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SOCIAL IMPACT OF DIGITAL PAYMENT TECHNOLOGY ADOPTION IN DEVELOPING COUNTRIES: A FINANCIAL LITERACY BASED QUALITATIVE STUDY

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ABSTRACT

Objective: This research aims to assess the social impact of adopting digital payment technologies in developing countries with a focus on financial literacy, especially among vulnerable groups with low financial literacy.

Research Design & Methods: This research uses a qualitative approach with a literature study, analyzing relevant previous studies. Data was drawn from recent literature on adopting digital payments in developing countries and its impact on financial inclusion, literacy, and consumer behavior.

Findings: This research shows that digital payment technologies can accelerate financial inclusion, but inequality in financial literacy is a significant barrier for low-income groups to experience the benefits fully. People with low financial literacy face higher security risks and difficulties accessing digital payment services.

Implications & Recommendations: The importance of more intensive and inclusive financial literacy education so that vulnerable groups can optimally utilize technology. Digital education programs should be specifically designed to improve financial understanding and skills at the grassroots.

Contribution & Value Added: This research offers insights for policy makers and financial service providers on the importance of strengthening financial literacy in an effort to expand equitable adoption of digital payment technologies.

Keywords: Financial Literacy, Social, Technology Adoption, Digital Financing.

JEL codes: G20, I25, F63
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INTRODUCTION

The rapid growth of digital payment technologies has fundamentally changed how people conduct financial transactions, especially in developing countries. These technologies offer various conveniences, such as faster transactions, cost efficiency, and easier access to financial services. For example, e-wallets and mobile banking allow users to make payments without having to use cash or go to a bank, which is a huge advantage in areas with limited access to physical banking. The rise of smartphones and mobile banking applications has democratized access to financial services, allowing unbanked individuals to conduct transactions and save money (Eziamaka et al., 2024). Digital payment technology is also able to reach groups of people who were previously unreachable by traditional financial services, such as micro-economic actors in developing countries (Mouna and Jarboui, 2022). A deeper understanding of the adoption of digital payment technologies is critical to

achieving broader financial inclusion. In many developing countries, adopting these technologies is considered one of the key factors in improving economic stability and expanding access to finance for low-income people (Goldfinch, 2024). Providing easier pathways for transactions and money storage, digital payment technologies help reduce reliance on traditional banking systems that are often difficult to access for a large proportion of the population in rural areas or those with low education. Policymakers and financial institutions must understand the social impact of this adoption to formulate policies that can support sustainable economic development (Yakubi et al., 2022).

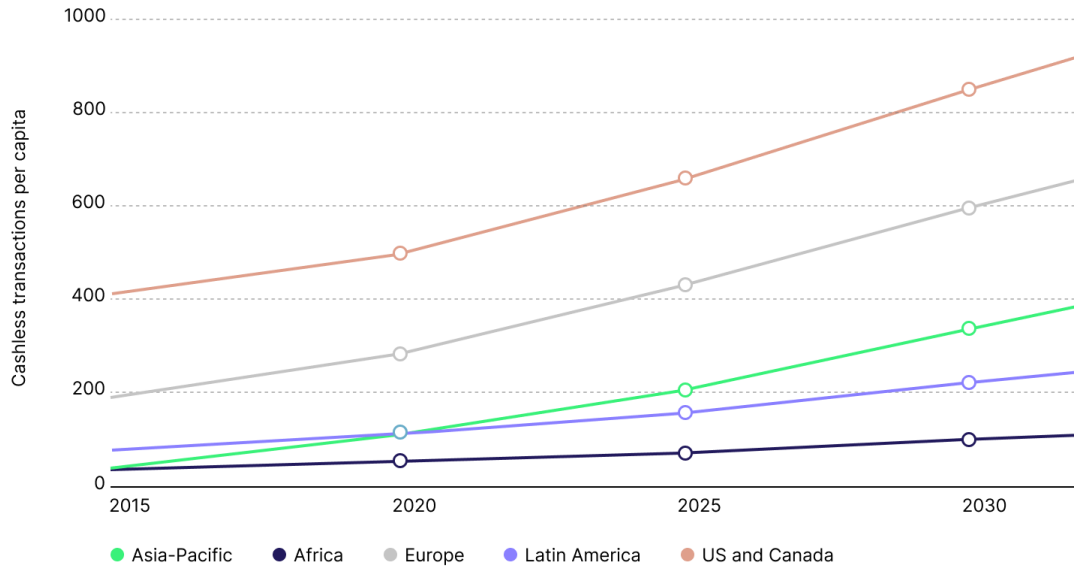

Figure 1. Cashless uptake is projected to rapidly increase through 2030

Previous research has highlighted the various benefits and challenges associated with adopting digital payment technologies. The main benefits are improved access to financial services and efficiency in conducting transactions, while challenges include low financial literacy and lack of adequate infrastructure in some areas. However, most studies have focused on the technical or economic aspects of adopting these technologies, while the social impacts, especially among low-literacy populations, have received less attention (Geetha and Kanniammal, 2023). This is creating a need for more in-depth studies on the social and welfare impacts associated with adopting digital payment technologies (Srivastava et al., 2021).

The global digital payments market is growing rapidly, with an estimated transaction value of $9.46 trillion by 2023. This growth is projected to continue at a compound annual growth rate (CAGR) of 11%, leading to a market size of $14.78 trillion by 2027. China remains a key player, holding a significant share with an estimated $3.639 trillion in transactions this year. The adoption of cashless payment methods has surged, with a 42% increase in transaction volume, reflecting a shift away from traditional cash and cashless payments. Furthermore, 90% of customer data valuable to banks now comes from digital payment information, underscoring its importance to financial institutions. Furthermore, with greater global connectedness, 42% of stakeholders predict that cross-border payment technologies will become increasingly prevalent, increasing international trade and remittance flows, especially in developing countries. Brazil and India have experienced significant reductions in cash transactions, driven by the implementation of instant payment networks such as Brazil's PIX system and India's Unified Payments Interface (UPI). In Brazil, cash transactions will decline by 7-10 percentage points by 2022, while instant payments are expected

to account for a large share of transaction growth by 2027. Similarly, Nigeria is experiencing a shift from a largely cash-based economy to one where instant payments have quadrupled since 2019.

With the increasing use of digital payment technologies in developing countries, it is important to examine how these technologies can contribute to improving financial literacy and reducing the financial access gap. This study aims to fill the existing knowledge gap by examining the social impact of digital payment technology adoption among low-educated populations in developing countries. The focus on this group is important as they often face barriers in accessing new technologies, which in turn can affect their economic well-being. This research will examine how these financial technologies affect various aspects of social and economic life, such as access to formal financial services, improved financial literacy, and individual economic empowerment. It is expected to help understand the extent to which these technologies play a role in promoting financial inclusion and economic empowerment.

LITERATURE REVIEW

Digital Payment Technology and Financial Inclusion

Several studies have shown that digital payment technologies, such as mobile banking and e-wallets, have played an important role in improving financial inclusion in developing countries. Ciptarianto (2022) highlighted how adopting e-wallets in Indonesia has reduced reliance on manual remittances, especially in rural areas, and significantly contributed to financial inclusion. This finding is confirmed by Wamba et al. (2021), whose study in Cameroon revealed that using mobile wallets has provided access to formal financial services for previously unbanked populations, promoting financial inclusion. These studies underscore the transformative role of digital payment systems in expanding financial access, especially in regions with limited traditional banking infrastructure.

Adoption Barriers among Low Literacy Communities

Despite the potential benefits, people with low literacy levels face significant barriers to adopting digital payment technologies. Pal et al. (2020) identify limited digital literacy and fear of financial risk as key barriers to adopting digital payments in India, especially among rural communities. Similarly, Ligon et al. (2019) found that in Jaipur, India, small merchants resisted adopting digital payment methods due to mistrust of the technology and concerns about taxation. These findings suggest that digital financial inclusion efforts must address literacy and trust issues to overcome these adoption barriers effectively.

Impact on Financial Literacy

The adoption of digital payments has shown promising results in improving financial literacy. In Pakistan, mobile banking in the Benazir Income Support Program (BISP) helped female beneficiaries improve their understanding of financial concepts, demonstrating that digital payment technologies can boost financial literacy (Kemal, 2019). Similarly, research in Malaysia by Ramli and Hamzah (2021) shows that frequent e-wallet users tend to better understand financial knowledge, which suggests that repeated interaction with digital financial services can foster greater financial awareness.

Economic Empowerment via Digital Payments

Digital payment technologies are also linked to economic empowerment, especially for low-income and marginalized groups. Studies in Indonesia and Malaysia show that micro-entrepreneurs use of electronic payment systems has improved business opportunities and financial management practices. (Trianto et al., 2023). In Africa, research by (Figuet and Kere, 2022) revealed that mobile money services have played an important role in increasing savings and access to credit among low-income earners, further demonstrating the economic empowerment potential of digital payments.

The Social Impact of Digital Payments

While the short-term benefits of digital payments are well-documented, there is a notable gap in research on long-term social and economic outcomes. Existing research often overlooks the ongoing impact of digital payments on financial independence, gender equality, and regional development. Ramli and Hamzah (2021) contend that while digital payments can improve financial inclusion, many marginalized groups, especially women, continue to face socio-technical challenges that hinder their full participation in the digital financial ecosystem. This underscores the need for further research on the long-term impact of digital payment technologies on vulnerable populations.

METHODS

This research will use a qualitative approach relying on literature analysis to explore the social impact of digital payment technology adoption in developing countries, particularly in the context of financial literacy. The data used in this research will be drawn from relevant previous studies and recent industry reports. The research will review existing findings on digital payment technologies, including mobile banking and e-wallets, and their impact on financial inclusion among low-educated populations. The results will be thematically analyzed to identify relevant patterns and relationships between using digital payment technologies, financial literacy, and economic empowerment. In this way, this study aims to provide a better understanding of the contribution of digital payment technologies to improving financial literacy and reducing the financial access gap among low-educated populations in developing countries. In summary, this paper uses a combination of literature data, case studies, surveys, and qualitative insights to analyze the social impact landscape of digital payment technology adoption in developing countries, particularly in the context of financial literacy. This diverse data set supports the authors' findings and recommendations for improving financial inclusion efforts and literature.

RESULT

Increased Access to Formal Financial Services

Adopting digital payment technologies, such as e-wallets and mobile banking, has shown great potential in expanding access to formal financial services in developing countries. However, non-technical challenges, including user perceptions and psychological factors, remain a significant barrier. In Jaipur, India, for example, despite adequate infrastructure, adoption remains low due to demand factors such as distrust of technology and tax concerns (Ligon et al., 2019). This indicates that removing cost barriers is not effective enough to increase adoption, and a more holistic approach that considers complex user demand factors is needed (Ramli and Hamzah, 2021). Furthermore, the increase in smartphone penetration in many emerging economies is still not enough to significantly boost e-wallet adoption. Factors such as security fears and cultural constraints also influence the low adoption of digital payment technologies. Micro merchants in Indonesia and Malaysia, for example, prefer to use fintech platforms such as e-wallets and ATM debit. At the same time, the adoption of QR code-based technology for business transactions is still low (Trianto et al., 2023). This highlights the need for specific policies tailored to each country's socio-economic conditions to encourage wider adoption.

Especially in rural areas, factors such as trust and security are important in influencing adoption decisions of digital payment technologies. Users in rural Maharashtra, India, revealed that a system design that addresses their needs and concerns is needed to increase trust and adoption of this technology (Parakh et al., 2020). Meanwhile, in Pakistan, digital literacy proved to be a significant factor driving the adoption of digital payment technologies, suggesting that digital literacy programs are indispensable in developing countries with low education levels (Ullah et al., 2022). The use of mobile banking has also had a significant impact in increasing the economic participation of small business groups in developing countries, especially among those who

previously did not have access to formal financial services (Donner and Tellez, 2008). Studies on Generation Z's use of digital payment technologies in developing countries show that social factors and technology performance expectations also play an important role in driving adoption (Purohit et al., 2022). Therefore, service providers should focus more on improving the perceived performance and social benefits of digital payment technologies for wider adoption. Overall, adopting digital payment technologies can provide great benefits in enhancing financial inclusion in developing countries. However, various technical and non-technical barriers must be carefully addressed so that adopting these technologies can have a maximum social and economic impact on the less educated population.

Financial Literacy Improvement

Digital payment technology has a significant role to play in improving financial literacy in developing countries. Various studies show that adopting digital financial technologies can improve financial inclusion and literacy. For example, in Indonesia, the use of digital payment services through fintech has provided access to financial services for individuals who were previously underserved by the traditional banking system, thus contributing positively to financial inclusion (Sriyono et al., 2023). In addition, the adoption of these technologies allows users to better understand personal financial management, further improving their financial literacy skills. In Bangladesh, there is a positive relationship between digital literacy and financial literacy in the adoption of fintech services, which confirms the importance of digital capabilities in driving the use of financial technology (Islam & Khan, 2024).

However, there is an interesting contradiction: despite the dominance of digital payment technology in the fintech sector in Indonesia, financial literacy levels are still relatively low. Research in major cities shows that financial literacy is not a major factor in payment technology adoption, indicating that increased technology adoption does not necessarily go hand in hand with improved financial literacy (Estisia Pratiwi and Saefullah, 2022). This indicates the need for more effective interventions to improve financial literacy alongside the adoption of payment technologies. To maximize the potential of digital payment technology in improving financial literacy, a comprehensive strategy is needed that includes improved technological infrastructure, tailored financial literacy programs, and a balance between innovation and consumer protection (Manda et al., 2024; Sharma et al., 2024). Improved financial literacy can lead to a better understanding of financial products, improve the ability to make smart financial decisions, and encourage more active participation in the financial system. Collaboration between the government, regulators, and industry players is also crucial to formulating effective policies to support financial literacy through digital payment technology, creating an inclusive and sustainable ecosystem for all levels of society.

Economic Empowerment

Digital payment systems have become a very important in empowering individuals and micro-entrepreneurs, especially in developing countries. By expanding business opportunities, these systems help improve transaction efficiency and provide wider market access (Nasyati et al., 2024). Implementing digital payment systems has accelerated services and transactions, although the impact on sales figures is not yet significant. This shows that while revenue growth may not be immediate, gains in operational efficiency can be a strong foundation for long-term business growth. For small businesses, the use of e-wallets offers even greater benefits. E-wallets allow for safer and faster transactions, reducing reliance on cash, which can increase the ease of conducting daily transactions (Nashirah et al., 2020). Integrating e-commerce with digital payment systems has boosted financial inclusion in countries like India, leading to a more cashless society and opening up opportunities for greater innovation and growth (Jaiswal and Singh, 2023). This not only encourages individual participation in the economy but also creates an ecosystem that supports the development of small and medium enterprises. Furthermore, digital payment systems are instrumental in improving access to financial services for individuals with low educational backgrounds. This creates opportunities for them to engage in broader economic activities, thereby

reducing economic inequality and empowering previously marginalized communities. As such, digital payment technology serves not only as a transaction tool but also as a significant driver in empowering economies in developing countries, expanding financial inclusion, and providing opportunities for individuals to participate in the growing digital economy. This makes digital payment systems key in improving quality of life and economic competitiveness at the micro level.

Barriers to Technology Adoption

Low-educated populations often face barriers that hinder technology adoption, such as a lack of digital literacy, distrust of technological systems, and limited access to technological devices. These barriers significantly impact individuals' ability to adopt digital innovations that can improve the quality of life and accessibility of services. Research shows that low levels of digital literacy and education create substantial barriers to adopting new technologies, especially in developing countries and rural areas. For example, in India, limited digital literacy among the older population and rural communities is hindering the adoption of telemedicine, with a cultural preference for face-to-face consultations further exacerbating this problem (Arora et al., 2024). Many rural areas also struggle to understand digital payment systems, which hinders their adoption (Geetha and Kanniammal, 2023). Limitations of inadequate technological infrastructure remain a barrier, especially in developing regions, affecting the reliability and security of digital transactions (Sriyono et al., 2023). The lack of infrastructure creates doubts among users regarding the technology's ability to deliver safe and efficient services. In addition, trust and security issues are crucial; users often express concerns regarding the security of digital transactions, which can deter adoption despite the perceived benefits (Neves et al., 2023). This uncertainty points to the need for a more transparent approach to educating the public about technology security so that they feel more comfortable in adopting digital systems.

This indicates that the success of new technologies, such as telemedicine, largely depends on people's understanding and acceptance of the technology, which is often influenced by an individual's educational background and experience. Similarly, in China, where education level was positively correlated with digital health literacy skills among the elderly (Farooq et al., 2021; Jaiswal and Singh, 2023; S. Liu et al., 2022). This highlights the importance of education in equipping individuals with the skills needed to navigate the digital world, where incomprehension can lead to distrust and resistance to new technologies. Moreover, in Pakistan, digital illiteracy contributes to a digital divide that impacts entrepreneurial opportunities, particularly for women (Barra et al., 2024). This indicates that when individuals, especially women, do not have access to digital education, they miss out on opportunities to engage in the digital economy, potentially exacerbating gender and economic inequality.

Several strategies have been recommended to overcome these barriers. Improving technology access and infrastructure, enhancing digital literacy skills through targeted training, and providing comprehensive support for users are essential measures (Fadrial et al., 2024; Subkhi & Haning Tyas, 2024). This strategy not only aims to improve digital skills but also to build people's trust in technology, which is crucial for wider technology adoption. Collaboration between the government, educational institutions, and other stakeholders is crucial to bridge the digital divide and encourage the adoption of technology among underserved populations (Asrani, 2022). Overcoming these barriers allows individuals from low educational backgrounds to more easily participate in the digital economy and harness the potential of technology to improve their quality of life. This approach creates more equitable and inclusive opportunities, thereby promoting more equitable economic growth across society.

Impact on Financial Inclusion

Digital payment technologies have emerged as a transformational force in accelerating financial inclusion, particularly in rural and marginalized communities. Mobile-based digital financial services (DFS) are an effective innovation that reaches communities previously underserved by the traditional banking system. Using mobile devices, individuals in remote areas

can conduct financial transactions easily and securely, which not only facilitates access to financial services but also reduces reliance on cash. Research by Perlman and Wechsler (2019) shows that the implementation of DFS helps reduce the risk of crime, such as cash theft, as well as increase individual financial security. In addition, this technology provides flexibility in transactions, allowing people to better manage their finances.

In India, the establishment of payment banks and small banks has been an important strategy to increase financial inclusion in rural communities that have been underserved. According to Srajan Kumar Singh (2023), this move is designed to expand access to banking products and services that are essential for local economic growth. These banks not only provide deposit and loan services but also offer financial training and education to the community. In doing so, they help reduce unfamiliarity with financial products and encourage wider use of banking services. Such initiatives have proven effective in improving the economic conditions of rural communities, which often face major challenges in accessing traditional financial services.

However, to ensure the long-term success of digital payment technologies, it is important to address the various challenges faced. Inadequate infrastructure, such as lack of internet access in rural areas and low levels of digital literacy, remain significant barriers to adopting these technologies. Research by Pradhan (2024) underlines the need for greater investment in digital infrastructure and financial literacy programs to ensure that all levels of society can benefit from digital financial services. By taking a holistic approach involving collaboration between the government, private sector, and non-government agencies, digital payment technologies can be optimized to increase financial inclusion and empower economically marginalized communities.

Enhancing Gender Equality through Financial Technology

Digital financial technology in Africa has made a significant impact in reducing the gender gap, especially by expanding access to financial services for women. According to research by Ojo (2022), although policies to support gender equality have been implemented, women in Africa still lag behind in adopting digital financial services. This suggests that structural and cultural barriers remain a challenge that must be overcome to achieve comprehensive financial inclusion. In countries with gender-enabling policies, the integration of digital financial services has improved women's ability to access and utilize financial resources, ultimately strengthening their economic independence (Tripathi and Rajeev, 2023). However, the impact is much less in countries where gender discrimination is high.

Based on research by Tripathi and Rajeev (2023), increased digital financial inclusion also contributes significantly to more inclusive economic growth, enabling women to access financial services needed for business and household needs. This suggests that digital financial inclusion plays an important role in empowering women in developing countries. In addition, Siueia et al. (2019) emphasize that in countries with stronger gender empowerment, women have greater access to bank accounts and use of digital payment services. The use of mobile banking in social assistance programs has also been shown to improve women's social and political inclusion, as seen in Pakistan, where women can receive funds more securely and efficiently (Kemal, 2019). These studies underscore the important role financial technology can play in strengthening women's position in society but emphasize that broader systemic change is needed to overcome the barriers of deep gender discrimination.

Efficiency and Security in Transactions

The use of digital payment technology has brought safer and more efficient solutions to people, especially in areas with weak banking infrastructure. One significant example is India, where the adoption of digital payment systems in various regions, including rural areas, has brought convenience to users. The transformation of the payment system in India is driven by government initiatives to expand access to digital financial services (Jerath, 2022). This digitization not only reduces reliance on physical cash, which is vulnerable to loss and theft, but also enables faster and more secure transactions. As a result, people can participate in economic activities more

conveniently without going through complicated banking procedures. This research shows that the Indian government, through the RBI, has been working hard to improve the payment infrastructure to make it more accessible and effective, even in areas with limited access to traditional banking services.

In addition, the security of digital transactions is also a major concern in developing this technology. Security in digital transactions can be enhanced through the use of digital token mechanisms that protect user privacy and prevent fraud (Rajendran et al., 2017). Digital tokens serve as a substitute for electronic cash that is certified by the banking service provider, thus providing an additional layer of protection in the transaction process. This approach can prove particularly useful in regions with unstable technological infrastructure, where internet or banking networks may not always be reliable. With this tokenization solution in place, transactions can still be carried out securely without reliance on a robust physical banking infrastructure. These findings underscore the importance of innovations in transaction security to facilitate secure and efficient digital payments in regions with limited infrastructure.

Potential for Continuous Improvement in Financial Literacy

Digital payment technologies such as e-wallets and digital banking have been proven to sustainably build financial literacy among the less educated. Previously limited access due to geographical and cost barriers can now be overcome with the presence of more accessible digital services. People with low income who previously did not have access to formal financial services can now better manage their finances through these platforms. In addition, this technology also serves as an educational tool, where users can learn about financial management through daily interaction with digital financial services (Wanof, 2023). This shows that the adoption of digital financial technology not only improves access but also supports a more sustainable improvement in financial literacy.

Another initiative that contributes to improving financial literacy is the volunteer accounting program that provides specialized financial education to low-income communities. Through a community engagement approach, the program successfully addresses local challenges and provides long-term economic benefits. The community involvement in this program demonstrates the importance of local support for the success of financial literacy initiatives (Ebirim et al., 2024). In addition, fintech solutions such as e-wallet services have helped low-income people record and track transactions automatically, significantly improving their understanding of financial management (Kulshrestha, 2023). The use of local communication systems, such as local languages and traditional methods, also accelerates the dissemination of financial literacy information in rural areas, reinforcing technology's role in improving financial literacy (Ogbemudia et al., 2021). However, challenges such as the digital divide and educational disparities must continue to be addressed to achieve sustainable financial empowerment in these communities.

DISCUSSION

Increasing access to formal financial services through digital payment technologies emphasizes these technologies' huge potential for expanding financial inclusion in developing countries. Adopting services such as e-wallets and mobile banking can help overcome geographical barriers and administrative costs that generally prevent people from accessing formal financial services. However, despite adequate technological infrastructure in some developing countries, adoption rates are still low due to non-technical factors, such as mistrust of technology security and concerns regarding tax management (Ligon et al., 2019; Ramli and Hamzah, 2021). For example, in India, despite the high availability of smartphones, the adoption of digital payment technology remains low due to cultural concerns and perceptions of security (Trianto et al., 2023). This suggests that policies that support technology adoption should consider the psychological and social factors that influence user decisions, especially in low-educated communities.

On the other hand, digital literacy has been shown to play an important role in increasing the adoption of digital financial technologies. In Pakistan, digital literacy programs have successfully improved people's understanding of digital payment technologies, increasing the adoption rate of digital financial technology (Ullah et al., 2022). Moreover, among micro-entrepreneurs and MSMEs, using mobile banking and e-wallets facilitates transactions and helps them in financial management, ultimately increasing their participation in the formal economy (Donner and Tellez, 2008). Social factors, such as community influence and technology performance expectations, also strongly influence technology adoption among young people in developing countries (Purohit et al., 2022). Therefore, service providers must ensure that the technology offered is not only easy to use but also provides real benefits in users' daily lives, especially in the aspects of transaction security and efficiency.

Technologies, such as e-wallets and mobile banking, have overcome access barriers previously faced by low-income and low-educated communities. Studies show that the use of digital payment services provides access to financial services for individuals who are not reached by the traditional banking system, as is the case in Indonesia (Sriyono et al., 2023). In addition to providing access, this technology also serves as an educational platform that helps individuals to understand personal financial management. This is supported by research in Bangladesh that shows a positive relationship between digital literacy and financial literacy in the use of fintech services (Islam & Khan, 2024).

However, while these technologies significantly improve financial inclusion, challenges such as low financial literacy remain an issue. Research shows that despite the high usage of digital payment technologies, the level of financial literacy in some regions is still not optimal, especially in big cities in Indonesia (Estisia Pratiwi and Saefullah, 2022). Therefore, to maximize the impact of these technologies in improving financial literacy, a comprehensive strategy is needed that not only focuses on technology adoption but also on improving understanding of financial literacy. This could include financial literacy programs designed for people with low educational backgrounds and policies that support consumer protection, as well as improved technology infrastructure (Manda et al., 2024; Sharma et al., 2024). As a result, digital payment technology will be more effective in promoting financial literacy and helping people make better financial decisions and participate more actively in the formal financial system. Economic empowerment through digital payment systems is also a major highlight. The use of this technology by micro and MSME entrepreneurs helps them to expand their market and improve operational efficiency. While the impact on income generation may not be immediate, the resulting efficiencies create a strong foundation for long-term growth (Nasyati et al., 2024). In Indonesia and India, e-wallets have proven to be of great benefit to small businesses in reducing reliance on cash and speeding up transactions (Nashirah et al., 2020). This creates a more inclusive business environment and enables wider participation in the formal economy.

Barriers to the adoption of digital payment technologies in developing countries are often influenced by low levels of digital literacy, distrust of technological systems, and limited technological infrastructure. Low-educated populations often face major challenges in adopting digital innovations. Lack of technical knowledge and access to technological tools makes it difficult for many people to understand digital payment systems and other fintech services. For example, in India, rural communities and the elderly population face major challenges in understanding and trusting telemedicine and digital payment technologies (Arora et al., 2024). These barriers are exacerbated by cultural preferences for face-to-face interactions and doubts about the security of digital transactions. Infrastructure is also a major constraint in rural areas, where unstable internet networks affect user experience (Sriyono et al., 2023). In addition, distrust of data and transaction security is a major issue hindering technology adoption in many regions (Neves et al., 2023).

Overcoming these barriers requires a strategic approach focusing on improving access, digital literacy, and technology infrastructure. Providing digital literacy programs tailored to the needs of the less educated, as well as improving technology infrastructure in less developed areas, are important steps to encourage technology adoption. In China, for example, good digital literacy

among the elderly population helps improve understanding and acceptance of technology (R. Liu and Becerik-Gerber, 2022). In addition, support from the government and collaboration with educational institutions is crucial in bridging the digital divide and ensuring that all levels of society can access relevant technologies. This approach can also create more equitable opportunities in the digital economy, especially for previously marginalized groups, such as women in Pakistan, who struggle to access digital training, thus missing out on entrepreneurial opportunities (Barra et al., 2024).

Digital payment technology has been instrumental in increasing financial inclusion, especially in rural and previously unbanked communities. These innovations enable people who are not covered by the traditional banking system to conduct financial transactions securely through mobile devices, reducing reliance on cash and the risk of financial crime (Perlman and Wechsler, 2019). In addition to providing access to basic banking services, this technology also contributes to local economic empowerment. However, significant challenges, such as inadequate infrastructure and low digital literacy, remain a barrier. In many rural areas, limited internet access slows down the adoption of this technology. Pradhan (2024) emphasizes the importance of investing in digital infrastructure and financial literacy programs to ensure all levels of society can benefit from digital financial services. A collaborative approach between the government and the private sector is key to optimizing the positive impact of this technology.

Digital financial technology has been instrumental in reducing the gender gap, especially in Africa, by expanding women's access to financial services. Despite the implementation of gender inclusion policies, many structural and cultural barriers still prevent women from adopting these technologies (Ojo, 2022). However, in countries with better gender policy support, financial technology has increased women's economic independence, strengthening their role in the local economy. This challenge requires broader structural changes to address deep-seated gender discrimination and ensure women can effectively utilize financial technology.

Digital payment technologies have improved the efficiency and security of transactions, especially in regions with weak banking infrastructure. In India, the transformation of digital payment systems by the government has brought convenience in fast and secure transactions, even in rural areas (Jerath, 2022). Transaction security is further strengthened by the innovation of digital tokens that protect user privacy so that transactions can be carried out more securely without relying on physical banking infrastructure. Digital financial technologies such as e-wallets and digital banking play a role in improving the financial literacy of low-income communities. These technologies provide easier access to financial services and help users manage their finances while being effective educational tools. Initiatives such as volunteer accounting programs also support financial literacy in low-income communities, demonstrating that local participation is critical to the success of financial literacy programs (Ebirim et al., 2024). However, to achieve sustainable financial empowerment, the digital divide and educational disparities must continue to be addressed.

CONCLUSION

The conclusion of this discussion shows that digital financial technologies have had a significant impact on financial inclusion, gender equality, and financial literacy, especially in developing countries. Innovations such as mobile-based financial services have facilitated marginalized communities' access to financial services, thereby reducing dependence on the traditional banking system and improving transaction security. However, structural challenges, such as inadequate digital infrastructure and low levels of financial literacy, remain key barriers. Technological solutions such as tokenization in digital payments have helped improve transaction security but require further improvements in infrastructure and financial literacy programs for people to make the most of these technologies.

The practical implications of these findings emphasize the importance of investment in digital infrastructure and comprehensive financial literacy education, especially in rural areas and

for marginalized groups, including women. Collaboration between the government, private sector, and NGOs is necessary to address the persisting digital and gender gaps. Further research is needed to explore the long-term impact of financial technology on reducing economic and gender inequality and to identify best practices in different regions. With a holistic approach that involves strengthening infrastructure, improving literacy, and cross-sector collaboration, digital financial technology has great potential to create a more inclusive and equitable economy.

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