



## Challenges, Strategies, and Islamic Ways for Effective Indonesian Economic Digitalization in the Post Covid-19 Pandemic



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### Abstract

*This study aimed to describe the condition of the digital economy in Indonesia before the COVID-19 pandemic, analyze the challenges, strategies, and Islamic ways to strengthen economic digitalization in Indonesia, and describe the upgrading steps to realize economic digitalization in Indonesia. Using qualitative data and qualitative-descriptive analysis methods, the researchers analyzed the digital economy, community index, and social and economic processes. System observations and online transaction recapitulation, online journals, books, papers, and other publications were used to obtain the data of this study. As a result of this study, the challenges of economic digitalization in Indonesia are the ability of Indonesians to adapt to new technologies and the diverse locality values in Indonesia, which are still general. The strategy that can be implemented is developing end-user policies, such as end-to-end business cycle policies, and strengthening digital economy development governance that retains the value of Indonesian locality while involving various parties through collaborative steps. Besides, developing Islamic financial technologies is also required. This aims to improve sharia-compliant online market liquidity and social finance (zakāt, infāq, and waqf). In conclusion, the digital economy in Indonesia must encompass enhancing company processes through technology innovation, encouraging growth through government regulations, and involving new actors.*

**Keywords:** Indonesian Economic Digitalization, Digital Economy Platform, Fintech, COVID-19

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### Abstrak

Penelitian ini bertujuan untuk mendeskripsikan kondisi ekonomi digital di Indonesia sebelum pandemi COVID-19, menganalisis tantangan, strategi, dan cara-cara Islami untuk memperkuat

digitalisasi ekonomi di Indonesia, dan mendeskripsikan langkah-langkah penataran untuk mewujudkan digitalisasi ekonomi di Indonesia. Menggunakan data kualitatif dan metode analisis deskriptif kualitatif, peneliti menganalisis ekonomi digital dan indeks masyarakat serta proses sosial dan ekonomi. Data penelitian dikumpulkan dari dokumen online, seperti jurnal, buku, artikel, atau publikasi lain yang terkait dengan topik yang dibahas, serta pengamatan sistem dan transaksi online. Sebagai hasil dari penelitian ini, tantangan digitalisasi ekonomi di Indonesia adalah kemampuan masyarakat Indonesia untuk beradaptasi dengan teknologi baru dan keragaman nilai lokalitas di Indonesia yang masih bersifat umum. Strategi yang dapat diterapkan adalah mengembangkan kebijakan end-user, seperti kebijakan siklus bisnis end-to-end, dan memperkuat tata kelola pengembangan ekonomi digital yang tetap mempertahankan nilai lokalitas Indonesia, dengan melibatkan berbagai pihak melalui langkah-langkah kolaboratif. Selain itu, pengembangan teknologi keuangan syariah juga diperlukan. Hal ini bertujuan untuk meningkatkan likuiditas pasar online syariah dan keuangan sosial (*zakāt*, *infāq*, dan *wakaf*). Kesimpulannya, ekonomi digital di Indonesia harus mencakup peningkatan proses perusahaan melalui inovasi teknologi, mendorong pertumbuhan melalui peraturan pemerintah, dan melibatkan aktor-aktor baru.

**Kata Kunci:** Digitalisasi Ekonomi Indonesia, Platform Ekonomi Digital, Keuangan Digital, Covid-19

## A. INTRODUCTION

The Covid-19 pandemic, which can hamper economic growth in Indonesia, must be tackled with an appropriate and effective economic strategy. Prior to COVID-19, economic transactions carried out traditionally and conventionally seemed to be "forced" to change according to existing conditions (Gomber et al., 2018, p. 230; Tran, 2021, p. 1). One of the shifts in this economic sector can be achieved by applying economic digitalization. The barrier in "traditional" economic process can be covered by new ways that still bring safety to the health, as far as to keep the economic growth and avoid the recession and crisis. Economic recovery in Indonesia can be carried out through the methods offered by Islam such as *zakāt*, *infāq*, and *waqf* because they contain the values of social solidarity, fairness, collaboration, and equality for all and can effectively help those in need. It can be seen in the Islamic banking system, which has crisis resilience during the COVID-19 pandemic because it adopts and implements fair and transparent values.

In this case, the government is not the only actor in economic recovery because the community also strengthens the economy of the less fortunate. This step to strengthen the Islamic value-based economy can also be combined with technological developments. Technology has a role as an enabling tool to help human needs (Istianah & Wahyuningsih, 2019, p. 31), which can produce various positive and negative changes (Hosseini & Ramchahi, 2014, pp. 137–138). From the Islamic perspective, technological advances will be able to provide convenience and accuracy in carrying out daily life (Kahfi, 2006, p. 11). As perfect creatures compared to other creatures, humans must be able to adapt to circumstances and the environment. Realities, events, and history must influence human thought and action for the better. In Islam itself, the Qur'an encourages its people to be advanced and modern, supports the implementation of research and experimentation in any field, including technological developments that must be sought and explored for the truth (Q.S. Ali Imran [3]: 190-191). Thus, Indonesian economic digitalization can be the only way the Indonesian government can tackle the economic problem and growth in the post-pandemic era.

Economic digitalization can be defined as the widespread emergence of technological developments capable of changing business and social fabrics widely throughout the world (Tang, 2020). Through the extensive use of technology in this economic sector, many countries in the world have experienced great growth in their economies, dominated by Western countries and many countries in Asia (Ali et al., 2018, p. 1180). So far, digital studies tend to look at two Challenges, Strategies, and Islamic Ways... (S.A Chaniago, et. al)

things; First, digitalization studies strengthen e-commerce activities and all buying and selling/distribution activities of goods and services using electronic media (Horoshko et al., 2021, p. 167). Second, studies in banking emphasize that innovation in financial services or financial services is focused on giving a touch of modern technology (Su et al., 2020, p. 1; Umar & Gubareva, 2020, p. 1).

This article attempts to complement the shortcomings of previous studies that have not considered the dynamics of the economy during the COVID-19 pandemic. Indonesia should start considering developing its digital economy. In this way, the Indonesian economy will be much stronger and can avoid a recession or economic crisis due to the existing pandemic. To achieve this, three questions must be answered. First, how was the digital economy in Indonesia before the COVID-19 pandemic? Second, what are the challenges of implementing economic digitalization in Indonesia? The scope of this question is limited to the period during and after the COVID-19 pandemic. Third, what are the steps for upgrading to realize economic digitalization in Indonesia? This question refers to what steps Indonesia can take to digitize the economy as a whole.

This study employed a qualitative-descriptive analysis method, which relied on both primary and secondary data to provide answers to the research problems. The primary data was gathered via system observations and online transaction recapitulation, which were conducted online. The information gathered includes economic digitalization before and after COVID-19, which was gleaned through a review of existing documentation. In order to determine how the pandemic's growth and dynamics affected the government's efforts to solve the challenges that developed as a result of the pandemic, observations were conducted. Data was gathered through the use of online resources such as journals, books, articles, and other publications that were relevant to the themes under consideration. A two-pronged approach was used to analyze the data. To begin, data is gathered through comparisons between different levels of knowledge, beliefs, and behaviors in order to establish linkages and data synchronization between them. Second, data analysis is gained through distinct categories of information that can be compared and utilized to evaluate the data. This is followed by a description to identify patterns or trends in the data, and the process is completed with interpretation to uncover meaning.

## **B. DISCUSSION**

### **1. Digital Economy**

Throughout its history, the world economy has been through at least four major stages: agricultural society, the era of the global industrial revolution, oil utilization, and the era of the multinational corporation (KOMINFO, 2019). To overcome an economic domination, economic digitalization can become a choice in the economic system because it is more flexible and inclusive so that the chances of creating equality will be much higher (Curtis, VMcVay, & Toynbee, 2020). The term digital economy can be interpreted as "economic activities that use digital information and knowledge as a key factor in the production process, modern information networks as their main activity, and utilize information and communication technology to support transaction activities" (United Nations Conference on Trade and Development (UNCTAD), 2019). The digital era of the economy was born and developed along with the increasing use of large technologies globally (Magherio et al., 1998, p. 332; Tapscott, 1996, p. 132).

Economic digitalization has a competitive character and concept and can inspire business people and startups who prioritize collaboration and synergy. In other words, the digital economy can be understood as a "sharing economy" that encourages lots of small and medium business units to participate in global business. The emergence of the digital economy era is marked by innovations in technology, such as internet connections and artificial intelligence (AI), that can easily spread across national borders (Fourcade & Klutz, 2020), so that in the end, they can become pioneers in economic growth. (Brynjolfsson & Collis, 2019; Curran, 2018, p. 210; Gomber et al., 2018, p. 227). In the era of economic digitalization, companies offer commodities according to special requests or offers, which are characterized as personal or private (Bloch &

Sergev, 2006, p. 772). When compared to the traditional economy, the digital economy will have a wider impact on all aspects of human life, such as interactions between individuals, the economic climate in a country, government policymaking, and much faster economic growth (Gopal et al., 2003, p. 17).

## **2. Impact of COVID-19**

Since March 11, 2020, when the World Health Organization declared COVID-19 a global pandemic, this virus has infected at least 23 million people and has killed more than 700,000 people in more than 210 countries. (Djalante, et al., 2020). The virus is expected to last for 18 to 24 months, which means that the pandemic will last until 2022 (Moore, Lipsitch, Barry, & Osterholm, 2020). Physical global economic activity has decreased throughout this pandemic, especially in physical transactions such as tourism, hospitality, and transportation. But on the other hand, the existing pandemic can increase economic activity whose transactions are carried out digitally. This increase is due to consumers who require safe economic solutions without threatening their health.

In addition, the need for effective and safe solutions, in the end, "force" some companies to switch to the online sector. Several areas of the company have successfully penetrated the digital sector to stay afloat amid the threat of a pandemic, such as the development of digital banking in several Southeast Asian countries that have developed in recent years (Kit, 2020). Not only that but the growth rate was also recorded in global internet usage, whether related to the digital publishing sector, video streaming, gaming, social media, the use of online learning services, as well as on online shopping platforms (Okuda & Karazhanova, 2020). The increase in numbers did occur in the consumption sector and the investment sector, such as increased investment in the entertainment, education, health services, and culinary sectors (Tashanova, et al., 2020).

The effectiveness of the application of economic digitalization in Indonesia was chosen as the research subject of this article through three considerations; (1) the issue of economic digitalization is a central topic that has not been given much attention in previous studies, (2) regarding the challenges and strategies for implementing inclusive economic digitalization, (3) the urgency of the government's role to support the existing digitalization process. The government must find a way to continue the transaction process and the economy to continue to run, even though there are limitations.

## **3. Challenges Demand of Sustainable Digital Economy Platform, and Islamic Ways to Strengthen the Economic Recovery**

Entering the industrial revolution 4.0, digital technology is one of the main assets to develop a country's economy. The development of the industrial sector accompanied by technological developments will positively impact a country, especially increasing the economy in that country. With digital technology, a country can encourage its economy to continue to develop (KOMINFO, 2019). Indonesia have great potential in developing the digital economy due to several factors, such as; (1) large number of internet users with 30 million online shoppers in 2017, (2) has an online trading market of 5 billion for formal online trading and 3 billion for informal online commerce, (3) and the potential for creating additional 3.7 million jobs by 2025 if the digital economy is successfully developed (Das et al., 2018). The development of the digital economy can trigger the emergence of new business models, integration between business sectors, and changes in business models in existing sectors.

However, despite these facts, there are several challenges faced in developing the digital sector in the economy in Indonesia. The first challenge arises from the ability of all human resources in Indonesia to adapt to technological developments that are not yet so good. This impacts the lack of inclusiveness in the use of technology and digital innovation in all productive activities in Indonesia. To overcome this, the Indonesian government must encourage the birth of platforms and create creators of digital products integrated with e-commerce, both on an Indonesian domestic and regional scale. This step must be combined with the strengthening of Challenges, Strategies, and Islamic Ways... (S.A Chaniago, et. al)

digital financial services supported by domestic fintech so that the inclusiveness of the use of technology in the production process can be achieved.

The second challenge is regarding the geographical condition of Indonesia, which is in the form of an archipelago with various cultures in it. Diverse locality values challenge the government in developing economic digitalization because the development of digitalization in Indonesia is still general. The government needs to develop end-to-end business cycle policies based on Indonesian locality values to overcome this. It would be better if the strategy carried out by the government was not based on a large-scale development but could be carried out on a local scale so that it could better meet the needs of local communities in Indonesia.

This development must be supported by a strategy carried out by the Indonesian government through policies or regulations that aim to create a social system that respects the values of Indonesian locality, with programs to improve people's welfare through productive activities that can create a complete and sustainable digital transformation, with the no-one-leave-behind principle, which means that the digitalization of this economy must involve all levels of society, without exception. This strategy must be based on three aspects, namely social, process, and technological developments. To provide broad benefits to consumers and business actors, a regulatory framework needs to be deployed to foster a balanced and competitive market climate in developing ideas to create better products and innovations. The purpose of the digital economy is to conduct global trade, and to cut the international chain, so that there are no barriers in the transaction process, and can be achieved through a policy development process through collaboration and cooperation between parties, initiated by the government as a facilitator of innovation and cooperation.

In addition, Indonesia has a great opportunity to digitize the economy (KOMINFO, 2019) increasing foreign investors' interest to enter Indonesia's digital market massively. This opportunity must be utilized properly by the Indonesian government by developing end-user policies, such as through end-to-end business cycle policies, strengthening digital economy development governance that still pays attention to the value of Indonesian locality, and can involve various parties through collaborative steps at the local level implementation.

However, even Indonesia is a country that has the opportunity to implement economic digitalization; there are several aspects that the government still needs to pay attention to and fix. One of them is the need to protect and realize a balance of business interests and capacities, including the MSME's. Without a balanced regulation for these business people, business people who are not able to compete will fall and disappear. The right regulations will save small companies and grow these companies, especially in the era of the COVID-19 pandemic.

Another advantage that Indonesia has is the number of predominantly Muslim people. As a country with the largest Muslim population in the world, Muslims can play their role through various forms of philanthropy in the Islamic economy and finance, which can recover and overcome economic shocks that occurred during the COVID-19 pandemic. One way is through direct assistance from *zakāt*, *infāq*, and alms, either through recognized formal institutions or directly from the community. By channeling it directly to people (*mustahīq*) who have been massively affected by the pandemic, it is an Islamic Economics philanthropic scheme in the post-pandemic economic recovery scheme. Therefore, it is necessary to strengthen the campaign for collecting *zakāt*, *infāq*, and alms, by involving mosques, educational institutions, and community leaders as campaigners and *zakat* collectors.

In addition, *waqf* is also able to play a role in strengthening the economy after the pandemic in Indonesia. Through cash *waqf* schemes, productive *waqf*, and Sukuk-linked *waqf*, the development of various *waqf*-based infrastructures can contribute to the recovery of various sectors of life after the pandemic. One example is through the *Waqf* Hospital (RSW) specifically for Covid-19 victims, the *Waqf* Isolation House (RIW), as well as procurement of goods related to the pandemic from *waqf* proceeds, such as personal protective equipment (PPE), masks,

ventilators, and other facilities. However, this *waqf* must be carried out professionally and transparently so that there is no abuse of authority in its implementation.

Business capital using the *qard al-hasan* scheme can also play a role in recovering the post-covid-19 economic sector. In the perspective of sharia, *qard al-hasan* is a loan that does not take any benefit (profit), but creditors still should repay the loan. This can be made a policy priority by targeting MSME actors, especially those on the threshold of business continuity due to the impact of the pandemic. In this case, the MSME actors are classified as *asnaf* (*zakāt* recipients) as poor groups or people who struggle in the way of Allah (*fī sabīlillāh*). The distribution of this assistance can be done through Sharia Microfinance Institutions or private companies and BUMN/BUMD in various regions in Indonesia.

Finally, but certainly not least, the advancement of Islamic financial technology must be taken into consideration. This is intended to improve social finance (*zakāt, infāq, and waqf*) in the context of commercial finance by enabling the liquidity of online market participants in accordance with Islamic law. Assuming that the recommendations above are followed through to completion, it is expected that aggregate demand and supply (as represented by the demand and supply curve) will be restored, and an economic surplus will be restored, which will assist to expedite Indonesia's economic recovery.

#### **4. Digital economy to strengthen post-COVID-19 pandemic resilience**

In the industrial era 4.0 generation, the size of a company is not a guarantee for the company's sustainability. The company's ability to survive arises from how responsive and agile the company is in overcoming obstacles that arise in this technological era. The demand to find the easiest way of doing activities results in fast movement. The direction of the development of the digital economy is very dynamic and is highly dependent on the development of technology which is growing very fast. Due to its dynamic nature, economic digitalization must be developed through principles that continue to prioritize stability but still provide possibilities for digital development innovations in the future.

One of the positive impacts of the COVID-19 pandemic on the economy is the doubling of online trade due to the need to comply with health protocols such as physical distancing, self-isolation, and travel restrictions (Auer et al., 2020, pp. 6–7; Fayomi et al., 2019b, p. 13; Juhro, 2021a, p. 10; Umar & Gubareva, 2020, p. 33). Moreover, the financial sector is experiencing development amid the COVID-19 pandemic (Asafo-Adjei et al., 2021). One of them is the banking industry that relies on technological innovation to provide better services to its customers through mobile or internet banking (Chen et al., 2017; Fayomi et al., 2019a; Juhro, 2021b). Furthermore, many startup players are developing technology-based financial service applications. The development of the fintech industry is becoming increasingly diverse, which has begun to penetrate the fields of payment services (payment), funding (funding), capital market (capital market), insurance (insurtech), and other financial services support services.

The fintech industry engaged in payments is developing as a non-cash payment tool that can be used for transactions with various merchants (such as ovo, go-pay, funds). Meanwhile, a fintech that is engaged in financing/financing (lending) in Indonesia are grouped into several sections, such as; (1) Peer-to-peer lending (P2P Lending), a platform that connects borrowers (debtors) and people who borrow funds (creditors), for example, Modalku, Investee, KoinWorks, Amarta. (2) Balance sheet lending, platforms that provide loans directly from their funds, for example, Julo, Uang Teman, Tunai Kita, Doctor Rupiah, (3) Online loan providers (online credit), platforms that provide credit facilities for transactions made online, such as *Akulaku, Kredivo, Cicil*, (4) online loan providers with pawn mechanisms, such as Borrow. Mostly in Indonesia, some fintech operate outside the payment and funding system. In this group, fintech operators are engaged in crowdfunding and digital banking, such as Kitabisa.com, Jenius (BTPN), and Digibank (DBS). This innovation in the fintech industry is carried out to answer consumer needs and is an alternative to adapting to changing customer behavior trends.

The development of the financial sector in the era of economic digitalization through fintech can grow the market in Indonesia. With the large population of Indonesia, there are still many groups of people who have not been served by conventional financial and banking services, especially those in remote areas. Through fintech, industry players in the financial sector can reach this group because it uses a customer-driven approach (faster and easier, regulations that are not too strict but still by existing regulations), so that the coverage and scope covered can reach areas isolated. The development of fintech in Indonesia provides growth to the financial sector industry and becomes a structural solution for the growth of the electronic-based trading industry, especially in the era of the COVID-19 pandemic.

The digital economy can also penetrate sales in the service sector. Many companies are starting to consider running a work-from-home (WFH) program, taking into account the calculation of benefits related to the health of their employees. At this stage, digitalization and virtualization can change the social order related to person-to-person interactions in various fields, such as education, entertainment, or other service companies. Through smartphones and business meetings, the services provided can be via Zoom, Skype, or via other platforms. In addition to reducing the growth of the COVID-19 number, this step will also support the government's policy regarding the lockdown of a certain area.

The emergence of various digital applications is proof that the financial sector has developed in the era of the digital economy. The payment system and digital applications related to the financing system have also begun to be developed and used by the public. The use of online payments, especially in the pandemic era, will also provide benefits and, at the same time, also offer security for public health (Ganne, 2018). Indonesia's step in its digital currency development plan is the right step in this era of the COVID-19 pandemic-19 (Post, n.d.). Reducing physical contact that must be implemented during the pandemic can be done by making this digital payment. Unfortunately, Indonesia doesn't have its digital currency yet. To overcome this, the government can collaborate with various e-wallet and e-commerce service providers so that the economy can continue to run without threatening the health of the Indonesian people.

### C. CONCLUSION

From the results of this study, it was revealed that the capacity of Indonesians to adapt to new technology, as well as the diversity of locality values in Indonesia, which are still prevalent, are identified as the main hurdles of economic digitalization in Indonesia. Building end-user policies, such as business cycle policies that run from beginning to end, and strengthening digital economy development governance are examples of strategies that can be implemented. These strategies maintain the value of Indonesian locality while involving various parties through collaborative steps. Aside from that, the development of Islamic financial technology is also necessary. This intends to increase the liquidity of sharia-compliant internet markets as well as social finance (*zakāt, infāq, and waqf*). At last, the digital economy in Indonesia must include improving business processes through technological innovation, supporting development through government regulations, and involving new actors. To sum up, this study confirms that digitalizing the economy needs to be carried out to provide better economic growth by increasing the availability of technological innovations so that the domestic Indonesian economic can grow even amid the COVID-19 pandemic.

This study also recommends that the digitalization of the economy can run optimally; however, the government must gradually tackle these obstacles. One way to achieve this is to integrate the digital economy with other sectors, especially small and medium-sized enterprises (SMEs). For the best results, it is necessary to incorporate a wide range of stakeholders and sectors in the planning process. The process of economic digitization must also place greater emphasis on the development of new ideas than on the updating of old legislation. Policies made by the government must be based on the principle of sustainable development and are based on the goal of the welfare of its people.

## REFERENCES

- Ali, M. A., Hoque, Md. R., & Alam, K. (2018). An empirical investigation of the relationship between e-government development and the digital economy: The case of Asian countries. *Journal of Knowledge Management*, 22(5), 1176–1200. <https://doi.org/10.1108/JKM-10-2017-0477>
- Asafo-Adjei, E., Boateng, E., Isshaq, Z., Idun, A. A.-A., Owusu Junior, P., & Adam, A. M. (2021). Financial sector and economic growth amid external uncertainty shocks: Insights into emerging economies. *PLOS ONE*, 16(11), e0259303. <https://doi.org/10.1371/journal.pone.0259303>
- Auer, R., Cornelli, G., & Frost, J. (2020). Covid-19, Cash, and the Future of Payments. *BIS Bulletin*, 03, 1–7.
- Bloch, M., Pigneur, Y., & Sergev, A. (2006). *On the Road of Electronic Commerce: A Business Value Framework, Gaining Competitive Advantage and Some Research Issues*. University of Laussane.
- Brynjolfsson, E., & Collis, A. (2019, November 1). How Should We Measure the Digital Economy? *Harvard Business Review*. <https://hbr.org/2019/11/how-should-we-measure-the-digital-economy>
- Chen, Z., Li, Y., Wu, Y., & Luo, J. (2017). The transition from traditional banking to mobile internet finance: An organizational innovation perspective—A comparative study of Citibank and ICBC. *Financial Innovation*, 3(1). <https://doi.org/10.1186/s40854-017-0062-0>
- Curran, D. (2018). Risk, innovation, and democracy in the digital economy. *European Journal of Social Theory*, 21(2), 207–226. <https://doi.org/10.1177/1368431017710907>
- Das, K., Toshan, T., Ben, V., Phillia, W., & Simon, W. (2018, August 28). *How Indonesia's ecommerce can drive economic development*. <https://www.mckinsey.com/featured-insights/asia-pacific/the-digital-archipelago-how-online-commerce-is-driving-indonesias-economic-development>
- Fayomi, O. S. I., Adelakun, J. O., & Babaremu, K. O. (2019a). The Impact of Technological Innovation on Production. *Journal of Physics: Conference Series*, 1378(2). <https://doi.org/10.1088/1742-6596/1378/2/022014>
- Fayomi, O. S. I., Adelakun, J. O., & Babaremu, K. O. (2019b). The Impact Of Technological Innovation On Production. *Journal of Physics: Conference Series*, 1378(2), 022014. <https://doi.org/10.1088/1742-6596/1378/2/022014>
- Ganne, E. (2018). *Can Blockchain Revolutionize International Trade?* World Trade Organization.
- Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services. *Journal of Management Information Systems*, 35(1), 220–265. <https://doi.org/10.1080/07421222.2018.1440766>

- Gopal, R. D., Ramesh, R., & Whinston, A. B. (2003). Microproducts in a Digital Economy: Trading Small, Gaining Large. *International Journal of Electronic Commerce*, 8(2), 9–30. <https://doi.org/10.1080/10864415.2003.11044292>
- Horoshko, O.-I., Horoshko, A., Bilyuga, S., & Horoshko, V. (2021). Theoretical and Methodological Bases of the Study of the Impact of Digital Economy on World Policy in 21 Century. *Technological Forecasting and Social Change*, 166, 120640. <https://doi.org/10.1016/j.techfore.2021.120640>
- Hosseini, S. E., & Ramchahi, A. A. (2014). The Impact of Information Technology on Islamic Behaviour. *JMEST*, 1(No. 5), 135–141.
- Istianah, I., & Wahyuningsih, S. (2019). The Hadith Digitization in Millennial Era: A Study at Center for Hadith Studies, Indonesia. *QIJIS (Qudus International Journal of Islamic Studies)*, 7(1), 25. <https://doi.org/10.21043/qijis.v7i1.4900>
- Juhro, S. M. (2021a). Central Banking Practices In The Digital Era: Salient Challenges, Lessons, And Implications. In *Working Papers (WP/01/2021; Working Papers)*. Bank Indonesia. <https://ideas.repec.org/p/idn/wpaper/wp012021.html>
- Juhro, S. M. (2021b). Central Banking Practices in the Digital Era: Salient Challenges, Lessons, and Implications. In *The Money and Technology Summit* (Issue June).
- Kahfi, A. S. (2006). Informasi dalam Perspektif Islam. *Mediator: Jurnal Komunikasi*, 7(2), 321–328. <https://doi.org/10.29313/mediator.v7i2.1274>
- Kit, T. S. (2020, January 13). *The rise of the digital economy: What is it and why it matters for Singapore—CNA*. <https://www.channelnewsasia.com/business/what-is-digital-economy-why-it-matters-mobile-app-782981>
- Magherio, L., Henry, D., Cooke, S., & Montes, S. (1998). *The Emerging digital economy*. Department of Commerce.
- Okuda, A., & Karazhanova, A. (2020). *Digital Resilience Against Covid-19. ICT and Disaster Risk Reduction*. United Nations Economic and Social Commission for Asia and Pacific (ESCAP).
- Post, T. J. (n.d.). *Indonesia Blockchain Week 2020 opens with decentralized finance in the spotlight*. The Jakarta Post. Retrieved 24 December 2021, from <https://www.thejakartapost.com/adv/2020/08/25/indonesia-blockchain-week-2020-opens-with-decentralized-finance-in-the-spotlight.html>
- Su, C.-W., Qin, M., Tao, R., & Umar, M. (2020). Financial implications of fourth industrial revolution: Can bitcoin improve prospects of energy investment? *Technological Forecasting and Social Change*, 158, 120178. <https://doi.org/10.1016/j.techfore.2020.120178>
- Tapscott, D. (1996). *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. McGraw-Hill.
- Tran, L. T. T. (2021). Managing the effectiveness of e-commerce platforms in a pandemic. *Journal of Retailing and Consumer Services*, 58(September 2020), 102287. <https://doi.org/10.1016/j.jretconser.2020.102287>
- Umar, Z., & Gubareva, M. (2020). A time–frequency analysis of the impact of the Covid-19 induced panic on the volatility of currency and cryptocurrency markets. *Journal of Behavioral and Experimental Finance*, 28, 100404. <https://doi.org/10.1016/j.jbef.2020.100404>