

Research Horizon

ISSN: 2808-0696 (p), 2807-9531 (e)

Research Horizon

Volume: 04

Issue: 06

Year: 2024

Page: 213-222

Digital Technology on Financial Inclusion and Economic Justice in Indonesia

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Abstract

The digital revolution in financial services has significantly changed the landscape of financial inclusion. Financial inclusion and economic justice remain a major challenge for the poor and vulnerable, especially in developing countries like Indonesia. Digital technology is developing as a promising alternative for increasing access to services of formal financial, reducing economic inequalities, and improving people's well-being. This study investigates the function of digital technologies in fostering financial inclusion and economic justice across the social strata in Indonesia. The findings show that digital technology has enhanced access financial services, reduced inequality and opened new economic opportunities for communities. However, there are challenges in ensuring equal access to digital financial services, including literacy barriers, infrastructure gaps, and security concerns. By evaluating government initiative and private sector engagement in promoting financial inclusion, this study highlights the critical role of digital tools in advancing economic justice. The research contributes by providing policy recommendations to improve access to digital technologies, expand financial inclusion, and support more equitable and sustainable economic growth.

Keywords

Digital Technology, Economic Justice, Financial Inclusion, Financial Literacy

1. Introduction

The rapid expansion of digital technology has altered several industries around the world, including finance, education, healthcare, and commerce (Khasanah & Sasana, 2022; Dewa, 2023; Azzahra et al., 2024). Digital technologies include innovations such as mobile banking, blockchain, digital wallets and online payment systems. These tools are revolutionizing the way people interact with financial services, creating a more inclusive and accessible system beyond the traditional banking infrastructure. Financial inclusion refers to attempts to ensure that individuals and corporations, especially those underserved by traditional financial institutions, have access to relevant financial goods and services. By increasing access to savings accounts, loans, insurance, and digital payment options, financial inclusion supports economic stability and development. On the other hand, economic justice aims to reduce inequality by ensuring that every individual has an equal opportunity to participate in economic activities, access resources, and benefit from economic growth.

In Indonesia, economic inequality and limited access to formal financial services remain significant challenges, especially for economically vulnerable people and communities in rural areas. With a large and geographically dispersed population, many regions still face limited banking infrastructure and high service fees that hinder access to financial services. For these underserved communities, achieving economic justice is difficult, with digital technology emerging as a potential solution to bridge this gap. Finance technology services, such as m-Banking and e-wallets, offer cost-effective and easily accessible options for individuals previously marginalized from the formal financial system, providing new opportunities to participate in the economy and improve community well-being (Aziz & Naima, 2021).

Recent studies show the digital technology's revolutionary impact on financial inclusivity and economic justice in different regions. Research conducted by de Sant'Anna & Figueiredo (2024) highlights that digital technologies are effective in expanding financial services to underserved communities in the Asia-Pacific region and sub-Saharan Africa. Digital innovations enable these communities to access affordable financial products, empower local entrepreneurs, and support economic growth. However, Indonesia faces major challenges in ensuring equal access to online financial services. The digital divide, low levels of digital and financial literacy, and poor infrastructure all hamper the best use of these tools (Asif, 2021; Odei-Appiah et al., 2022; Sun & Wang, 2023).

Financial literacy and digital literacy are essential to ensure people can use digital financial services effectively. Studies by Elouaourti & Ibourk (2024) and Vyas & Jain (2021) emphasize that digital and financial literacy strengthen users' confidence in interacting with financial platforms, enabling them to participate more actively in the formal economy. In Indonesia, efforts to improve literacy in rural areas and among economically vulnerable groups are crucial for digital technology to be fully utilized as a financial inclusion tool. Addressing the literacy gap can empower people to make informed financial decisions, access loans, and participate in previously hard-to-reach economic opportunities.

Researchers have acknowledged the potential of digital technologies to promote financial inclusivity, despite differing perspectives on its deployment. Some researchers emphasize the role of government policies and private sector partnerships in ensuring the success of digital financial systems. For example, the National Non-Cash Movement initiative launched by the Indonesian government reflects the government's commitment to expanding digital financial inclusion. However, consistent policies and strong partnerships are needed to build an accessible, inclusive and secure digital finance environment (Putranti et al., 2020;

Aloulou et al., 2024; Marpaung et al., 2024). In addition, concerns about data security and infrastructure limitations remain key barriers to wider digital adoption.

This article intends to examine the role of digital technologies in advancing financial inclusion and economic justice across different social strata in Indonesia. Using a literature review approach, it evaluates impact of digitalization on financial technologies and the barriers that hinder access to these services. With a focus on government initiatives, private sector efforts, and the importance of financial and digital literacy, this research provides insights and policy recommendations to improve digital access, bridge socio-economic gaps, and support inclusive and sustainable economic growth for communities across Indonesia.

2. Literature Review

Internet Of Things (IoT), big data analytics, Cloud, and last Artificial Intelligence (AI) are types of digital technology in the context of industry 4.0, which enable automation, connectivity, and data-driven decision-making in industry. According to Chatterjee (2020), these technologies are categorized as General-Purpose Technology (GPT) due to their broad role in improving productivity and innovation. de Sant'Anna & Figueiredo (2024) explain that IoT supports real-time monitoring and control of production processes, while Aloulou et al. (2024) point out that cloud computing enables coordination and integration of data across different parts of the enterprise. Sun and Wang (2023) highlighted that big data analytics help companies identify demand patterns and savings opportunities, while Elouaourti & Ibourk (2024) emphasized that AI and machine learning support the automation and optimization of production processes. By applying these technologies, industries can achieve higher operational efficiency, reduce waste, and improve environmental sustainability.

Economic justice is defined as a fundamental principle in Islamic law (Shariah) that encourages the fair distribution of wealth across society. Economic justice includes equal access to economic opportunities and resources for all members of society, particularly for those who are economically disadvantaged. In this context, the use of Islamic financial instruments such as waqf is seen as a mechanism to achieve a more equitable distribution of wealth, support financial inclusion, reduce economic inequality and promote sustainable socio-economic development in Nigeria (Arinnis et al., 2022; Setiawan et al., 2024).

Individuals and businesses have opportunities that have benefits and are affordable on financial products and services such as fulfilling needs when transacting, namely starting from making payments, saving, making credit loans and insurance with sustainable responsibility. Financial inclusion as a facility for financial institutions, services and products provided in accordance with the abilities and needs of everyone in improving their welfare. Financial inclusion can be said to be a condition in which everyone can easily access the financial products and services they need so that they can manage their finances properly (Oruo, 2013).

According to the Organization for Economic Co-operation and Development, 2016 includes comprehending financial ideas and risks, as well as the motivation and confidence to utilize this information in making smart financial decisions, enhancing well-being, and participation in the economy. Financial literacy encompasses the knowledge, attitudes, awareness, skills, and behaviors needed for sound financial decision-making to achieve effective personal financial well-being (Welly et al., 2016; Mariam et al., 2021).

3. Methods

In examining the function of digital technology in promoting financial inclusion and economic justice across social strata in Indonesia, this research employs the

Systematic Literature Review (SLR) approach. This method is a way to identify, evaluate and interpret all the results of articles or research that are relevant to the question criteria that have been determined for this research (Kitchenham, 2004). The keywords used in this research are: digital technology, financial inclusion, economic justice and financial literacy. By using the keywords and criteria that have been determined, the aim is to collect data in the form of relevant articles in accordance with the research topic on Financial Inclusion. Data collection using the Watase Uake site from the Scopus database. Based on filtering using the keywords used, there were 30 articles that were relevant to the topic identification. The researcher examined these articles based on specific criteria established by the researcher. Furthermore, the articles obtained will be collected, tabulated, compared and then analyzed to get a conclusion. The identified journals are internationally indexed journals in the Scopus database from Q1 to Q4 based on the Scopus ranking index. The identified journals use the English language.

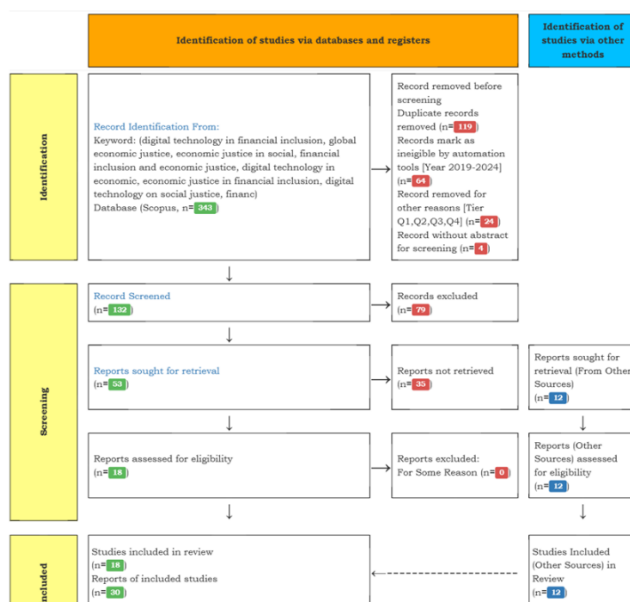


Figure 1. Prisma Analysis Report

From the data results, a search using keywords produces 343 articles, which are then selected and found as many as 30 articles. Of the articles that match the criteria consist of 18 articles originating from Watase UAKE tools and the rest of the articles are obtained from outside these tools. Furthermore, articles that did not pass the screening on the Watase Uake site were 35 articles. After obtaining articles that match the topic in this study, researchers conducted descriptive analysis.

4. Results

From the analysis after collected data, this research presents findings on the use of digital technologies to improve financial inclusion and economic justice in Indonesia. The findings, indicate the digital technologies has a significant role in improving financial inclusion and economic justice in Indonesia. Digitalization in the finance, through tools such as mobile banking and financial technology applications, has improved access to formal financial services for previously underserved communities. For example, a paper by Aloulou et al. (2024) states that the adoption of finance technology enables the deployment of financial services at lower costs and greater accessibility, especially for communities located in remote areas and difficult to reach by traditional banks. Meanwhile, a study by de Sant'Anna & Figueiredo

(2024) also highlighted that digital financial technology supports economic stability by providing access to financial products that were previously inaccessible to low-income groups.

The report also identified some critical hurdles to achieving equitable financial services throughout Indonesia. One of the biggest challenges is low digital and financial literacy among rural communities. According to research by Elouaourti & Ibourk (2024), low levels of digital literacy hamper people's ability to understand and use digital financial services effectively, which in turn limits the benefits that can be derived from digital financial inclusion. Similarly, Vyas and Jain (2021) stated that low digital literacy hinders the successful implementation of financial technology in India, and this condition is similar in Indonesia, especially in less developed regions.

Infrastructure gaps are also a major obstacle to the equitable implementation of digitalization financial inclusion. According to the research by Sun and Wang (2023), disparities in access to technology and communication infrastructure between urban and rural areas exacerbate economic disparities, as communities in remote areas are less likely to have adequate internet connectivity and digital devices. Odei-Appiah et al. (2022) also note that infrastructure limitations are a limiting factor that keeps many remote communities from accessing digital financial services, further widening social and economic inequality. In terms of security, concerns about personal data protection are also a barrier to wider adoption of digital financial services. Aloulou et al. (2024) point out that although digital financial services provide greater access, the security risks faced by users, especially among the less tech-savvy, may discourage them from switching to fully digital services. In response, some countries have strengthened data protection policies to protect users from cybersecurity threats.

Furthermore, government support and business regulation are key in ensuring the successful adoption of digital technology in the financial sector. Vyas & Jain (2021) show that supportive government policies, such as digital banking regulations and incentives for fintech companies, contribute to the growth of digitalization of financial services in Indonesia. In addition, Prasetyo (2024) notes that government support in the form of education and the provision of technological infrastructure are important components in overcoming barriers to financial inclusion, especially for people in less developed regions.

Overall, digital technology, especially in financial technology and financial services based on digital products and services, requires wider access considering that in developing countries there are remote rural areas. Digitalization is also expected to be able to reduce transaction costs and fast services, so that it can help the community. Big data complements financial technology, allowing it to provide financial goods and services suited to addressing the community's needs. With promising digital finance technology, there are also challenges related to infrastructure and financial literacy (Agwu, 2020; Vyas & Jain, 2021). Financial and digital literacy is essential for making the best use of financial goods and services. Therefore, increasing these services can promote sustainable development for groups of people in all strata and close the economic gap between regions in Indonesia. Increasing financial inclusion also requires support from existing government regulations, especially on digital infrastructure, data security, and financial stability that can have a positive long-term impact (Ali & Naima, 2019; Saraswari et al., 2020).

5. Discussion

Research highlights that digital financial inclusion plays a crucial role in expanding access to financial services and supporting economic development in various countries. According to Ali & Naima (2019), demand factors such as financial literacy, religious devotion, and social impact, as well as supply factors such as human resources, infrastructure, and regulations, significantly influence Islamic finance in Indonesia. Meanwhile, Wu et al. (2024) found that digital financial inclusion reduces financing constraints for technology-based enterprises, enabling more efficient fund allocation and sustainable economic growth.

Digital technology also serves as a bridge to reducing economic and regional disparities. Agwu (2020) emphasized the importance of digital technologies in improving financial access in rural areas, although digital literacy and infrastructure remain barriers. In China, research by Jiao et al. (2024) and Ding & Kang (2024) revealed that digital financial inclusion supports green technology adoption, reduces regional economic disparities, and promotes green growth. In the Asia-Pacific region, digitalization enhances financial inclusion for low-income groups, while Vyas & Jain (2021) highlighted how the Digital India program has expanded access to financial services, particularly in rural areas. In Africa, research by Senou & Ouattara (2019) showed that mobile phone and internet usage significantly increase access to financial services in WAEMU countries, while Elouaourti & Ibourk (2024) highlighted that digital literacy amplifies fintech's impact on financial inclusion in Uganda. Menza et al. (2024) confirmed that fintech improves access to financial services in Ethiopia, though digital infrastructure and financial literacy remain challenges.

The research also underscores the benefits of digital financial inclusion for sustainability and efficiency. Thathsarani & Jianguo (2022) found that implementing the Technology Acceptance Model (TAM) improves SME performance by facilitating better access to financing. In environmental contexts, studies by Yuchen Li et al. (2024) demonstrated that digital financial inclusion accelerates green technology adoption and supports green growth in China.

However, challenges persist. Aziz & Naima (2021) highlighted barriers such as low digital literacy, limited connectivity, and gender gaps that hinder the positive impact of digital technology on financial inclusion. Additionally, de Sant'Anna & Figueiredo (2024) cautioned that increased fintech adoption poses risks to financial stability that require careful management. Overall, the studies reveal that digital financial inclusion is key to reducing inequality, promoting sustainable growth, and strengthening global economic stability. Digital technology has brought major changes in the financial inclusion landscape, especially in developing countries such as Indonesia. Digital technology, especially in industry 4.0 such as Internet of Things (IoT), Cloud Computing, Big Data, and Artificial Intelligence (AI) have an important role in improving operational efficiency and innovation. This is also in line with de Sant'Anna & Figueiredo's research (2024) that IoT also helps real monitoring of the financial system between financial institutions.

According to Chatterjee (2020) General Purpose Technology (GPT) is beneficial in its widespread use and influence on various industrial sectors. Various studies show that the digitization of financial services not only expands financial access but also supports more inclusive and sustainable economic growth. Research by Vyas & Jain (2021) found that digitalization in the Asia-Pacific region plays an important role in promote economic growth, especially for low-income individuals who previously had restricted access to formal banking services. In Ethiopia, financial technology has been shown to improve financial inclusion by providing wider access, although there are still constraints in terms of literacy and digital infrastructure

(Menza et al., 2024). Financial inclusion also aims to ensure people have easy and affordable access to financial services. In Sub-Saharan Africa and Asia-Pacific countries, digital technologies such as mobile phones and the internet are effective tools to reach rural areas, where financial technology adoption is still low (Agwu, 2020; Senou et al., 2019).

The role of economic justice, especially from an Islamic legal perspective, focuses on equitable distribution and equal access to economic resources. Furthermore, digitization also plays an important role in overcoming the challenges of limited infrastructure and high costs that are often a major barrier for vulnerable groups. Therefore, financial inclusion can be utilized to promote economic justice. In addition to supporting economic growth in achieving economic equity across all strata in Indonesia, digital financial inclusion has also been shown to have significant social benefits. For example, in Uganda, digital literacy increases the effectiveness of fintech services, enabling vulnerable groups to participate more actively in the formal economy. This is in line with findings in Bangladesh, where digital financial services have enhanced access to financial services despite challenges in terms of connectivity and financial literacy (Aziz & Naima, 2021).

However, challenges to the implementation of digital financial inclusion remain, including digital inequality rooted in the gender gap and differences between urban and rural areas. Tay et al. (2022) reveal that these disparities can hinder the achievement of sustainable development goals, especially in developing countries. In Indonesia, digital platforms are beginning to support the informal economy by providing solutions that ease collaboration and standardize services, helping the informal sector better integrate into the digital economy (Prasetyo, 2024). Digital financial inclusion also supports environmental policies. Research by Jiao et al. (2024) in China show that digital financial services can contribute to green growth by strengthening the efficiency of financial services and more equitable access to resources. However, the increased use of these technologies also poses new risks, such as financial stability that need to be carefully managed (de Sant'Anna & Figueiredo, 2024). With its multiple benefits, digital financial inclusion is a key driver for economic justice, although there are challenges that need to be overcome. Digital technologies inequality and low financial literacy also require ongoing support. In Indonesia, support from both the public and private sectors is needed to build more inclusive infrastructure, improve financial literacy, and reduce the existing digital divide.

6. Conclusion

This study shows that digital financial inclusion has great potential in promoting economic justice and sustainable growth, especially in developing countries like Indonesia. Digital technologies have opened greater access to formal financial services for previously hard-to-reach communities, thereby driving increased economic participation and creating new economic opportunities. Research results show that innovations such as mobile banking and fintech not only help reduce economic inequality but also contribute to the overall well-being of society. However, key challenges such as the digital divide, limited financial literacy, and infrastructure deficiencies remain barriers that must be overcome for the benefits of these technologies to be equitably realized.

Despite the significant findings, this study contains significant factors that may reduce the validity and generalizability. One of the main limitations is the approach used in the data analysis, which is based on secondary data and cross-sectional studies. This technique may not adequately represent the long-term impact of digital financial inclusion in Indonesia, particularly given the country's rapid socioeconomic changes. In addition, external factors such as government policy changes and global

economic shifts may also influence the results of this study, which may pose challenges in drawing strong causal conclusions.

For future research, a longitudinal methodology that allows monitoring of changes over a long period of time is recommended, to better examine the effect of digitalization of inclusivity on economic fairness. Further research involving multi-country analysis would also be beneficial, as it can help understand the influence of diverse demographic and geographic contexts on the benefits of digital technologies. Experimental or field-based studies are also recommended to deepen the understanding of the causal effects of digital finance initiatives on different groups of people. Overall, while digital technology brings many opportunities for financial inclusion and economic justice, its successful implementation still requires the right policies, consistent supervision, and adequate infrastructure support. With strong collaboration between the government and the private sector, it is hoped that these technologies can become an effective tool in driving economic justice and sustainable growth across all levels of Indonesian society.

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