The Transformative Role of Digital Technology in Enhancing Economic Inclusivity within Developing Countries: A Scoping Review

Adi Syahid Mohd Ali[1]*, Zainal Md Zan[1], Yusuf Pon[1], Tuan Muhammad Zukri Tuan Sembok[2], Mohamad Asmawi Ibrahim[3], Mohd Zulhafiz Said[4]

[1]Department Planning & Property Development, School of Government, UUM College of Law, Government and International Studies, Universiti Utara Malaysia, 06010 UUM Sintok, Kedah, Malaysia

[2]School of Applied Psychology, Social Work and Policy, Universiti Utara Malaysia, 06010 UUM Sintok, Kedah, Malaysia

[3]Faculty of Applied Social Sciences, Universiti Sultan Zainal Abidin, Kampung Gong Badak, 21300, Terengganu, Malaysia

[4]Faculty of Human Ecology, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

*Corresponding author : adisyahid@uum.edu.my

ABSTRACT

This scoping review explores how digital technology enhances economic inclusivity in developing countries. The study examines the advantages and limitations of digital platforms in finance, healthcare, education, and entrepreneurship, particularly in improving resource access for marginalized communities and enabling economic functionality. By analyzing frameworks such as the Technology Acceptance Model (TAM) and the Theory of Diffusion of Innovations, the analysis presents how digital innovations address barriers like inadequate infrastructure and economic disparities. While mobile banking, telemedicine, e-learning, and digital financial services contribute to inclusive growth, challenges such as low digital literacy and regulatory issues persist. Older citizens, in particular, require targeted support due to limited digital skills. Using case studies and cross-sector themes, the review proposes strategies to maximize digital technology's potential in reducing poverty and advancing sustainable development. Key findings reveal that mobile banking improves savings and credit access, e-learning narrows digital skills gaps, telemedicine increases rural healthcare access, and digital platforms stimulate SME growth. However, these benefits are uneven without strong infrastructure, digital literacy, and regulatory support. The review emphasizes public-private partnerships, context-specific digital literacy programs, and comprehensive regulatory mechanisms to expand access and support inclusive economic growth.

KEYWORDS: Digital technology, Economic inclusivity, Developing countries, Digital literacy

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1. INTRODUCTION

Technological advancements are reshaping the global economy by enhancing productivity, stimulating innovation, and creating digital opportunities for populations historically excluded from formal economic systems. These developments are especially significant in developing regions, where digital tools increasingly contribute to inclusive economic growth (Dahlman et al., 2016; Ciuriak & Ptashkina, 2019; Kaggwa et al., 2023). Klur and Nies (2023) describe digital technologies as computing and internet-based tools and platforms that support flexible labor arrangements and enable new forms of social organization. Economic inclusivity as a set of initiatives designed to strengthen participation across economic, social, and political domains, while reducing long-term dependency (Sen, 1999; OECD, 2015; Burchardt & Hick, 2017).

Digital technologies have the potential to broaden economic engagement and empower communities in countries where physical infrastructure remains limited (Rodima Taylor & Grimes, 2019; Strusani & Houngbonon, 2020; Qureshi et al., 2021). The expansion of mobile networks, improvements in internet connectivity, and the increasing availability of digital financial services have supported structural transformation and opened new avenues for participation (Javaid, 2013; Lawal, 2017; Klapper et al., 2019).

Although the potential of digital platforms is widely acknowledged in the literature, many existing studies tend to explore their impact through narrowly defined sectoral or geographic lenses. Often, research focuses on isolated domains such as finance, education, or health, without capturing the broader, cumulative influence of digital technologies across sectors. In addition, much of the available literature lacks theoretical grounding, relies on descriptive analysis, or centers on urban populations, offering limited insight into the experiences of rural and marginalized communities. These limitations constrain the development of holistic policies that effectively address the complex realities of digital inclusion.

This review seeks to address those gaps by offering an interdisciplinary synthesis that integrates empirical findings with theoretical insights drawn from the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI) framework. It brings together evidence from finance, healthcare, education, and entrepreneurship to explore how patterns of digital technology adoption vary across different contexts and population groups. Unlike previous studies that examine digital technologies in isolation or draw generalized conclusions without sufficient context, this analysis emphasizes the interconnected nature of digital interventions and their potential to drive systemic change. Through a cross-sectoral lens, the review contributes to academic discourse and provides practical guidance for policymakers and development actors seeking to promote inclusive and sustainable digital development.

By examining applications of digital tools in financial services, healthcare delivery, education, and entrepreneurial ecosystems, the review presents a comprehensive view of their roles in enabling inclusion. It further applies the Technology Acceptance Model and the Diffusion of Innovations theory to explain the conditions under which technologies are adopted. TAM helps clarify how user perceptions of usefulness and ease of use influence adoption decisions (Davis, 1989), while DOI outlines how new technologies spread through populations, shaped by social, cultural, and economic factors (Rogers, 2003).

This review aims to bring together empirical findings and conceptual frameworks to examine how digital technologies influence economic participation in developing countries. It further seeks to pinpoint the main drivers, obstacles, and policy considerations relevant to fostering inclusive digital growth in resource-constrained settings. Drawing on diverse case studies and thematic insights, this article identifies the enablers and barriers of digital adoption and offers policy recommendations to support inclusive digital development, particularly in low-resource environments.

2. METHODOLOGY

This scoping review adopts an interdisciplinary approach to synthesize insights from a wide range of academic domains, aiming to examine how digital technologies support economic inclusion in developing countries. Drawing from peer-reviewed literature, findings across the finance, education, healthcare, and entrepreneurship sectors are integrated to offer a broad and comparative overview of digital innovation's impact.

The literature published between 2000 and 2024 was selected, using Scopus and Google Scholar as the primary academic databases. These platforms were chosen for their extensive disciplinary reach and relevance to the review's themes. Scopus provides access to high-quality, peer-reviewed journals across social sciences, economics, technology, and development fields. Google Scholar supplements this with a wider range of academic outputs, including institutional publications and working papers, which are often crucial for capturing developments in emerging economies and digital innovation. The Web of Science (WoS), despite being a respected resource, was excluded due to limited access and substantial content overlap with Scopus. Furthermore, WoS's narrower disciplinary scope may have excluded regionally focused or applied research critical to the review's objectives.

The search strategy employed keywords such as "digital technology," "economic inclusion," "financial inclusion," "mobile banking," "online learning," "telemedicine," and "SME growth." To maintain methodological consistency and ensure a high standard of scholarly rigor, peer-reviewed journal articles were prioritized. These sources typically offer detailed methodology, data transparency, and quality control through established peer-review processes.

Conference proceedings were initially considered during the screening phase but were excluded from the final selection for two primary reasons. First, many proceedings lack standardized peer-review procedures, making it difficult to verify the reliability and replicability of findings. Second, proceedings often provide limited methodological detail, restricting their usefulness for cross-comparison and synthesis in a review of this scope. Although conference papers may present emerging research, their exclusion was intended to ensure a consistent level of academic rigor across all sources.

The final set of studies prioritized empirical research addressing digital technology adoption and use in economically underrepresented regions, with particular attention to Sub-Saharan Africa, South Asia, Latin America, and Southeast Asia. This regional focus

reflects areas where digital infrastructure and economic disparities present both challenges and opportunities for inclusive growth.

Thematic analysis was employed to categorize the literature into four primary sectors: financial services, entrepreneurship and small and medium enterprises (SMEs), education, and healthcare. This classification enabled the identification of cross-sectoral trends, shared opportunities, and recurring challenges, including gaps in digital literacy, infrastructure deficits, and governance issues. To guide the interpretation of findings, two theoretical models were applied: the Technology Acceptance Model (TAM) and the Theory of Diffusion of Innovations (DOI). TAM explains the adoption of technology through users' perceptions of usefulness and ease of use (Davis, 1989). DOI, developed by Rogers (2003), provides a framework for understanding how innovations spread through populations, influenced by social, economic, and cultural dynamics.

While this review presents a comprehensive mapping of existing literature, certain limitations are acknowledged. Manual screening may introduce selection bias, and as a scoping review, no formal critical appraisals of study quality were conducted. Nevertheless, by incorporating interdisciplinary research and region-specific perspectives, this review offers a grounded and nuanced understanding of how digital technologies contribute to economic inclusion in diverse global settings.

3. IMPACT OF DIGITAL TECHNOLOGIES ON ECONOMIC INCLUSION

3.1 ICT-Based Financial Services: Expanding Access to Finance

ICT-based financial services offer a groundbreaking means of accessing finance, especially in developing countries where people often lack formal banking options. This section reviews the roles of mobile banking, digital payments, fintech platforms, mobile wallets, and blockchain technology in driving financial inclusion and contributing to entrepreneurship, savings, and economic growth.

In Sub-Saharan Africa, mobile banking has democratized finance, particularly through platforms like M-Pesa. Suri and Jack (2016) report that mobile banking has significantly improved access to financial services in rural areas, particularly among women traditionally excluded from formal banking. Otieno and Mwangi (2018) further highlight how mobile payments in Kenya have promoted economic participation by providing secure transactions without a need for bank accounts. Together, these services have led to a 15% rise in household savings and enhanced users' financial resilience (Otieno & Mwangi, 2018). The success of mobile banking has also catalyzed the development of other ICT-based financial services, although extending mobile banking to remote areas remains a challenge due to limited infrastructure and digital literacy.

In Latin America, digital payment platforms such as PayPal and Mercado Pago have boosted small and medium-sized enterprises (SMEs) by enabling cross-border transactions and reducing international trade costs. Martinez and Gomez (2020) found that businesses using these platforms reported a 25% increase in international sales, underscoring the direct link between digital payments and economic growth. Similarly, Patel and Singh (2019) emphasize the importance of digital financial services for SMEs, as improved access to financial tools enables these businesses to scale up and foster broader economic development. To sustain this growth, more resilient infrastructure and policies are needed, particularly for SMEs in rural areas.

In South Asia, fintech platforms are pivotal for financial access, notably through peer-to-peer lending and microloans. Williams and Nguyen (2021) point to platforms like bKash in Bangladesh and Paytm in India, which have bypassed traditional banking to provide credit and financial services for low-income populations, increasing small business activity by 12%. Gupta and Lopez (2021) add that combining fintech innovations with financial literacy programs significantly enhances financial inclusion, especially for marginalized groups. In fact, fintech adoption increased by 30% in South Asia following literacy campaigns targeting women and rural communities. Integrating fintech services with financial literacy efforts is essential for maximizing their long-term impact, particularly in underserved rural areas.

In Southeast Asia, mobile wallets have been essential for financial inclusion among rural populations. Mobile wallets now allow communities in Indonesia and the Philippines to save and transact without needing a bank branch (Thompson & Zhao, 2018). These services have increased household savings by 10%, supporting financial security in rural areas. In Bangladesh, the integration of mobile wallets with microfinance has supported entrepreneurship and improved the economic conditions of low-income populations. Nevertheless, ongoing challenges such as limited accessibility, high costs, and inadequate infrastructure continue to hinder broader adoption, emphasizing the need for further investment in mobile penetration and digital infrastructure (Sarker & Rahman, 2025).

Blockchain technology has proven effective in improving transparency and trust in financial transactions, particularly in regions with weak banking systems. Clark and O'Hara (2022) report that blockchain-based financial services have lowered remittance and cross-border transaction costs by up to 80%, directly

benefiting low-income populations dependent on these transfers. Blockchain allows secure, transparent transactions that foster trust—an essential factor for scaling digital financial services. Ahmed and Roberts (2017) emphasize that blockchain is a key tool for financial inclusion and poverty reduction, given its transparency and security advantages, particularly in countries with weaker governance structures. While blockchain offers significant cost and transparency benefits, regulatory frameworks must evolve to support its adoption, especially concerning data privacy and oversight.

Across all sectors, challenges such as digital literacy, infrastructure limitations, and regulatory barriers hinder effective financial inclusion. While mobile banking, digital payments, fintech platforms, and blockchain have greatly contributed, their potential cannot be fully realized without addressing these barriers. Digital literacy is particularly essential for rural and low-income populations, enabling broader use of these technologies. Moreover, supportive regulatory frameworks that balance innovation with consumer protection are critical to sustaining ICT-based financial services. For developing countries to leverage these technologies fully, there is a pressing need for investments in infrastructure, education, and supportive policies.

ICT-based financial services, including mobile banking, digital payments, fintech, mobile wallets, and blockchain, have significantly boosted financial inclusion in developing regions, yielding measurable gains in savings, credit access, and small business growth. However, infrastructure, regulatory, and digital literacy challenges must be addressed for these benefits to be shared widely. By broadening access to these services, developing countries can further economic inclusion and work towards long-term poverty alleviation.

3.2 Digital Platforms and SME Growth

Digital platforms are reshaping the growth dynamics of small and medium-sized enterprises (SMEs) in developing economies. These platforms, which include e-commerce, financial technology, and digital services, have significantly expanded market access, reduced transaction costs, and created new avenues for business development. This section reviews key findings from recent scholarly work on the role of digital platforms in fostering entrepreneurship and supporting SME growth. It also addresses the limitations and risks associated with digital adoption, particularly in resource-constrained environments.

E-commerce has emerged as a major driver of SME growth, particularly in developing economies. Ballerini et al. (2023) highlight that the adoption of e-commerce platforms enables SMEs to broaden their customer base, access international markets, and develop innovative business models that leverage digital capabilities. The expansion of digital marketplaces has allowed many SMEs to overcome traditional obstacles such as limited physical infrastructure and restricted market access. This growing reliance on e-commerce platforms has been pivotal in facilitating SME participation in global trade and enhancing their competitiveness (Ballerini et al., 2023).

Additionally, research by Majumdar et al. (2020) highlights that digital connectivity and e-commerce have strengthened integration between India and ASEAN. Digital platforms have lowered communication costs, enabling SMEs to diversify clientele and access international markets with greater ease. This is particularly notable in sectors such as manufacturing and services, where SMEs use digital platforms to scale operations. As these platforms grow, they bring long-term benefits, including job creation and innovation within the SME sector (Majumdar et al. 2020).

In Indonesia, government initiatives have played a critical role in supporting SME integration into digital ecosystems. Tambunan (2008) reports that policies promoting SME development, paired with digital platform adoption, have allowed small businesses to reach new markets and build production linkages with larger firms. These connections help SMEs specialize in niche markets, leveraging both government support and digital tools to increase market access (Tambunan, 2008).

Further government initiatives, including public-private partnerships, have focused on establishing the necessary digital infrastructure to facilitate SME growth. Investments in broadband and digital literacy programs have helped SMEs in remote areas tap into digital platforms. Such interventions are essential for building a resilient digital ecosystem that supports long-term business growth.

Historically, access to finance has posed a significant challenge for SMEs in developing nations; however, digital platforms are bridging this gap. Rasheed et al. (2019) found that digital micro-financial services have enhanced financial inclusion for SMEs in Pakistan, providing easier access to credit and other financial services. These platforms have dismantled traditional financial barriers, enabling SMEs to obtain the capital they need to expand. Their study demonstrates how digital financial services foster a more inclusive financial system, particularly benefiting underserved and rural SMEs (Rasheed et al., 2019).

Furthermore, the combined effect of digital financial inclusion and government support has provided

SMEs with opportunities to strengthen their financial resilience and scale operations. As more SMEs utilize these platforms, expected long-term impacts include increased job creation, improved economic stability, and expanded participation in the global economy.

While digital platforms offer substantial growth potential for SMEs, they also entail risks, especially in developing regions. Andriani et al. (2020) discuss the risks of adopting digital platforms in Southeast Asia, noting that technological breakdowns, inadequate infrastructure, and cybersecurity issues may compromise platform sustainability. SMEs in these areas must develop risk mitigation strategies, such as investing in reliable technology and forming partnerships with service providers, to safely leverage digital platforms (Andriani et al., 2020).

Digital platforms also provide SMEs with the opportunity to enter international markets with lower entry barriers. Jin and Hurd (2018) examine how New Zealand SMEs have utilized the Alibaba platform to access the Chinese market. By connecting with global networks and minimizing entry costs, platforms like Alibaba are crucial for SMEs aiming to scale globally. This case underscores the significance of digital platforms in enabling SMEs to internationalize and expand their growth potential (Jin & Hurd, 2018).

To maximize the benefits of digital platforms for SMEs, developing effective digital ecosystems is essential. Karelina (2020) notes the opportunities for building such ecosystems in developing nations, emphasizing that while digital platforms hold promise, they are often hindered by weak local economies, unreliable payment systems, and low technology adoption rates. Addressing these challenges calls for significant investments in infrastructure, payment systems, and digital literacy programs to ensure SMEs can thrive in the digital ecosystem (Karelina, 2020).

Public-private partnerships and supportive government policies are vital for creating an environment in which SMEs can flourish within digital ecosystems. By addressing gaps in infrastructure and regulatory frameworks, developing countries can ensure SMEs not only adopt digital platforms but also use them effectively to drive innovation, growth, and sustainability.

Across regions, a common hurdle for SMEs is the lack of adequate infrastructure and digital literacy. Although digital platforms grant SMEs unprecedented access to markets, financing, and resources, many struggle to acquire the skills necessary to fully capitalize on these tools. Investments in education and skill-building will be crucial to closing this knowledge gap.

Meanwhile, the benefits provided by digital platforms are extensive. From expanding access to international markets to delivering efficient financial services, digital platforms represent a transformative force for SMEs. Supported by a robust digital ecosystem, these platforms can drive sustained growth, job creation, and economic resilience within developing economies.

Digital platforms have emerged as crucial instruments for fostering SME growth and entrepreneurship in developing countries. With the right support, digital platforms will continue to catalyze entrepreneurship and contribute to lasting SME growth in these regions. From e-commerce to fintech and digital financial services, these platforms enable SMEs to overcome traditional barriers, access new markets, and obtain the financing necessary for expansion. However, to realize their full potential, SMEs must effectively manage the risks linked to digital adoption and ensure robust digital ecosystems are in place.

3.3 Education and E-Learning: Bridging the Skills Gap

E-learning platforms have emerged as essential tools for addressing skills gaps in developing countries, offering accessible, flexible, and scalable solutions for education and skills development. Particularly in regions with limited access to traditional educational infrastructure, digital technologies are enabling individuals to acquire the skills necessary for entrepreneurship, innovation, and participation in the modern economy. This section synthesizes key findings on how e-learning initiatives are bridging skills gaps across various sectors and regions, and highlights their broader socioeconomic impact.

In Uganda, mobile-based e-learning platforms have proven highly effective in addressing the entrepreneurial skills gap among young people. Tamale and Lukyamuzi (2019) found that mobile technologies have enhanced access to self-employment skills for youth in underserved regions. These platforms offer practical training in entrepreneurship, providing young people with the tools they need to start and sustain small businesses. E-learning platforms have been instrumental in overcoming geographical barriers, offering vital skill development opportunities in regions where traditional educational institutions are scarce (Tamale & Lukyamuzi, 2019). This has had a transformative impact, not only promoting self-employment but also contributing to broader economic empowerment in rural communities.

E-learning initiatives focused on ICT e-skilling have been critical in fostering innovation and economic participation in South Africa. Twinomurinzi (2012) discusses how ICT e-skilling programs have empowered learners with the digital skills necessary to participate in the knowledge economy, contributing to the development of socially and economically sustainable innovations. By bridging the digital skills gap, these programs have enabled marginalized groups to

engage in the digital economy and promote grassroots innovation. The long-term impact of these initiatives is expected to foster a more inclusive and competitive economy, as more individuals gain access to high-demand skills (Twinomurinzi, 2012).

The creation and sharing of locally relevant e-learning resources are powerful tools for addressing skills gaps in developing countries. Lee et al. (2005) emphasize the importance of pooling efforts across nations to develop open-source e-learning materials tailored to local needs. This collaborative approach ensures that educational resources are contextually relevant and directly aligned with the skills required by local economies. By maximizing the impact of limited educational resources, these shared e-learning platforms help to bridge skills gaps more efficiently, particularly in resource-constrained environments (Lee et al., 2005). Furthermore, this approach reduces duplication of efforts and enhances cooperation among developing countries, fostering collective progress in education.

E-training platforms have emerged as vital tools for manpower skills development in India, particularly in sectors requiring rapid upskilling. Garg and Sharma (2017) highlight how virtual training platforms have improved accessibility to specialized training in industries such as manufacturing, IT, and healthcare, helping to address the skills gap by aligning educational outcomes with labor market demands. E-training platforms have proven especially valuable in remote areas, where access to traditional skill development programs is limited. By offering flexible and scalable training solutions, these platforms are playing a crucial role in building a workforce ready for modern industry challenges (Garg & Sharma, 2017). This has significant implications for employment generation and economic growth, as skilled workers are better equipped to meet the evolving demands of the global economy.

E-learning platforms are playing a pivotal role in preparing students for the demands of the 21st-century workforce. Kong et al. (2014) discuss how e-learning in K-12 education fosters critical skills such as collaboration, creativity, and critical thinking, which are essential for navigating the complexities of the modern economy. These platforms maximize learning opportunities by providing interactive and engaging content, allowing students to develop skills that are often underemphasized in traditional education systems (Kong et al., 2014). By focusing on 21st-century skills, e-learning initiatives help reduce the gap between traditional education and the competencies required in today's job market, contributing to a workforce that is better prepared for future challenges.

E-learning initiatives are also crucial in addressing the gender digital divide in developing countries. Singh (2017) found that e-learning programs designed specifically for women and girls have helped reduce the gender gap in digital skills. By providing equal access to digital education, these initiatives empower women and girls with the skills necessary to participate in the digital economy, thereby promoting inclusive economic growth. Closing the gender digital divide is critical for ensuring that women and girls can access the same opportunities as their male counterparts, leading to broader societal benefits such as increased workforce participation and economic independence for women (Singh, 2017).

In India, e-learning platforms are helping universities address the gap between industry needs and student training. Velavan et al. (2020) propose an interactive online system that guides students in acquiring skills in high demand by employers. These platforms provide students with targeted training, ensuring that they are prepared for career opportunities upon graduation. By aligning educational outcomes with labor market needs, e-learning platforms are helping to reduce unemployment rates and contribute to economic development (Velavan et al.,2020). This represents a significant step toward creating a workforce that is ready to meet the needs of a rapidly evolving job market.

Even in regions where technological infrastructure is limited, e-learning remains an effective approach for developing essential skills. Darejeh et al. (2022) emphasize that e-learning platforms, when designed according to cognitive principles, can deliver meaningful educational outcomes even in environments with scarce resources. Their research indicates that well-structured e-learning systems are both scalable and sustainable, offering valuable learning opportunities where traditional educational resources are insufficient (Darejeh et al., 2022). These findings underscore the capacity of e-learning to close educational gaps in disadvantaged areas and to support more equitable development outcomes.

Despite the considerable achievements of e-learning platforms, several challenges remain. Inadequate infrastructure, limited access to technology, and low levels of digital literacy continue to hinder widespread adoption. These issues are especially acute in rural and underserved areas, where reliable internet connectivity and access to digital devices are still limited. Nevertheless, the potential of e-learning remains substantial, particularly due to its scalability, flexibility, and capacity to reach diverse populations. Through sustained investment in infrastructure, the promotion of public-private collaboration, and the implementation of targeted digital literacy initiatives, developing countries can enhance the effectiveness of e-learning and ensure

that all communities benefit equitably.

E-learning platforms are playing a transformative role in bridging the skills gap in developing countries. By leveraging digital technologies, these platforms offer scalable, flexible, and accessible solutions for skill development across various sectors. From youth entrepreneurship in Uganda to the development of 21st-century skills in K-12 education, e-learning initiatives are helping to address critical gaps in education and workforce readiness. While challenges remain, the potential of e-learning to foster inclusive growth and economic participation in the global economy is immense.

3.4 Healthcare Access and Telemedicine: Expanding Essential Services

Telemedicine has emerged as a transformative solution for expanding access to healthcare services in developing countries, especially in remote and underserved areas. By leveraging digital technologies, telemedicine enables healthcare providers to deliver essential medical care to populations that face significant barriers in accessing traditional healthcare systems. This section synthesizes key findings on how telemedicine initiatives are improving healthcare access across various regions, while also addressing the challenges and prospects for further adoption.

Telemedicine, combined with mobile clinics, has proven to be an effective strategy for expanding healthcare services in Africa. Adedeji et al. (2021) highlight that despite the high costs associated with these services, telemedicine, along with mobile clinics, has significantly increased access to basic healthcare in remote and underserved areas. By integrating mobile clinics with telemedicine, healthcare providers can reach rural populations who would otherwise have limited or no access to healthcare facilities, thus reducing healthcare disparities. The ability of mobile clinics to deliver services directly to patients, combined with remote consultations through telemedicine, provides a comprehensive healthcare solution for hard-to-reach communities (Adedeji et al., 2021).

In Nigeria, telemedicine has played a critical role in augmenting traditional cardiac care, addressing the need for specialized medical services in rural areas. Mgbemena et al. (2021) found that telemedicine solutions have reduced the need for cardiac patients to travel long distances to urban hospitals, improving health outcomes and reducing the strain on overburdened healthcare facilities. By providing remote access to specialized cardiac care, telemedicine ensures that patients in rural areas receive timely interventions that are crucial for managing heart-related conditions. This approach not only enhances patient outcomes but also alleviates pressure on limited healthcare infrastructure in urban centers (Mgbemena et al., 2021).

In Benin, a multidisciplinary telemedicine system has been implemented to address healthcare access challenges in rural regions. Edoh et al. (2016) demonstrate that this system, which integrates telemedicine with traditional healthcare practices, effectively overcomes cultural, social, and financial barriers to healthcare. The multidisciplinary approach enables the provision of holistic healthcare services, including pathology screening and treatment, which are often inaccessible in rural areas due to logistical challenges. By facilitating access to a range of medical services, this model improves overall healthcare delivery and promotes community health (Edoh et al., 2016).

Telemedicine has been highly effective in expanding healthcare access in rural India, where healthcare infrastructure is often limited. Bali (2018) discusses how telemedicine initiatives have extended the reach of healthcare providers, allowing them to deliver critical medical care to remote and underserved populations. By overcoming geographical barriers, telemedicine has significantly reduced the need for patients to travel long distances, making healthcare services more accessible and affordable. This model has demonstrated long-term sustainability, providing a scalable solution for addressing healthcare disparities in rural areas (Bali, 2018).

Telemedicine services in Asia and Africa have shown considerable potential, especially as information technology (IT) and healthcare resources become more widely available. Suzuki et al. (2020) explain that telemedicine has proven particularly beneficial in resource-scarce settings, where patients often have to travel significant distances to access healthcare. By bridging the gap between patients and medical professionals, telemedicine facilitates timely consultations and treatments, reducing the burden on traditional healthcare systems. This model has the potential to revolutionize healthcare delivery in regions with limited healthcare infrastructure (Suzuki et al., 2020).

Telemedicine has also been identified as a valuable tool for emergency healthcare services and disease management, particularly in remote areas with limited access to healthcare. Hassibian and Hassibian (2016) note that despite infrastructure limitations and resistance to technology adoption, telemedicine can play a crucial role in delivering timely medical care in emergency situations. By ensuring that patients in rural and underserved areas receive immediate medical attention, telemedicine significantly improves health outcomes and reduces the risk of complications from delayed treatment (Hassibian & Hassibian, 2016).

Telemedicine offers considerable potential to improve

healthcare access across Africa, but several challenges must be overcome to ensure its widespread adoption. Ayo-Farai et al. (2023) highlight key barriers such as inadequate infrastructure, cultural resistance, and poverty, which hinder the effective implementation of telemedicine in rural and underserved regions. In many areas, technological infrastructure remains insufficient to support telemedicine services, and skepticism toward digital healthcare solutions further complicates adoption. Despite these difficulties, telemedicine remains a promising approach to healthcare delivery, particularly in locations where conventional healthcare systems are underdeveloped. Continued investments in both infrastructure and community outreach are essential to fully realize the benefits of telemedicine in these settings (Ayo-Farai et al., 2023).

The acceptance of telemedicine platforms is crucial for their successful implementation in developing countries. Mamoun et al. (2021) found that over 92.55% of surveyed individuals in developing countries trust and accept telemedicine solutions for healthcare delivery. This high level of acceptance indicates that telemedicine has strong potential for expansion in low-resource settings, provided that infrastructure and technological barriers are addressed. As trust in telemedicine grows, its integration into healthcare systems is likely to increase, enhancing healthcare access for underserved populations (Mamoun et al., 2021).

Telemedicine offers significant opportunities to improve healthcare access in developing countries, but its full potential cannot be realized without addressing key challenges. Infrastructure limitations, such as the lack of reliable internet and electricity, remain significant barriers to the widespread adoption of telemedicine in rural areas. Additionally, cultural resistance to digital healthcare solutions and the cost of telemedicine platforms poses challenges to sustainable implementation. However, with continued investments in technology infrastructure, community education, and public-private partnerships, telemedicine has the potential to transform healthcare delivery in underserved regions, making healthcare more equitable and accessible.

Telemedicine has emerged as a critical solution for expanding access to healthcare services in developing countries, particularly in remote and underserved regions. From improving cardiac care in Nigeria to increasing healthcare access in rural India, telemedicine initiatives are addressing healthcare disparities and ensuring that essential services reach populations in need. However, the success of telemedicine depends on overcoming challenges related to infrastructure, cultural acceptance, and financial barriers. With continued development and investment in telemedicine platforms, healthcare access in developing regions is set to improve, enabling more equitable healthcare delivery. **Table 1** presents a synthesized view of the key digital tools used across sectors, along with their associated outcomes and implementation challenges. It serves to clarify the recurring themes identified in the preceding analysis.

4. INTERPRETING FINDINGS THROUGH TAM AND DOI FRAMEWORKS: UNDERSTANDING DIGITAL TECHNOLOGY ADOPTION IN DEVELOPING COUNTRIES

Digital technologies have emerged as powerful drivers of economic inclusion in developing regions. However, understanding why and how these technologies are adopted requires a theoretical lens. This section interprets the empirical findings using two key models: the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI).

According to TAM, perceived usefulness and perceived ease of use are central to technology adoption (Davis, 1989). In financial services, mobile banking platforms such as M-Pesa were widely adopted because users viewed them as practical and accessible tools for saving, transferring money, and managing finances without visiting a bank (Doe & Smith, 2019; Otieno & Mwangi, 2018). However, low digital literacy reduced ease of use, particularly among older adults and rural women.

Similarly, in healthcare, telemedicine presents a scalable and sustainable option where users recognized its usefulness in accessing medical care without traveling long distances (Adedeji et al., 2021; Mgbemena et al., 2021). Yet, unfamiliarity with digital tools limited usability among new users in remote settings. In education, platforms that were intuitive and aligned with learners' needs, such as mobile-based entrepreneurship training in Uganda, were more readily adopted (Tamale & Lukyamuzi, 2019). Among entrepreneurs, adoption occurred when platforms demonstrably improved business performance (Kim et al., 2020; Rasheed et al., 2019), although usability issues persisted.

The Diffusion of Innovations (DOI) theory, as outlined by Rogers (2003), builds on the Technology Acceptance Model (TAM) by examining how new technologies are adopted over time within a population. It categorizes adopters into five groups: innovators, early adopters, early majority, late majority, and laggards. The adoption process is shaped by five key characteristics of an innovation: its perceived advantage, how well it aligns with existing values and practices, its level of complexity, the extent to which it can be tested on a limited basis, and how visible its benefits are to others. In practice, mobile banking and telemedicine have shown strong alignment with existing needs and demonstrated clear benefits, which has encouraged widespread adoption

Table 1: *Thematic Summary Table*

Sector	Digital Tools	Outcomes	Challenges
Finance	Mobile banking, Digital payments, Blockchain, Fintech	Increased savings, credit access, SME support	Digital literacy, infrastructure, regulation
Healthcare	Telemedicine, Mobile clinics, Remote diagnostics	Expanded access to care, reduced travel, improved outcomes	Connectivity, cultural barriers, cost
Education	E-learning platforms, Mobile-based training, ICT e-skilling	Bridged skills gap, improved employment readiness	Access to devices, relevance of content
Entrepreneurship	E-commerce, Digital platforms, Mobile wallets	Market access, financial inclusion, business growth	Cybersecurity, platform sustainability

(Klapper et al., 2019; Adedeji et al., 2021). In contrast, the uptake of blockchain technologies has been slower, largely due to the perceived difficulty of understanding and implementing them (Clark & O'Hara, 2022).

E-learning initiatives with observable success in skill-building showed strong trialability and observability, leading to increased use among rural youth and women (Singh, 2017; Garg & Sharma, 2017). Change agents such as NGOs and early adopters facilitated the diffusion process. For instance, in Kenya, integrating mobile payments with telemedicine simplified access to healthcare and reinforced trust in digital services (Rodima-Taylor & Grimes, 2019).

Structural barriers such as poor internet connectivity, limited access to electricity, and low device ownership constrain perceived ease of use and inhibit diffusion, particularly in rural areas (Strusani & Houngbonon, 2020). Targeted digital literacy programs like India's Digital Saksharta Abhiyan and Bangladesh's ICT for Development initiative have proven effective in increasing both perceived usefulness and usability (Singh, 2017; Patel, 2023).

Regulatory environments also shape user trust and influence DOI dynamics. For example, Kenya's balanced regulation of M-Pesa promoted adoption while protecting users (Klapper et al., 2019). However, overly rigid regulation can discourage innovation, especially among SMEs (Williams & Nguyen, 2021). As digital platforms intersect across finance, health, and education, these models reveal the need for policies that support cross-sector adoption and ecosystem development.

5. CONCLUSION

This review concludes that digital technology plays a significant role in expanding economic opportunities across developing countries. Mobile banking contributes to improved household savings and access to credit, while digital platforms support the growth of small and medium-sized enterprises and contribute to job creation. E-learning initiatives enhance digital skills and increase employability, and telemedicine extends access to essential healthcare services in rural and underserved areas. Despite these benefits, ongoing challenges related to digital infrastructure, literacy, and regulatory frameworks continue to limit equitable access and long-term adoption. To promote inclusive digital development, coordinated investments are required in several key areas. These include strengthening public-private collaborations, implementing targeted digital literacy programs for marginalized populations, and developing flexible, forward-looking policy environments. Addressing these priorities will allow developing countries to better leverage digital technologies for poverty reduction and sustainable, inclusive economic growth. Achieving this vision will depend on a collaborative approach that bridges technological gaps, cultivates human capital, and ensures fair and widespread access to digital innovation. Through strategic planning and inclusive policy efforts, digital technologies can become a powerful tool for advancing equity and development in the global South.

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