to cyberspace have made internet users grow quite rapidly. There was a condition where at that time humans lived more focused on technology and thought that technology was everything without requiring any more interaction with other humans because everything could be accessed with technology itself. Thus creating a wide financing gap. In the midst of these conditions, Financial Technology (FinTech) companies were born as an alternative solution to meet people's needs for financial services.

To compensate for the Industrial 4.0 era which is more played by technological innovation, and "overrides" the role of humans, at the same time Society 5.0 emerged which was pioneered by Japan in carrying out a sustainable humanitarian mission (Koegh et al, 2020) to control digitalization so that it is directed The internet technology that plays digitalization must be fully controlled by humans, not the other way around. The development of digitalization based on internet technology cannot be ignored, the changes are constantly innovating in the Industrial 4.0 era, so it needs to be balanced with massive financial literacy to realize society 5.0 (Nurlaili et a., 2021). However, this does not mean that the full digitalization of technology can increase productivity and run effectively, instead it creates a new problem, namely Cyberloafing.

REFERENCE

- Keogh, John G., Laurette Dube, Abderahman Rejeb, Karen J. Hand, Nida Khan, and Kevin Dean. "The Future Food Chain: Digitization as an Enabler of Society 5.0." Building the Future of Food Safety Technology, 1st Edition, Blockchain and Beyond (2020). <http://hdl.handle.net/10993/42910>
- Chen, Mark A., Qinxu Wu, and Baozhong Yang. "How valuable is Fintechinnovation?." The Review of Financial Studies 32, no. 5 (2019): 2062-2106.
- Nurlaili, Nurlaili, Muhammad Faqih, Muhammad Hasan Basri, and Kiki Dwi Larasati. "Improving Financial Literacy in Facing the Era of Society 5.0." International Journal of Islamic Economics 3, no. 2 (2021): 150-163.
- Kurniawan Rahmad. Visi dan Aksi Ekonomi Islam. Malang: Intimedia (Kelompok In- TRANS Publishing), 2014.
- Hendra Kusuma dan Wiwiek Kusumaning Asmoro: Perkembangan Financial Teknologi (Fintech) Berdasarkan Perspektif Ekonomi Islam, Journal of Islamic Economic Development, Volume 4, No. 2, Desember 2020.
- Fachrurazi.2022 *FINTECH DALAM KEUANGAN ISLAM TEORI DAN PRAKTIK* (Jakarta: PT Publica Indonesia Utama

APPLICATION OF A WAQF BASED IJARAH SMART SUKUK FOR THE DEVELOPMENT OF WAQF PROPERTIES

Jawwad Ali, India

Smart Sukuk

One of the most recent and crucial frameworks for upcoming Sukuk issuances is called Smart Sukuk. In the period of developments in crowdfunding and financial technology, smart sukuk appears to be the future of Islamic fundraising to expand industry and infrastructure. The most lucrative markets in Islamic finance are sukuk. However, it is also evident that strong organizations and government bodies frequently issue Sukuk, making their issuance expensive. By utilising blockchain technology, the smart Sukuk framework promises to increase productivity, transparency, and cost efficiency while empowering SMEs, social impact projects, groups, and associations to create Sukuk using cutting-edge technology. The main function of the Smart Sukuk is to standardise and automate the accounting, legal, and administrative payment processes of traditional Sukuk transactions, all of which are fully supported in the issuing country by a licenced legal company. (Sa'ad, 2018). "In the Islamic economy, smart sukuk is tokenized by obtaining funds from investors in return for Sukuk Tokens that reflect a share of the investment's ownership. Without the use of traditional banks or middlemen, the money is automatically transferred back to the holders of Sukuk Tokens via the blockchain in accordance with the smart contract's regulations for Islamic Economics.". Because of this, any entity in need of money can issue a Smart Sukuk, which raises funds from investors in exchange for Smart Sukuk Tokens that represent a piece of the Sukuk. When an institution makes a payment, the money is automatically distributed back to the owners of Smart Sukuk Tokens via Blockchain in accordance with the terms of the smart contract—banking institutions or other third parties are not required. A thorough investigation and analysis reveals that, in contrary to the smart contract notion, Sukuk's behaviour is fully consistent. The sole distinction is automation; whereas Sukuk is manual, smart contracts are automatic. (Maghdeed, 2019).

Blossom's Smart Sukuk, the first of its kind in the world, leverages "smart contracts" from Ethereum, which are essentially blockchain computer programmes. A smart contract is used to manage all documents, tasks, calculations, and payments associated with the Sukuk, establishing a permanent audit trail that can be accessed at any time (Blossom, 2019). The blockchain complies with the contract's regulations for payments and ownership transfers since a smart contract encrypts business rules directly into the underlying payment currency. (Blossom, 2018). Advantages of Smart Sukuk

The term "Smart Sukuk" refers to Islamic bonds that have been digitalized in order for the Islamic financial system to keep up with the pace of rapidly advancing technology and to take advantage of new opportunities rather than run the risk of being disrupted. According to reports, the Sukuk, which uses blockchain technology to transact, offers numerous advantages

REFERENCES

- Angwei Law. (2017). *Smart contracts and their application in supply chain management*.
- Ambrose et al. (2015). The Possible Role of Waqf in Ensuring A Sustainable Malaysian Federal Government Debt. *Procedia Economics and Finance*.
- Blossom. (2018). *Islamic Finance Upgraded: Smarter Sukuk Using Blockchain*. Retrived from <https://bossomfinance.com/sukuk>.
- Çizakça. (1998). Waqf in History and its Implications for Modern Islamic Economies. *Islamic Economic Studies*, 43-70.
- Elasrag, H. (6 March 2019). *Blockchains for Islamic finance: Blockchains for Islamic finance:.*
- Fintech, I. (2018). *Blockchain Sukuk: The Smart way of doing it*.
- Ismail et al., C. Z. (2015). Administration and Management of Waqf Land in Malaysia: Issues and Solutions. *Mediterranean Journal of Social Sciences*, Vol 6 No 4, pp 613-620.
- Kot, I. (2019). *A weak link: Is blockchain as secure as we think it is?* ITProportal.
- M. e. (2012). Tackling Poverty: A Look at Cash Waqf . *Prosiding PERKEM VII*, (pp. 1611-1623).
- M.N.Siddiqi. (1995). An Overview of Public Borrowing in Early Islamic History. . *Journal of Islamic Economic Studies*, 61-78.
- Maghdeed, F. (14 AUGUST, 2019). SukukChain: A Blockchain Solution for Islamic Capital Markets.
- Mohd Yahya Mohd Hussin, F. M. (2012). Development of Sukuk Ijarah in Malaysia. *Journal of Islamic Economics, Banking and Finance*, 12.
- SA'AD, D. A. (2018). *Smart SukukStructure From Shari'ahPerspective: The Application Of MudarabahSmart Contract*.
- Swanson, T. (20 January, 2016). *Blockchain Enigma. Paradox. Opportunity*.

CRYPTOCURRENCY INVESTMENT IN ISLAM

Rahmat Kurnia, Indonesia

The increasingly widespread digital development in Indonesia has also spread to the economic sector. In this case, the internet has created a virtual world that resembles all aspects of the real world, including in the social, political and economic fields, as well as influencing the ease of transactions. In the economic sector in particular, the existence of the internet has had an important impact on financial transactions, making it possible for individuals in different locations to connect with each other, which can provide fast and easy services. As the types of services that provide convenience in the form of economic activity increase, this will have an impact on changes in the payment system, and will also influence people's economic behavior patterns (Putra, 2005).

People whose financial condition is in surplus will of course look for the right investment so that the funds they have can provide profits. Currently, various types of new investments are booming in response to increasing market demand. Accompanied by the era of revolution 4.0 which brought society to a new world, which included the economy in it. One of the investments currently being used by the public is cryptocurrency (Huda, 2020).

The development of the times can also have an impact on economic activities and the form of money continues to change from time to time, after which precious metals such as gold are used as the main material for payment instruments, checks and banknotes are also used as a means of payment. considered as money. With the globalization of the world economy, people's need for speed, comfort and security in financial transactions is increasing, thereby providing convenience in terms of payment systems (Yonifia, 2021).

As technology becomes more sophisticated, it also influences the form of payment in the economic system which has an impact on society. Nowadays, people prefer to use electronic payment systems compared to cash payment systems, this is because of the convenience provided by this payment system. Based on this phenomenon, people created crypto which is a new currency. This progress in the world of technology has also been felt by Muslims (Nouruzzaman, 2021). This has an influence on patterns of life and interactions in the social and economic world. This change in implementation is clearly illustrated due to changes in people's investment patterns and interests from post-traditional ones such as: deposits, property, gold, mutual funds, bonds and shares to a form of investment that is popular with digital groups, namely cryptocurrency investment (Davis, 2021).

Cryptocurrency, which is often known as "digital money", is a blockchain- based technology that is commonly used as digital currency. Regarding the role and function of this digital currency, it is the same as other currencies. However, cryptocurrency does not have a physical form like conventional currency in general, but is just a block of data bound by a hash as validation (Bhiantara, 2018). The phenomenon related to investment in the form of

REFERENCE

- Aditiasari, D. (2018). *IMF Reveals the Dangers of Cryptocurrencies* . Retrieved from <https://finance.detik.com/moneter/d3979293/imf-besar-bahayacryptocurrency>
- Aulia, M. (2021). Electronic Money, Digital Money (Cryptocurrency) and DSN-MUI Fatwa No. 116 concerning Electronic Money. . *Al-Mizan: Journal of Islamic Law and Economics* , 5(1), 15- 32.
- Ausop, A.Z. (2018). Bitcoin Cryptocurrency Technology for Investment and Business Transactions According to Islamic Sharia. *Journal of Sociotechnology* , 19.
- Banks, I. (2022). *Introduction to Financial System Stability and the Role of Bank Indonesia* . Retrieved from <https://www.bi.go.id/id/functionutama/stabel-sistemkeuangan/ikhtisar/default.aspx>
- Bhiantara, IB (2018). Cryptocurrency Blockchain Technology in the Era of the Digital Revolution. *National Seminar on Informatics Engineering Education (SENAPATI)* , 173-177.
- Davis, T. C. (2021). *The Routledge Companion to Theater and Performance Historiography*. Routledge: Taylor & Francis Group .
- Fatarib, H. &. (2020). Cryptocurrency and Digital Money In Islamic Law: Is it Legal? . *Jurisdictie* , 237-261.
- Franco, P. (2015). *Understanding Bitcoin: Cryptography, Engineering and Economics*, Wiley Finance Series. Chichester, West Sussex, United Kingdom: Wiley .
- Hairudin, AS (2020). Cryptocurrencies: A survey on acceptance, governance and market dynamics. *International Journal of Finance & Economics* .
- Hamin, DI (2020). Crypto Currency and Views of Legality According to Islam: A Literature Review. *JAMBURA: Scientific Journal of Management and Business* , 127-139.
- Huda, N. &. (2020). Risks and Profit Levels of Cryptocurrency Investment. *Journal of Management and Business* , Performance, 17(1), 72-84.
- Hussain, S. (2021, August 4). *What is cryptocurrency and is it halal?* . Retrieved from <https://www.qardus.com/news/whatis-cryptocurrency-and-is-it-halal>
- Ichsan, M. (2020). The Concept of Money in an Islamic Economic Perspective. *Prophetics* , 27- 38.
- Idhom, AM (2018). *BI Invites OJK-Bappebti to Expand Scope of Bitcoin Transaction Prohibition* . Retrieved from <https://tirto.id/bi-ajak-ojk-bappebtiperbesarjangkauan-larangantransaksi-bitcoin-cDix>
- Idrus. (2021). Halal Haram Cryptocurrencies. *AL-TASYREE, journal of sharia business, finance and economics* , 113-123.
- IDX. (2021, May 4). *Considering whether Bitcoin is Haram or Halal, here are 11 MUI notes* . Retrieved from <https://www.idxchannel.com/economics/menilik-bitcoin-haram-atauhalal-ini-11-dataan-mui>

- Imamia, T.L. (2021). Islamic Paradigm of Money: Interconnected Dimensions. . *Revista CEA* , 15.
- Indonesia, MU (2022, February 10). *Halal or Haram Crypto Investment? This is what the MUI said* . Retrieved from <https://finance.detik.com/fintech/d5936581/investasi-kripto-halal-atau-haram-ini-kata-mui>
- Institute, A. (2021, December 28). *Cryptocurrency in Islam: Asset, Money, or Something Else?* Retrieved from <https://alamisharia.co.id/institute/en/learn/cryptocurrency-menurut-islam>.
- Iqbal, I. (2012). Islamic Economic Thought about money, prices and markets. *Equatorial Journal LP2M IAIN Pontianak* , 1-15.
- Jazeera, A. (2018, April 8). *Islam and cryptocurrency, halal or not halal* . Retrieved from <https://www.aljazeera.com/economy/> 2018/4/8/islam-and-cryptocurrency-halal-or-not-halal
- Kusuma, T. (2019). The Perspective of Islamic Law On Cryptocurrency For Commodity Future Exchange in Indonesia. *International Conference on Language, Education, Economic and Social Science* , 275-293.
- Malaysia, T.o. (2017). Cryptocurrency Framework Diagnostics From Islamic Finance Perspective: A New Insight Of Bitcoin System. *International Journal Of Management Science And Business Administration*, 4(1) , 19-28.
- Nizar. (2018). *Digital Currency Controversy. In Anthology of the Disruptive Mindset of the Financial Services Sector*. Bogor: IPB Press.
- Noor, A. F. (2018). *Pros and Cons of Digital Money: The Case of Bitcoin*. Retrieved from <https://www.republika.co.id/berita/nasional/newsanalysis/18/01/27/p35hum440-pro-kontra-uang-digital-kas-bitcoin>
- Nouruzzaman, AW (2021). Cryptocurrencies in Islamic Economic Principles. *Dynasty International Journal of Educational Management and Social Science* , 3(2), 233-239.
- Nur Azizah, AS (2020). Cryptocurrency Phenomenon in Islamic Law Perspective. *Shautuna: Student Scientific Journal of Comparative Schools and Law*, 1(1) , 62-80.
- Prasetyo, L. &. (2022). Cryptocurrency As Money: Islamic Monetary System Perspective. *Al-Tahrir* , 71-94.
- Prima Dwi Priyatno, IN (2021). Looking at the Dynamics of Cryptocurrency with an Ushul Fiqh Approach. *Scientific Journal of Islamic Economics* , 1682-1688.
- Priyatno, PD (2021). Looking at Cryptocurrency Dynamics with an Ushul Fiqh Approach. *Scientific Journal of Islamic Economics* , 7(03), 1682–1688.
- Putra, PL (2005). Bitcoin and Blockchain to Indonesia's Economic Resilience: A Business Intelligence Analysis. *Journal of Economics and Policy* , 13.1.
- Rahman, MM (2021). Bitcoin as an investment tool: Analysis of the results of Bahtsul Masail Ma'had Aly Hasyim Asy'ari Tebuireng's 2018 decision regarding Bitcoin. *Medina: Journal of Islamic Studies* , 143-159.
- Rosen, K. H. (2018). andbook of Discrete and Combinatorial Mathematics (Second ed.). *H. Boca Raton: CRC Press, Taylor & Francis Group* .

- Tejosusilo, E.O. (2019, January 25). *What is meant by Cryptocurrency (Digital Currency)?*
Retrieved from www.finansialku.com/apa-yang-dimaksud-dengan-Cryptocurrency-mata-uang-digital/amp/
- Umam, AK (2020). Cryptocurrency Dynamics and Islamic Economic Mission. *An-Nisbah: Journal of Sharia Economics* , 366-386.
- Vynck, G.D. (2022, March 8). *Washington Post*. Retrieved from *Islam has a rich tradition around finance. Crypto is prompting new questions* . Retrieved from <https://www.washingtonpost.com/technology/2022/03/08/bitcoin-cryptoislam-haram/>
- Yonifia. (2021). Concept of Money and Cryptocurrency in Islamic Economic Dimension. *Talaa: Journal of Islamic Finance* , 121-132.
- Yusuf, MY (2015). Islamic corporate social responsibility in Islamic banking: Towards poverty alleviation. *Ethics, Governance and Regulation in Islamic Finance*,. 73.
- Zain, MF (2018). Mining-Trading Cryptocurrency in Islamic Law. *Al-Manahij: Journal of Islamic Legal Studies* , 119-132.
- Zhao, Y. (2015). Cryptocurrency Brings New Battles into the Currency Market.

CHAPTER TWO – FINANCIAL CRIME AND CYBER SECURITY

CRYPTO ASSET IN OUR SOCIETY

Asma Nafisa, Indonesia

Cryptocurrency has been a topic of interest in recent years, and its impact on society has been a subject of debate. Cryptocurrency is a digital or virtual currency that uses cryptography for security and operates independently of a central bank. It is decentralized, meaning it is not controlled by any government or financial institution. In this essay, I will explore the effects of cryptocurrency on society. According to a study by UK Essays, cryptocurrency has both positive and negative impacts on our society and economy. Cryptocurrency is stored in electronic wallets and transferred using blockchain technology. It has revolutionized the way we store money, pay for goods and services, and do business. Cryptocurrency transactions are secure, fast, and efficient. They do not require intermediaries such as banks or financial institutions, which reduces transaction costs.

However, there are also some drawbacks to cryptocurrency. One of the main concerns is its association with illegal activities such as money laundering and terrorism financing. Cryptocurrency transactions are anonymous and untraceable, making them attractive to criminals. Another concern is the volatility of cryptocurrency prices. The value of cryptocurrencies can fluctuate rapidly, making them risky investments.

Despite these concerns, cryptocurrency has the potential to transform our society in many ways. For example, it can make transactions more private and efficient and improve the e-commerce system. Cryptocurrency can also provide financial services to people who do not have access to traditional banking systems.

In conclusion, cryptocurrency has both positive and negative impacts on our society. While it has the potential to revolutionize the way we do business and provide financial services to people who do not have access to traditional banking systems, it also poses risks such as money laundering and terrorism financing. As with any new technology, it is important to weigh the benefits against the risks before adopting it.

CRIME IN FINANCE UNDER THE CYBER WORLD

Alvera Zahvania Putri, Indonesia

The use of information technology and communication has changed both the behavior of society and human civilization globally. The development of information and communication technology has also caused world relations to become borderless and caused significant social, economic and cultural changes to take place so quickly. Information technology is currently a double-edged sword, because in addition to contributing to the improvement of human welfare, progress and civilization, it is also an effective means of unlawful acts,

The life of modern humans today cannot be separated from and sometimes even very dependent on advances in advanced high technology (high tech a tamod technology) in information and electronic buting through international networks (internet). On the one hand, technological advances bring positive impacts, such as e-mail: e-commerce euming EFTS (Electronic Funds Transfer System Dalernet Banking Cyber Bank On-line Business and so on. However, there is also a negative impact, with the emergence of various types of ligh tech crime and cyber-crime, so it is stated that cyber-crime is the most recent type of crime and her crime is part of the seamy side of the Information Society.

The development of cyber-crime can be seen from the occurrence of various crimes such as economic cyber-crime EFT (Electric Funds Transfers) Crime, Cybank Crime: Internet Banking Crime: On-line Buses Cros: Cyber in electronic Money Laundering High Tech WWC (White Collar Crime), Cyber Terrorism Cyber Sex Cyber Criminal and so on. Even in the back ground paper of the workshop on Measures to Combat Computer related Crime of the XI UN Congress, it is stated that the globalization of technology in the field of communication and information casts a dark shadow, because it allows for new forms of exploitation, new opportunities for criminal activity, and new forms of crime.

Financial crime refers to all crimes committed by an individual or a group of individuals that involve taking money or other property that belongs to someone else, to obtain a financial or professional gain. Financial crime is a multi-trillion-dollar business for criminal organizations, and it ranges from basic theft or fraud committed by single individuals to large-scale, global schemes masterminded by organized criminal syndicates. Financial crime is commonly considered as covering the following offenses is Fraud, Money laundering, Terrorist financing, Bribery and corruption, Insider trading, Cybercrime

Cyber-crime has two meanings, first cyber-crime in a broad sense is also known as computer related crime, where the perpetrator illegally uses computer systems and networks, and second cyber-crime in a narrow sense is computer crime where the perpetrator illegally/violates the computer security system, and data processed by other computers. According to Agus Subagyo (2015), cyber-crime is very complex and includes several forms, among others;

ENVIRONMENTAL FINANCIAL CRIME: THE DARK SIDE OF GREEN INVESTMENTS

Muhammad Rezaul Haider, Bangladesh

Environmental financial crime is a growing concern in the age of climate change. Criminals are increasingly offering attractive investments on projects related to the preservation of the environment, known as green investments, to defraud investors. Environmental crime and money laundering pose a threat to both the natural world and global financial systems, generating billions of dollars per year for criminals worldwide. The low risk and high reward nature of environmental crime makes it a lucrative and safe source of revenue for criminals.

This essay will explore the dark side of green investments, including the types of environmental financial crimes, the impact of these crimes on sustainable development goals, and the efforts to combat environmental financial crime.

Environmental financial crimes are illegal activities that exploit natural resources and wildlife, including violence, theft, and trafficking. These crimes generate significant financial gains and are especially prevalent in low-regulation countries where animals and natural resources are relatively plentiful and more easily exploited.

The following are some of the most common types of environmental financial crimes:

- **Illegal Logging:** This involves the harvesting, processing, and trade of timber in violation of national and international laws. Illegal logging is a significant contributor to deforestation, which has a devastating impact on the environment, including climate change, soil erosion, and loss of biodiversity.
- **Illegal Mining:** This involves the extraction of minerals and metals in violation of national and international laws. Illegal mining can cause significant environmental damage, including deforestation, soil erosion, and water pollution.
- **Wildlife Trafficking:** This involves the illegal trade of animals and animal products, including ivory, rhino horn, and pangolin scales. Wildlife trafficking is a significant contributor to the decline of endangered species and has a devastating impact on the environment, including loss of biodiversity and ecosystem disruption.
- **Waste Trafficking:** This involves the illegal disposal of hazardous waste, including electronic waste, chemicals, and medical waste. Waste trafficking can cause significant environmental damage, including soil and water pollution, and can pose a significant risk to human health.

Impact of Environmental Financial Crimes on Sustainable Development Goals

Environmental financial crimes have a significant impact on sustainable development goals (SDGs). The SDGs are a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030. Environmental financial crimes undermine the achievement of several SDGs, including:

REFERENCES

- Europol. (2023). What we know about the dirty business of environmental crime in the age of climate change. <https://www.europol.europa.eu/media-press/newsroom/news/what-we-know-about-dirty-business-of-environmental-crime-in-age-of-climate-change>
- Financial Action Task Force (FATF). (2021). Money laundering from environmental crime. <https://www.fatf-gafi.org/content/dam/fatf-gafi/reports/Money-Laundering-from-Environmental-Crime.pdf>
- ComplyAdvantage. (2022). AML and environmental crime. <https://complyadvantage.com/insights/aml-environmental-crime/>
- Refinitiv. (2021). Environmental crime's impact on global sustainable development goals. https://www.refinitiv.com/content/dam/marketing/en_us/documents/white-papers/environmental-crime-impact-global-sustainable-development-goals-report.pdf
- Swissinfo.ch. (2022, April 23). Green corruption—a planetary crime fought from Basel. <https://www.swissinfo.ch/eng/business/green-corruption---a-planetary-crime-fought-from-basel/48189556>
- Association of Certified Anti-Money Laundering Specialists (ACAMS). (2022). Green crimes and sustainable trade finance. <https://www.acamstoday.org/green-crimes-and-sustainable-trade-finance/>
- Financial Crime Academy. (2023). Ways to prevent environmental crimes. <https://financialcrimeacademy.org/ways-to-prevent-environmental-crimes/>
- Protiviti. (2023). Navigating the intersection of ESG and money laundering. <https://www.protiviti.com/us-en/whitepaper/navigating-intersection-esg-and-money-laundering>
- ComplyAdvantage. (2022). Detecting and preventing environmental crime. <https://complyadvantage.com/insights/detecting-and-preventing-environmental-crime/>
- Sanctions Scanner. (2023). Environmental crime and money laundering. <https://sanctionsscanner.com/blog/environmental-crime-and-money-laundering-569>
- Interpol. (2023). Reduce your impact on the environment. <https://www.interpol.int/en/Crimes/Environmental-crime/Reduce-your-impact-on-the-environment>
- United Nations. (2022). Putting a stop to global environmental crime has become imperative. <https://www.un.org/en/chronicle/article/putting-stop-global-environmental-crime-has-become-imperative>
- Environmental Protection Agency (EPA). (2023). Economic incentives. <https://www.epa.gov/environmental-economics/economic-incentives>

- EPA. (2023). Summary of Inflation Reduction Act provisions related to renewable energy. <https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy>
- U.S. Department of the Treasury. (2023). Fact sheet: The Inflation Reduction Act of 2022. <https://home.treasury.gov/news/press-releases/jy0993>
- National Renewable Energy Laboratory (NREL). (2023). Solar consumer protection. <https://www.nrel.gov/state-local-tribal/solar-consumer-protection.html>
- U.S. Department of the Treasury. (2022). The Inflation Reduction Act and U.S. business investment. <https://home.treasury.gov/news/featured-stories/the-inflation-reduction-act-and-us-business-investment>
- Bricker & Eckler LLP. (2022). Local government incentives available under the Inflation Reduction Act. <https://www.bricker.com/resource-center/solar/publications/local-government-incentives-available-under-inflation-reduction-act>

FINANCIAL CYBERCRIME

Nasheerah Rahman, Brunei Darussalam

In a digitalized world, technological advancements have undoubtedly transformed the way we live, work and communicate. These advancements have also given rise to a new breed of criminals – cybercriminals. These cybercriminals exploit the virtual landscape of the cyberworld to commit various crimes especially financial crimes. Financial crimes in the cyberworld encompasses a wide range of illegal activities such as phishing, malware, romance scams, distributed denial-of-service (DDoS) attack, Cyber espionage, ransomware and identity theft. These types of criminal activities can pose a significant threat to both the financial institution and the consumers. It does not only pose significant threats to the financial health of businesses and the trust of their customers, but also emerge as an escalating menace to national security. Financial fraud and cybercrime have become a fundamental problem in the new era, affecting not only banks and e-shops but also everyday life (Gebbski,2021). Hence, understanding the reasons behind the prevalence and impact of financial crime in the cyberworld is crucial in developing strategies to combat this growing threat.

Financial crime in the cyberworld has become an issue of utmost importance. It plays a pivotal role in shaping individuals' perceptions of honesty and trust towards the financial sector, additionally influencing their cost-of-living due to its broad impact on economic stability. The security vulnerabilities present in financial systems are the main reason why financial sectors is the most affected by cybercrime. Nevertheless, as the technological world advances, new means of security detection and protection are available. For instance, modern strategies for fraud detection and prevention have been implemented by financial institutions, emphasizing the identification of unusual behaviors on their digital platform to mitigate risks. Yet, as cybercrimes grow more complex and sophisticated, enhanced and innovative measures are needed to safeguard financial organizations and individuals alike.

Traditional security protocols in the financial technology system have been unable to keep pace with the sophistication and complexity of modern cyber-attacks, leaving financial systems continuously being exposed to threats and exploitation. Financial institutions handle vast amounts of sensitive data, including personal and financial information, making them the most attractive targets for cybercriminals. When cybercriminals obtain access to personal and financial information, there are many potential illegal criminal activities that they are able to perform such as threatening to release sensitive financial information unless a ransom is paid.

Additionally, efforts are in place and have been made to mitigate financial crimes. Mitigating financial crimes in the cyberworld requires a multi-faceted approach which involves individuals, business, government agencies as well as law enforcement. These collaborative strategies are crucial in the battle against the ever-evolving landscape of cybercrime. In this context, financial institutions and businesses play a pivotal role in defending against financial

REFERENCE

- Ashfaq, T., Khalid, R., Yahaya, AS., Aslam, S., Azar, A T., Alsafari, S., & Hameed, I A. (2022, September 21). A Machine Learning and Blockchain Based Efficient Fraud Detection Mechanism. <https://scite.ai/reports/10.3390/s22197162>
- Cason, C (2023). Financial Crime in a Cyber World. The 4th International Short Course on Islamic digital finance, cybersecurity and data protection, UIN Sunan Kalijaga Yogyakarta.
- Gębski, Ł. (2021, June 1). The Impact of the Crisis Triggered by the COVID-19 Pandemic and the Actions of Regulators on the Consumer Finance Market in Poland and Other European Union Countries. <https://scite.ai/reports/10.3390/risks9060102>
- Nuredini, A. (2014). Challenges in combating the Cyber Crime. *Mediterranean Journal of Social Sciences*. <https://doi.org/10.5901/mjss.2014.v5n19p592>
- Petrosyan, A., & 31, A. (2023, August 31). *Cyber incidents in financial industry worldwide 2022*. Statista. <https://www.statista.com/>
- Skiba, K. (2022b, November 30). *FBI: Nearly \$7 billion lost to cybercrime in 2021*. AARP. <https://www.aarp.org/money/scams-fraud/info-2022/fbi-internet-crime-report.html>
- Yong, C. (2020, September 17). *China acting as a safe haven for its cyber criminals, says US*. The Straits Times. <https://www.straitstimes.com/world/united-states/us-charges-7-in-wide-ranging-chinese-hacking-effort>.

I DO WANT TO INVEST IN CRYPTO CURRENCY, BUT I NEED MORE REASSURANCE

Hanifah Kutia, Indonesia

The finance world is going through some big changes, and at the heart of it all is cryptocurrency. Bitcoin, Ethereum, and loads of other digital coins have become everyday terms, and the idea of digital money isn't just for tech geeks anymore. It's a global thing now, and people, businesses, and even governments are all getting in on it. In this essay, we're diving into the world of cryptocurrency. We will talk about how it's gone global, look at what's happening with cryptocurrency in Indonesia (where I'm from), explore the views of Muslims on this topic, and I will also share my own thoughts and questions about it.

Cryptocurrency used to be seen as a geeky trend that might not stick around, but now it's a big deal. It's a kind of money that isn't tied to any one country, and it's all digital. Companies, from small startups to huge international ones, are getting on board with using it for payments. People from all over the world are investing tons of money in it. The story of cryptocurrency is pretty amazing. It all started with Bitcoin after the 2008 financial crisis. It was like a new way to do money outside of regular banks. Then came other digital coins, and they all have their own unique things going on. Ethereum, for instance, brought in smart contracts, which are super interesting. Companies like Tesla and PayPal now say, "Hey, we'll take your digital money as payment." Even governments are thinking about creating their own digital currencies. So, this whole thing is a big deal.

If we want to understand what's going on, we have to look at some cool moments in the cryptocurrency world. Remember when Bitcoin's value went through the roof in 2017? That was a wild time, and it got people super interested in the whole crypto world. After that, tons of new digital coins came onto the scene, each with its own unique twist. It's been quite the journey.

Indonesia is a unique place, and it's pretty interesting to see what's happening with cryptocurrency here. The government's views have shifted over time. In the early days, they were warning people about the risks of getting into crypto. But as time has passed, they've realized they need to come up with some rules.

Indonesia's relationship with crypto has been like a rollercoaster. At first, the government was worried, but now they're starting to figure out how to handle it. They've come up with some rules to make sure people are safe when they use digital money. But those rules are still evolving, and that will shape the future of crypto in Indonesia. Lately, some crypto exchanges in Indonesia got the green light from the Commodity Futures Trading Regulatory Agency (Bappebti) to operate. In fact, Bappebti also issued Decree of the Head of Bappebti Number 01/BAPPEBTI/SP-LKBAK/07/2023 dated 17 July 2023 concerning Approval as a Futures Clearing Institution for Guaranteeing and Settlement of Crypto Asset Physical Market Trades to PT Kliring

REFERENCES

- CNN, Team. (2023, July 21). Bappebti Resmi Luncurkan Bursa Kripto Indonesia. *CNN Indonesia*.
<https://www.cnnindonesia.com/ekonomi/20230721103211-92-976009/bappebti-resmi-luncurkan-bursa-kripto-indonesia>
- Achmad Fageh, Aldi Khusmufa Nur Iman. (2021). "Cryptocurrency as Investment in Commodity Futures Trading in Indonesia; Based on Maqāsid al-Sharī'ah Approach," *Journal Islamic law* 19, no. 2 175–92.
- Kusuma, Teddy. (2021). Cryptocurrency Deep Trade Futures Commodity Of Indonesian Perspective Islamic law, *TSAQAFAH* 16. No. 1 (2020). 109 - 26.
- Bloommoney.co. (2023, July 6). Is Bitcoin Halal? A Guide To Cryptocurrency For Muslims. *Bloommoney.co*. <https://bloommoney.co/learning-hub/is-bitcoin-halal-a-guide-to-cryptocurrency-for-muslims#:~:text=What%20do%20Islamic%20scholars%20say,country%2C%20has%20banned%20cryptocurrency%20trading>
- Media, Pojok. (2022, October 12). Hingga Agustus, Investor Aset Kripto Naik Jadi 16,1 Juta. *Beritasatu.com*
https://bappebti.go.id/pojok_media/detail/11410#
- Lewellen W., Lease R.C., Schlarbaum G.G. (1977). Pattern of Investment Strategy and Behavior among Individual Investors. *The Journal of Business*. 5(3).
- Gupta, Hemendra., Chaudhary, Rashmi. (2022). An Empirical Study of Volatility in Cryptocurrency Market. *Journal of Risk and Financial Management* 15(513).
<https://doi.org/10.3390/jrfm15110513>

CHAPTER THREE – BLOKCHAIN TECHNOLOGY AND DIGITAL CURRENCY

BLOCKCHAIN AS A SOLUTION TO OVERCOMING INFORMATION SECURITY PROBLEMS IN THE DIGITAL ERA

Anais Pavitasari, Indonesia

The current era is a digital era, where information and communication technology (ICT) has become an inseparable part of human life. ICT allows humans to access, process and disseminate information quickly, easily and cheaply. Information is a very important and valuable resource for individuals, organizations and countries. However, ICT also brings various challenges and threats related to information security. Information security is a condition where information can maintain its confidentiality, integrity, availability and authentication from unauthorized or malicious parties. Information security is an important aspect that must be considered in the current digital era. Information stored, processed, and transmitted via digital media can be the target of various cyber threats, such as hacking, data theft, wiretapping, fraud, sabotage, etc. Information security becomes very important because if information is leaked, damaged, lost, or Counterfeits can cause major losses to their owners, both in terms of economic, social, political and national security.

One of the main threats to information security in the digital era is cyber-attacks. A cyber-attack is an action carried out by irresponsible parties to disrupt, damage, steal or change information stored, processed or transmitted via digital media. Cyber-attacks can be carried out in various ways, such as hacking, data theft, ransom ware, phishing, denial of service (DoS), malware, and others. Cyber-attacks can target individuals, organizations, or countries. These impacts and losses can be divided into three categories, namely economic, social and political.

1. Economic impacts and losses occur due to damage, loss or theft of data, information or digital assets that have economic value. For example, a ransomware attack may result in victims having to pay a ransom to get back data or systems held hostage by the hacker. Phishing attacks can cause victims to lose money or financial information due to being deceived by fake emails or websites claiming to be official institutions. DoS attacks can cause victims to suffer losses due to being unable to access or provide online services that are important for their business or activities. According to a study conducted by McAfee and

REFERENCE

- 6 Risiko dan Ancaman Cryptocurrency. (n.d.). Retrieved December 10, 2023, from <https://www.cryptomedia.id/cryptopedia/6-risiko-dan-ancaman-cryptocurrency/>
- 12 Cyber Threats That Could Wreak Havoc on the Election | WIRED. (n.d.). Retrieved December 10, 2023, from <https://www.wired.com/story/election-threats-cyberattacks-misinformation/>
- 2023 Must-Know Cyber Attack Statistics and Trends | Embroker. (n.d.). Retrieved December 10, 2023, from <https://www.embroker.com/blog/cyber-attack-statistics/>
- Annual global industry losses caused by cyber crime 2018 | Statista. (n.d.). Retrieved December 10, 2023, from <https://www.statista.com/statistics/474928/average-annual-costs-caused-by-cyber-crime-worldwide/>
- Apa itu Blockchain dan Bagaimana Cara Kerjanya? (n.d.). Retrieved December 10, 2023, from <https://finansial.bisnis.com/read/20211211/55/1476516/apa-itu-blockchain-dan-bagaimana-cara-kerjanya>
- Apa Itu Blockchain? Inilah Pengertian & Cara Kerjanya - Qwords. (n.d.). Retrieved December 10, 2023, from <https://qwords.com/blog/apa-itu-blockchain/>
- Apa Itu Serangan 51%? | Binance Academy. (n.d.). Retrieved December 10, 2023, from <https://academy.binance.com/id/articles/what-is-a-51-percent-attack>
- Bagi, U. (n.d.). TEKNOLOGI BLOCKCHAIN SEBAGAI SOLUSI PENURUNAN RISIKO KREDIT.
- Complimentary Guide Explores Blockchain Risk. (n.d.). Retrieved December 10, 2023, from <https://www.isaca.org/resources/news-and-trends/newsletters/atisaca/2021/volume-11/complimentary-guide-explores-blockchain-risk>
- Cyber Security Incident yang Menghebohkan Dunia pada Tahun 2021 - Info Komputer. (n.d.). Retrieved December 10, 2023, from <https://infokomputer.grid.id/read/123240048/cyber-security-incident-yang-menghebohkan-dunia-pada-tahun-2021>
- Daftar Serangan Siber yang Picu Kerugian Finansial Sepanjang 2021 - TribunNews.com. (n.d.). Retrieved December 10, 2023, from <https://www.tribunnews.com/techno/2021/10/11/daftar-serangan-siber-yang-picu-kerugian-finansial-sepanjang-2021>
- Kominfo Akan Atur Blockchain, AI, IoT, hingga Tanda Tangan Digital - Teknologi Katadata.co.id. (n.d.). Retrieved December 10, 2023, from <https://katadata.co.id/desysetyowati/digital/6061a63ae51ba/kominfo-akan-aturl-blockchain-ai-iot-hingga-tanda-tangan-digital>
- Pengertian Blockchain | Fungsi dan Contoh | Kamus IT Techbuddy. (n.d.). Retrieved December 10, 2023, from <https://techbuddy.id/kamus/blockchain-2327/>
- Rifki Kautsar, M. (n.d.). TEKNOLOGI BLOCKCHAIN DALAM CYBERSECURITY.

<https://www.researchgate.net/publication/370074689>

Seberapa Aman Penggunaan Blockchain? Ini Pendapat Pakar Ahli. (n.d.). Retrieved December 10, 2023, from <https://wartaekonomi.co.id/read354502/seberapa-aman-penggunaan-blockchain-ini-pendapat-pakar-ahli>

Top 20 Most Common Types Of Cyber Attacks | Fortinet. (n.d.). Retrieved December 10, 2023, from [https://www.fortinet.com/resources/cyberglossary/types-of-cyber-](https://www.fortinet.com/resources/cyberglossary/types-of-cyber-attacks) attacks

What is a Blockchain Node? A Comprehensive Guide | Shardeum. (n.d.). Retrieved December 10, 2023, from <https://shardeum.org/blog/what-is-a-blockchain-node/>

CENTRAL BANK DIGITAL CURRENCY (CBDC) AS A NEW MONETARY INSTRUMENT IN RESPONSE TO THE GROWTH OF DIGITAL MONEY IN INDONESIA

Achmad Shidiq, Indonesia

Cryptocurrency has been gaining popularity in Indonesia, with the country ranking among the top 30 in the world in terms of cryptocurrency ownership. Here are some key points about the development of cryptocurrency in Indonesia (Kompas.com. 2023). First, interest in cryptocurrency and blockchain technology is growing in Indonesia, with the number of cryptocurrency users increasing rapidly. As of early 2022, there were already 5 million members in Indodax, one of the largest cryptocurrency exchanges in Indonesia. Second, there are several cryptocurrencies created by local entities in Indonesia, such as Zipmex Token (ZMT), Toko Token (TKO), ANA Coin (ANA), Token XAU, Agri Coin (AGCMN), BBX Coin, Tokenomy (TEN), and IDM Token. However, these coins are not as popular as Bitcoin and Ethereum, as they have not yet been connected to the global market. Third, the Indonesian government has been regulating the cryptocurrency market since 2018, with the issuance of the Minister of Trade Regulation No. 99 of 2018 on the General Policy of Cryptocurrency Futures Trading. The regulation designates the Commodity Futures Trading Regulatory Agency (Bappebti) as the authority responsible for overseeing cryptocurrency trading in Indonesia. In 2021, Bappebti issued Regulation No. 8 of 2021, which regulates utility crypto or crypto-backed assets (Pajak.com. 2023). Fourth, cryptocurrency trading is subject to taxation in Indonesia, with a tax rate of 0.05% proposed by the government. The government has been collecting taxes from cryptocurrency trading since 2021, with tax revenue amounting to IDR 246.45 billion as of December 2022. Fifth, the Indonesian government has been conducting literacy campaigns to educate the public about cryptocurrency and blockchain technology. In 2023, the government will hold a Crypto Asset Literacy Month to increase public awareness and understanding of cryptocurrency. Overall, the development of cryptocurrency in Indonesia is expected to continue to grow, with the potential for Indonesia to become a leader in the global cryptocurrency market (KOMINFO. 2023).

Cryptocurrencies are digital assets designed to work as a medium of exchange that use strong cryptography to secure financial transactions, control the creation of additional units, and verify asset transfers. In the digital world there is the term cryptocurrency, which is a digital currency based on cryptography. The cryptocurrency market is growing. In the last 5 years, more than 700 types of cryptocurrencies have been born. One of the most famous cryptocurrencies is Bitcoin. Actually, not only Bitcoin, several other types of cryptocurrencies such as Litecoin, Ripple, Paycoin, Darkcoin, or Dogecoin have the same concept, but have different advantages and disadvantages (RudiA. 2021)

REFERENCES

- Allen, F., Xian Gu, & Jagtiani, J. (2022). Fintech, Cryptocurrencies, and CBDS :Financial Structural Transformation in China. *Journal of International Money and Finance*, 1-13.
- Bulan Literasi Aset Kripto 2023, Masyarakat Harus Makin Paham*. (2023, Februari 02). Retrieved from KOMINFO.go.id: <https://www.kominfo.go.id/content/detail/47201/bulan-literasi-aset-kripto-2023-masyarakat-harus-makin-paham/0/berita>
- CBDC Role in Strengthening Implementation of Central Bank Mandate*. (2022, July 12). Retrieved from Bank Indonesia: https://www.bi.go.id/en/publikasi/ruang-media/news-release/Pages/sp_2417722.aspx
- Digitalization of Indonesian Currency Through Implementation of Central Bank Digital Currency*. (2023, April 17). Retrieved from Alami Institute: <https://alami.institute/en/learn/babaj-baru-mata-uang-rupiah>
- Hariani, A. (2023, Juni). *Mengulas Perkembangan Perdagangan Aset Kripto di Indonesia*. Retrieved from Pajak.com: <https://www.pajak.com/keuangan/mengulas-perkembangan-perdagangan-aset-kripto-di-indonesia/>
- Mengenal Lebih Dekat Central Bank Digital Currency*. (2022, Februari 14). Retrieved from KEMENKEU.go.id: <https://djpb.kemenkeu.go.id/direktorat/pkn/id/odading/2918-mengenal-lebih-dekat-central-bank-digital-currency-cbdc.html>
- Project Garuda : Navigating the Architectur of Digital Rupiah*. (n.d.). Retrieved from Bank Indonesia: <https://www.bi.go.id/en/rupiah/digital-rupiah/default.aspx>
- Rikhmadani, Y. A. (2021). Tantangan Hukum E-Commerce dalam Regulasi Mata Uang Digital (Digital Currency) di Indonesia. *Supremasi jurnal Hukum*, 177 - 192.
- Safitri, K., & Ika, A. (2022, Januari 14). *Kilas Balik Perkembangan Kripto di Indonesia Sepanjang 2021, Artis hingga Pejabat Berlomba Jualan NFT*. Retrieved from Kompas.com: <https://money.kompas.com/read/2022/01/14/104500726/kilas-balik-perkembangan-kripto-di-indonesia-sepanjang-2021-artis-hingga?page=all>
- Saputra, E. (2018). Dampak Cryptocurrency Terhadap Perekonomian Indonesia. *Seminar Nasional Royal (SENAR)*, 491 - 496.

- Ulfiana, A. D. (2022, November 30). *Indonesia c.bank launches white paper on planned digital currency*. Retrieved from Reuters: <https://www.reuters.com/markets/currencies/indonesia-cbank-launches-white-paper-planned-digital-currency-2022-11-30/>
- Wang, Y., M. Lucey, B., Vigne, S., & Yarovaya, L. (2022). The Effects of Central Bank Digital Currency News on Financial Markets. *Technological Forecasting and Social Change*, 1 - 39.

THE TECHNOLOGICAL INNOVATION BEHIND CBDC: BLOCKCHAIN AND DISTRIBUTED LEDGER TECHNOLOGY

Widya Rizki Wulandari, Indonesia

In this digital era, cryptocurrencies and blockchain technology have become very important topics of conversation. However, there is one innovation that may change the way we think about currency and financial transactions: Central Bank Digital Currency (CBDC). CBDC are digital currencies issued by a country's central bank, and they promise to bring about a revolution in the global financial system. One of the main technologies behind CBDC is blockchain and distributed ledger networks. In this essay, we will explore the technological innovations behind CBDCs, with a particular focus on the role of blockchain and distributed ledger networks in creating a more efficient and inclusive financial future.

Before we understand the technological innovation behind CBDCs, it is important to understand what CBDCs are and why they have become so important in the world of modern finance. CBDC is a digital form of currency issued by a country's central bank. In simple terms, these are dollars or euros in digital form issued by a central bank, such as the Federal Reserve in the United States or the European Central Bank.

But why are CBDCs so important? One reason is the response to the rapid development of cryptocurrencies such as Bitcoin and Ethereum. These cryptocurrencies have shaken up traditional financial markets and brought the concept of digital currencies to the world's attention. CBDCs are largely a response from central banks to stay relevant in the digital era and integrate the benefits of digital technology into the existing financial system. Additionally, CBDC also offers the potential to increase financial inclusion. In many countries, there are millions of people who do not have access to traditional banking services. CBDCs can help address this problem by providing access to a more inclusive financial system, regardless of geographic location or economic background.

One of the most interesting aspects of CBDC is the use of blockchain technology and distributed ledger networks. Before we explore how this technology plays a key role in CBDCs, let's outline what blockchain is. Blockchain can be defined in simple terms as a distributed database that contains an ordered list of various records and these records are connected together through links called chains (Zhang & Chen, 2019). It is a digital ledger that is decentralized, meaning no single party controls it. This ledger consists of a series of blocks containing financial transactions. Each block is connected to each other chronologically, and each block contains transaction information carried out by the user's network. The main advantages of blockchain are its transparency and security. Transactions entered into the blockchain are permanent and irreversible, creating a high level of noise. Additionally, because the network is decentralized, no single authority can control or manipulate the ledger. This makes blockchain a very secure and trustworthy technology.

CBDCs UNLEASHED: POTENTIAL IMPACTS ON FINANCIAL INTERMEDIARIES

Haura Hamizah Melzatia, Indonesia

Central bank digital currencies (CBDCs) refer to digital manifestations of traditional fiat currencies created and endorsed by central banks. Cryptocurrencies are designed to serve as a unit of account, a store of value, and a means of exchange. Central Bank Digital Currencies (CBDCs) are gaining traction among central banks globally, attracting attention from policymakers, researchers, and industry experts who want to understand their potential impact on financial intermediaries. This essay critically analyses the prospective implications of Central Bank Digital Currencies (CBDCs) on the future operations of commercial banks, shariah banks, and other financial intermediaries.

The implementation of Central Bank Digital Currencies (CBDCs) could have a substantial influence on commercial banks. The implementation of a retail central bank digital currency (CBDC) that encompasses both individual consumer and company accounts has the potential to significantly displace a considerable percentage of the deposits presently kept in commercial bank accounts. Furthermore, it could create opportunities for payment solution providers to access previously untapped markets. The potential consequences of deposit substitution and volume erosion may lead to a reduction in the income of commercial banks. The successful implementation of a Central Bank Digital Currency (CBDC) has the potential to catalyze a new era of innovation in financial services. However, the impact on commercial banks would be contingent upon the specific design choices made by the central bank. Central Bank Digital Currencies (CBDCs) can influence the demand for bank reserves and the effectiveness of interest rate policy, potentially altering the transmission and execution of monetary policy (McKinsey, 2022).

Central Bank Digital Currencies (CBDCs) have the potential to impact shariah-compliant banks, which adhere to the principles of Islamic banking. The adherence of Central Bank Digital Currencies (CBDCs) to these principles would be contingent upon the design decisions made by central banks. The Islamic financial regulations, which prohibit interest-based transactions, may pose compatibility challenges with Central Bank Digital Currencies (CBDCs), particularly if they incorporate interest-based mechanisms. According to the Bank for International Settlements (2023), if Central Bank Digital Currencies (CBDCs) are designed to adhere to shariah principles, they could potentially facilitate the development of novel financial services and products that align with such principles.

Central Bank Digital Currencies (CBDCs) possess the potential to exert a substantial influence on the promotion of financial inclusion through the facilitation of enhanced accessibility to financial services. Central Bank Digital Currencies (CBDCs) have the potential to facilitate financial inclusion by providing individuals without traditional banking services the

REFERENCES

- Bank for International Settlements. (2023). *Central bank digital currencies: financial stability implications*. Bank for International Settlements. https://www.bis.org/publ/othp42_fin_stab.pdf
- Bank Indonesia. (2019, March 9). *Bank Indonesia's Views on Central Bank Digital Currency*. Bank Indonesia. https://www.bi.go.id/en/ruang-media/siaran-pers/Pages/sp_236221.aspx
- Bank of Indonesia. (2021, March 9). *Bank Indonesia Continues to Study the Feasibility of Central Bank Digital Currency*. Bank of Indonesia. https://www.bi.go.id/en/ruang-media/siaran-pers/Pages/sp_236221.aspx
- International Monetary Fund. (2023, March 17). *Central Bank Digital Currency and Financial Inclusion*. International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2023/03/18/Central-Bank-Digital-Currency-and-Financial-Inclusion-531104>
- Jones, M. (2023, June 28). *Study shows 130 countries exploring central bank digital currencies*. Reuters. <https://www.reuters.com/markets/currencies/study-shows-130-countries-exploring-central-bank-digital-currencies-2023-06-28/>
- McKinsey. (2022, October 13). *Central bank digital currencies: An active role for commercial banks*. <https://www.mckinsey.com/industries/financial-services/our-insights/central-bank-digital-currencies-an-active-role-for-commercial-banks>

THE DISTINCTION OF CBDC AMONG CRYPTOCURRENCIES: RISK, BENEFIT, AND TREND IN INDONESIA

Rozita Julian Azmita, Indonesia

Future digital currency is a term that refers to the various forms of digital money that are emerging and evolving in the global economy. Digital currency is a type of currency that exists only in electronic form and does not have a physical counterpart. Some examples of digital currency are cryptocurrency, central bank digital currency (CBDC), stablecoin, and e-money. The future of digital currency is uncertain and depends on many factors, such as technological innovation, regulation, adoption, competition, and consumer preference. However, some possible trends and scenarios are: (1) The coexistence of multiple types of digital currency, each with its own advantages and disadvantages, use cases and user groups. (2) The convergence of different types of digital currency, such as the integration of CBDC with e-money platforms or the development of hybrid stablecoins that combine features of CBDC and cryptocurrency. (3) The dominance of one type of digital currency over others, such as the widespread adoption of CBDC by central banks and governments or the emergence of a global cryptocurrency that challenges the existing monetary system.

The demand for speedy and efficient money transfers anywhere is one of the key factors that drive the adoption of cryptocurrencies. As a result, the use of Bitcoin is expanding quickly in nations like El Salvador that have significant remittance rates. With the increasing adoption of cryptocurrencies, many countries, including Indonesia, have begun exploring the development of a regulated digital currency or Central Bank Digital Currency (CBDC). This is due to several weaknesses possessed by cryptocurrencies, such as extreme volatility, which makes them difficult to be used for daily transactions. So, what is Central Bank Digital Currency (CBDC) and what is the difference between CBDC vs cryptocurrency?

CBDC stands for central bank digital currency, which is a form of digital money issued by a country's central bank. CBDC is similar to the traditional fiat currency, except that it exists only in electronic form and does not have a physical counterpart. CBDC is backed by the government and has legal tender status, which means that it can be used to pay for goods and services, as well as to store value and make transfers. Some of the advantages of CBDC are that it can provide faster, cheaper, and more inclusive payment services to the public, as well as enhance financial stability and inclusion. CBDC can also compete with other types of digital currencies, such as cryptocurrencies and stablecoins, which are not issued or regulated by any authority. CBDC can also facilitate the implementation of monetary and fiscal policies by the central bank and the government.

Some of the challenges of CBDC are that it may pose risks to the privacy and security of the users, as well as to the profitability and competitiveness of the commercial banks and other financial intermediaries. CBDC may also require significant changes in the legal, regulatory, and

REFERENCES

- CBDC vs Cryptocurrency: What Are the Core Differences? - Shrimpy.
<https://academy.shrimpy.io/post/cbdc-vs-cryptocurrency-what-are-the-core-differences>.
- CBDCs vs. Cryptocurrencies: What's the Difference? - MUO.
<https://www.makeuseof.com/cbdcs-vs-cryptocurrencies-whats-the-difference/>
- CBDCs vs. Cryptocurrencies: Understanding the Key Differences.
<https://www.kaleido.io/blockchain-blog/cbdcs-vs-cryptocurrencies>
- Cryptocurrency vs. digital currency (CBDC) – The future of ... - Nagarro.
<https://www.nagarro.com/en/blog/cryptocurrency-vs-digital-currency-cbdc-banking-future>
- CBDC vs Cryptocurrencies: What's the Difference and Why Does It Matter?.
<https://blog.unocoin.com/2023/05/11/cbdc-vs-cryptocurrencies-whats-the-difference-and-why-does-it-matter/>
- Digital Currency Types, Characteristics, Pros & Cons, Future Uses.
<https://www.investopedia.com/terms/d/digital-currency.asp>
- Are digital currencies the future of the global economy? | World
<https://www.weforum.org/agenda/2022/12/digital-currencies-global-economy/>
- The Future of Digital Currency in 2021 and Beyond | Nasdaq.
<https://www.nasdaq.com/articles/the-future-of-digital-currency>
- What is cryptocurrency and how does it work? - Kaspersky.
<https://www.kaspersky.com/resource-center/definitions/what-is-cryptocurrency>
- Cryptocurrency: A Basic Guide for Beginners - NerdWallet.
<https://www.nerdwallet.com/article/investing/cryptocurrency>
- Cryptocurrency: What is it and how does it work? - BBC Newsround.
<https://www.bbc.co.uk/newsround/57115261>
- What is Cryptocurrency - Javatpoint. <https://www.javatpoint.com/what-is-cryptocurrency>
- Cryptocurrency Explained With Pros and Cons for Investment - Investopedia.
<https://www.investopedia.com/terms/c/cryptocurrency.asp>.
- The Difference Between CBD VS Cryptocurrency
<https://pintu.co.id/en/academy/post/difference-between-cbdc-vs-cryptocurrency>
- 14 Benefits of Cryptocurrency in 2023 | SoFi. <https://www.sofi.com/learn/content/benefits-of-crypto/>
- Advantages and Disadvantages of Cryptocurrency in 2023 - Forbes.
<https://www.forbes.com/advisor/in/investing/cryptocurrency/advantages-of-cryptocurrency/>
- Benefits of Cryptocurrency - EarlyBird. <https://www.getearlybird.io/blog/benefits-of-cryptocurrency>

8 Benefits of Cryptocurrency | The Motley Fool. <https://www.fool.com/investing/stock-market/market-sectors/financials/cryptocurrency-stocks/benefits-of-cryptocurrency/>

Cryptocurrency Explained With Pros and Cons for Investment - Investopedia. <https://www.investopedia.com/terms/c/cryptocurrency.asp>

Central African Republic delays cryptocurrency listing – Economist Intelligence Unit. <https://www.inferse.com/762872/central-african-republic-delays-cryptocurrency-listing-economist-intelligence-unit/>

Day Trading in 2023: Top Cryptocurrency Methods to Consider. <https://www.theportugallnews.com/news/2023-10-19/day-trading-in-2023-top-cryptocurrency-methods-to-consider/82458>

New York AG accuses crypto firms of deceiving investors in \$1 billion fraud. <https://www.cnn.com/2023/10/19/tech/crypto-firms-fraud-charges-new-york/index.html>

Advantages and Disadvantages of Cryptocurrency in 2023 - Forbes. <https://www.forbes.com/advisor/in/investing/cryptocurrency/advantages-of-cryptocurrency/>

Cryptocurrency: Risk Or Opportunity? The Good, The Bad, & The Ugly - Forbes. <https://www.forbes.com/sites/earlcarr/2021/12/30/cryptocurrency-risk-or-opportunity-the-good-the-bad--the-ugly/>

Cryptocurrency Explained With Pros and Cons for Investment - Investopedia. <https://www.investopedia.com/terms/c/cryptocurrency.asp>

Digital Currency in Indonesia: Understanding The Implementation. <https://www.cekindo.com/blog/digital-currency-indonesia>

Project Garuda: Navigating The Architecture Of Digital Rupiah. <https://www.bi.go.id/en/rupiah/digital-rupiah/default.aspx>

Apa Itu Central Bank Digital Currencies (CBDC)? - Warta Ekonomi. <https://wartaekonomi.co.id/read330789/apa-itu-central-bank-digital-currencies-cbdc>

Rupiah Digital, Uang Masa Depan Kita - Bank Indonesia. <https://www.bi.go.id/id/publikasi/ruang-media/cerita-bi/Pages/Rupiah-Digital-Uang-Masa-Depan-Kita.aspx>

CHAPTER FOUR – DIGITAL ECONOMY DISRUPTION

ROLE OF DIGITAL ECONOMY IN INDONESIA: AN ECONOMIC PERSPECTIVE, CHALLENGES, AND OPPORTUNITIES

Atif Yaseen, Pakistan

In the 21st century, the role of the digital sector is pivotal in a country's economic development. The digital economy has played a significant role in driving Indonesia's economic growth and development. With a population of over 270 million people, Indonesia is one of the largest and fastest-growing economies in Southeast Asia. In recent years, the country has witnessed remarkable growth in its digital economy, fueled by the widespread adoption of smartphones and increased internet penetration. This growth has created new opportunities for businesses and entrepreneurs, while also contributing to overall economic growth and job creation.

This article aims to provide an in-depth analysis of the role of the digital economy in Indonesia from an economic perspective, examining its challenges and opportunities. According to a report by Google, Temasek, and Bain & Company, Indonesia's digital economy is projected to reach \$124 billion by 2025, contributing to 11% of its GDP. This growth is driven by various sectors, including e-commerce, fintech, and digital services.

Indonesia's digital economy presents vast opportunities for the country's economic development. E-commerce platforms such as Tokopedia and Bukalapak have revolutionized retail by providing small businesses with access to a broader customer base. Fintech companies like GoPay and OVO have transformed financial services by enabling seamless mobile payments and expanding access to banking services for the unbanked population.

According to the World Economic Development report, in the new edition of the Digital Riser Report from the European Center for Digital Competitiveness by ESCP Europe Business School, Indonesia is recognized as one of the top Digital Risers in the G20. This acknowledgment highlights the country's progress in the digital sector, marking it as a rising star in the global digital economy landscape.

The digital economy has played a pivotal role in Indonesia's economic growth. Over the past decade, the country has experienced a significant expansion of e-commerce, online marketplaces, and digital payment systems. Statistically, Indonesia's GDP growth has been positively influenced by the digital economy. For instance, the digital economy's contribution to

REFERENCES

- Asian Development Bank. (2019). ASEAN Digital Integration Index 2018: Indonesia Country Report.
- Google, Temasek, & Bain & Company. (2020). e-Economy a SEA 2020: Resilient and Rising Amidst Adversity.
- McKinsey & Company. (2016). Digital Finance for All: Powering Inclusive Growth in Emerging Economies.
- PwC. (2019). Cybersecurity and Privacy Trends in Asia Pacific.
- World Bank Group. (2020). Indonesia: Maximizing Benefits from Digital Economy Development.
- World Economic Forum. (2021, September 2). These countries rank highest in digital competitiveness. <https://www.weforum.org/agenda/2021/09/countries-rank-highest-digital-competitiveness/>.
- Sapulette, M. S., & Muchtar, P. A. (2023). Redefining Indonesia's Digital Economy.
- Economic Research Institute for ASEAN and East Asia.
- Google, Temasek, & Bain & Company. (2020). e-Economy SEA 2020: Southeast Asia's \$100 Billion Digital Opportunity.
- World Bank. (2019). Indonesia's Digital Economy: A New Driver of Growth.

MACHINE LEARNING IN FINANCIAL INNOVATION

Shaban Nassor Shaban, Tanzania

Financial innovation refers to the creation of new financial products, services, or processes that are effective and efficient. It is an important topic in the research community, with increasing development in the financial system and the use of information technology (Edwar Sinaga et al., 2023). Financial innovation has both antecedents and consequences at both micro and macroeconomic levels (Babus Kinda Cheryl Hachem et al., 2019). It plays a crucial role in the modern financial system, impacting the profitability of the banking sector (Sharon Sophia et. Al, 2021). Financial innovation is driven by market structure and the payoffs of the claims being traded, with intermediaries designing securities based on the cash flows of underlying assets (Suman Tarleja and Mustansara Hayat). It also has implications for financial literacy, financial inclusion, and the global digital economy, particularly in developing countries. Financial development and innovation are closely linked to economic growth, with financial deepening predicting future growth and productivity advances. Overall, financial innovation is a dynamic process that shapes the financial system and has far-reaching implications for various aspects of the economy, and innovation is considered an important factor for economic growth and productivity advances.

Financial innovation has a long history, dating back thousands of years. It has been driven by various factors such as the need for specialization and investment, as well as the desire to mobilize capital for large projects. Throughout history, financial innovation has played a crucial role in economic growth and the stability of financial systems. However, the governance of financial innovation has evolved over time. While there have been mechanisms to govern the financial sector, such as legal frameworks and self-regulatory mechanisms, there is limited evidence of specific governance mechanisms for the process of financial innovation itself. The relationship between financial innovation and economic growth has been extensively studied, with financial development being considered a cause of economic growth. It is important to strike a balance between promoting the right kind of innovation that can drive growth and avoiding excessive or misused innovation that can have negative consequences for the overall economy (Arnaboldi & Rossignoli, 2000.; Beck, 2012; Naa & Arthur, 2017).

Examples of financial innovation include microfinance, junior market initial public offerings, consumer lending, private currency, and cryptocurrencies. These innovations have emerged as a response to unmet needs and have attracted both private sector and state attention. While financial innovations have the potential to address gaps in the financial system, they can also lead to regulatory changes and restrictions, sometimes even resulting in the elimination of emerging industries. Financial innovation has been a focus of research and discussion, particularly in the aftermath of the international economic crisis, with both positive and negative effects being observed. It has been recognized as a multidisciplinary field that

REFERENCES

- Arnaboldi, F., & Rossignoli, B. (n.d.). *Financial innovation in banking*.
- Babus Kinda Cheryl Hachem, A., Babus, A., & Cheryl Hachem, K. (2019). *NBER WORKINGPAPER SERIES MARKETS FOR FINANCIAL INNOVATION*. Retrieved from <http://www.nber.org/papers/w25477>
- Beck, T. (n.d.). *Handbook of finance and development*.
- Borrellas, P., & Unceta, I. (2021). The challenges of machine learning and their economic implications. *Entropy*, 23(3), 1–23. doi: 10.3390/e23030275
- Chelladurai, K., & Sujatha, N. (2023). A Survey on Different Algorithms Used in Deep Learning Process. *E3S Web of Conferences*, 387. doi: 10.1051/e3sconf/202338705008
- Edwar Sinaga, H., Halawa, F., & Anasthasia Mbate, C. (2023). *UNDERSTANDING THE FACTORS OF FINANCIAL INNOVATION IN INDUSTRIAL REVOLUTION 4.0 ERA*. 7(2), 2023.
- Ferrati, F., & Muffatto, M. (2021). Entrepreneurial finance: Emerging approaches using machine learning and big data. *Foundations and Trends in Entrepreneurship*, 17(3), 232–329. doi: 10.1561/03000000099
- Financial-literacy-and-financial-innovation-fintech-1532-5822-27-S1-1-194*. (n.d.).
- Gonzalez Perez, A., Bidarra, J., Figueiredo, M., González Pérez, A., & Godejord, B. (n.d.). *Breaking Barriers in Learning Math-Architecture of the MILAGE Learn+ App* © Artech-International *BREAKING BARRIERS IN LEARNING MATH Architecture of the MILAGE Learn+ App*. Retrieved from <https://www.researchgate.net/publication/329038291>
- Groth, S. S., & Muntermann, J. (2009). *SUPPORTING INVESTMENT MANAGEMENT PROCESSES WITH MACHINE LEARNING TECHNIQUES*. Retrieved from <http://aisel.aisnet.org/wi2009http://aisel.aisnet.org/wi2009/107>
- Huawei Technologies Co., Ltd. (2023). Overview of Deep Learning. In *Artificial Intelligence Technology* (pp. 87–122). Springer Nature Singapore. doi: 10.1007/978-981-19-2879-6_3
- Johnson, K., Pasquale, F., & Chapman, J. (n.d.). Artificial Intelligence, Machine Learning, and Bias in Finance: Artificial Intelligence, Machine Learning, and Bias in Finance: Toward Responsible Innovation Toward Responsible Innovation Recommended Citation Recommended Citation. In *Fordham Law Review* (Vol. 88). Retrieved from <https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion->
- Kwak, J., Ahn, J., Lee, J., & Park, S. (2022). *Shai-am: A Machine Learning Platform for Investment Strategies*. Retrieved from <http://arxiv.org/abs/2207.00436>
- Lommers, K., Harzli, O. El, & Kim, J. (n.d.). *Confronting Machine Learning With Financial Research*.
- Machine Learning. (2023). In *Artificial Intelligence Technology* (pp. 43–86). Singapore: Springer Nature Singapore. doi: 10.1007/978-981-19-2879-6_2

- Mndebele, S., Mayayise, T., Twinomurinzi, H., Msweli, N. T., Mawela, T., & Thakur, S. (2023). *The Issues, Challenges and Impacts of Implementing Machine Learning in the Financial Services Sector EPIC Series in Education Science Scaling Data Skills For Multidisciplinary Impact* (Vol. 5).
- Naa, K., & Arthur, A. (2017). The emergence of financial innovation and its governance-a historical literature review. *Journal of Innovation Management Arthur JIM*, 5, 48–73.
- Sen, J., Sen, R., & Dutta, A. (n.d.). *Machine Learning in Finance-Emerging Trends and Challenges*.
- Vanschoren, J. (2018). *Meta-Learning: A Survey*. Retrieved from <http://arxiv.org/abs/1810.03548>
- Wong, Y. K. (n.d.). *UNDERSTANDING THE FEATURES OF DEEP LEARNING*.
- Zhang, C. (2022). *Asset Pricing and Deep Learning*. Retrieved from <http://arxiv.org/abs/2209.12014>

CBDC IN THE REVOLUTION OF NATIONAL CURRENCY DIGITIZATION AND ITS IMPACT ON THE GLOBAL ECONOMY SAHARANI, INDONESIA

Central Bank Digital Currency (CBDC) is a concept of digital currency or a digitized form of fiat money issued and backed by a central bank. The currency is designed as a secure and efficient means of payment that can be used for everyday transactions. Unlike cryptocurrencies such as Bitcoin, CBDCs are not decentralized and are subject to central bank control. The concept of CBDCs has gained significant attention in recent years, with several central banks around the world exploring the possibility of issuing their own digital currencies. This paper will explore the benefits, risks, challenges, implementation, comparison with other forms of payment, and the future of CBDCs.

Benefits of CBDC's is the CBDC has the potential for the financial system and society to offer a number of benefits over traditional forms of payment. In the traditional financial system, interbank fund transfers often take a long time and involve high costs, so CBDCs can reduce the cost and time required for transactions, increase financial inclusion, and improve the efficiency of monetary policy. CBDCs can also provide a more secure and transparent means of payment, as they can be easily tracked and monitored by central banks. This can help reduce the risk of fraud and money laundering.

One of the key benefits of CBDC is its potential to increase financial inclusion. In many countries, there are still large numbers of the population who do not have access to traditional financial services. According to the World Bank, approximately 1.7 billion adults worldwide do not have access to formal financial services. With CBDCs, people can access low-cost payment tools that can be used by anyone with a smartphone or internet connection. This can help reduce reliance on cash and improve the efficiency of payment systems. It can also expand financial accessibility and help reduce financial disparities in society.

CBDC can also increase transparency and accountability in the financial system. In the digital currency ecosystem, all transactions are recorded in decentralized blockchain technology. This means that all transactions can be transparently monitored and verified by authorized parties. This can help prevent illegal activities such as money and terrorism financing.

Another benefit of CBDC is its potential to improve the efficiency of monetary policy. CBDCs can give central banks more direct control over the money supply, as it can be easily tracked and monitored. This can help reduce the risk of inflation and deflation, and ensure that the economy remains stable.

CBDC Risks and Challenges there while CBDCs offer several benefits, there are also concerns about the potential risks and challenges associated with their implementation. One of the main risks is the impact on financial stability. CBDCs have the potential to disrupt the existing financial system, as they can reduce demand for traditional forms of payment such as cash and bank

DIGITAL ECONOMY DISRUPTION

(Unveiling the Dynamic View of Islamic Finance, Digital
Asset, Financial Crime and Cybersecurity)

"Digital Economy Disruption: Unveiling the Dynamic View of Islamic Finance, Digital Asset, Financial Crime and Cybersecurity" takes readers on a riveting journey through the intricate convergence of Islamic finance and the disruptive forces of the digital era. In this compelling exploration, the book delves into three key realms: "Islamic Finance and Digital Asset," unveiling the harmonious integration of traditional Islamic financial principles with the dynamic landscape of digital assets. "Financial Crime and Cybersecurity" reveals the critical intersection where financial security and the digital realm collide, offering insights into safeguarding financial systems from evolving cyber threats. The exploration extends to "Blockchain Technology and Digital Currency," providing a nuanced understanding of the transformative potential of blockchain in the creation and management of digital currencies. The book concludes with a comprehensive examination of "Digital Economy Disruption," offering readers a panoramic view of how the digital revolution is reshaping economies globally. This book's strength lies in its ability to demystify complex subjects, making them accessible to a broad audience. The narrative skillfully weaves together technical insights with real-world examples, ensuring that readers, regardless of their background, can grasp the profound implications of the intersection between Islamic finance and the digital revolution. "Digital Economy Disruption" is not merely a book; it's a roadmap for navigating the intricate landscape of finance in the digital age. Engaging and thought-provoking, this book invites readers to ponder the transformative potential and challenges that lie at the crossroads of tradition and innovation.