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**MOBILE AND DIGITAL BANKING ADOPTION,
TECHNOLOGY INTEGRATION,
AND PROJECT MANAGEMENT EFFICIENCY:
A BIBLIOMETRIC ANALYSIS**

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Abstract:

This study is a bibliometric analysis of research on the adoption of mobile and digital banking, integration of technology, and project management efficiency in the world. The purpose of the study is to analyze the intellectual structure, thematic development, and the trends of research in the field of digital banking transformation from 2015 to 2025. The bibliometric data was retrieved from Scopus database and was analysed in Biblioshiny and VOSviewer for citations network, keywords co-occurrence, thematic clusters and co-authorship analysis. The findings indicate that there is a remarkable rise in the number of scholarly publications, notably following 2021, which underscores the strategic significance of fintech innovation, digital transformation, and sustainable financial systems. Based on the thematic analysis, digital transformation, financial technology, sustainability, and organizational performance are key research themes and project management perspectives are relatively less studied. They also show that collaboration networks are disjointed, and digital banking research is increasingly incorporating environmental, social and governance (ESG) principles. The study adds to the academic knowledge on digital banking transformation by determining influential authors, emerging topics and research gaps. In practical terms, the results offer policy makers, financial institutions and practitioners' key insights into the effective use of digital governance and technology and sustainable financial innovations.

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Keyword:Mobile Banking, Digital Banking, Technology Integration,
Project Management Efficiency, Bibliometric Analysis

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Introduction

The services given by financial institutions and banks is considered as the Mobile banking (M-banking), which occurred as the most notable strategic transformations in the retail banking sector in last 10 years (Al-Okaily et al., 2024; Al-Okaily et al., 2023). The financial sector has been able to offer customers with quick solutions, responding to their problems with the help of self-service technologies (Al-Bashayreh et al., 2022; Almajali et al., 2022; Abu-Salih et al., 2022) as technological interfaces has been transformed. Further, convenience are now offered to customers by these services, like remote financial services on mobile devices (tablets and smartphones) (Al-Qudah et al., 2024; Al-Adwan et al., 2022). M-banking unlike internet banking, depends on the application that is developed and curated by the service provider itself. The digital transaction transition has however, transformed regular operations of financial institutions, especially for banks that need to offer quick resilience with concurrent needs to perform online operations (Al-Okaily et al., 2024). This new segment has been significant in concurrent scenario, respecting the service providers, providing benefits include new market penetration, operational scope extension beyond international borders, customer trust elevation, operational costs' notable reduction, enhanced performance levels, and widened delivery options. Mobile banking (m-banking) offers customers personalized services, enhanced convenience, and significant time savings through remote access to financial transactions and investment management (Alsmadi et al., 2022). By enabling wireless connectivity and simplified service procedures, m-banking has become a dominant service delivery model in modern banking. However, administrative efficiency and effective implementation of B2C mobile business models remain limited, and a substantial segment of customers still lacks awareness of mobile commerce solutions.

Digital finance is not just about convenience, it is becoming more and more green, and sustainable in the environment (Geng & He, 2021). Online platforms facilitate investments that are low carbon, renewable energy projects, and sustainable manufacturing and reduce transaction and capital-access costs on SMEs. They enable the process of green financing, promote responsible consumption and create sustainable jobs. Digital finance is an important tool in promoting inclusive and sustainable economic development as the importance of ESG grows (Yang et al., 2025). Bibliometric analysis assists in determining gaps in knowledge, thematic patterns, and intellectual framework of digital and mobile banking study. This review is a mapping of scholarly development of the study of banking adoption, technology adoption, and operational efficiency, with some of the most prominent authors and trends worldwide. Although the interest in fintech innovation and digital transformation is constantly growing, project management views have not been researchable. The gap has been important to provide

strategic information on how to incorporate project performance structures in digital banking transformation studies.

Literature Review

Digital Transformation and Mobile Payment Adoption in Banking

The spread of mobile technologies has changed a system of payment and operations of banks in the world. Based on the extended UTAUT2 framework, research in Jordan reveals that mobile payment adoption is highly driven by social influence, trust, price value, awareness, and performance expectancy and that trust mediates the impact of privacy and security concerns (Al-Okaily et al., 2024). Rural bank evidence has proven that digitalization helps increase profitability, efficiency, and competitiveness. Mobile banking provides quicker and safer transactions to facilitate cashless shifts in the world (He et al., 2025). Blockchain and real-time payments are technologies that contribute to transparency and compliance, especially in developing economies (Eriqat et al., 2025). Adoption is however not very even because of regulatory and security reasons. The success of the implementation is also influenced by organizational preparedness and employee attitudes, which emphasizes the role of contextual and governance variables (Ristanović et al., 2025).

Digital Banking, FinTech, and Sustainable Financial Performance

Fintech solutions and digital banking promote sustainable financial performance to a great extent (Wamba-Taguimdje & Kamdjoug, 2025). Systematic reviews indicate that mobile payment and digital financial technologies make the operations efficient, financially inclusive, and environmentally sustainable, which add to the wider economic growth. Online-based banking solutions can only be successful by having excellent customer understanding (Salmasi et al., 2024). Research based on the TOE framework proved that digital transformation occurs due to technological, organizational, and environmental elements, with developing economies being affected by them the most (Abdurrahman et al., 2024). It has been shown that the integration of digital payments can enhance the speed of transactions, customer satisfaction, and profitability and that digitalization can be used as a strategic tool to gain competitiveness. Cloud computing, artificial intelligence, blockchain, and big data are changing the way banking functions and pressuring established organizations to change (Agarwal et al., 2024). Perceived usefulness, quality of the services, trust and compliance with regulations in the various contexts are key determinants of adoption. Fintech cooperation and government programs also contribute to financial inclusion and lower expenses of services. Altogether, the efficiency, transparency, and long-term growth are improved with the help of fintech-driven transformation, but contextual and regulatory aspects are crucial to success (Papathomas & Konteos, 2023).

Global Perspectives on Mobile and Digital Banking Transformation

Digital and mobile banking has dramatically changed the world financial environment and led to financial inclusion, operational efficiency, and sustainable growth, especially among the small and medium-sized enterprises (SMEs). The systematic investigation suggests that digital platforms guarantee increased transparency, access, and resource optimization, which lead to financial performance in the long run and customer confidence. The COVID-19 pandemic increased the need to implement digital payment and contactless technologies in emerging and

developed economies, which made digital banking a strategic requirement and not an innovation option. In the new markets like Indonesia, Ghana, Vietnam, India and Jordan, adoption of digital banking has been fueled by technological innovation, the adoption of smart phones, and favorable regulatory environments. Technology such as mobile banking, e-wallets, social media banking, and chatbots have lowered the cost of operations, enhanced services provision and increased access to finances to underserved groups (Tran et al., 2024). Policymakers are pushing the idea of cashless towards a higher level by encouraging more competitiveness and economic efficiency. Nevertheless, there are differences in the adoption patterns. Research has emphasised the significance of the perceived security, service quality, and perceived usefulness in developing behavioral intentions of the customers. Subjective norms and social influence also influence the acceptance of digital banking, especially in developing economies. Though countries like India are registering high growth rates because of the regulatory backing and government efforts on cashless transaction, others like Algeria and some of the regional development banks in Indonesia are still recording low adoption rates. In general, the evidence provided at the global level proves that digital banking increases the level of market expansion, performance, and customer satisfaction. However, contextual issues such as regulatory contexts, technology infrastructure and culture are important in influencing the outcomes of adoption. These variations underscore the need for context-specific strategies to strengthen digital transformation and ensure sustainable financial development worldwide (Chetioui et al., 2023).

Digital Banking and Project Management Efficiency

Fintech adoption is influenced by IT governance influences, which connected fintech efforts with strategic vision of an organization, and prioritized investments in most rational products. IT governance models, for instance can assist banks to make alignment with fintech projects, such as digital wallets and mobile banking, with widened objectives to elevating customer experience and advocating digital products' growth (Almaqtari et al., 2025). The fintech popularity since COVID-19 pandemic in particular developing countries has facilitated banking transition with digital operations. The technological use like big data analytics (BDA), blockchain and artificial intelligence (AI) are involved in Fintech, to derive new financial services and products (investment platforms, digital cash, wealth management, digital currencies and crowd funding) (Badrous et al., 2025). Banking organizations emphasizing organizational learning have been more inclined to harness and detect evolving sustainable finance conveniences, like renewable energy investment or socially responsible projects' contribution (Alsoukuni et al., 2025). Transaction volumes gain increase due to customer satisfaction aligned with banking services, as an outcome that elevate profitability. Financial literacy improvement also bolsters the SMEs financial performance (Toni, 2025).

Bibliometric Analysis of Mobile and Digital Banking Adoption, Technology Integration, and Project Management Efficiency

Alsmadi et al., (2022) reviewed the mobile banking literature (2000 - 2020), visualizing the patterns of its development worldwide, sustainability issues, and significant research topics which contribute to the process of service development. In an attempt to review and analyse the bibliometrical results, Kumar and Yadav (2024) conducted a systematic review and bibliometric analysis of mobile payments, revealing the most important factors in mobile payments adoption, new areas of research, and the widening role of mobile payments in digital finance and consumer behaviour. The study reviewed the digital banking and financial

inclusion literature (2014-2020), revealing the pattern of publications, the most influential researchers, and the thematic groups. Taken together, these sources indicate that scholarly interest in digital banking, mobile payments, and financial inclusion is growing, and the research directions of this area and future opportunities in fintech development have been outlined.

Research Methods

The research utilizes the method of bibliometric analysis to conduct a systematic study of the international literature in mobile and digital banking adoption, technology integration and the efficiency of project management in the research. Bibliometric techniques are especially effective in the mapping of intellectual frameworks, influential literature and tracing thematic change in new disciplines (Donthu et al., 2021). With an interest in academic publications dating back to the recent ten years, this study aims at identifying the prominent research trends, co-authorship networks, and theme clusters that inform the discourse of digital transformation in banking and organizational performance. The information used in this research was obtained in the Scopus database which is a well-known and trusted bibliographic library and includes a large number of peer reviewed academic journals. The choice of Scopus was because it has an extensive indexing of quality journals in the fields of finance, information systems, project management and studies on innovation. It is also one of the most authoritative bibliometric research databases, which offer credible metadata and citation record to analyse it. A strict search plan was established that utilized the Boolean operators and that obtained the publications that covered the three thematic dimensions of the current research mobile and digital banking adoption, technology integration, and project management efficiency. The search query that would be used to select studies in the areas where digital finance, technological transformation, and project management performance intersect was the following query applied to Title, Abstract, and Keywords (TITLE-ABS-KEY) fields:

("mobile banking" OR "digital banking" OR "m-banking" OR "mobile financial services" OR "mobile payments" OR "digital payments" OR "fintech adoption" OR "online banking" OR "information systems adoption" OR "innovation adoption" OR "IT capabilities" OR "digital transformation" OR "project management efficiency" OR "project governance" OR "digital implementation" OR "IT project success" OR "agile transformation" OR "implementation performance") AND (PUBYEAR > 2014) AND (PUBYEAR < 2026). To strengthen the project management dimension of the study, project management-related keywords such as “project management efficiency,” “project governance,” “digital implementation,” “IT project success,” and “agile transformation” were incorporated into the search strategy. This broader keyword structure ensured that the analysis captured not only digital banking adoption and technology integration studies, but also research associated with implementation performance, governance mechanisms, and organizational project execution within financial institutions.

Peer-reviewed journal articles constituted the primary source of analysis to ensure academic quality and relevance. However, a limited number of conference proceedings and scholarly publications were also included where they provided significant contributions to emerging themes related to digital banking transformation, fintech innovation, and project management efficiency. Dissertations, book chapters and conference papers in foreign languages were not included. The period was limited to the period of publications in 2015-2025 that are representative of modern trends in financial technology and the digital transformation. Other filters were used to make sure that duplicate records and irrelevant studies were eliminated.

The bibliographic data was then exported as a csv and was able to be analysed later. The most important details like the names of the authors, their association, year of publication, keywords, references and the source of the journals were retrieved. Data cleaning was done to remove inconsistencies and duplicate author entries and accuracy in the standardization of keywords. Citation analysis, co-authorship analysis, co-occurrence of keywords mapping and bibliographic coupling were performed with VOSviewer and Biblioshiny (R package), respectively (Klarin, 2024). Citation analysis was used to find out the most influential studies and those that had the highest number of citations whereas co-authorship analysis was used to find the collaboration networks institutions and between countries. Key words were co-occurred, which showed that there were themes and new directions of research. Thematic mapping has been done to visualize the way in which the literature agrees with the three core domains namely: (1) mobile and digital banking adoption, (2) technology integration and (3) project management efficiency. The review was done in an objective and transparent manner and all sources of data appropriately referenced in order to uphold ethics in research. Rigor and replicability of the study were ensured by detailed process as proposed by Donthu et al. (2021) along with figure 1.

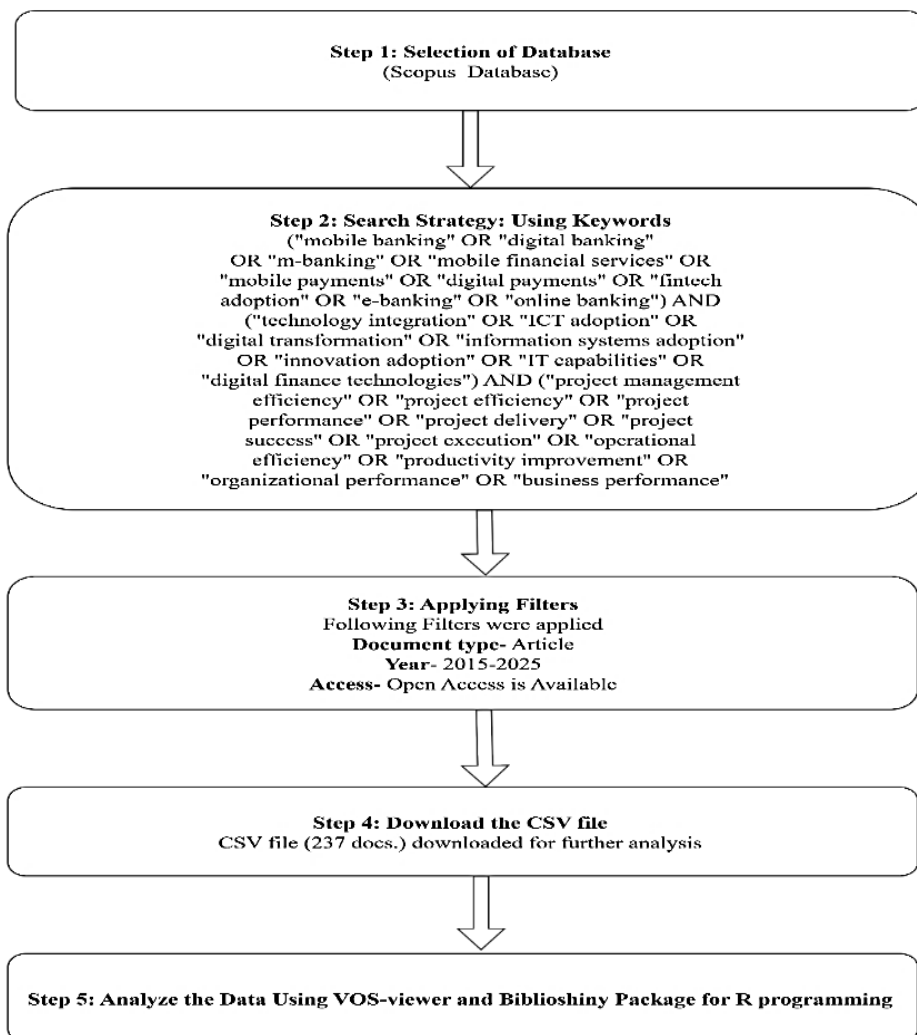


Figure 1: Steps in Bibliometric Analysis

Result And Analysis

This section is an in-depth review of international studies on the adoption of mobile and digital banking, integration of technology, and project management efficiency. Based on bibliometric methods, the analysis shows important publication patterns, prominent authors, collaboration patterns, theme groups and perspectives in future research.

Description of Bibliometric Analysis

Main Information

Table 1 Main Information

| Indicator | Value |
|---------------------------------|--------------|
| Timespan | 2015–2025 |
| Total Documents | 237 |
| Total Sources | 130 |
| Total Authors | 1591 |
| Articles | 171 |
| International Co-authorship (%) | 28.27% |
| Average Citations per Document | 11.96 |
| Annual Growth Rate (%) | 64.87 |

Data on 237 publications (2015-2025) including 130 sources and 1591 authors, is mostly in the form of journal articles. Its annual growth rate (64.87%) is high, which means that the scholarly interest is growing. The field has an average citation of 11.96 documents with 28.27% international collaboration showing an increasing influence and moderate engagement with the global research.

Publication Over the Years

Table 2: Annual Scientific Production

| Year | Articles |
|-------------|-----------------|
| 2015 | 0 |
| 2016 | 1 |
| 2017 | 3 |
| 2018 | 7 |
| 2019 | 5 |
| 2020 | 6 |
| 2021 | 13 |
| 2022 | 17 |
| 2023 | 32 |
| 2024 | 63 |
| 2025 | 90 |

Production in the sciences is increasing exponentially every year. No publications in 2015 transformed into 13 articles in 2021 and the highest level was reached with 90 articles in 2025. In general, the number of publications is 237, which indicates a high and long-term academic impetus and growing interest in the area of research.

Sources

Most Relevant Sources

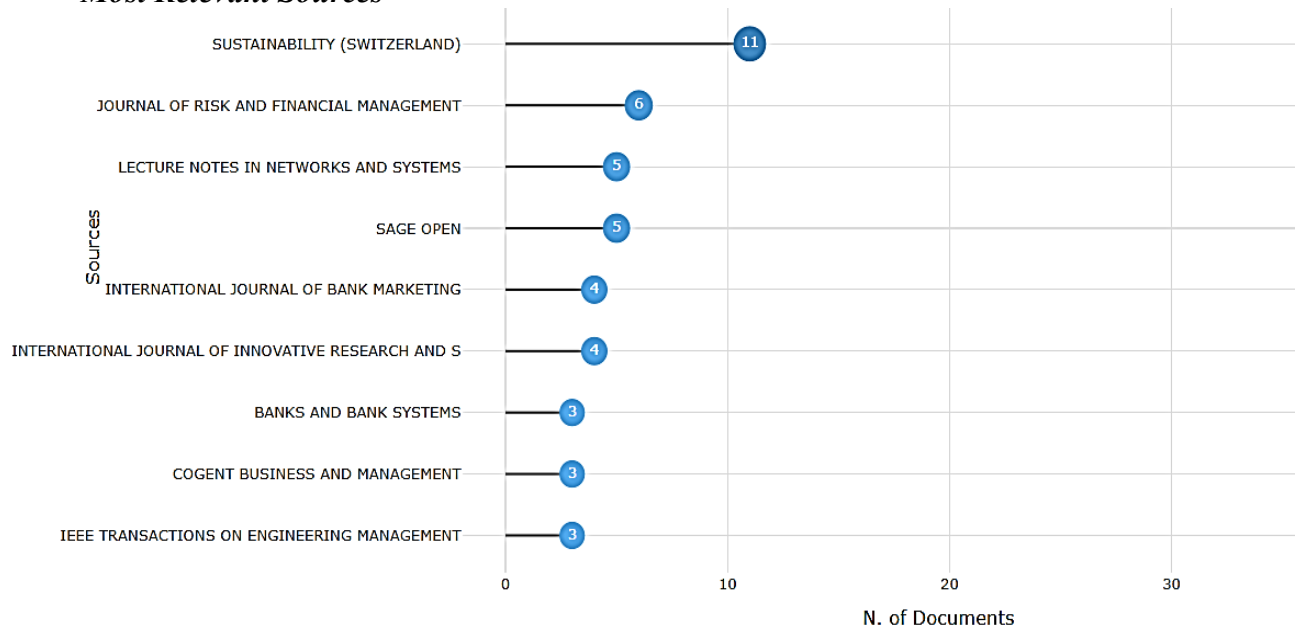


Figure 2: Most Important Sources

The most popular source is sustainability (Switzerland) with 11 publications, and the Journal of Risk and Financial Management comes in the second place (6). Each of the networks and systems lecture notes dedicated five documents to Lecture Notes in Networks and Systems and SAGE Open. This means that studies on digital banking are mostly featured in multidisciplinary sustainability, financial, and technology-focused journals and periodicals.

Citation Analysis

Citation analysis is used to assess the frequency and importance of citations to scholarly materials and take into account the frequency of citations per year on average and the most commonly cited document in the world (Kleminski et al., 2022). It also contains document-level citation analysis, which follows the number of times a particular piece of work is mentioned in a second piece of research hence demonstrating its impact and import to the discipline.

Most Global Cited Documents

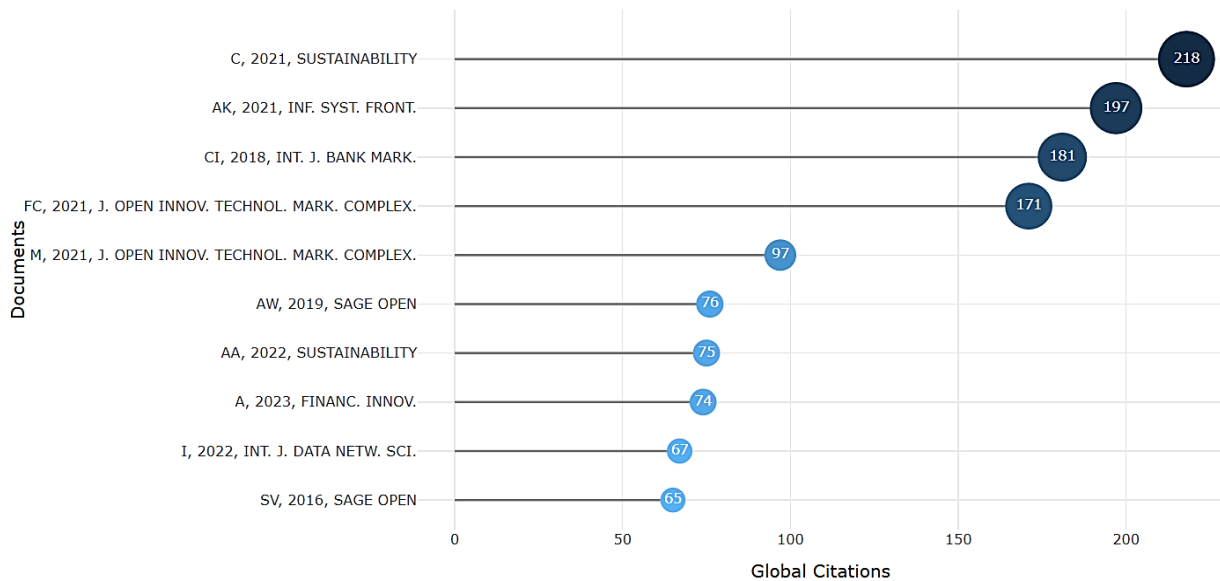


Figure 3: Most Global Cited Documents

Publications published not earlier than 2018 were considered the most cited, and the most popular article got 218 citations, and the ones with 197 and 181 citations were the most frequent. The fact that the citation difference between these and other studies is sharp shows that the intellectual background of the field is dominated by a few highly influential works.

Network Analysis

Network analysis focuses on the relationship between authors and institutions, disclosing the patterns of collaboration and the co-author network (Carchiolo et al., 2022). It includes the identification of most topical author affiliations, the analysis of collaborative and co-authorship networks, and collaborative analysis of publications as the ways of understanding the connections between authors, institutions, or research groups on the basis of mutual research and publication.

Most Relevant Affiliations

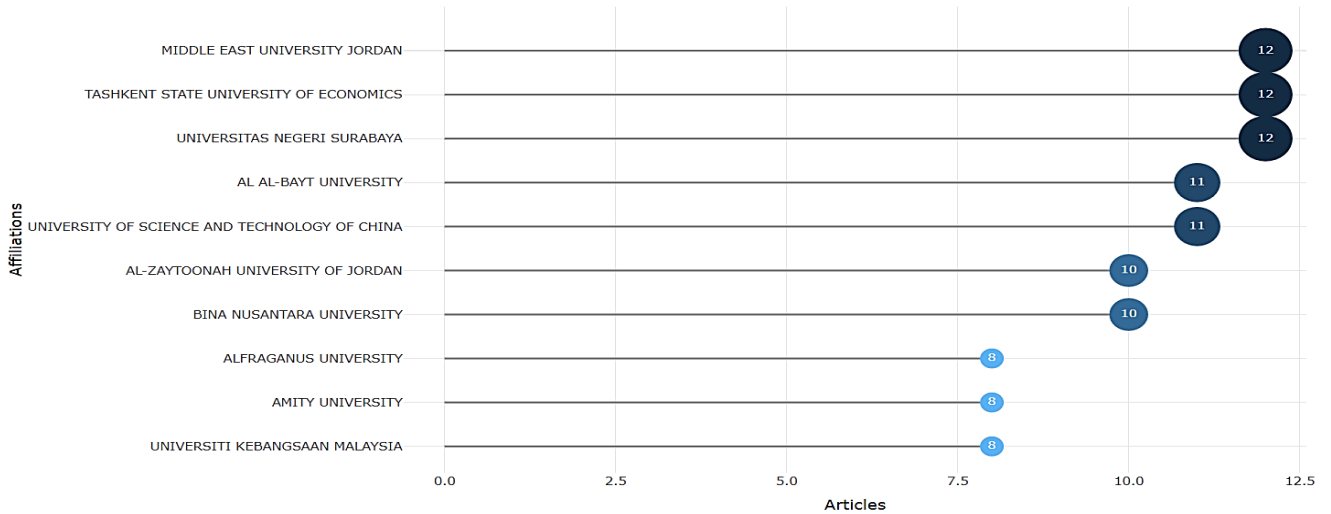


Figure 4: Relevant Affiliations

Middle East University (Jordan), Tashkent State University of Economics, and Universitas Kepriyaan Surabaya are the three most applicable affiliated organizations, having 12 articles each. Others that come after these are Al al-Bayt University (11) and the University of Science and Technology of China (11). This allocation has more production of research contribution which predominantly is based in Jordan, Uzbekistan and Indonesia.

Collaboration Theme

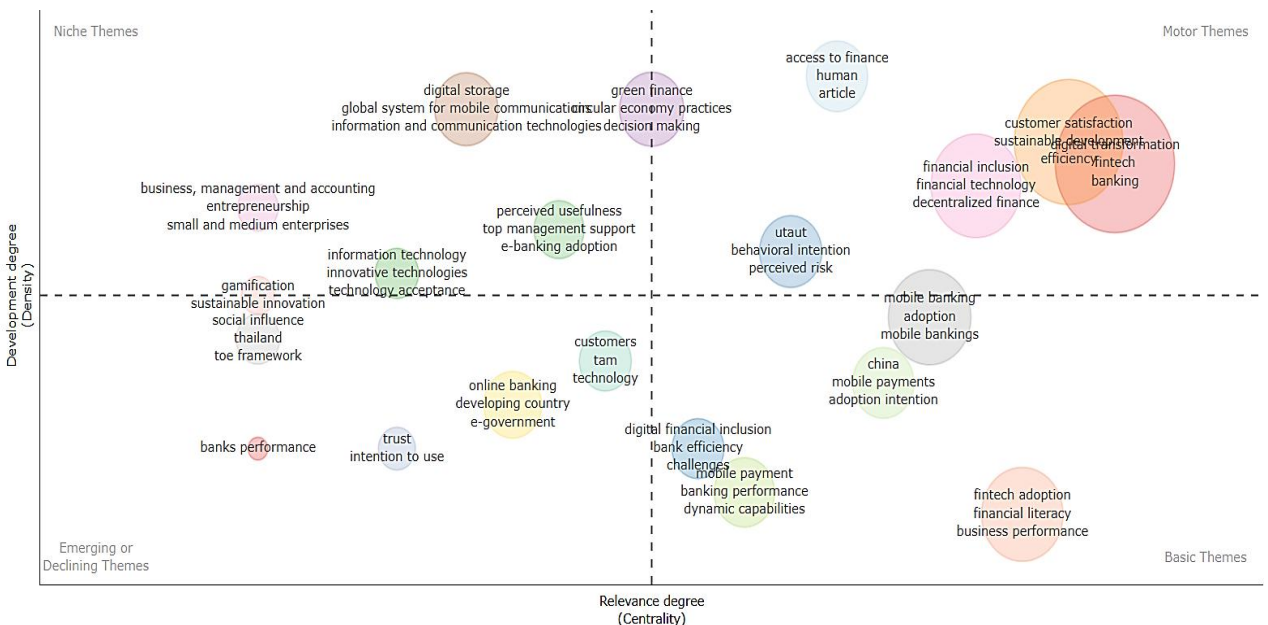


Figure 5: Thematic Map

The thematic map indicates that the banking, fintech and financial inclusion are developed motor themes. Green finance and digital storage seem to be the niche segments, whereas the performance of banks and trust/ intention to use are not developed. Generally speaking, the sector focuses on the convergence of technology, money, and sustainability.

Collaborative Analysis of Publications

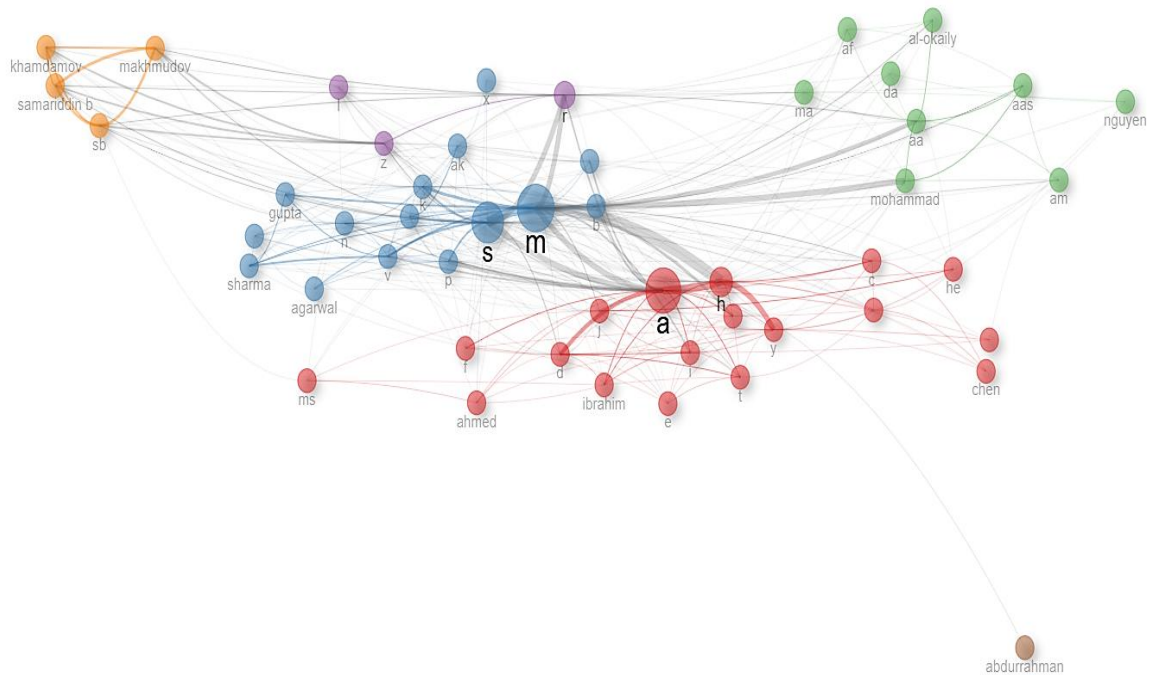


Figure 6: Collaboration Network

Five clusters are found in the collaboration network which implies a fragmented research structure. Although there is a good interaction with major clusters, there is low cross-cluster interaction which shows poor integration across research groups.

Keyword Analysis

Keywords analysis concerns the recognition and assessment of the most commonly and the most significant words in scholarly studies (Corrin et al., 2022). Such an approach will help to identify some of the major topics, trends, and themes by searching the repetition of words or phrases. Through such analysis, researchers are able to trace the development of developing spheres and optimize the search engine (SEO) and findability.

since 2021, reflects the growing recognition of digital transformation as a strategic imperative within the banking sector. The sharp growth between 2023 and 2025 aligns with accelerated global digitalization driven by fintech innovation, evolving consumer behavior, and advanced technologies such as artificial intelligence, blockchain, and big data analytics. Source analysis indicates that multidisciplinary journals, particularly Sustainability and the Journal of Risk and Financial Management have a leading role in the dissemination of research in this field. This shift reflects how digital banking scholarship is moving beyond the finance sector to sustainability, technological innovation and organizational performance areas. Collaboration patterns show that there are well-defined research groups, but the lack of collaboration with other clusters indicates fragmentation in the research area. Bibliographic coupling also shows that there are different schools of thought with little theoretical overlap, suggesting that there is no common conceptual framework. Through citation analysis, it is found that some influential works, especially a few behavioral adoption theories such as the Theory of Planned Behaviour still remain relevant in digital banking research, thereby showing the close dependency of the research on a few works.

But some new trends like green finance, fintech adoption, and sustainability have begun to show signs of moving beyond the traditional consumer adoption framework to include other factors of performance and governance. Thematic and keyword analyses reveal that digital transformation, fintech innovation and banking performance are central research areas that are closely related to financial inclusion and organisational outcomes. There are mature areas of research (motors themes) and emerging and niche areas that offer opportunities. It is interesting to note that project management efficiency is not foremost in the thematic structure, and thus there is a massive research gap. Overall, the results are consistent in that digital banking research is dynamic and rapidly changing. However, fragmentation and a degree of theoretical dependency indicate a need for more profound interdisciplinary integration, cross-contextual comparisons and the construction of unified conceptual frameworks, especially with the inclusion of project management approaches in the field of digital transformation. The findings further suggest that successful digital banking transformation increasingly depends on effective project governance, implementation efficiency, and organizational coordination rather than purely technological adoption factors alone.

Conclusion and Implications

The results also show a shift in the intellectual structure of research on digital banking as previous studies have mainly adopted the Customer Adoption Behaviour and Technology Acceptance theories, while more recent studies focus on sustainability, fintech ecosystems, organisational resilience and a shift towards governance-oriented transformation. Since the outbreak of the COVID-19 pandemic, publications have increased significantly, emphasizing the rapid acceleration of the importance of digital financial services and contactless banking systems in the world due to the global disturbances. The study has a theoretical dimension and adds to the literature on digital banking by combining the technology adoption, sustainability and project management perspectives in a single bibliometric analysis. From a practical perspective, the findings underscore the need for robust banking project governance, agile project implementation, and digital project coordination mechanisms to enhance the performance and competitiveness of banks. The research also offers insights for policymakers to support balanced regulatory approaches that foster innovation while ensuring financial security, customer trust, and sustainable digital transformation. In addition, themes like green finance and sustainability reflect a shift towards incorporating environmental, social, and

governance (ESG) into digital banking analysis. This development reflects a wider shift in the financial services industry from those of operational efficiency to digital transformation frameworks that are more sustainable, innovative, and strategically managed.

Limitations and Future Research

This research is limited in a number of ways. Firstly, only Scopus database was used in the bibliometric analysis. In spite of the quality of indexed publications, other databases like Web of Science or regional repositories can potentially have been omitted, even though they have the relevant studies. It is suggested that the future studies are carried out based on the multi-database approach so as to enhance the coverage and strength. Second, literature search was conducted for the years 2015 to 2025 only and may not have covered theoretical backgrounds of years prior. The further expansion of time would facilitate a more in-depth insight into the development of the digital banking research. Third, bibliometric methods offer only quantitative trends (citations, key-word networks) and hence do not provide a deeper understanding of the contextual, cultural and regulatory influences. The next round of research needs to be able to combine systematic reviews, meta-analyses, and empirical case research. In order to establish more coherent and longitudinal research frameworks, more interdisciplinary research on how fintech innovation and digital governance can be more sustainable and efficient through project management needs should be encouraged.

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- Author Contribution Statement:** Adaikalamary Adaikalasamy was responsible for the conceptualization, data collection, bibliometric analysis, interpretation of findings, and manuscript drafting. Dr. Jasmine Ahmad contributed to research supervision, methodological guidance, critical revision, and overall academic review of the manuscript. Both authors read and approved the final version of the manuscript.
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