Cureus Journal of Business and Economics

Open Access Review Article

Digital Literacy and Its Role in Enhancing Financial Access for Sustainable Economic Growth

Received 04/21/2025
Review began 05/12/2025
Review ended 08/15/2025
Published 09/16/2025

DOI:
https://doi.org/10.7759/s44404-025-04651-x

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Abstract

The current study aims to find the impact of digital literacy on financial inclusion and its potential use in sustainable economic growth, especially within emerging economies. A systematic review of papers from 2004 to 2024 was conducted through Google Scholar, Taylor & Francis, MDPI, and Wiley Online Library, using the keywords "digital literacy," "financial access," "financial inclusion," and "sustainable economic growth." Twenty-six papers were selected for relevance, while others were excluded for failing to fit the study. Digital financial literacy is needed to use digital financial services effectively, thus facilitating financial inclusion and proper financial decision-making. It further affects poverty reduction, entrepreneurial activities, and social stability in developing regions. This research uniquely integrates understanding from these extant papers on digital literacy and financial access, concentrating on their role in promoting sustainable economic growth. This piece of work is important for the significance of digital financial literacy in enhancing financial inclusion for sustainable economic growth as presented in this single paper. The study only focuses on digital literacy for financial access and sustainable economic growth. Future studies might explore how digital literacy impacts economic well-being in underdeveloped regions and other spheres of digital literacy, which may also focus on the accessibility of infrastructure and tailored financial services in rural areas. Enhancing digital financial literacy is essential for better financial inclusion, empowering individuals to make informed decisions, access digital services, and support sustainable economic growth, especially in underserved regions.

Categories: Banking and financial services, Sustainable Economic Development, Fintech and Cryptocurrencies
Keywords: digital literacy, financial access, financial inclusion, sustainable economic growth, poverty alleviation

Introduction And Background

In an increasingly digitalized world, digital literacy has emerged as the crucible for social and economic advancement. As per the UNESCO (United Nations Educational, Scientific and Cultural Organization), digital literacy is defined as the ability to use, assess, and access digital technologies to communicate, access information, and solve problems in various life situations. It has been recognized as a key skill to facilitate inclusive learning, e-governance, economic participation, and access to health and social care, and is therefore an essential competence for the contemporary digital age (UNESCO, 2018). No doubt, in today's integrative global economy, the position of digital literacy in developing innovation, improving productivity, and accessing markets is critical in furthering sustainable economic growth. Financial services are becoming increasingly online, and being digitally literate is crucial for acquiring and utilizing digital financial services to make informed financial choices (Demirguc-Kunt et al., 2018), (Gomber et al., 2017), and (Mushtaq and Bruneau, 2019). Digital literacy empowers people to utilize digital banking, mobile wallets, and fintech to ensure that more economic services are accessible and safe. This, therefore, diminishes economic inequality, encourages already vulnerable populations to fully engage in economic activity, and makes them more resilient and empowered.

As per the World Bank, financial inclusion is enhanced by digital literacy, which in turn generates sustainable economic growth by enabling people and enterprises to access vital services like credit, education, health, and business opportunities, thus enabling more robust and resilient local economies (World Bank, 2018). Financial inclusion promotes efficient resource allocation while reducing income inequalities and increasing inclusiveness among the economic mainstreams that involve vulnerable groups in the mainstreaming of development. It further encourages environmentally sustainable practices through paperless transactions and investment in green technologies. This way, digital literacy and financial inclusion can seamlessly contribute to an overall agenda of equitable and sustainable economic growth in the digital age. According to the "Digital Literacy Mission Government of India," digital literacy is defined as the capacity and capability of people and communities to understand and engage with sensible digital technologies (NDLM, 2015). These include information fluency, media fluency, computing skills, and critical thinking (Shabani and Keshavarz, 2022) (Reddy et al., 2020). It therefore completes the focus of the United Nations Conference on Trade and Development by stretching beyond technical knowledge to make other aspects of life and work feasible in a digital society. According to Widyastuti et

How to cite this article
Patra B, Tudu M, Pareek A (September 16, 2025) Digital Literacy and Its Role in Enhancing Financial Access for Sustainable Economic Growth. Cureus J Bus Econ 2 : es44404-025-04651-x. DOI https://doi.org/10.7759/s44404-025-04651-x

al. (Widyastuti et al., 2024), this concept is based on two major principles: improving financial and digital literacy as basic factors and developing risk awareness about digital financial products. In addition, Morgan et al. (Morgan et al., 2019) also point out that digital financial literacy involves several attributes, such as knowledge of digital services and products, proper management of financial risks, awareness of possible risks, and acquaintance with consumer rights and compensation procedures. These interlocking factors together endow human beings with the ability to conduct business safely and securely online. Mehra (Mehra, 1997) and Reshi and Sudha (Reshi and Sudha, 2022) highlighted that empowering of women makes women become the masters of their lives, make good decisions, and intensive involvement in social, political, and economic sectors. Information Communication Technology (ICT) plays a vital role in society, which has greatly served to bring about changes for more improvement in social and economic aspects, such as higher productivity, employment, easier access to living quality, and the creation, storage, processing, transmission, and exchange of information. It allows one to understand and make use of various forms of banking services, which include mobile banking and Internet banking, which are essential to achieving financial inclusion.

The World Bank highlighted in the Global Findex Database 2017 that financial inclusion has increased worldwide, particularly through mobile and internet-based accounts. However, the vast majority of adults worldwide still lack basic digital skills to open and utilize these accounts, especially in low- and lower-income communities (Demirguc-Kunt et al., 2018). Ideas for India highlighted that even when there are government schemes for financial inclusion, as few as 38% of Indian households are digitally literate, and rural households lag in a manner that excludes the full utilization of digital financial services (Ideas for India, 2021). The lack of focus on sustainable economic development has led to significant global challenges. United Nations (United Nations, 2024) released a Sustainable Development Goals Report, which shows only 17% of the Sustainable Development Goals (SDGs) targets are now on track, and increasing poverty and hunger are worsening as millions are forced into disastrous situations. Such stagnation is further worsened by climate change and other geopolitical conflicts that erode resources and hinder the rejuvenation of economic activities (United Nations Conference on Trade and Development, 2024). The Financing for Sustainable Development Report 2024 mentions that an annual financing gap of $4 trillion in developing countries is holding back necessary investments in sustainability, thus further slowing the progress toward SDGs. Therefore, the study explores the impact of digital literacy on digital financial inclusion and assesses its potential to drive sustainable economic growth, particularly in emerging economies by conducting a systematic review of extant pieces of literature and drawing meaningful findings in this area.

Review

Research methodology

The research was conducted through all the major online databases, but results were obtained from only the following databases: Google Scholar, Taylor & Francis, MDPI, and Wiley Online Library, due to significant findings and other databases were excluded due to inaccessibility or a lack of significant results as per the sphere of the study. Using keywords in the combination of (“digital literacy” AND “financial access” OR “financial inclusion”) AND (“sustainable economic growth” OR “sustainable development” OR “sustainability”) to find all interlinked, themes-based papers, then (“digital literacy” AND “financial access” OR “financial inclusion”), and lastly (“financial access” OR “financial inclusion”) AND (“sustainable economic growth” OR “sustainable development” OR “sustainability”). While many articles related to digital literacy were found, the focus was solely on the relevant articles, and others were eliminated. Additionally, a few relevant articles were included through manual selection. Twenty-one articles were selected from Google Scholar that were closely aligned with the research scope, and one was selected from Taylor & Francis that was specifically pertinent to the research topic. Three academic publications were chosen from the MDPI database since they were closely related to the field of study, and one article was chosen from the Wiley Online Library. Based on this review's topic, 26 past studies were selected, including articles and books, for examination. All the articles and their sources are mentioned in Table *1* which was selected through the above-mentioned keywords and manual selection.

Database	No. of Articles Reviewed	Frequency
Google Scholar	21	81%
Taylor & Francis	1	04%
MDPI	3	11% [1]
Wiley Online Library	1	04%
Total	26	100%

TABLE 1: Database Utilized for Review of Literature

Source: compiled by authors

[1] represents the frequency percentage of MDPI that was reduced from 11.53% to 11%, to make room for the difference in rounding.

The above table summarizes the number of articles selected from each particular database, as shown in Table *1*. In the row of MDPI, we mentioned 11% [1], which defines the frequency of articles selected from the MDPI database, and [1] represents the frequency percentage of MDPI that was reduced from 11.53% to 11% in order to make room for the difference in rounding. This is a compromise because MDPI is a mid-range contributor; it does not significantly alter the overall distribution like the largest category, Google Scholar, and the smaller categories like Taylor & Francis and Wiley Online Library do, but it keeps the total at 100% without moving the proportionality too much.

This research presents a detailed literature review that discusses the contribution of digital literacy to facilitating financial inclusion and, in turn, how the latter contributes to sustainable economic development. The procedure, from the selection of articles, is illustrated in Figure *1*.

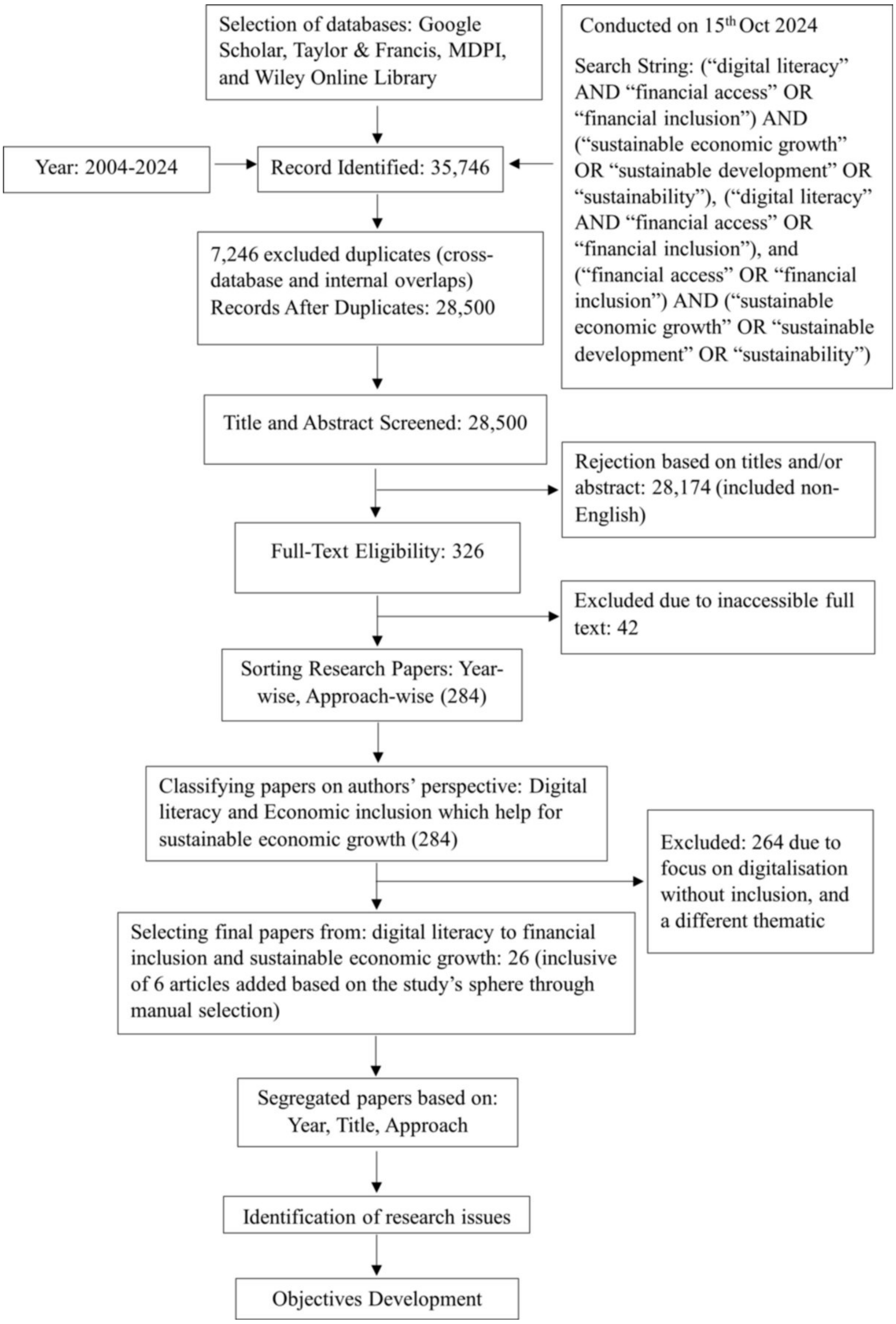

FIGURE 1: Research Methodology for Selection of Articles

Source: Flowchart adopted from Pareek and Mangaraj (Pareek and Mangaraj, 2021)

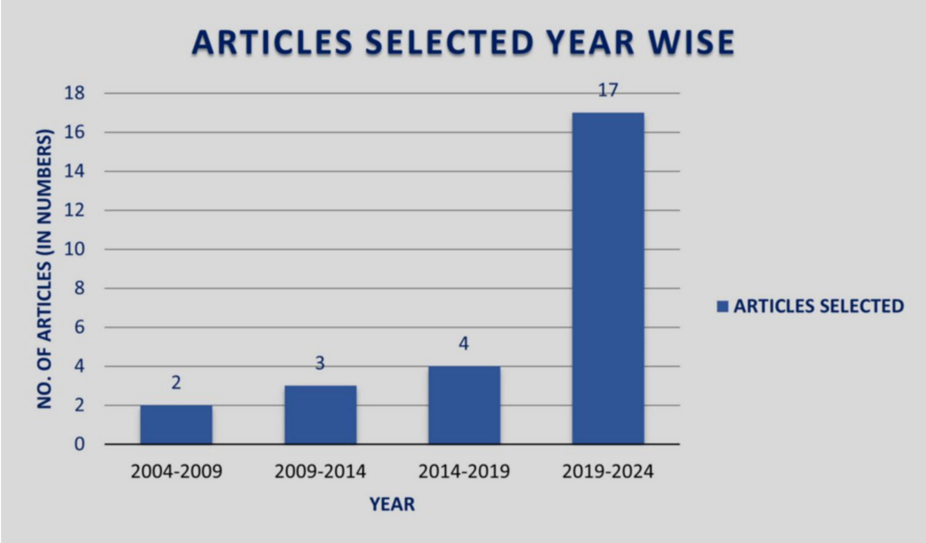

FIGURE 2: Year-Wise Graphical Representation of Articles

Source: compiled by authors

Figure *2* shows a year-wise analysis of papers: The analysis shows a significant growth in papers related to digital literacy, mainly digital financial literacy, which helped financial accessibility and sustainable economic growth after 2020. This concept has grown in importance daily, especially in the last ten years, since the collection of chosen articles has been extracted for the study related to the review sphere.

Table *2* represents the article type and focus of the study. As mentioned below, the article type is represented as an approach, and it subdivides into three categories. There are F/T to represent framework or theory-type papers; likewise, S is for survey or empirical papers, and R is for review or analytical summary of articles. There are two focus groups: one is digital literacy to financial inclusion, which is represented by "1," and the other is financial inclusion to sustainable economic growth, which is represented by "2." The "↑" represents the articles aligned with both the approach and focus of the study; i.e., the paper "Bridging digital divide: Efforts in India" aligned with "R" and focus group "1," which defined the paper as a "review or analytical summary" and related to "digital literacy in financial inclusion." Likewise, all the articles are aligned.

Author	Title	Approach			Focus	
		F/T	S	R	1	2
(Rao, 2005)	"Bridging digital divide: Efforts in India"			↑	↑	
(Chauhan and Murthy, 2006)	"India on the way to bridge the digital divide: role of INFLIBNET"	↑			↑	
(Rajput and Nair, 2013)	"Significance of Digital Literacy in E-Governance"			↑	↑	
(Venkatesh and Sykes, 2013)	"Digital Divide Initiative Success in Developing Countries: A Longitudinal Field Study in a Village in India"		↑		↑	
(Khan, 2014)	"Digital India: Emerging Challenges & Opportunities for the Banking Sector"			↑	↑	↑
(Arun and Kamath, 2015)	"Financial inclusion: Policies and practices"			↑		↑
(Jagani and Patra, 2017)	"Digital Participation through Mobile Internet Banking and Its Impact on Financial Inclusion: A Study of Jan Dhan Yojana"	↑			↑	↑
(Sardana and Singhania, 2018)	"Digital technology in the realm of banking: A review of literature"			↑	↑	↑
(George and College, 2020)	"A Study on Digital Financial Literacy: A Precedent for Improved Financial Literacy and Financial Inclusion"		↑		↑	↑

(Kamesh, 2021)	"COVID-19 - Digital Transformation and Digital Competency"			↑	↑	↑
(Fitriani and Santi, 2023)	"Does Financial Technology and Financial Literacy Enhance Financial Inclusion? (Evidence from Several Countries)"			↑	↑	↑
(Fauziyah et al., 2024)	"Digital Financial Literacy and Digital Financial Inclusion: Efforts to Overcome Challenges After the Covid-19 Pandemic and Increase the Independence of Financial Management"	↑			↑	↑
(Gumilar et al., 2024)	"Digital Financial Literacy and Digital Financial Inclusion in the Era of Digital Disruption: Systematic Literature Review"			↑	↑	↑
(Kumar et al., 2024)	"Impact of Digital Financial Literacy on Financial Inclusion – The Role Fintech Services"		↑		↑	↑
(Khémiri et al., 2024)	"How Financial Inclusion Moderates the Curvilinear Nexus between Tangible Investment and Sustainable Firm Growth: New Evidence from the Middle East and North Africa Region"		↑			↑
(Adel, 2024)	"The Impact of Digital Literacy and Technology Adoption on Financial Inclusion in Africa, Asia, and Latin America"		↑		↑	↑
(Showkat et al., 2024)	"Empowering women in the digital age: can digital financial services fulfil the promise of financial autonomy and gender equality in the attainment of Sustainable Development Goal 5?"		↑		↑	↑
(Abbas et al., 2024)	"How Financial Inclusion and Green Innovation Promote Green Economic Growth in Developing Countries"		↑			↑
(Nwokike et al., 2024)	"Effects of Financial inclusion and sustainable economic growth in Nigeria: The role of Small and Medium-Sized Enterprises (SMEs)"			↑		↑
(Tidjani and Madouri, 2024)	"Fintech, financial inclusion, and sustainable development in the African region"		↑		↑	↑
(Hussain et al., 2024)	"Financial Inclusion and Economic Growth: Comparative Panel Evidence from Developed and Developing Asian Countries"		↑			↑
(Mishra et al., 2024)	"Financial Inclusion and Its Ripple Effects on Socio-Economic Development: A Comprehensive Review"			↑		↑
(Amaliah et al., 2024)	"Does digital financial inclusion forecast sustainable economic growth? Evidence from an emerging economy"		↑		↑	↑
(Huang et al., 2024)	"Role of social capital and financial inclusion in sustainable economic growth"		↑			↑
(Huang et al., 2024)	"Natural resources, digital financial inclusion, and good governance nexus with sustainable development: Fuzzy optimization to econometric modelling"		↑		↑	↑
(Yasmina, 2024)	"The impact of digital finance on enhancing financial inclusion and achieving sustainable development in the tourism sector in Algeria"		↑		↑	↑

TABLE 2: Article Type and Focus of the Study

Abbreviations used:

F/T - Framework/Conceptual

S - Survey/Empirical study

R - Review/Analytical Summary of Articles concerning Author, Title, Approach

"↑" represents the above articles aligned with which approach and focus of the study

Focus 1 Role of Digital Literacy in Financial Inclusion

Focus 2 Financial Inclusion to Sustainable Economic Growth

Source: compiled by authors

Table 3 represents the major research questions (RQs) as per the research issues (RIs) extracted from the represented articles. There are three research issues that were found in most of the articles, as follows.

Phase	Representative Article	Research Issue	Research Question
Role of Digital Literacy in Financial Inclusion (FOCUS 1)	(Rao, 2005); (Chauhan and Murthy, 2006); (Rajput and Nair, 2013); (Venkatesh and Sykes, 2013); (Khan, 2014); (Jagani and Patra, 2017); (Sardana and Singhania, 2018); (George and College, 2020); (Kamesh, 2021); (Fitriani and Santi, 2023); (Fauziyah et al., 2024); (Gumilar et al., 2024); (Kumar et al., 2024); (Adel, 2024); (Showkat et al., 2024); (Tidjani and Madouri, 2024); (Amaliah et al., 2024); (Huang et al., 2024); (Yasmina, 2024).	RI1: Few studies explore effective ways to increase internet access and add bandwidth in rural areas. RI2: Holistic research is lacking in terms of unique challenges and barriers to the development of digital literacy skills and adaptation to technological advancement by older populations.	RQ1: Is there a different strategy requirement to increase internet access in rural areas? RQ2: Do older people face barriers to the development of digital literacy skills and adaptation to technological advancement for access to financial inclusion?
Financial Inclusion to Sustainable Economic Growth (FOCUS-2)	(Khan, 2014); (Arun and Kamath, 2015); (Jagani and Patra, 2017); (Sardana and Singhania, 2018); (George and College, 2020); (Kamesh, 2021); (Fitriani and Santi, 2023); (Fauziyah et al., 2024); (Gumilar et al., 2024); (Kumar et al., 2024); (Khémiri et al., 2024); (Adel, 2024); (Showkat et al., 2024); (Abbas et al., 2024); (Nwokike et al., 2024); (Tidjani and Madouri, 2024); (Hussain et al., 2024); (Mishra et al., 2024); (Amaliah et al., 2024); (Huang et al., 2024); (Yasmina, 2024).	RI3: While many studies are mainly concerned with its short-run and direct advantages of digital financial inclusion, there are issues in the literature concerning its overall implications for sustainable economic growth. It is important to know the relationship between digital financial inclusion and sustainable economic growth.	RQ3: Is there any relationship between digital financial inclusion to sustainable economic growth?

TABLE 3: Major Questions As Per the Research Issues

Source: compiled by authors

The research objectives were based on acknowledged RQs. Few studies have illustrated the impact of digital literacy on digital financial inclusion and the contribution of digital financial inclusion toward sustainable economic development among the final selection of articles. Since digital literacy, digital financial inclusion, and economic sustainability have become integral parts of sustainable development, a systematic review of the literature was conducted to produce more significant and inclusive findings through the following objectives, as mentioned in Table *4*.

Research Question	Objectives
RQ1, RQ2	Role of Digital Literacy in Digital Financial Inclusion.
RQ3	Digital Financial Inclusion to Sustainable Economic Growth.

TABLE 4: Objectives of the Research

Source: compiled by authors

Review of literature

The review of the literature is divided into two categories:

Role of Digital Literacy in Digital Financial Inclusion

Digital literacy plays an important role, one that enables people to have appropriate skills in interacting with digital financial services. This process of building capability leads to access to a broad range of financial services (products); more importantly, it yields healthier financial behavior and better attitudes toward handling finances. As the world changes day to day, digital literacy must update with the changing scenario for a better and sustainable future, but many barriers remain to overcome for such a future. The gap is still mainly a product of socioeconomic inequalities in terms of better access in urban locations than in a rural areas, according to Chauhan and Murthy (Chauhan and Murthy, 2006). They further mention that this gap will be better covered by initiatives like the Information and Library Network Centre (INFLIBNET) and awareness programs by promoting e-information literacy. These are coupled with improvements in accessibility of the Internet in institutions of learning within India, thereby creating a spread as the gap narrows. Venkatesh and Sykes (Venkatesh and Sykes, 2013) analyzed whether social networks had played a significant role in influencing technology use, which partially mediated its impact on economic outcomes. According to the results, they found that initiatives based on social network constructs resulted in better economic performance, whereby growth in the village income outperformed national Gross Domestic Product (GDP) growth. They also stressed that higher social ties have always been correlated with better economic performance and underlined the importance of applying social networks for economic development. Khan (Khan, 2014) brings forth the barriers and opportunities available in the financial sector (banking) relating to mobile banking and the imperative for banks and telecom companies to come together to unlock the unexplored potential in India. TReDS (Trade Receivables Discounting System) is seen as one of the main initiatives to finance Micro, Small, and Medium Enterprises (MSMEs). The increase in e-payment transactions also points toward the need for a technological transformation to increase the efficiency of operations. He also states that the strategy for refining better growth of risks and revenues encompasses the exploitation of Big Data.

According to Rajput and Nair (Rajput and Nair, 2013), digital literacy increases the effectiveness and transparency of the e-governance concept, cutting down corruption and increasing the accessibility of the general public to government services, and it serves a significant purpose in the socio-economic advancement of society. Government support is much more essential for digital literacy and also for the plans related to e-governance and rural empowerment in the form of computer centers to improve the access of people to ICT resources. This will thus pave the way for enhanced decision-making and even financial outcomes. The succeeding subsections talk about different dimensions of the relationship but define how digital literacy works its way toward better financial inclusion and therefore better economic welfare. Arun and Kamath (Arun and Kamath, 2015) assessed inclusion strategies since 1991 based on usage and access to financial products in 30 countries. They underscore that user-centric policies make financial inclusion effective for a host of groups. However, they do point out that cultural understanding influencing these policies would have an impact on both financial capability and overall well-being. Jagani and Patra (Jagani and Patra, 2017) explored a research study that makes the case for financial resilience through the Jan Dhan Yojana and assesses consumer engagement and disengagement impacts. It emphasizes the impact of the technological divide on the ability of consumers to engage in digital banking and further identifies that mobile banking constitutes an important component of expanding access to disadvantaged groups. The research study concludes that the attainment of better levels of inclusion requires financial and digital literacy. Besides, the study depicts a significant correlation between the use of Internet banking and levels of educational achievement, coupled with relevant skills. The government has established policies to reduce the digital divide and facilitate digital inclusion as an important factor in facilitating economic growth and improving civic participation. In view of Sardana and Singhania (Sardana and Singhania, 2018), digital technology has transformed Indian banking, where "Brick and Click" models are preferred in place of "Internet-only." Customers increasingly seek tailor-made services and greater value for money, while security acts as a deterrent to the wider adoption of digital banking. Cooperation between old banks and fintech firms represents an important success factor. The COVID-19 pandemic accelerated digital payments in India to a large extent. Kamesh (Kamesh, 2021) found that fintech new enterprises have played a very significant role in the personal management of finances. Quick Response (QR) code contactless payments surged, and levels of Unified Payments Interface (UPI) transactions reached unprecedented numbers. Digital payments were now a part of daily transactions, and services provided by fintech became customer-centric. Expansion of e-commerce sites increased the number of options for digital payments. Digital literacy efforts in emerging markets gained more intensity. The author deems digital financial literacy of particular importance as it can fundamentally be connected to targeted financial inclusion in terms of access, understanding, and application of technological financial tools and services (George and College, 2020). Fitriani and Santi (Fitriani and Santi, 2023) explain that digital financial literacy is one of the most important elements of financial inclusion, and contend that financial technology plays an important role in this by enabling access to internet-based financial services. Increased use of financial technology also boosts financial inclusion. The authors opine that collaboration between banks and fintech is crucial for development in this field. However, they acknowledge that a weak citation may affect the validity of findings. Better digital financial literacy facilitates better access to financial services, an impetus for increased financial inclusion and reduced economic and social inequalities, as per Gumilar et al. (Gumilar et al., 2024). Advances in technology bring better opportunities for financial well-being; however, the socio-economic status of a person determines his or her potential for digital financial literacy. Consumer protection issues still prevail despite the expansion of digital services. Financial literacy improvement programs are necessary to reduce financial crises, and digital financial inclusion is instrumental in supporting economic growth and stability. Digital financial literacy, as Kumar et al. (Kumar et al., 2024) indicate, is a good determinant for the adoption of fintech, mainly contributing to inclusion in finances. Awareness of consumer rights, along with knowledge of digital financial products, results in the enhancement of fintech adoption of service offerings. Perception of risk about finance acts as a positive influencer to take up services for fintech. Also, studies indicate that with the growth of artificial intelligence (AI) and blockchain, digital literacy is key to improving financial inclusion in new markets (Adel, 2024). Despite uneven internet penetration in regions, it reveals disparities in terms of regions across digital literacy and technological advancement. The higher a digital literacy, the better their access to financial services would be, but measurement error affects the accuracy of related variables.

Digital Financial Inclusion to Sustainable Economic Growth

The issue of financial inclusion is today an essential driver of sustainable growth in the economies of countries. Since access to financial services by all sorts of people and enterprises can be positively supportive of economic development, the major aspects by which financial inclusion contributes toward sustainable economic growth are as follows: According to Amaliah et al. (Amaliah et al., 2024), digital financial inclusion contributes highly to GDP growth, especially in the use of automated teller machines and debit cards for stimulating economic growth. However, they notice that its contribution to carbon dioxide (CO_2) emissions is moderate and, therefore, shows a balanced relationship between economic growth and environmental development. In the study explored by Showkat et al. (Showkat et al., 2024), digital financial services are essential in promoting women's decision-making and independence over financial issues. The study on 426 women from different age groups and regions brings out how these services work toward the larger objective of gender equality and economic empowerment. The author proposes that financial inclusion is one of the prime determinants of economic growth in Asia, with a mutual relationship between financial inclusion and economic development. The effect is most significant when comparing developing countries with their developed counterparts (Hussain et al., 2024). Mishra et al. (Mishra et al., 2024) mentioned that financial inclusion is needed for sustainable socio-economic development as it enables marginalized groups to improve access to finance, facilitates financial literacy in making proper decisions, and supports innovation that provides affordable and accessible services, also, the authors highlighted that financial inclusion encourages entrepreneurship and employment. Huang et al. (Huang et al., 2024) found that financial inclusion has major effects on poverty reduction and economic equality. Financial literacy is a crucial intermediary that induces sustainable development, and social capital adds to the relationship of financial inclusion with sustainability through the medium of collective action as well as ethical norms in an economy. Income levels and knowledge of banking influence access to finance, implying that these two factors are significant factors that financial institutions take into consideration when distributing resources.

Thus, the dynamics of this study rely on its impacts on sustainable development in developing countries. Fauziyah et al. (Fauziyah et al., 2024) also claim that digital financial literacy empowers MSMEs by giving them independence in financial management, while financial inclusion has played a critical role in bridging gaps and driving sustainable development for these enterprises. The study discusses the few relevant factors for sustainable development. Huang et al. (Huang et al., 2024) found that digital financial inclusion contributes largely to sustainable development, while the availability of natural resources adds to those outcomes due to the minimized use of natural resources for financial inclusion provided through technology instead of physical branches. Efficient governance increases the relationship between digital inclusion and sustainability, but the absence of critical factors slows down progress, which further reduces the sustainability level. Hybrids have integrated approaches that may provide holistic comprehension regarding what drives sustainable development. Khémiri et al. (Khémiri et al., 2024) believes that the relationship between investment growth is curvilinear, where investments increase growth first, but diminishing returns occur at higher thresholds. Financial inclusion plays a moderating function in the investment and growth dynamic, besides supporting sustainable firm growth. Improving access to financial services enhances operational efficiency and competitiveness, as Nwokike et al. (Nwokike et al., 2024) explain, it is one of the principal roles it plays in accelerating SME growth in Nigeria. Access of small and medium enterprises (SMEs) to financial services is likely to require intermediaries in the financial sector. The policy provisions that should open up access for SMEs to financial services are likely to be needed. Inversely, high interest rates and low financial literacy limit the expansion of an SME. A study in Algeria by Yasmina (Yasmina, 2024) discusses the role of digital finance in promoting financial inclusion, especially within Algeria's tourism sector. It described financial inclusion as the main route to achieving SDGs; meanwhile, it makes rural access to services more efficient through advancements that digital finance promotes. It also stressed that the success of digital payment systems is dependent on trust from the cardholders and thus calls for the adoption of a holistic national financial inclusion strategy. Tidjani and Madouri (Tidjani and Madouri, 2024) found that financial inclusion significantly contributes to the sustainable development of Africa, and FinTech contributes considerably to positive results. However, a negative influence in the relationship appears in the relationship between financial inclusion and FinTech on sustainable development. Abbas et al. (Abbas et al., 2024) argue that financial inclusion, although important, would restrain green economic growth unless aligned with green investment. It is found that green innovation, foreign direct investment, and trade openness are influential factors that work positively toward green economic development, while green innovation also creates research and development employment. However, it is identified that population growth is a significant obstacle as it negates green economic development. Economic factors also bind funding for green initiatives in developing countries, further complicating efforts toward sustained development.

Theoretical model

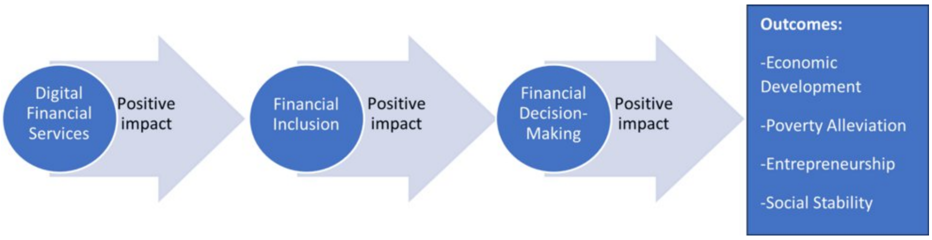

FIGURE 3: Based on the Review, the Authors have Proposed a Theoretical Model as Follows

Source: compiled by authors based on the literature review

Figure *3* represents a theoretical model that is based on the review conducted after developing objectives for significant findings related to the sphere of the study. This theoretical model emphasizes that digital literacy is the key driver of access to digital financial services. When individuals can utilize digital tools efficiently, they are in a better position to access mobile banking, digital payments, and online credit services. This corresponds to increased financial inclusion, which allows individuals to make informed financial decisions, save, borrow, and invest safely. Financial inclusion, on the other hand, acts to stimulate economic growth, poverty reduction, and entrepreneurship. It also promotes social stability by empowering the marginalized. All these, thus, lead to sustainable development in the long term, emphasizing how digital literacy fuels robust and inclusive growth.

Findings

The findings below are fully based on the above extant literature. These have been found through analysis of previous studies, which are based on the sphere of the study.

· Digital literacy allows a person to negotiate and utilize a variety of financial products and services. As a result, it leads to good financial behavior and attitudes toward money management.

· Digital literacy increases transparency in finance, which reduces corruption, thereby giving the public more confidence in the system.

· Digital literacy will facilitate and directly contribute to the reduction of poverty and economic inequality, leading to long-lasting, sustainable economic growth.

· Digital financial literacy can help in improved management of finances for MSMEs, hence leading to sustainable development in the sector.

· Efficient governance combined with digital financial inclusion has a more direct effect on sustainability; this is helping economies grow more inclusively.

· Digital inequality also exists in unequal access to the internet and proper technological infrastructure, thus bringing digital inequalities that will prevent large parts of the population from gaining full benefits from financial services.

· Initiatives like government-arranged computer centers should be there to increase the level of digital literacy, mainly in rural areas.

The results suggest that, however important financial inclusion is, without synchronization with green investment, it can be detrimental to the growth of green economic development. Green innovation and foreign direct investment are the most potent positives contributing to green economic advancement due to green investment; therefore, investors should focus on green investment with better utilization of technology for sustainable development.

Conclusions

The lack of focus on sustainable economic development continues to intensify global challenges, such as growing poverty and inequality, which are worsened by climate change and geopolitical conflicts. Closing the annual financing gap for sustainability remains one of the major hurdles facing developing countries. Addressing this will require innovation that empowers people and communities, especially through improved financial access. Thus, digital literacy becomes an important enabler to equip people with the skills to navigate financial systems that help in sustainable economic growth and contribute toward the achievement of the SDGs. Digital literacy enhances good financial behavior and money management, as well as transparency in financial dealings, reducing the potential for corruption and building public confidence in a financial systems. It also assists MSMEs to handle finances appropriately, which helps in stimulating the sustainable growth of the sector. Still, the availability of the Internet as well as infrastructure and Internet-access inequality occur, and benefits from financial inclusion are somehow limited to the marginalized classes in certain ways. Based on these observations, the government, financial institutions, and development organizations must focus on initiatives that will promote digital literacy in rural and less privileged regions. The government has to initiate government-supported digital literacy centers, improve access to technology and the internet, and align financial inclusion with the green investment strategy to support such initiatives to achieve the objectives of sustainable development toward inclusive and environment-friendly growth. This research is, despite all these insights, limited. It narrowly focuses on digital financial literacy, whereas other, more pervasive digital skills remain totally overlooked, and an extensive regional analysis that is aimed at overcoming the specific infrastructure and cultural barriers in the rural areas was not covered. Further studies would consider the effect of the overall digital skills on financial inclusion, study the regionally comparative outcomes, and undertake longitudinal studies to evaluate the long-run effects of digital literacy on poverty and economic stability. An important strategy to overcome systemic barriers to financial inclusion and sustainability involves the strengthening of digital literacy. The bridging of digital divides should have different types of stakes from a range of stakeholders to support growth in a more resilient path toward the achievement of global goals on development.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

Acknowledgements

The paper was presented at the International Management Perspective Conference (IMPeC) 2025, which was held from January 30 to February 1, 2025, at IIM Sambalpur, India.

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