Minnesota Journal of Business Law and Entrepreneurship

Volume 2026, No. 3

ISSN: 1540-3270

Digital Financial Inclusion as A Catalyst for Inclusive Development and Sustainable Development Goals: A Bibliometric Review

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Abstract

Digital financial inclusion (DFI) is quickly becoming a global movement of overwhelming proportions. Reports featuring Bill Gates indicate that mobile-enabled financial services can cover over 2 billion unbanked people worldwide by 2030. DFI offers significant value to community banks, thrifts, lending companies, and insurance agencies by promoting positive financial systems that enable firms to capitalise on opportunities. It also benefits sustainability, as the World Bank has stated it can help achieve 13 of the 17 United Nations Sustainable Development Goals (SDGs). Studies from 25 African countries between 2011 and 2019 have shown that digital financial inclusion can advance sustainable development. Still, all markets should be regulated to ensure a balanced distribution of benefits.

In recent trends, digital transactions are becoming an indispensable part of daily life. The transactions rose from 2,071 crores in the year 2017 - 2018 to 18,737 crores in the year 2023- 2024, making it an indispensable part of the economy in countries like India. The percentage of Indian accounts grew from 35% in 2011 to 80% in 2024 due to the implementation of policies.

There are over 37% of adults who are outside the financial system. This highlights the immediate need for more inclusive alternatives. The common challenges include poverty, inequality, low literacy, and poor infrastructure. Consumer protection, data privacy and regulatory strategies are also issues that need to be resolved to properly apply digital payment policies. Even though financial inclusion is better in developed countries, it also faces challenges with people due to economic, psychological or cultural factors such as the indebted, the jobless, the elderly, migrants, and prisoners.

This study addresses three key questions using combined data from 87 articles spanning from 2015 to 2024: (1) How can the existing literature establish a relationship between inclusive development, Digital Financial Inclusion, and the Sustainable Development Goals (SDGs)? (2) What does bibliometric analysis reveal about the patterns of citation, major authorship, and publication sources, and the relationships of author's works, in addition to the use of common keywords in Digital Financial Inclusion research?

From the results of the survey, it can be concluded that digital financial inclusion is effective in promoting economic growth and enhancing the financial inclusion of the poor. However, there is a need for customised policies and continuous efforts for proper implementation.

Digital finance is changing the world economy in multiple ways. It empowers people by reducing poverty. To fully maximise the opportunities provided by digital finance, involved parties should ensure that individuals can benefit from the digital finance revolution.

Keywords: Digital financial inclusion, Digital financial services, Economic empowerment, Social empowerment, Marginalised segment, Sustainable development goals.

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1. INTRODUCTION

Digital financial services have revolutionised the economy, as their increasing spread and use have boosted economic growth and improved the number of people included in the formal financial system. India's digital transactions have risen from 2,071 crores in 2017-18 to 18,737 crores in 2023-24, due to the introduction of Digital Financial Inclusion (DFI) and its easy accessibility for people. The concept was first introduced by the United Nations in 2005 when leaders recognized the barriers to financial services (Sarma & Pais, 2011). Financial inclusion and literacy have become the pillars of the economic infrastructure of a successful, sustainable economy. Sustainable development cannot take place without them. Data from 2024 shows that financial institutions and mobile money providers hold accounts for 80% of Indian adults, exceeding prior levels of 35% in 2011 and 78% in 2021. Government-targeted policies, along with the rapid adoption of digital financial services, drive this advancement.

Digital financial services have revolutionised the economy as their increasing spread and use have boosted the economy and improved the number of people in the formal financial system. India's digital transactions have risen from 2,071 crores in 2017-18 to 18,737 crores in 2023-24, due to the introduction of DFI and making it easily accessible to people. The concept was first introduced by the United Nations in 2005 when leaders recognised financial service barriers (Sarma & Pais, 2011). Financial inclusion and literacy have become the pillars of the economic infrastructure of a successful, sustainable economy . Sustainable development cannot take place without them. Data from 2024 shows that financial institutions and mobile money providers hold accounts of 80% of Indian adults, exceeding prior levels of 35% in 2011 and 78% in 2021. Government-targeted policies, along with the fast adoption of digital financial services, drive this advancement. The National Strategy for Financial Inclusion (2019-2024) established providing formal financial services to all adults as its target for 2024. The government added financial literacy programs with the National Strategy for Financial Education that uses the "5 C" approach which stands for content, capacity, community, communication, and collaboration.

Digital financial infrastructure continues to advance due to technological advancements, including big data, blockchain, and artificial intelligence (AI), which move banking models toward secure digital platforms. Underserved populations across rural areas and marginalized communities benefit from DFI because it establishes vital banking services that connect them to financial resources. The (Koh et al.,2018) report featuring Bill Gates made an estimation that mobile financial transactions would rise dramatically to serve more than two billion unbanked people by 2030. (Qiu et al., 2018). Digital financial inclusion delivers benefits to community banks along with savings accounts, loan services and insurance companies, thus reinforcing financial resilience, according to (Bongomin et al.,2019) and Mhlanga (2020).

Financial inclusion and sustainability show an ever-growing link between these two components. Digital financial services expand the availability of services while helping organisations meet several United Nations Sustainable Development Goals. The World Bank states that digital financial solutions remain essential for post-COVID-19 economic recovery by supporting the achievement of 13 SDGs out of 17. The research demonstrates how financial inclusion and fintech generate sustainable development benefits, but regulators need to strike a proper equilibrium, as reported in Bongomin et al (2019). A study analysing 25 African countries from 2011 to 2019 found that financial inclusion and fintech positively impact sustainable development, though their combined influence requires strategic oversight.

For long-term social and economic prosperity, these advancements should be implemented while keeping sustainable goals in mind. The discourse on digital financial inclusion (DFI) as a worldwide agenda brings up three significant questions:

1) How can the existing literature establish a relationship between inclusive development, Digital Financial Inclusion, and the Sustainable Development Goals (SDGs)?

2) What does bibliometric analysis reveal about the patterns of citation, major authorship, and publication sources, and the relationships of authors' works, in addition to the use of common keywords in Digital Financial Inclusion research?

This research analyses publications through a bibliometric method to identify the main points, themes, and insights from 87 articles on DFI between 2015 and 2024 and then supplements them with a review of additional literature to answer these questions. The objective of the study is to investigate not only the past of the DFI concept but also its current issues and the effects of the reform on economic growth and social integration of the underprivileged as well as sustainable development. The thorough examination of DFI involves policy effects and differences between countries, as well as changes in distribution, generating valuable knowledge for policymakers, academic researchers, and financial institutions. The results of this research serve as a starting point for the development of innovative policies aimed at enhancing the effectiveness and global spread potential of digital financial inclusion.

2. REVIEW OF LITERATURE

2.1 Digital Financial Inclusion - Making Formal Financial Services Accessible.

Financial inclusion is the aspect of making formal financial systems accessible and usable for the generalisation of people and businesses. And that people and firms can use financial services, such as credit, insurance and the like. (Demirguc-Kunt et al., 2018). One objective of financial inclusion is empowerment of marginalised communities inspiration, particularly the poor community who have accessibility to basic finance services (R.G. Rajan, 2009). Financial inclusion may also be described as the formal ownership of an account with a regulated financial institution (M. Bruhn, 2014). Accounts enable individuals and businesses to save, borrow and carry out transactions such as payments and insurance. Financial inclusion being adopted can positively, complement economic growth at the same time improve income opportunities and jobs especially among disadvantaged communities. In 2014, financial industry policymakers began to understand how digital financial inclusion could change the accessibility to financial services posed by existing structures. Digital financial inclusion enhances previous perspectives through cost-effective digital solutions to reach unserved and underserved populations through low-cost digital finance services (CGAP, 2021). By 2019, over 80 countries had introduced digital financial services using mobile-based solutions (Penicaud et al., 2019). These efforts aim to build trust among people who were previously excluded from the financial system, encouraging them to transition from cash-based transactions to digital platforms. Digital financial inclusion to be successful, it must be tailored to the needs of specific communities. When people fully understand and trust the benefits of digital financial services, they are more likely to adopt them. Moreover, these solutions shall be given by service providers at a cost that is environmentally appreciated if they want the product to be affordable and have a long-term success (H.T.T. Nguyen, 2019).

2.2 Digital Financial Inclusion to Drive the Sustainable Development Goals

Financial inclusion is an instrumental factor in facilitating fair access to and use of financial services worldwide that a way-through countries can achieve economic gains (S. Ghosh, 2021). With the dissemination of digital payment systems as well as the infrastructure for mobile phone technologies, the formal financial sector has been considerably changed (A. Aziz & U. Naima, 2021). The purpose of inclusive digital finance is to provide financial services such as mobile money, internet banking, electronic transfers, insurance, and loans to previously disenfranchised populations through a variety of fintech innovations (B. Frączek et al., 2021). Financial services must be organized to meet specific needs and be cost effective that allow for everyone to engage in the economy (K. Feghali et al., 2021). Digital platforms can allow for increased financial inclusion by providing access to financial services. Moreover, digital financial inclusion serves as a fundamental catalyst to advance every one of the Sustainable Development Goals (SDGs), which must be achieved by 2030; and studies suggest that digital financial inclusion can achieve up to 13 out of 17 SDGs, in addition to producing important impacts in SDG 17 through acceleration of international cooperation and progress in global technological and policy environments. The table consists of 14 Sustainable Development Goals, each with a description of how digital financial inclusion advances each SDG, and academic support for each. The Global Partnership for Financial Inclusion (GPFI) was

initiated in response to the increasing recognition of financial inclusion by four global organizations namely the G20 and the Alliance for Financial Inclusion (AFI), and the Consultative Group to Assist the Poor (CGAP) as well as the International Finance Corporation (IFC). Global organizations developed GPFI as an organized mechanism to better implement financial inclusion on a worldwide basis. The three primary points of measurement for financial inclusion are access to financial services, usage of financial services, and the quality of products and services, (A. Aziz & U. Naima, 2021). The principles of digital financial inclusion are critical to the wider drive to digitize financial services. The GPFI made two significant evolutions to the G20 financial inclusion indicators in 2016 by incorporating digital financial inclusion metrics. The GPFI has addressed various new valuation metrics concerning cashless payments, digital payments, debit card ownership, and digital infrastructure (GPFI, 2021). Table 1. Makes it clear the contributions of digital financial inclusion towards the Sustainable Development Goals (SDGs) and associated articles.

Table 1. The role of digital financial inclusion in achieving Sustainable Development Goals (SDGs) and other related articles.

SDGs	Contributions of DFI towards SDGs	Article
SDG 1: No Poverty	Digital financial inclusion is a significant element in the promotion of the base of the pyramid through the provision of digital access to savings, credit, and insurance.	73, 10, 81, 55, 52, 33, 68, 62, 44, 63, 85, 4, 5, 67, 34, 20, 1, 69, 30, 86, 87, 39, 70, 59, 90, 24, 53, 48, 77, 93, 78, 82, 29.
SDG 2: Zero hunger	Services such as mobile payments, digital credit, and crop insurance can be easily availed by vulnerable people if they are supported by digital financial inclusion, hence, agriculture can be made more profitable by such investments.	10, 52, 1, 69, 30, 70, 20, 86, 77
SDG 3: Good health and well-being	By means of digital payments and health microinsurance, digital financial inclusion opens the door to affordable healthcare for people.	52, 11, 33, 62, 66, 34, 5, 70, 48
SDG 4: Quality education	Digital financial services can make fee payments easier, educational savings more accessible, and scholarships more affordable through the use of mobile wallets.	10, 52, 11, 33, 44, 63, 66, 85, 67, 53
SDG 5: Gender equality	DFI contributes to women's empowerment by enabling them to access digital banking services and instruments that enhance their financial independence.	10, 52, 33, 68, 63, 66, 85, 71,48
SDG 6: Clean water and sanitation	Digital financing methods open the way for small-scale water and sanitation projects in which loans can be easily given to those who live in the community and are underprivileged.	69, 89
SDG 7: Affordable and clean energy	Digital financial inclusion makes clean energy affordable by enabling small digital loans and pay-as-you-go solar systems to be used. Digital financial inclusion empowers communities to switch to	69, 63

	renewable energy sources and thus lessen their dependence on conventional fuels.	
SDG 8: Decent work and economic growth	Digital finance can create a large number of job opportunities by making credit, savings, and online loans more accessible. DFI is instrumental in small businesses, income stabilisation, and the initiation of sustainable economic growth.	81, 55, 11, 68, 62, 44, 63, 91, 20, 30, 70, 26, 59, 67, 87, 91, 94, 90, 24, 53, 89, 48, 77,93, 78, 82, 29
SDG 9: Industry, innovation and infrastructure	DFI modernised the financial sector with technology, thus creating a digital payment ecosystem and fintech innovation.	11, 44, 63, 66, 67, 26, 30, 90, 53, 89, 77
SDG 10: Reduced inequalities	DFI is overcoming differences between cities and villages as well as between men and women in financial access by mobile banking and e-wallets.	73, 10, 52, 33, 62, 63, 55, 69, 30, 90, 53, 78
SDG 11: Sustainable cities and communities	The use of digital finance leads to the smart payments of transport, utilities, and urban micro-enterprises through digital finance.	46, 37, 72
SDG 13: Climate action	DFI plays a role in supporting climate change adaptation in the most vulnerable sections of society through green digital financing and insurance.	NONE
SDG 16: Peace, justice and strong institutions	The introduction of digital financial services to the unbanked also facilitates the openness and implementation of the law as a result of the traceable digital transactions.	70, 69, 55, 52
SDG 17: Partnerships for the goals.	DFI encourages the establishment of international cooperation among governments, fintech companies, and development agencies.	90, 24, 53, 89, 77, 82, 29

2.3 METHOD - Bibliometric analysis

Bibliometric techniques are useful for monitoring and tracking an emerging area of published research. Billings (1881) was one of the first to implement bibliometric techniques to measure the evolution of a field of medical science, and one of the first authors to conduct a systematic bibliometric analysis of the literature in the medical science field. More specifically, the bibliometric technique relied on an early correspondence with mathematics or statistics applications used to study library citation-based literature (Nicholas & Ritchie, 1978; Pritchard, 1969). The technique was quickly adopted to study research output or productivity, which is importantly reflected through the counting of publications, citation counts and research group categorizing (Moed et al., 1985). Bibliometric techniques are frequently used to quantitatively examine a wide variety of written forms of communications, including books and journals, for example, (Heersmink et al., 2011). Bibliometric analysis can be roughly delineated into three approaches: review approaches, evaluative approaches, and relational approaches to studies (Benckendorff & Zehrer, 2013). Evaluative approaches are those that examine an area of research in terms of research impact, based on productivity indicators, like published works in terms of volume or trend, spread of journal outlets, and citation studies of major refereed authors (Hall, 2011). Relational approaches, like co-citation, co-authorship, and co-word analysis will show the intellectual structure of a research domain. Co-citation and co-word approaches have been considered very good at identifying research trends and finding out when new topics are developing in a developing research community (Zupic & Cater, 2015).

VOSviewer software (Van Eck & Waltman, 2010) provides a mapping tool to visually display bibliometric data, which facilitates an understanding of research trends. The goal of this study is to evaluate Digital Financial Inclusion in India and its significance. The authors will employ bibliometric analysis, a prominent method in both scientific and applied research. Bibliometric analysis is a key methodological tool in academic research. While it has some research attention by researchers, it is also a valuable tool for practitioners in application contexts (Ellegaard & Wallin, 2015). Bibliometric is a systematic method to evaluate a body of research overtime through qualitative and quantitative evaluation (Xie et al., 2020).

In order to ensure a structured review of pertinent literature, the study utilized the PRISMA framework, established by Page et al. (2021), in order to ascertain systematic filtering of the database (see Figure 1). Visualization of data and quantitative analysis occurred in VOSviewer, an open-source software created to construct bibliometric maps that facilitate complex visual comprehension of the trends in scholarly output (Van Eck & Waltman, 2010).

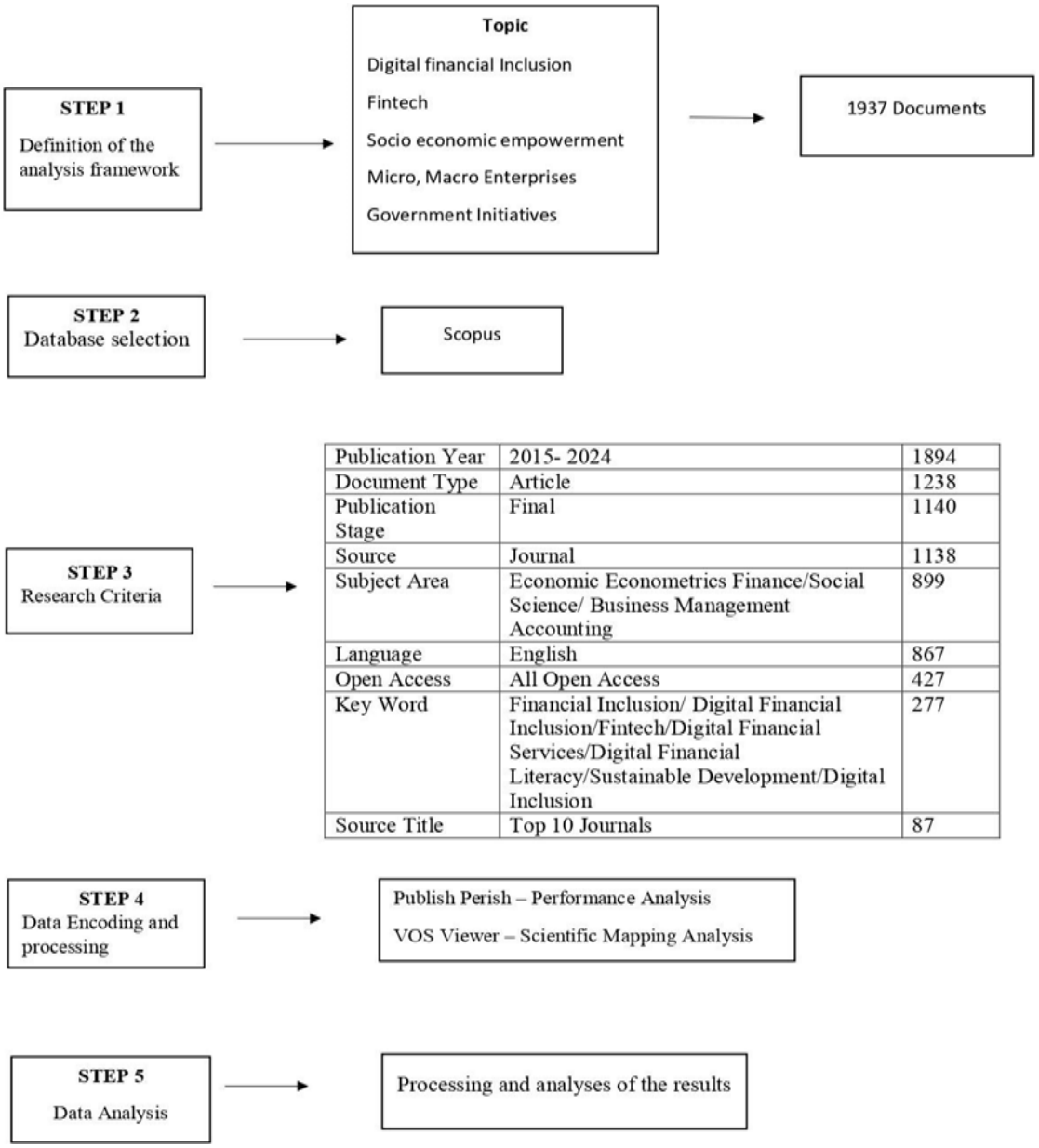

Figure 1. PRISMA Chart for Filtering the Records Fetched from the Scopus Database.

Source: Scopus database

Figure 1 illustrates the key concern areas that the research aims to address, along with the proposed systematic literature review methodology, encompassing themes such as digital financial inclusion, fintech, socio-economic empowerment, enterprises, and government. The initial database search from the Scopus for this study gave 1937 documents; further filter applied to select the desired dataset based on the publication year 2015-2024, document type of article and restricting the subject area of Economics, Finance, and Management this was combined with the language filter for English only. Publish or Perish software was used in performance evaluation while VOS Viewer was used in scientific mapping. The process of analysis has finally limited it to terms and top journals, which created a strong foundation for the consequent analysis and examination of trends and insights in the field. "The PRISMA chart shows how records were filtered from the Scopus database. After the filtering process, 87 relevant documents were selected. To enhance the Literature Review, additional articles were also included for a more comprehensive analysis."

3. RESULTS AND DISCUSSION

3.1 Analysis by citation

Figure 2 shows that the citation value mentioned earlier reached its highest level in 2018, with 837 hits. hits. This means that the research or scholarly work published that year has an influence. Citations stood in varying positions when it evaluated from 2019 and 2023. A sharp decline is noticed in the year 2019 with 56 citations. They then rose in 2020 to 380 and have risen steadily, further to 717 in 2022 and 318 in 2023. Since there was either a lack of citation data for the year or a decrease in activity, there are only two citations in 2024.It is also clear that there are few documents (represented by the orange bars) each year in comparison to citations. The highest frequency was observed 27 documents in 2023, the next highest was 15 in 2022. There were fewer documents written in prior years; for example, there were 7 documents in 2020 and 2 in 2019. More papers have been cited that are older, having been published in previous years due greatly to availability. Documents 2023 & 2024 have less citation because of time constraint for academicians/ scholars etc. The number of citations exceeds the total of documents, thus implying that the documents produced in this period enjoyed a high level of academic consideration.

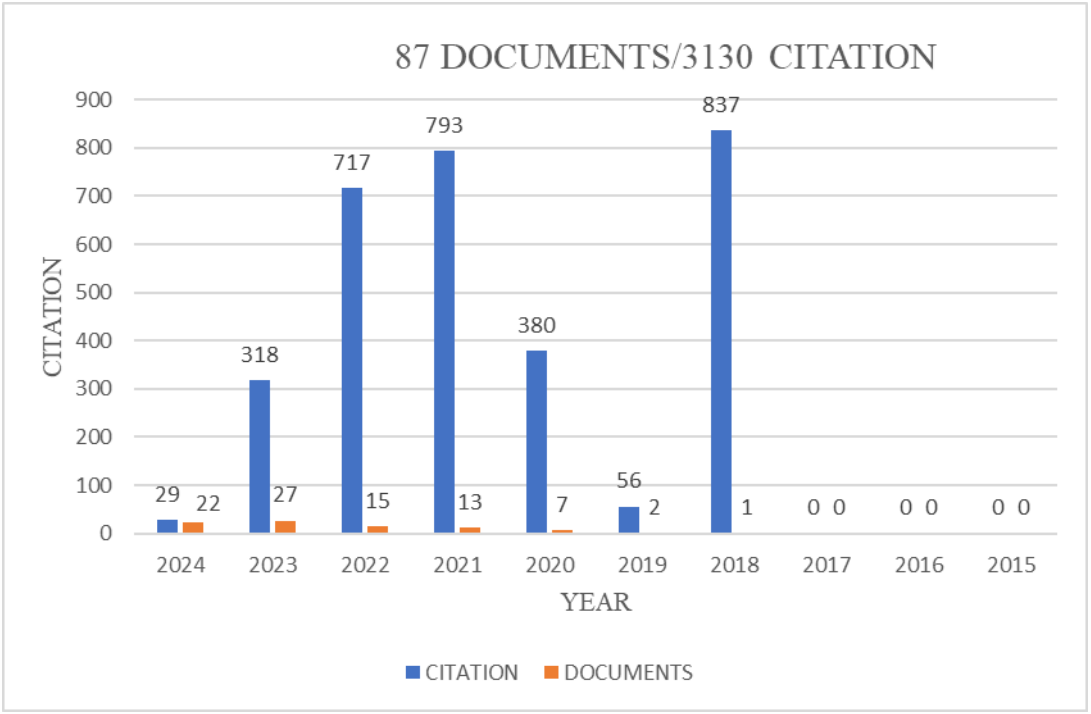

Figure 2: Documents by Citation

Source: Scopus database

3.2 Citation Overview

Table 2 Citation Overview

PUBLICATION YEARS	2018-2024
CITATION YEARS	6(2018-2024)
PAPER	87
CITATIONS	3130
CITES/YEAR	521.67
CITES/PAPER	35.98
CITES/AUTHOR	1668.34
PAPERS/AUTHOR	35.13
AUTHORS/PAPER	3.2
H-INDEX	29
G-INDEX	55
HI, NORM	17
HI, ANNUAL	2.83
HA-INDEX	21
PAPERS WITH ACC	1,2,5,10,20:73,69,58,37,22

Source: Scopus database

Table 2 presents the bibliometric analysis of the research data, including the analyzed field, productivity, citation count, and collaboration rate for the period 2018–2024. In this body of papers, 87 papers were published, and the total cites number is 3130, averaging 521.67 citations for a year. Each paper has on average been cited 35.98 times, whereas individual authors' works have been cited 1,668.34 times, on average. Overall, the average number of papers contributed by each author is 35.13 with 3.20 authors per paper indicated moderate collaboration in the field.

This comprises an h-index of 29; this means that the author has 29 of his publications that have been cited at least 29 times or more each. The g-index score is 55; it signifies that the 55 top articles have received at least 55^2 = 3025 citation which also underlines the predominance of the works cited most often. For the first metric, the hi-norm which considers field differences is 17 and the second metric, the hi-annual which defines the average number of highly cited papers per year, is 2.83. Also, the ha-index, calculated concerning the authors' contributions, is 21, which reveals the prominence of individual contributors.

The distribution of the number of papers that have received large numbers of citations (ACC) indicates also the tendency of papers to attract significantly large numbers of citations. I had approximately 1, 2, 5, 10 and 20 ACC papers that have cited 73, 69, 58, 37 and 22 times respectively. This distribution raises the issue of the substantial visibility and funding received by a sizeable fraction of the produced research. Altogether, these indicators yield a lot of useful information about the academic impact, output, and connectedness in the given field during the studied period.

Minnesota Journal of Business Law and Entrepreneurship

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ISSN: 1540-3270

3.3 Analysis by subject area

Figure 3 shows that the largest document contribution comes from social science, accounting for 23% of the documents, indicating a strong focus on the social impact of inclusive digital finance. The Economics, Econometrics & Finance category is closely behind with 19% closely relating to the financial and economic aspects of the subject. Of the categories, Environmental Science (17%) and Arts and Humanities (16%) take the biggest slices, indicating that the exhibit is interdisciplinary, could address issues of sustainability or cultural significance. Energy is 14% and may contain links between financial inclusion and access sources of energy. Business, Management, and Accounting constitutes 8% and this may well be assessing how businesses are spearheading the attainment of financial control. The other sciences that claim less representation which are Engineering and Computer Science occupy a meager 2 percent and 1 percent respectively which meant that there partially work on technology and other engineering solutions. The coverage of the sector includes the main aspects of social and economic sciences supported by a strong emphasis on sustainability, culture, and interdisciplinarity.

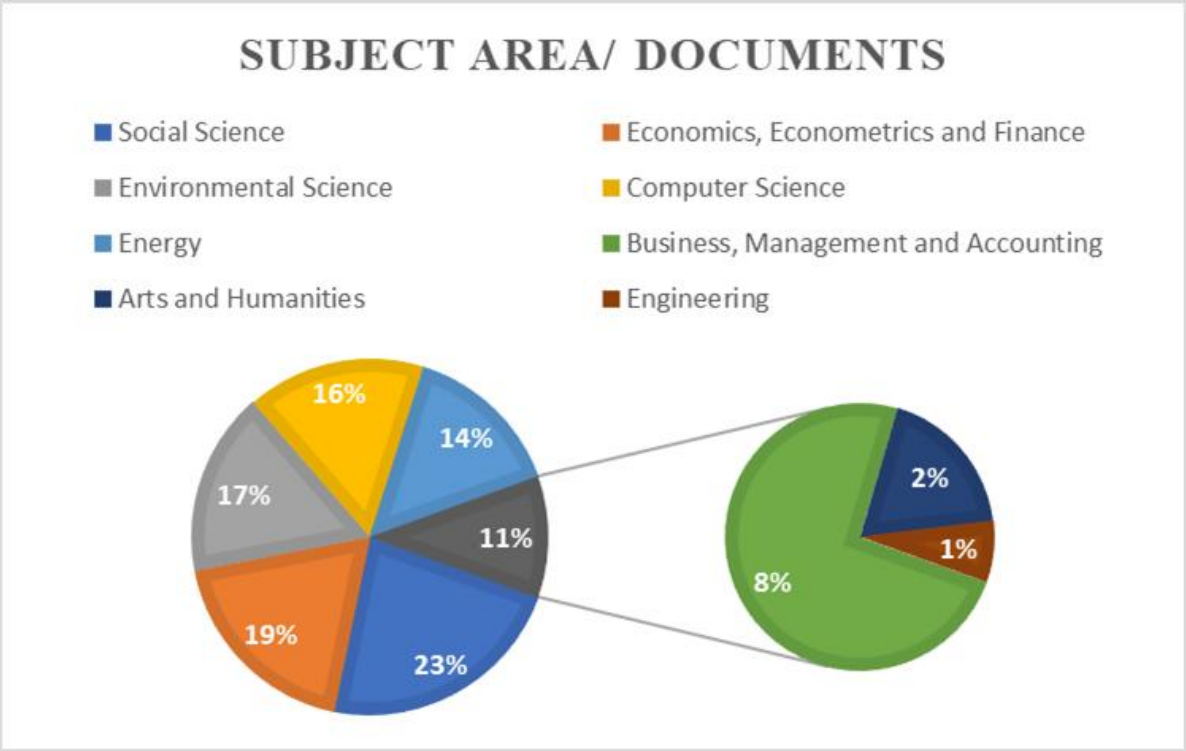

Figure 3: Documents by Subject Area

Source: Scopus database

3.4 Analysis by source

Figure 4 indicates that Sustainability in Switzerland is the most prominent source, comprising nearly 40 documents and significantly surpassing other sources. Ranking behind the Seventh Week General Post moral: The Journal of Risk and Financial Management is the second-highest contributor with approximately ten documents. Some of the journals that have moderate contribution include Borsita Istanbul Review, Cogent Economics and Finance, Journal of Open Innovation Technology of which they have contributed 5-7 documents. The rest, comprising of Sage Open, Telecommunications Policy, Economics, European Journal of Finance, and Journal of Enterprising Communities, have below five documents each. This chart exonerates Sustainability Switzerland, as the most significant producer of articles with the other ten journals being in a humble producer category.

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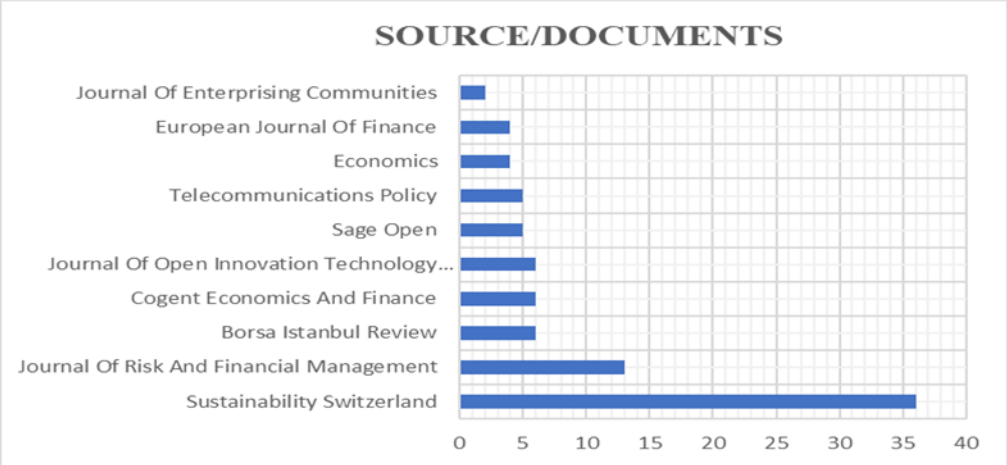

Figure 4: Documents by Source

Source: Scopus database

3.5 Analysis by Country/Territory:

Figure 5, titled Documents by Country/Territory, presents the top fifteen countries and territories in descending order based on the number of published documents. China is the most active or focused country highly with 28 documents. India is on the second position with 11 documents which are considerably lower than the count of Chinese documents. The United Kingdom comes in third place with 6 papers which are reasonably significant. The countries like Malaysia, South Africa, and Vietnam submitted 5 documents each which owes a similar status also. France, Indonesia, Nigeria, Saudi Arabia, and Spain are presented in five documents each indicating that there is slightly less emphasis placed on these three areas. Vietnam, Indonesia and Sri Lanka are at the bottom with 3 documents, the same as Côte d'Ivoire, Hungary, and the Netherlands. As for the last country in the chosen top 15, there are only two documents, which shows their small participation. The distribution shows clearly that China is largely dominating the picture, followed by India, after which other countries have a much lower representation. Such imbalances mean one or few countries receive more attention while the rest receive comparatively less attention.

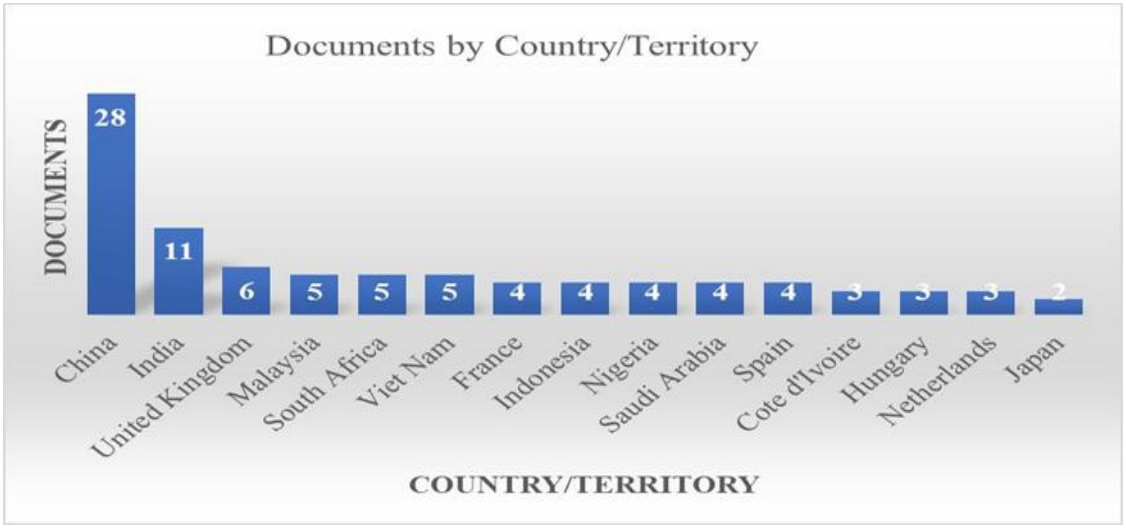

Figure 5: Documents by Country & Territory

Source: Scopus

3.6 Analysis by Affiliation

This bar chart (Figure 6) titled "Documents by Affiliation" shows the number of documents published by ten universities or research-institutions listed below. The horizontal scale consists of the number of documents whereas the vertical scale consists of the Universities. Among the listed Institutions Universitas Indo Global Mandiri produced the highest number of documents close to 3 and above. Other Universities, for instance, the Hungarian University of Agricultural and Life Science, Universidad Católica de Ávila, Liaoning University and the University of South Africa scored a score of 2.5 and therefore closely related to the University Politehnica Timisoara at the bottom of the scale in the number of documents they produced. Some Institutions contributing least documents include Erasmus Universiteit Rotterdam with near about two documents and China Agricultural University. The production of documents by the listed universities seems to be in the same order, but with a slight difference.

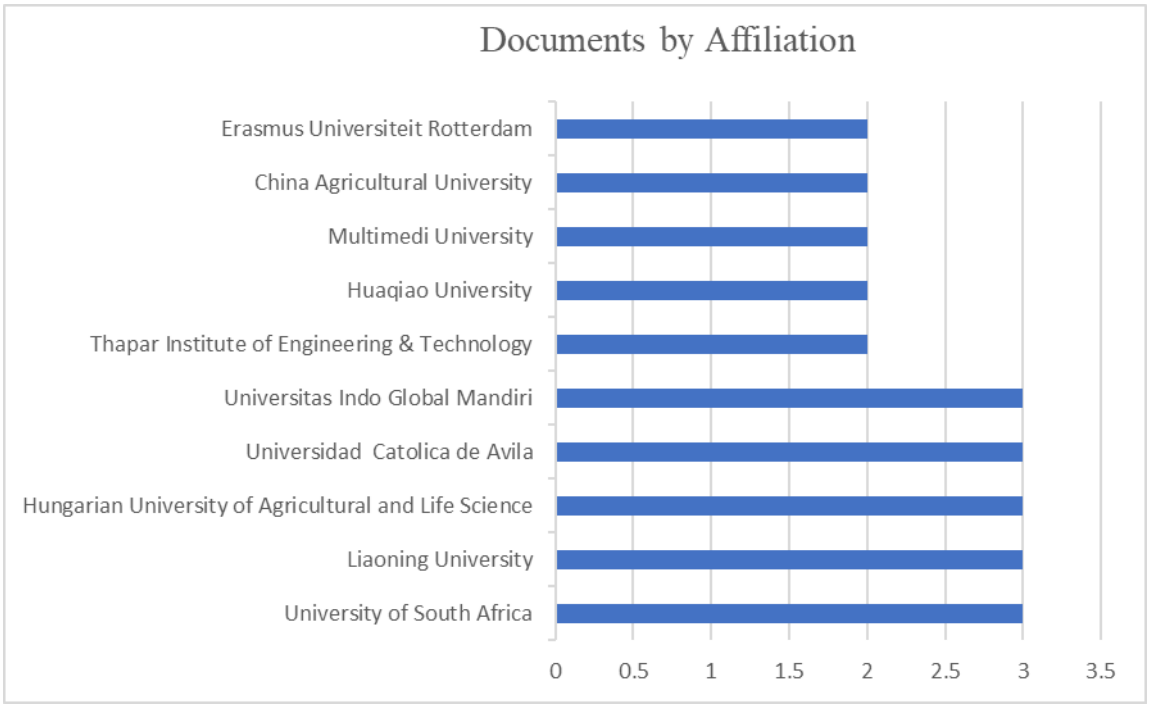

Figure 6: Documents by Affiliation

Source: Scopus

3.7 Bibliographic Coupling (Documents)

Figure 7 presents the bibliographic coupling analysis of the documents.

Clustering of Documents: These nodes are the documents that are then divided into clusters with different colours on the map. These clusters suggest that the current findings are part of several groups of studies with substantial reference overlap; therefore, the current groups are likely to have methodological or topical similarity. For instance, the nodes of the cluster "Demir A. (2022)" (blue) are densely connected which shows that the works of this research area have high similar BIBCOUP.

Size of nodes in a given paper is proportional to bibliographic coupling which makes these papers more important or core papers in a particular field. For instance, there are Demir A. (2022) and Hu X. (2023) with large nodes suggesting the importunately of these authors or papers.

Interconnectedness Across Clusters: Bibliographic coupling links are shown as lines between nodes (edges) with heavier weights indicating stronger coupling. Intersection between the clusters is measured by the density of

connections and indicates interdisciplinarity or cross-thematic coupling. For instance, the areas of orange and green clusters indicate some common point or intersection between these researched groups.

The Analysis assists in determining major trends in the chosen field of research, important publications, and, perhaps, voids. It also helps the researchers to understand where they stand in the academic environment due to its ability to identify the clusters that best relate to the researcher's work.

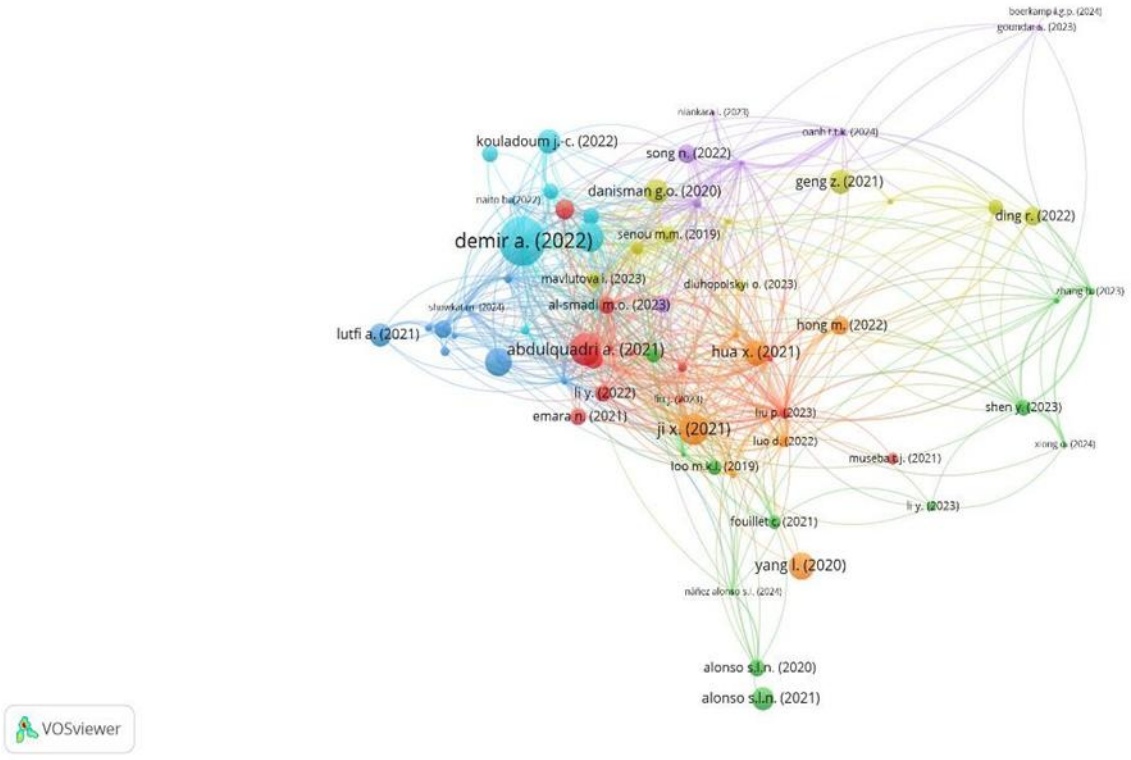

Figure 7: Bibliographic Coupling (Documents)

Source: Scopus database

3.8 Co-occurrence (All Keywords)

Figure 8 illustrates that the connections between the keywords are represented in various colors and divided into clusters, with each color corresponding to a specific topic of discussion. Each cluster represents a distinct research area or focus within the broader theme under study.

Green Cluster: Feature most directly relevant including 'financial', 'inclusion' and those stemming from it such as 'financial system', 'fintech,' 'financial literacy,' and 'sustainability.' This suggests that financial inclusion plays a central part of the discourse around sustainability and of economic development.

Red Cluster: Concerns digital financial inclusion with such as "China", "economic growth", "panel data", "threshold". This implies an emphasis on area specialties (such as China) as well as measurement approaches.

Yellow Cluster: Has such words as 'financial services,' 'financial development,' as well as 'digital,' and 'digitalization,' stressing the innovations related to the financial sector and its contribution to enhancing services.

Purple Cluster: Covers development countries and policy implication emphasizing socio- economic analysis particularly developing countries in Sub-Saharan area.

Blue Cluster: Focuses on sustainable development and digital technologies and relinks digital technology with development objectives.

They found that “financial inclusion” is placed as one of the cores and highly interlinked terms, which confirms its significance as one of the key postulates of the studied area of research. “Digital financial inclusion” is another one of the key nodes that point out the increasing importance of digital instruments. ‘Sustainable development’ is an interface between financial access and socio-economic issues, proving the roles of FinTech in driving change.

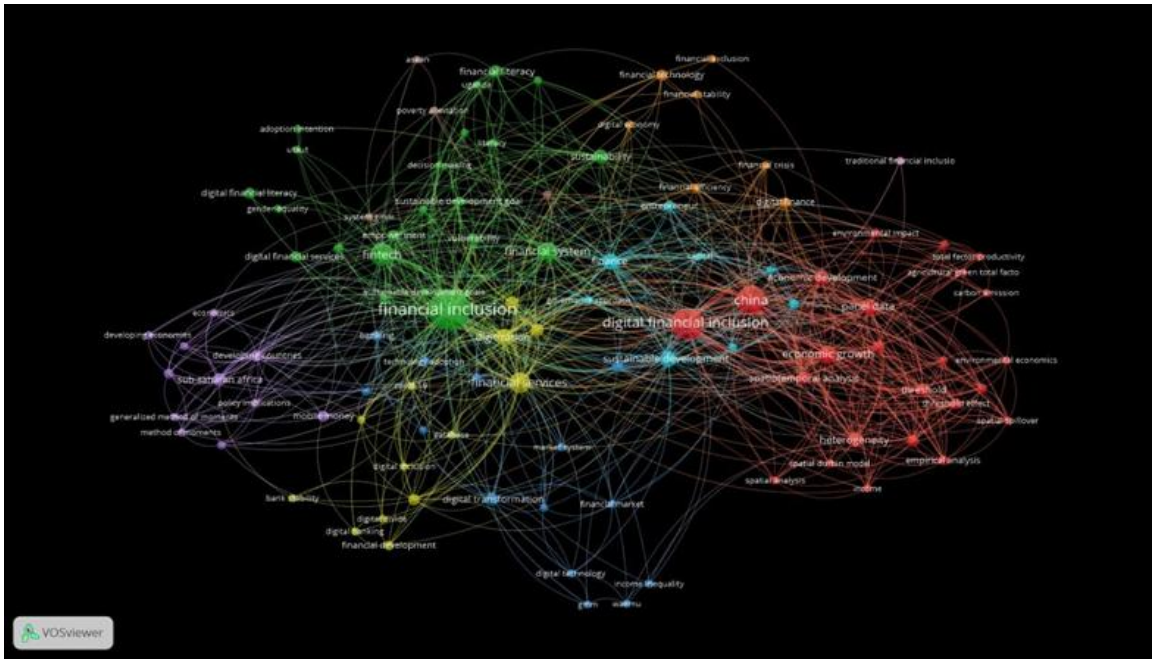

Figure 8: Co-occurrence (All Keywords)

Source: Scopus database

3.9 Connections and Relationships: It was appreciated to see that there is a clear and significant interconnection between the different topics during the event; such as, financial inclusion, sustainability, and digitalization. Words such as “financial literacy” and “digital financial literacy” have very strong connection with each other which shows how important they are as enabler of FI.

3.10 Emerging Trends: Such terms like ‘gender parity’, ‘digital monetary finance’, and ‘carbon footprint’ has emerged relatively newer than ‘financial inclusion’. There is an increased tendency towards empirical and data-driven approaches as indicated by such quantitative terms as ‘panel data’ and the ‘threshold effect’.

4. ANALYSIS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The swift growth of both financial and technology has been instrumental in improving financial inclusion, particularly among vulnerable groups. Digital financial products have offered opportunities to reach banking, credit and investment, thereby facilitating economic empowerment and poverty alleviation. Consequently, many governments and financial institutions have made digital financial inclusion (DFI) a priority policy consideration. Over 50 country leaders and various international standard-setting bodies in the financial sector have so far aligned their policies to promote inclusive digital finance as a means of economic development and stability.

Digital financial inclusion became even more necessary due to COVID-19. As the situation developed and restrictions on human movement were implemented worldwide, the speed at which digital transactions were adopted could only be described as phenomenal. However, significant differences in access to digital finance still exist. The most vulnerable groups face various barriers to participating in digital finance because, in addition to the real-world constraints to financial inclusion they already experience, their levels of digital literacy are also low. This, therefore, calls for collaboration among policymakers, regulators, and financial institutions to create a conducive environment for financial inclusion.

4.1 Recommendations for Governments and Policymakers

Governments ought to map out a plan for the scenario where they identify obstacles to digital financial inclusion in rural areas and hinder affordable and widespread internet connectivity, on which digital financial services can be developed. Local initiatives need to focus on educating people in the use of digital financial services so that they can be users without any problem. In addition to this, attention to security and data protection issues is a prerequisite for the creation and maintenance of people's confidence in digital financial systems.

4.2 Recommendations for Financial Institutions and Service Providers

Financial service organizations should put into effect personalized educational plans for the risk populations so that these people can learn how to use banking systems in a safe way. To achieve a higher usage rate among poor clients, the cost of mobile financial services also should be lowered. Excessively burdensome documentation, as well as tightly limited minimum account balances, can be major obstacles to access for the unbanked. Besides that, the bank's products and services have to be specially tailored to the needs of the deprived people to guarantee their inclusion and fair participation in finance.

5. Concluding remarks and Future scope of research

It is obvious that digital financial inclusion is one of the leading factors to ensure sustainable economic growth and to create a financially inclusive ecosystem. With financial services becoming more technologically driven, the use of technology, the development of entrepreneurship, and finally the eradication of poverty and the stabilisation of the economy will go hand in hand. However, in a world that has made significant strides towards the international financial inclusion agenda, there still exist problems of digital literacy and Information and Communications Technology (ICT) that continue to spread and also issues of security. The inclusion of finance will be facilitated only through a full partnership among the government, the regulatory body, the financial institutions, and the technology providers.

A coherent regulatory framework, digital financial literacy, especially if it is purposely targeted, investment in infrastructure, and the development of complementary activities in the area of inclusive digital finance are some of the ways by which financial inclusion may be promoted more effectively. Localised solutions will be necessary to address differences between socio-economic environments so as to enable longer-term uptake of digital financial priorities.

Research on digital financial inclusion in the future should primarily focus on examining the long-term effects of digital financial inclusion on socio-economic variables, especially in developing economies. The future research agenda should also address the question of what factors drive financial inclusion and what barriers exist that hinder financial inclusion when new technologies such as blockchain, artificial intelligence, or big data are used.

Moreover, identifying the potential of financial literacy programs in enhancing financial inclusion is going to be one of the key elements for policy formulation that will facilitate the use and creation of digital bank accounts. Digital financial inclusion, by overcoming these barriers and creating an innovation environment, can be the engine of the sustainable development goals and the financial empowerment of everyone.

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