



Research Trend on Digital Financial Services in Developing Countries in the Last Five Years (2020-2024)

Mohamad Arief Rafsanjani^{1*}, Susanti², Jun Surjanti³, Retno Mustika Dewi⁴, Prattana Srisuk⁵

^{1,2,3,4}Department of Economics Education, Universitas Negeri Surabaya, Surabaya, Indonesia

⁵Thai Global Administration Technological College, Samut Prakan, Thailand

Address: Jl.Ketintang, Ketintang, Gayungan District, Surabaya, East Java 60231

Corresponding email: mohamadrafsanjani@unesa.ac.id*

Abstract. *The rapid expansion of digital financial services (DFS) in developing countries presents significant opportunities for financial inclusion, yet the research landscape in this domain remains fragmented and underexplored. This study conducts a bibliometric analysis to examine research trends on digital financial services (DFS) in developing countries over the past five years (2020–2024). Using a dataset of 425 publications sourced from a bibliographic database, the study evaluates scholarly output, citation patterns, and influential contributions. The findings reveal a significant growth in DFS research, with the number of publications increasing from 47 in 2020 to 131 in 2024, reflecting the rising importance of DFS in fostering financial inclusion and economic development. China leads in scholarly output and citation impact, followed by India and South Africa, underscoring the global interest in this domain. Key research themes include financial inclusion, electronic money adoption, and regulatory frameworks, while high-impact topics, such as cryptocurrency and digital currency adoption, highlight emerging areas of interest. The study identifies foundational contributions from 2020 as pivotal in shaping the field and highlights geographic disparities in research output. These findings offer valuable insights for academics, policymakers, and industry practitioners, emphasizing the need for collaborative and multidisciplinary efforts to address barriers to DFS adoption and leverage its potential for economic growth in developing countries.*

Keywords: *Digital financial services, research trend, developing countries, bibliometric analysis, 2020-2024*

1. INTRODUCTION

The digital revolution has significantly impacted various sectors of society, with financial services undergoing a profound transformation. In developing countries, digital financial services (DFS) have emerged as a pivotal tool to overcome long-standing challenges in traditional banking and finance (Agwu, 2020; Chinoda & Kapingura, 2023; X. Wang et al., 2024). Services such as mobile money, digital wallets, blockchain-based financial transactions, and online lending platforms have rapidly expanded their reach, providing unbanked and underbanked populations access to financial systems that were previously inaccessible (Carè et al., 2025; Mothobi & Kebotsamang, 2024; Singh et al., 2024). This paradigm shift has attracted substantial attention from policymakers, practitioners, and academics due to its potential to drive economic growth, enhance financial inclusion, and reduce poverty.

The existing literature on digital financial services in developing countries spans a range of topics, including the determinants of DFS adoption (Khera et al., 2022; Ranabhat et al., 2022), the socio-economic impacts on marginalized groups (Fu & Kingiri, 2020; Raheem et al., 2024), and the technological and regulatory frameworks enabling their growth (Fu & Kingiri, 2020; Mothobi & Kebotsamang, 2024). However, despite this growing body of work,

several critical gaps in the literature remain unaddressed. First, the fragmented nature of existing studies makes it difficult to identify overarching trends and patterns within the field. Most research is focused on specific case studies (Siddika et al., 2023), technologies (Pobee & Ansong, 2022), or regional contexts (Mothobi & Kebotsamang, 2024), limiting the generalizability of findings. Second, there is limited understanding of how research on digital financial services intersects with broader global challenges, such as gender inequality (Rahayu et al., 2023; Raheem et al., 2024; Rohatgi et al., 2024), climate resilience (Appavoo, 2024; Siddika et al., 2023), and economic development (Feng & Lin, 2024; Sreenu, 2025). Furthermore, the lack of bibliometric analyses in this field leaves researchers without a comprehensive map of influential works, collaboration networks, and research trajectories over time.

Addressing these gaps is essential to advancing both academic and practical understanding of digital finance in developing countries. A bibliometric analysis of the research in this domain can provide a systematic overview of how the field has evolved, including identifying key research themes, influential scholars, and leading institutions (Mohd Ishar et al., 2024; Sangma & Das, 2024). This is especially important for developing countries, where the impact of digital finance extends beyond financial inclusion to encompass areas such as small business growth (Lin & Dong, 2024; Xie et al., 2024), household resilience to economic shocks (Liu et al., 2024; Zhang et al., 2025), and social equity (Yan et al., 2024; Yang & Gong, 2025). Such an analysis not only informs future research agendas but also supports evidence-based policymaking and targeted interventions to enhance the effectiveness and reach of digital financial services.

The significance of this study lies in its potential to consolidate existing knowledge while shedding light on emerging trends and critical gaps in the literature. By mapping the scholarly landscape, this research contributes to the understanding of how digital financial services are shaping the economic and social fabric of developing countries. Moreover, it provides a resource for scholars and practitioners seeking to build on previous work and address challenges unique to these contexts. Therefore, the primary purposes of this research are:

- a. To present the number of scholarly papers on digital financial services in developing countries published between 2020 and 2024.
- b. To analyze citation counts to identify the influence and impact of research within the field.

- c. To identify the top 10 authors by citation count, shedding light on the most influential contributors to the topic.
- d. To determine the top 10 countries by scholarly output, showcasing the geographic distribution of research contributions.
- e. To highlight the top 10 topics within digital financial services by scholarly output, identifying key areas of focus in the field.
- f. To explore the top 10 topics by citation impact, providing insights into the most impactful areas of research.

By achieving these objectives, this study provides a comprehensive overview of the scholarly landscape surrounding digital financial services in developing countries, offering valuable insights for academics, policymakers, and practitioners.

2. METHODS

This study employs a bibliometric analysis to examine the trends in research on digital financial services (DFS) in developing countries over the last five years (2020–2024). Bibliometric analysis is a quantitative method used to analyze patterns in academic literature, providing insights into the volume, impact, and structure of research in a particular field. This section outlines the data collection process, inclusion criteria, data analysis methods, and tools used in the study.

Data Collection

The data for this study were collected from a reputable academic database, Scopus, to ensure comprehensive coverage of relevant publications. A search query was constructed using a combination of keywords related to the research topic, such as "*digital financial services*," "*mobile banking*," "*digital payments*," "*blockchain finance*," and "*developing countries*." Boolean operators (e.g., AND, OR) were used to refine the search and focus specifically on studies conducted in the context of developing countries. The search was restricted to articles published between 2020 and 2024 to capture the most recent trends in the field. Only peer-reviewed journal articles were included in the analysis to ensure the quality and reliability of the data. Conference papers, book chapters, and other non-peer-reviewed documents were excluded. The study focused on articles from subject areas such as economics, finance, business, and information systems to maintain relevance to the topic.

Inclusion and Exclusion Criteria

Articles must focus on digital financial services in the context of developing countries and provide empirical, theoretical, or conceptual insights into the topic. Studies that primarily

address digital finance in developed countries or lack clear relevance to the context of developing countries were excluded.

Data Analysis

The data analysis process involved the use of bibliometric tools by Elsevier, namely Scival (<https://www.scival.com/home>). These tools facilitated the extraction and analysis of key bibliometric metrics, including the number of publications, citation counts, co-authorship patterns, and trends of the topics. The bibliometric analysis aimed to identify trends, influential works, and collaborative networks within the field of economic growth research in developing countries.

3. RESULTS

Publication metric

The total number of papers in the last five years (2020- 31 December 2024) found in the Scopus database using the above keywords is 425 papers.

Table 1. Scholarly output from the last five years

Years	Scholarly output (papers)
2020	47
2021	66
2022	69
2023	112
2024	131

The publication metric shows a clear upward trend in scholarly output on digital financial services in developing countries from 2020 to 2024. Starting with 47 publications in 2020, the number of studies increased steadily, reaching 66 publications in 2021 and 69 in 2022. A significant rise is observed in 2023, with 112 publications, followed by a peak in 2024 with 131 publications. This growth reflects the increasing academic interest in this field, driven by advancements in digital financial services and their role in addressing financial challenges in developing regions.

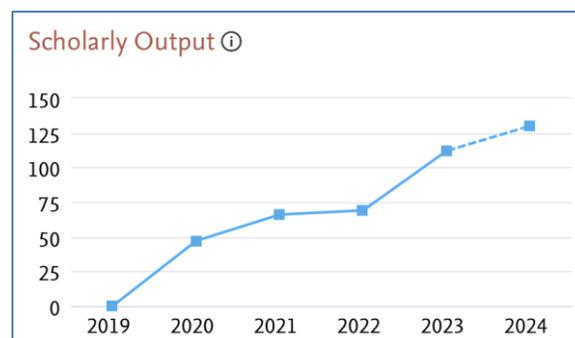


Figure 1. Scholarly output from the last five years

Citation count

The citation data illustrates the research impact over the same five-year period. The highest citation count is recorded in 2020 (1,555 citations), likely reflecting the influence of foundational studies published early in this timeframe. Citations slightly decline in subsequent years, with 1,541 citations in 2021 and 1,516 in 2022. A notable drop occurs in 2023 (1,184 citations) and 2024 (347 citations), which can be attributed to the limited time available for newer publications to accumulate citations. This trend emphasizes the delayed nature of citation accumulation for recent works.

Table 2. Citation count

Years	Citation count
2020	1.555
2021	1.541
2022	1.516
2023	1.184
2024	347

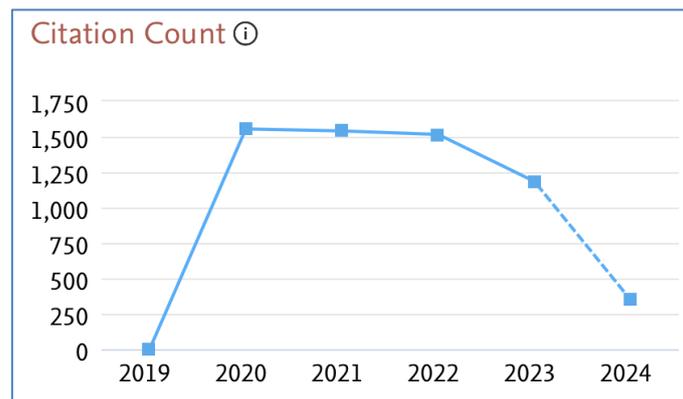


Figure 2. Citation count

Top 10 Authors Based on Citation Count

The top authors in this field demonstrate significant contributions from a geographically diverse group. First, Yuji Murayama (Japan), Vincent R. Nyirenda (Zambia), Manjula Ranagalage (Sri Lanka), Serajis Salekin (New Zealand), and Matamy Simwanda (Zambia) stand out with a shared citation count of 443 citations each, all based on works published in 2020. Second, Boqiang Lin (China) and Ilhan Tekin Ozturk (UAE) have notable contributions with 294 and 282 citations, respectively, based on works published in 2022. Third, Manaf Al-Okaily (Jordan) appears consistently from 2021–2024 with a total of 160 citations, showcasing consistent scholarly output. Last, Mak B. Arvin (Canada), with 151

citations, rounds out the top contributors with impactful work published in 2021. This data highlights both the global reach and the concentration of impactful research in specific regions.

Table 3. Top 10 authors based on citation

No	Author/year	Country/Region	Scholarly Output	Citation Count
1	Murayama, Yuji (2020)	Japan	1	443
2	Nyirenda, Vincent R. (2020)	Zambia	1	443
3	Ranagalage, Manjula (2020)	Sri Lanka	1	443
4	Salekin, Serajis (2020)	New Zealand	1	443
5	Simwanda, Matamy (2020)	Zambia	1	443
6	Lin, Boqiang (2022)	China	1	294
7	Ozturk, Ilhan Tekin (2022)	United Arab Emirates	1	282
8	Tan, Si Ying (2020)	Singapore	1	195
9	Al-Okaily, Manaf (2021) (2022) (2023) (2024)	Jordan	4	160
10	Arvin, Mak B. (2021)	Canada	1	151

Top 10 Countries by Scholarly Output

China leads with 66 publications and 1,524 citations, reflecting its dominant role in research on digital financial services. India follows with 60 publications and 819 citations, showcasing strong scholarly contributions. Other notable contributors includes The United States with 47 publications (994 citations). The United Kingdom with 36 publications (532 citations). South Africa, Indonesia, and Ghana also demonstrate significant activity, with 27, 20, and 19 publications, respectively. Countries like Australia, Russian Federation, and Pakistan have relatively smaller outputs but still play important roles in advancing knowledge in this field.

Table 4. Top 10 Countries by Scholarly Output

No	Country/Region	Scholarly Output	Citation Count
1	China	66	1524
2	India	60	819
3	United States	47	994
4	United Kingdom	36	532
5	South Africa	27	483
6	Indonesia	20	172
7	Australia	19	67
8	Ghana	19	150
9	Russian Federation	19	40
10	Pakistan	18	579

Top 10 Topics by Scholarly Output

The analysis of research themes shows that "Financial Inclusion; Banks; Finance" leads with 63 publications, emphasizing the field's focus on bridging financial access gaps. Other notable topics include "Electronic Money; Financial Inclusion; Finance" with 29 publications. Topics such as "Banks; Legislation; Fintech" (19 publications) and "Electronic Money; Unified Theory; Adoption" (15 publications) suggest an interest in regulatory and adoption-related aspects of digital finance. Emerging topics like "Central Bank Digital Currency" and "Cryptocurrency" also gain attention, reflecting contemporary developments in monetary policy and digital assets.

Table 5. Top 10 topics by scholarly output

No	Topics	Scholarly Output
1	Financial Inclusion; Banks; Finance	63
2	Electronic Money; Financial Inclusion; Finance	29
3	Banks; Legislation; Fintech	19
4	Electronic Money; Unified Theory; Adoption	15
5	Digital Transformation; Digitalization; Information System	12
6	Central Bank Digital Currency; Cryptocurrency; Monetary Policy	10
7	Mobile Banking; Innovation Adoption; Perceived Risk	9
8	Financial Literacy; Wellbeing; Finance	8
9	Bitcoin; Cryptocurrency; Volatility	4
10	Shopping Online; Influencer; E-Commerce	2

Top 10 Topics by Citation Impact

The analysis of citation impact reveals the most influential research themes. "Electronic Money; Unified Theory; Adoption" achieves the highest Field-Weighted Citation Impact score of 15, indicating its significant influence on the academic community. Other high-impact topics include "Financial Inclusion; Banks; Finance" (63 FWCI) and "Central Bank Digital Currency; Cryptocurrency; Monetary Policy" (10 FWCI). This demonstrates that foundational and innovative topics in digital finance are both critical areas of focus in this domain.

Table 6. Top 10 Topics by Citation Impact

No	Topics	Field-Weighted Citation Impact
1	Electronic Money; Unified Theory; Adoption	15
2	Financial Inclusion; Banks; Finance	63

3	Central Bank Digital Currency; Cryptocurrency; Monetary Policy	10
4	Digitalization; Sustainable Development; Digital Economy	1
5	Financial Literacy; Wellbeing; Finance	8
6	Digital Divide; Information and Communication Technologies; Social Media	3
7	Electronic Money; Financial Inclusion; Finance	29
8	Shopping Online; Influencer; E-Commerce	2
9	Mobile Banking; Innovation Adoption; Perceived Risk	9
10	Bitcoin; Cryptocurrency; Volatility	4

4. DISCUSSION

The findings of this bibliometric analysis provide critical insights into the evolving research landscape of digital financial services (DFS) in developing countries from 2020 to 2024. This section delves into the observed trends and patterns, offering a detailed interpretation of the results and their significance for the field.

Scholarly Output and Growth Trends

The increasing volume of publications over the last five years indicates a robust and growing interest in DFS research in developing countries. Starting with 47 publications in 2020, scholarly output more than doubled to 131 publications by 2024. This consistent upward trend reflects the global recognition of digital finance as a transformative tool for fostering financial inclusion (Carè et al., 2025; Mushtaq & Bruneau, 2019), economic growth (Kurantin & Osei-Hwedie, 2019; Sun & Tang, 2022), and poverty alleviation in resource-constrained settings (F. Wang et al., 2024; Xiong et al., 2022).

The significant jump in publications from 2022 (69) to 2023 (112) suggests that researchers are increasingly prioritizing this topic, possibly driven by technological advancements and the widespread adoption of digital payment systems during and after the COVID-19 pandemic (Akata, 2022; Dluhopolskyi et al., 2023). The rapid integration of digital technologies into financial ecosystems (Kochergin & Sheshukova, 2022; Kurantin & Osei-Hwedie, 2019; Okello Candiya Bongomin et al., 2021), coupled with policy initiatives in many developing countries (Mpfungu, 2024; Putrevu & Mertzanis, 2024), has likely spurred academic interest in understanding their impacts and challenges.

Citation Trends and Research Impact

The citation data reveal an interesting temporal dynamic in research influence. The highest citation counts are associated with publications from 2020 (1,555 citations), which may

be attributed to their foundational role in framing the discourse on DFS in developing countries. These early studies provided essential frameworks, insights, and empirical evidence that subsequent research has built upon.

However, the steady decline in citation counts from 2021 to 2024 (with the lowest at 347 citations in 2024) is expected due to the limited time newer publications have had to accumulate citations. This phenomenon, known as citation lag, is typical in bibliometric studies. Despite this, the sharp growth in publication volume in 2023 and 2024 suggests that many recent studies are likely to gain influence in the coming years, further enriching the field.

Author Contributions and Global Collaboration

The analysis of top authors highlights the global nature of DFS research. The most-cited authors, such as Yuji Murayama (Japan), Vincent R. Nyirenda (Zambia), and Manjula Ranagalage (Sri Lanka), underscore the contributions of researchers from diverse regions (Phiri et al., 2020). Notably, the top five authors each had publications with identical citation counts (443), all published in 2020, reflecting the substantial influence of a few seminal works.

The recurring presence of authors like Manaf Al-Okaily (Jordan), who has contributed consistently from 2021 to 2024, highlights the sustained scholarly engagement with DFS research (Al-Okaily, 2023; Al-Okaily et al., 2024; Alqudah et al., 2022; Lutfi et al., 2021). This consistency contrasts with one-off high-impact contributions from other authors, suggesting different patterns of academic involvement.

Geographic Distribution of Research

China's dominant position with 66 publications and 1,524 citations underscores its leading role in DFS research. This leadership may stem from China's advanced digital finance ecosystem (Lin & Ma, 2022; Sun & Tang, 2022; Xie et al., 2024), which includes innovations in mobile payments, fintech, and digital currencies. India, with 60 publications, emerges as another significant contributor, reflecting its ongoing efforts to improve financial inclusion through initiatives like digital payment systems and biometric-linked banking.

The United States and the United Kingdom, though not developing countries themselves, also play key roles in the research landscape, contributing valuable theoretical and empirical insights. Developing countries such as South Africa (Appavoo, 2024; Sivotwa et al., 2023), Indonesia (Ariansyah et al., 2021; Hunter et al., 2024; Najib & Fahma, 2020), and Ghana (Okyerere et al., 2024; Owusu, 2024) are active participants, reflecting their recognition of the importance of DFS for addressing local economic challenges.

However, the relatively low output and citation counts from other developing regions suggest disparities in research capacity, access to funding, and academic resources. These gaps

highlight the need for greater collaboration and capacity-building initiatives to enable broader participation in DFS research.

Key Topics in DFS Research

The thematic analysis reveals that "Financial Inclusion; Banks; Finance" dominates with 63 publications, emphasizing the central role of DFS in bridging gaps in financial access. This theme is particularly relevant in developing countries, where large segments of the population remain unbanked or underbanked (Muchandigona & Kalema, 2023; Pobe & Ansong, 2022; Syed et al., 2022).

Emerging topics, such as "Electronic Money; Adoption" and "Central Bank Digital Currency; Cryptocurrency; Monetary Policy," reflect the increasing focus on the adoption of digital finance technologies and their implications for monetary policy. The high field-weighted citation impact (FWCI: 15) of the topic "Electronic Money; Adoption" suggests its critical importance in understanding user behavior and adoption patterns (Jimenez et al., 2024; Ledi et al., 2023).

Other prominent themes include "Banks; Legislation; Fintech" and "Mobile Banking; Innovation Adoption; Perceived Risk," which explore regulatory, technological, and behavioral dimensions of DFS (Aghimien et al., 2021; Okello Candiya Bongomin et al., 2020). The presence of niche topics like "Bitcoin; Cryptocurrency; Volatility" indicates a growing interest in the intersection of DFS with emerging digital asset markets (El Hajj & Farran, 2024; Mirkamol & Mansur, 2024).

The diversity of topics highlights the interdisciplinary nature of DFS research, encompassing fields such as finance, technology, behavioral economics, and public policy. This multidimensional approach is essential for addressing the complex challenges and opportunities associated with digital financial services in developing contexts.

5. CONCLUSION

This bibliometric analysis of research on digital financial services (DFS) in developing countries from 2020 to 2024 reveals a dynamic and rapidly growing field. The steady increase in scholarly output highlights the rising global interest in leveraging DFS for financial inclusion and economic development. Key insights includes the dominant themes focus on financial inclusion, digital adoption, and the intersection of DFS with regulatory frameworks. China, India, and South Africa emerge as significant contributors to the DFS research landscape in developing countries, with China leading in both scholarly output and citation impact. Foundational works published in 2020 continue to influence the field, with newer research

poised to gain recognition in the coming years. By synthesizing global contributions and identifying key themes, this study underscores the critical role of DFS in shaping the financial landscape of developing countries.

These findings have important implications. First is for researchers. The concentration on specific themes like financial inclusion and electronic money indicates robust foundational research, but underexplored topics such as digital divide, sustainability, and gender equity offer opportunities for further investigation. Second is for policymakers. The growing research output emphasizes the need for enabling policies that promote DFS adoption while addressing challenges like cybersecurity, infrastructure gaps, and user trust. Last is for industry practitioners. Insights from this research can guide the development of user-centric DFS solutions, targeting barriers to adoption such as digital literacy and perceived risks.

LIMITATION

Although the current study provides important insights of the DFS roles, we have to acknowledge the following limitations. First, data source dependency. The analysis relies on data from a single bibliographic database (Scopus), which may exclude relevant publications indexed elsewhere. Second, temporal bias. The citation analysis inherently favors older publications, which have had more time to accumulate citations, potentially underestimating the impact of recent works. Third, scope restriction. This analysis focused exclusively on peer-reviewed journal articles, omitting conference proceedings, policy papers, and other forms of scholarly work that might provide additional insights.

Future research should expand data sources by incorporating multiple bibliographic databases to provide a more comprehensive view of the DFS research landscape. Additionally, there is a need to investigate regional disparities in research output and citation impact, with a focus on capacity-building initiatives in underrepresented areas. Emerging themes such as the sustainability of DFS, gender-specific barriers to adoption, and its role in mitigating income inequality warrant deeper exploration. Longitudinal studies could provide valuable insights into the evolution of key themes and the enduring impact of seminal works in the field. Moreover, integrating multidisciplinary perspectives from fields like behavioral economics, technology adoption, and public policy could enrich our understanding of DFS and enhance its relevance in addressing the unique challenges of developing countries.

By addressing these limitations and expanding research horizons, future studies can contribute to a deeper and more nuanced understanding of DFS, ensuring its effective deployment in addressing the unique challenges faced by developing countries.

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