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Cash to Digital Transformation: Policy Challenges and Opportunities in Improving Financial Inclusion

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Abstract

The transition from cash-based payment systems to digital finance has emerged as a global phenomenon driven by advances in financial technology and a growing emphasis on financial inclusion. While this transformation offers significant opportunities to expand access to formal financial services, it also presents a number of policy challenges, particularly in developing countries with low levels of digital literacy. This study aims to explore the policy challenges and opportunities associated with the cash-to-digital transformation in enhancing financial inclusion. A qualitative research method with a literature study approach is used, analyzing academic publications, policy reports, and case studies from various countries. The research findings reveal that the success of this transformation depends on several important factors, including the readiness of digital infrastructure, public trust in the digital financial system, and the development of adaptive and inclusive regulations. The main contribution of this study lies in providing policy recommendations for governments, financial regulators, and fintech industry players in designing sustainable and inclusive digital transformation strategies. These findings are expected to serve as a foundation for policy makers to create a more effective digital financial ecosystem in promoting financial inclusion.

Keywords

Digital Transformation, Financial Inclusion, Opportunity, Policy Challenges.

1. Introduction

The financial transformation from a cash system to a digital system is a global phenomenon that continues to grow. The main drivers of this transformation come from advances in information and communication technology, internet penetration, and a shift in consumer behavior towards digital (Damodaran, 2006). Financial transformation is a fundamental change in the way financial services are provided, from a conventional cash-based and face-to-face system to a digital system that utilizes information and communication technology. This transformation includes the digitalization of financial processes, automation of services, and the integration of innovative technologies into the operations of financial institutions (Fahimah & Harsono, 2023). In Indonesia, financial transformation is becoming increasingly relevant given the still low level of financial inclusion, especially in remote areas. Only around 36% of the Indonesian population has a formal bank account, far behind the Asia Pacific average (69%) and countries such as Thailand (78%) (Laut & Hutajulu, 2019). The low ownership of formal accounts is due to various factors such as low financial and digital literacy, limited physical access to banks, and administrative requirements that are difficult for people in remote areas to meet. The reality in Indonesia is that many people have not felt socio-economic justice in terms of easy access to finance (Erlando et al., 2020; Jurnalita, 2024).

The inability of the banking sector to reach all elements of society such as farmers, fishermen and the like, causes most people to feel less helped by the presence of banking as a supporter of ease in accessing financial services. This shows the still low implementation of financial inclusion in Indonesia (Marsally et al., 2024). Financial inclusion, as defined in a report from Bank Indonesia and Financial Services Authority (*Otoritas Jasa Keuangan/OJK*), is the process of ensuring that all levels of society, including vulnerable and low-income groups, can access formal financial products and services easily, affordably, and sustainably (Xun et al., 2020; Milana & Ashta, 2020; Marc, 2020). Digitalization allows for the reduction of physical and administrative barriers that have so far hampered people's access to formal financial services. Digital services such as mobile banking, e-wallets, and peer-to-peer lending make financial services accessible anytime and anywhere, without the need for a physical presence at a branch office (Gabor & Brooks, 2017). Along with the development of information and communication technology, financial technology (fintech) has experienced rapid growth and become part of the modern financial ecosystem. In Indonesia, fintech is experiencing a positive trend, especially in the digital payment sector. Bank Indonesia recorded that electronic transactions reached IDR 350 trillion in 2022. Meanwhile, in 2023, transactions reached IDR 420 trillion, which means an increase of 20% compared to previous year (Buckley et al., 2019; Marsally et al., 2024).

Fintech has proven to be able to reach people who do not have bank accounts by providing access to financial services without a physical presence. A study shows that increasing the number of borrowers on fintech lending platforms by 1% can increase the financial inclusion index by 1.9% (Saffanah & Amir, 2022). Fintech also provides microfinance solutions that are more flexible, faster, and often cheaper than conventional banking, making it very relevant for MSMEs and the informal sector (Andaiyani et al., 2020). Digital financial transformation has also changed the role of banking from a physical-based institution to a digital-based financial service provider. According to Alwi et al. (2023) Digital banking not only expands the reach of services, but also increases operational efficiency and user convenience, while reducing service costs. Digital transformation in the banking sector also creates various conveniences such as online account opening, self-authorization, and integration of financial services with e-commerce platforms. Gomber et al. (2017) said that consumers can access financial services anytime and anywhere without

having to come to a branch office. Cyber security risks, personal data protection, limited internet infrastructure, and digital literacy gaps are obstacles that must be addressed immediately (Damodaran, 2006).

The success of this transformation is highly dependent on collaboration between government, regulators, the financial industry, and the community in creating an inclusive, safe, and sustainable digital financial ecosystem. Scott et al. (2017) The role of public policy in promoting digital literacy, expanding access to technology infrastructure, and ensuring consumer protection is becoming increasingly crucial in the digital era. Therefore, this study aims to analyze the challenges and opportunities of policy in increasing financial inclusion through financial transformation from cash to digital by utilizing financial technology (fintech). The results of this study are expected to provide practical benefits for the banking industry, regulators, and academics. For the banking industry, this study can be a source of insight to improve innovation and transformation strategies. Meanwhile, regulators can use the research findings as a basis for developing policies that support the development of digital banking. For academics, this study can be a basis for further research in the field of digital banking and financial innovation.

2. Literature Review

The digital financial transformation in recent years has revolutionized the way people access, manage, and utilize financial services. This change is driven by the rapid growth of financial technology (fintech), which offers innovative and more inclusive financial solutions than conventional financial systems. Fintech comes in various forms, including digital wallets, peer-to-peer lending platforms, micro-investments, and QR code-based payment systems, all of which provide convenience, speed, and high accessibility for users (Allen et al., 2016). The role of fintech is very significant in driving financial inclusion, especially for people who were previously difficult to reach by traditional banking services. In addition, the integration of technologies such as artificial intelligence, data analytics, and digital security has increased efficiency and transparency in financial transactions (Jones et al., 2019). This phenomenon also demands a shift in consumer behavior, who now prefer digital-based services because of the flexibility and convenience they offer. However, behind this convenience, digital transformation also poses challenges, such as personal data protection and adaptive regulations. Therefore, the development of fintech must be balanced with an adequate policy framework and digital literacy so that its benefits can be felt widely and sustainably in the national financial ecosystem (Andaiyani et al., 2020).

In the context of expanding financial inclusion through fintech technology, Rogers' (1962) Diffusion of Innovation Theory is a relevant theoretical framework for understanding the process of adoption of this technology in society. Fintech adoption does not occur uniformly, but is influenced by the characteristics of the innovation, communication channels, time, and the social structure of the recipient of the innovation. Innovations that are considered easier to use, provide relatively high benefits, and are in accordance with the social values of society will be adopted more quickly. Fintech that offers practical solutions such as digital payments, micro-loans, and application-based investments can quickly reach various segments of society, especially those previously untouched by formal financial services (Alhammadi, 2023; Alwi et al., 2023). Through this approach, the Diffusion of Innovation Theory helps explain why and how certain groups of society accept fintech more quickly than others, and how communication and education strategies can accelerate adoption. Thus, this theory provides an in-depth understanding of the role of society and communication in driving the growth of sustainable digital financial inclusion. Fintech as an innovation offers solutions that can address various traditional barriers in financial access, such as limited banking infrastructure in

remote areas, low bank account ownership, and lack of collateral or official documentation usually required by conventional financial institutions (Marc, 2020). This innovation is considered by some people as a more practical, fast, and affordable way to carry out financial transactions, save, or even obtain financing.

Regulations from financial authorities such as the OJK and BI, collaboration between banks and fintech, as well as support from the government in the form of literacy and digital infrastructure, are part of the social system that supports the spread of this innovation. People tend to trust fintech more if it is supported by clear regulations and trusted institutions (Noor et al., 2020). Overall, the diffusion of fintech as a financial innovation has been and is taking place in Indonesian society. More and more individuals and communities are starting to switch to digital services because they see the real benefits both in terms of efficiency, convenience, and accessibility. This process shows that the digital financial transformation through fintech not only contributes to the modernization of the financial system, but also becomes the main driving force in efforts to increase financial inclusion widely and evenly.

Financial inclusion, as defined in a United Nations report from 2016, involves offering lasting access to reasonably priced financial services, thereby integrating low-income populations into the established economic system (United Nations, 2016). Financial inclusion is an increase in opportunities and public participation in accessing finance, especially for the unbanked (Abubakar & Handayani, 2019:275). In addition, the transformation of financial from cash to digital also provide important support for the implementation of the financial inclusion program mentioned above (Tay et al., 2022). Digital finance, simply put, involves accessing financial services using digital tools such as mobile phones, computers, the internet, or digital payment cards (Aziz & Naima, 2021). McKinsey's definition aligns with this, highlighting access to financial services through mobile devices, the internet, or cards. Gomber et al. (2017) offer a broader view, stating that digital finance includes a wide array of new financial products, businesses, software, and innovative ways for companies to communicate and interact with customers, all facilitated by FinTech firms and forward-thinking financial service providers.

Definition of fintech in Indonesia Refers to the use of technology to provide more efficient and accessible financial services. Fintech covers a wide range of services from digital payments, financing, investment, risk management, to financial planning (Laut & Hutajulu, 2019). According to Bank Indonesia, fintech is an innovation in the financial services sector that involves the use of information and communication technology to improve the efficiency and effectiveness of the financial system (Bank Indonesia, 2024). There are various types of banking industry services based on fintech, including: mobile payment (m-payment), mobile-banking (m-banking), internet banking and electronic money (e-money). For other payment transactions such as credit cards, electricity tokens, e-commerce site payments, toll payments, busways, trains, hotels, and others (Nasution et al., 2022). All of these types of services are solely presented with the hope that the public can access financial services easily, quickly and safely. This presence will help the government in increasing financial inclusion.

3. Methods

This study uses qualitative methodology to explore the phenomenon under study in depth. This method allows for examination of the intricate details and context in which the phenomenon occurs, while also attempting to understand the various interpretations and meanings associated with it. This study uses a qualitative approach with the Internet Searching method (Zakariah et al., 2020). In data collection, researchers utilize internet technology to collect information from various sources and time periods. This process involves reviewing previous research,

such as theses, blogs, and journals that are relevant to the research topic. The data used in this study are secondary data from references such as journals, theses, and blogs that are the main sources of research. The internet serves as a valuable data collection tool, allowing researchers to obtain relevant and in-depth information. The purpose of data analysis is then to present research findings clearly and systematically. Data is presented in the form of descriptions, narratives, or systematic flows, which help researchers interpret the meaning, patterns, and causal relationships in the data. Furthermore, analysis involves checking the data to ensure that the findings are correct and reliable. The final step is to draw conclusions that comprehensively summarize what the research reveals and directly answer the initial questions. This method aims to significantly increase our understanding of the subject and offer a useful foundation for future research.

4. Results

4.1. Financial Transformation from Cash to Digital

Information and communication technology's progress, particularly in the digital space, has fundamentally changed many life sectors, including finance. Digital finance is increasingly widespread due to financial innovation and banking transformation. The Covid-19 pandemic also altered consumer behavior, pressuring banks to digitize their services (Li et al., 2022), thus shifting customer behavior from a physical to a virtual economy (Belitski et al., 2021). Indonesia is undergoing a rapid transformation in its payment methods, moving from cash to various digital platforms like credit/debit cards, e-wallets, and online banking. This shift, spurred by the booming e-commerce and online transport industries, has positioned Indonesia as a leading market for digital payment growth worldwide. (Alwi et al., 2023). The most popular way to pay digitally in Indonesia is through electronic money and e-wallets. This is largely due to the high number of internet and smartphone users. Additionally, their appeal is boosted by the fact that they don't require a bank account or credit card, making them accessible to a wider population. As a result, the number of electronic money and e-wallet users is higher than that of other digital payments that require a bank account (Romero, 2024).

In Indonesia, there are already more than 48 licensed e-wallet systems operated by domestic companies in the public and private sectors. GoPay and OVO, two of Indonesia's most used e-wallets, are boosted by their association with super-apps. GoPay is integrated within Gojek, Indonesia's largest multi-service platform, and OVO has grown through its alliances with Grab, a regional ride-hailing service, and Tokopedia, a major Indonesian online marketplace (Marsally et al., 2024). Consumers are often attracted to using these e-wallets due to immediate benefits like cashback and bonus points for cashless transactions. Bank Indonesia (BI) reported that the volume of electronic money (e-money) transactions reached 1.84 billion transactions in August 2024. This volume increased by 4.56% compared to the previous month, which recorded 1.76 billion transactions. Similarly, the value of e-money transactions amounted to Rp220.87 trillion in August 2024, growing by 3.18% compared to the previous month. Cumulatively, throughout January-August 2024, the volume of e-money transactions reached 13.76 billion transactions. This figure decreased by 0.29% compared to the same period in 2023. Meanwhile, the accumulated value of e-money transactions for the January-August period this year reached Rp1.6 quadrillion, growing by 35.76% compared to the same period last year, which was Rp1.18 quadrillion. The largest e-money transactions were for top-ups and shopping.

Table 1. Electronic Transaction in Indonesia

Electronic Transaction	Nominals
Reload/top up	Rp847.05 trillion
Shopping	Rp372.91 trillion
Transfer between electronic money	Rp350.44 trillion
Initial (first top up)	Rp13.86 trillion
E-money cash withdrawal	Rp8.32 trillion
Redeem	Rp10.34 trillion

The data in table 1 illustrates the rapid development of financial transformation from cash to digital in Indonesia. The rise of fintech companies is the main driver of digital financial transformation in Indonesia. The growth of fintech companies is the most significant factor accelerating the shift from cash to digital transactions. The accessibility of these platforms is also key, allowing them to reach a broad and diverse user base that increasingly prefers digital transactions.

4.2. Policy Challenges and Opportunities in Improving Financial Inclusion

Financial inclusion essentially aims to provide everyone with access to and the ability to use a variety of suitable financial services. Improving financial inclusion in Indonesia presents a significant opportunity to enhance economic growth, reduce poverty, and empower underserved communities. While there's been clear improvement, a considerable portion of the population is still unbanked or underbanked, emphasizing the necessity of targeted solutions to overcome this issue. Here's the opportunity of improving financial inclusion in Indonesia: Despite having a population exceeding 270 million, a large segment still lacks access to essential financial services such as bank accounts, loans, and insurance (Shofawati, 2019). This gap creates a huge untapped market for financial service providers. With rapid growth in internet access and smartphone usage, especially in rural and remote areas, digital financial services such as mobile banking, e-wallets (e.g., GoPay, OVO), and fintech apps have the potential to reach people who were previously excluded from the formal financial system (Suri & Jack, 2016).

The Indonesian government, through Bank Indonesia and the Financial Services Authority (OJK), has been actively promoting financial inclusion with initiatives like QRIS (QR code standardization for payments), National Financial Inclusion Strategy (SNKI), and encouragement of digital banks and fintech. These policies reduce barriers to entry and encourage innovation and investment in the sector (Alhammad, 2023). With financial inclusion, it can lead to poverty reduction, gender empowerment by giving women access to financial tools, and better risk management through insurance, savings. This makes financial inclusion not only profitable but also socially impactful (Inoue, 2019). The main idea behind financial inclusion is to make sure that everyone, especially people who are struggling financially or don't have much money, can get access to financial services and get loans when they need them, at a cost that's not too high (Le et al., 2019). But getting there has been tough. We've faced big challenges like connecting those who are outside the regular banking system with it, teaching everyone how to manage their money wisely, and making it easier for them to get loans so the economy can grow (Sarma & Pais, 2011).

There are a few challenge of improving financial inclusion in Indonesia. These challenges are from both demand and supply sides. On the demand side, the main reasons include a lack of awareness about financial services and products, low income, poverty, and limited literacy especially financial literacy and feeling like they don't belong or are excluded (Allen et al., 2016). From the supply side, contributing factors are distance from branches, restrictive branch timings, complex

documentation and procedures, unsuitable financial products, language barriers, and unhelpful staff attitudes (Jones et al., 2019). These procedural complexities often push individuals towards informal credit sources, which, in turn, negatively impacts their living standards, increases costs, and exposes them to unethical and unregulated entities and uninsured risks (Damodaran, 2006). To counteract this, financial inclusion necessitates more than just opening savings accounts; banks must actively work to build awareness about financial products, provide financial education and advice, and offer debt counseling services. It is imperative that every society ensures straightforward access to public goods (Marc, 2020).

Financial inclusion is a long term goal, technology is a really important tool for making financial inclusion happen. It can lower the cost of transactions, make it easier for customers to access services, and make financial products more affordable. But getting everyone included in the money system is a big job that will take time and keep evolving. To make it work well, everyone involved needs to cooperate: that's the government, the regulators, both public and private organizations, and all the people in the country. By working together, they can create a better way of doing business that meets today's economic needs and also lays the groundwork for even greater financial inclusion in the future.

5. Discussion

Based on research findings, the transition from cash to digital finance in Indonesia reflects a significant evolution in the national financial system that is not only technological, but also socio-economic (Astuti et al., 2022; Hendrawan et al., 2023). This shift shows that financial digitalization has great potential in expanding financial inclusion, namely by reaching groups of people who previously had difficulty accessing formal financial services. Digital finance, such as e-wallets, QR-based payments, and online lending platforms, have opened up wider, faster, and more efficient access, especially in remote areas and for low-income groups. This transformation has important implications for public policy, where the government and regulators need to create a framework that supports data security, digital literacy, and consumer protection (Yusuf et al., 2023; Anindya et al., 2024). In addition, innovation in the digital finance sector encourages the birth of new business models that are more adaptive to the needs of modern society. Equal access to digital financial services also plays a role in reducing economic disparities and increasing community participation in productive economic activities. Thus, the digital financial transition is not only a tool for efficiency, but also a foundation for more inclusive, equitable and sustainable economic development in the digital era.

The data highlight the massive adoption of digital payment systems such as e-wallets, electronic money, and internet banking. This digital uptake is particularly notable due to the fact that e-wallets in Indonesia do not require users to have a bank account, thereby enabling financially excluded individuals to participate in the digital economy. This point aligns with prior research by Suri & Jack (2016), which found that access to mobile money services significantly improved financial resilience among low-income households in Kenya. Similarly, Indonesia's case demonstrates that removing institutional barriers (like the need for a bank account) can democratize access to financial tools. Moreover, the research underlines that the COVID-19 pandemic accelerated digital transformation, compelling banks and consumers alike to shift to virtual interactions. This mirrors findings from Li et al. (2022), which noted that the pandemic catalyzed digital innovation in financial services globally. However, while technological advancement enables access, the report wisely points out that access alone is insufficient. Deep-rooted issues such as low financial literacy, mistrust of formal institutions, and the unsuitability of traditional banking products continue to hinder true inclusion. These findings are consistent with prior research by Allen et al. (2016), which emphasized that trust

and product fit are just as critical as availability when it comes to effective financial inclusion.

The research also surfaces an essential tension: although digital finance lowers costs and expands reach, it does not automatically translate to usage or empowerment unless it is accompanied by supportive policies and educational efforts. The challenge is not only technological but also institutional and cultural. This underlines the importance of multi-sector collaboration, as suggested in the report's conclusion. Governments, financial institutions, fintech companies, and civil society must work in concert to design inclusive systems that not only open doors but help users walk through them confidently. To relate this to previous research more concretely, it aligns with Beck et al. (2007), who argue that inclusive financial systems foster economic growth, reduce income inequality, and lower poverty rates. Indonesia's progress so far shows promise in this direction, especially if policy efforts continue to solve the demand and supply side barriers identified in the study.

6. Conclusion

In conclusion, Indonesia's shift from a cash-based financial system to digital finance reflects a profound transformation in the economic and social landscape of society. This development is driven by technological advances and changes in consumer behavior that are increasingly accustomed to digital solutions. Tools such as e-wallets, payment applications, and other fintech platforms have opened up access to financial services for groups previously underserved by the traditional banking system. This shows the great potential of digital finance as an instrument to expand financial inclusion in real terms. However, challenges such as low digital financial literacy, distrust of financial institutions, and the mismatch of services with community needs remain significant obstacles.

To realize comprehensive financial inclusion, synergy is needed between the government, financial sector, fintech players, and the community. Digital financial solutions must be designed to be easy to use, affordable, and in accordance with the socio-economic context of everyday users. In addition, consumer education and protection must be strengthened to build trust and encourage active participation. Further research needs to explore more deeply how people from various backgrounds actually use digital financial services in their daily lives and to what extent it improves their financial well-being. By understanding the behavior, needs, and barriers faced by users, stakeholders can design digital financial strategies that are more inclusive, sustainable, and have a real impact on creating more equitable economic well-being in Indonesia.

References

- Alhammadi, S. (2023). Expanding financial inclusion in Indonesia through Takaful: opportunities, challenges and sustainability. *Journal of Financial Reporting and Accounting* 34, (2), 12-32
- Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation*, 27(2), 1-30.
- Alwi, M. N., Bahari, F., Turot, M., Nainggolan, A., & Semmawi, R. (2023). Tantangan dan Peluang Perbankan Digital: Studi Kasus Inovasi Keuangan dan Transformasi Perbankan. *Jurnal Cahaya Mandalika* 3(2), 2160-2177.
- Andaiyani, S., Yunisvita, Y., & Tarmizi, N. (2020). Sricommerce: Journal of Sriwijaya Community Services Peran Financial Technology sebagai Alternatif Permodalan bagi UMKM di Desa Kerinjing, Kabupaten Ogan Ilir. *Sricommerce: Journal of Sriwijaya Community Services*, 1(2), 85-92.

- Anindya, D. A., Aisyah, S., Anggriani, D. P., Fadillah, T. D., Habibie, M., Risal, T., & Nurhusna, S. (2024). Evaluation of Revenue Accounting System at Pos Indonesia Pulo Brayan Branch using Framework Matrix Approach. *Economic and Business Horizon*, 3(2), 25-34.
- Astuti, I. P., Sugiyanto, F. X., & Kurnia, A. S. (2022). The role of financial inclusion in poverty reduction: A production theory approach. *Economic and Business Horizon*, 1(1), 24-32.
- Aziz, A., & Naima, U. (2021). Rethinking digital financial inclusion: Evidence from Bangladesh. *Technology in Society*, 64(2), 101509.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, Inequality and the Poor. *Journal of Economic Growth*, 12(1), 27-49.
- Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics* 58(3), 1-17.
- Damodaran, A. (2006). Financial Inclusion: Issues and Challenges on JSTOR. *Economic and Political Weekly*, 41(41), 4310-4313.
- Erlando, A., Riyanto, F. D., & Masakazu, S. (2020). Financial inclusion, economic growth, and poverty alleviation: evidence from eastern Indonesia. *Heliyon*, 6(10), 35-56.
- Fahimah, H. M., & Harsono, M. (2023). Literature Review of The Evolution of Payment System Paradigms: From Cash to Cashless with Digital Payment. *Social, Humanities, and Educational Studies (SHES): Conference Series*, 6(3), 11-18.
- Gabor, D., & Brooks, S. (2017). The digital revolution in financial inclusion: international development in the fintech era. *New Political Economy*, 22(4), 423-436.
- Gomber, P., Koch, J. A., & Siering, M. (2017). Digital finance and FinTech: Current research and future research directions. *Journal of Business Economics*, 67(5), 537e580.
- Hendrawan, M. R. N. A., Marits, S. A., & Herman, S. (2023). Development of digital payment systems in Indonesia. *Jurnal Ilmiah Manajemen Kesatuan*, 11(3), 1335-1344.
- Inoue, T. (2019). Financial inclusion and poverty reduction in India. *Journal of Financial Economic Policy*, 11(1), 21-33.
- Jones, L., Burns, C., & Yoon, C. (2019). CHAPTER 5 – Financial inclusion: challenges and opportunities. *Women's Economic Empowerment* 5(2), 63-80.
- Jurnalita, A. C. (2024). The Impact of Digital Transformation on MSME Competitiveness and Economic Growth. *Arthatama: Journal of Business Management and Accounting*, 8(2), 95-106.
- Laut, L. T., & Hutajulu, D. M. (2019). Kontribusi Financial Technology dalam Meningkatkan Inklusi Keuangan di Indonesia. In *Prosiding Seminar Nasional Fakultas Ekonomi Untidar 2019*.
- Le, T. H., Chuc, A. T., & Taghizadeh-Hesary, F. (2019). Financial inclusion and its impact on financial efficiency and sustainability: Empirical evidence from Asia. *Borsa Istanbul Review*, 19(4), 310-322.
- Li, G., Zhang, R., Feng, S., & Wang, Y. (2022). Digital finance and sustainable development: Evidence from environmental inequality in China. *Business Strategy and the Environment*, 31(7), 3574-3594.
- Marc, H. (2020). FinTech and Financial Inclusion: Opportunities and Challenges. *Journal of Payments Strategy & Systems*, 14(4), 315-325.
- Marsally, S. V, Nugroho, H. F., Saputri, S. E., Tavana, R., & Saputro, R. F. (2024). Analisis Peluang dan Tantangan Penggunaan Financial Technology (Fintech) Pada UMKM di Kabupaten Banyumas. *Pusat Publikasi Ilmu Manajemen*, 2(3), 227-240.
- Milana, C., & Ashta, A. (2020). Microfinance and financial inclusion: Challenges and opportunities. *Strategic Change*, 29(3), 257-266.
- Nasution, L. N., Sadalia, I., & Ruslan, D. (2022). Investigation of Financial Inclusion, Financial Technology, Economic Fundamentals, and Poverty Alleviation in ASEAN-5: Using SUR Model. *Abac Journal*, 42(3), 132-147.
- Noor, M., Fourqoniah, F., & Aransyah, M. F. (2020). The Investigation of financial inclusions, financial literation, and financial technology in Indonesia. *Jurnal Perspektif Pembinaan Dan Pembangunan Daerah*, 8(3), 257-268.
- Rogers, E. M. (1962). *Diffusion of innovations*. Free Press of Glencoe.
- Romero, L. (2024). *Digital payments in Indonesia - statistics & facts*. Statista.

- Saffanah, N., & Amir, W. (2022). Implementasi fintech (e-wallet) dalam mengembangkan bisnis bagi pelaku umkm di kota makassar. *JEMBA: Jurnal Ekonomi Pembangunan, Manajemen & Bisnis, Akuntansi*, 2(1), 1-8.
- Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of International Development*, 23(5), 613-628.
- Scott, S. V., Van Reenen, J., & Zachariadis, M. (2017). The long-term effect of digital innovation on bank performance: An empirical study of SWIFT adoption in financial services. *Research Policy*, 46(5), 984e1004.
- Shofawati, A. (2019). The Role of Digital Finance to Strengthen Financial Inclusion and the Growth of SME in Indonesia. *KnE Social Sciences*, 3(13), 389.
- Suri, T., & Jack, W. (2016). The Long-Run Poverty and Gender Impacts of Mobile Money. *Science*, 354, 1288-1292.
- Tay, L. Y., Tai, H. T., & Tan, G. S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*, 8(6), 12-25.
- Xun, Z., Guanghua, W., Jiajia, Z., & Zongyue, H. (2020). Digital economy, financial inclusion and inclusive growth. *China Economist*, 15(3), 92-105.
- Yusuf, S. D., Mokoagow, M., Nur, M., & Rauf, S. (2023). Islamic Financial Characteristics and the Sustainability of Islamic Banking in Indonesia: Challenges and Opportunities. *Jurnal Ilmiah Manajemen Kesatuan*, 11(2), 363-369.
- Zetzsche, D. A., Buckley, R. P., & Arner, D. W. (2019). FinTech for financial inclusion: driving sustainable growth. *Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology, and Law Reform* 34(3), 177-203.



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