Research Article

Fintech for the Masses: Mapping Digital Financial Inclusion Research in Developing Countries

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ABSTRACT

Digital Financial Inclusion has emerged as a critical driver for sustainable development, leading to a rapid expansion of academic literature. However, this burgeoning work lacks a comprehensive overview, resulting in a fragmented scholarly landscape. This study addresses this gap by employing a bibliometric analysis to systematically map the intellectual structure and thematic evolution of digital financial inclusion research in developing countries. Using VOSviewer software, co-citation and co-word analysis were conducted to identify the field's foundational works and dominant research themes. The co-citation analysis reveals six influential intellectual clusters, including financial inclusion measurement, the transformative role of mobile technology, behavioral models of technology adoption, and the importance of institutional economics. The co-word analysis identifies five major thematic clusters centered on technological innovation and adoption, sustainability and human development, the evolving financial system, core digital financial inclusion mechanisms, and macroeconomic outcomes like economic growth and poverty reduction. The resulting intellectual map serves as a valuable guide for researchers to identify trends and gaps, and for policymakers to make evidence-based decisions to foster a more inclusive financial ecosystem.

Keywords: *Bibliometric analysis, Developing countries, Digital financial inclusion, Economic growth, Fintech, Sustainable development, Technology adoption*

Introduction

A critical gateway for inclusive economic development and a powerful enabler of achieving many of the Sustainable Development Goals (SDGs) is access to formal financial services. Large segments of the population in developing countries have remained unbanked or underbanked for decades, primarily due to significant barriers such as distance to financial services outlets, high costs, and complicated

processes or documentation (Achugamonu et al., 2020). This exclusion reinforces poverty cycles by limiting savings, access to credit, and the ability to manage risk. The notion of Digital Financial Inclusion, which leverages mobile phones, the internet, and other digital technology to provide financial services more cheaply and widely, grew out of the breakthrough possibility opened up by digital technology to break down these traditional barriers.

Widespread mobile technology has been the principal driving digital financial inclusion in the developing world. Peer-to-peer lending platforms, agent banking, and mobile money are among the innovations that have radically changed the way small businesses and individuals manage their finances. The attainment of digital financial inclusion has a crucial role in poverty reduction, economic security, and women's empowerment (Johnson & Kuada, 2019), illustrated by precedent-setting cases like M-Pesa in Kenya (Hovekinser & Dubus, 2019). In many developing countries, there are substantial efforts from governments and international organizations to promote digital financial inclusion to build a more resilient and inclusive financial system. Consequently, digital financial inclusion is no longer considered a specialized line of work but an integral part of national development strategies (Hasan et al., 2024).

In line with its increasing relevance, the academic literature on digital financial inclusion has grown quickly in the last 10 years. The macro and micro-level implications of digital financial inclusion, including household consumption smoothing, poverty reduction, and growth of small and medium enterprises, have been researched extensively (Osuma et al., 2025; Muhammad et al., 2021; Lwesya & Beni, 2023). Other established research streams have focused on digital financial inclusion uptake determinants, including infrastructure, regulation, and digital literacy. These studies can fragment the academic community, focusing on specific geographic or thematic focus areas, despite offering valuable information concerning various aspects of digital financial inclusion.

Despite this expanding literature, a comprehensive, higher-order overview of the intellectual terrain of research in digital financial inclusion is notably missing. With the rapidly increasing volume of publications, it is increasingly difficult for researchers, particularly newcomers, to grasp the major research hotspots, identify seminal work, understand how a discipline evolves, and spot new trends. Prior literature reviews have been qualitative and narrow-scoping, with no systematic or quantitative mapping of the overall research domain. There is an apparent research gap because of the absence of an overview of and understanding of the theme clusters, intellectual structure, and research frontiers on global digital financial inclusion from a data-driven perspective, which makes the present research different from other bibliometric reviews, as it will capture the entirety of the digital financial inclusion research in developing countries.

A bibliometric approach is the most appropriate for filling in this void. Bibliometric analysis offers a quantitative and unbiased tool for mapping the scientific landscape of an area, as compared to narrative literature reviews (Öztürket al., 2024). This methodology allows the visualization of co-authorship and the co-citation network, revealing the most influential authors, institutions, and countries, and the monitoring of keyword co-occurrence in order to detect the intellectual core and thematic evolution in the research area. Hereby, the study employs bibliometric analysis to systematically draw the academic pictures of digital financial inclusion in these developing countries. The primary purposes are to examine the intellectual structure of the field, identify its principal lines of inquiry, and highlight new developments and possible avenues for further investigation.

This research contributes significantly by providing a comprehensive "bird's-eye view" of the digital financial inclusion literature, which can guide future scholarly inquiry and inform policymakers. By quantitatively mapping the field, this study will help researchers identify under-explored topics and potential collaborators, while offering policymakers insights into the most heavily researched areas of digital financial inclusion policy and practice. The remainder of this paper is structured as follows: Section 2 outlines the data collection and

bibliometric analysis methodology. Section 3 presents the key findings from the analysis, including publication trends, key contributors, and thematic clusters, with a discussion of the implications of these findings and proposes a detailed agenda for future research. Finally, Section 4 provides the conclusions and recommendations of the study.

Methodology

This study employs a quantitative bibliometric analysis to systematically map the intellectual and conceptual structure of research on digital financial inclusion in developing countries. The data for this analysis were sourced from the Scopus database, which is widely recognized for its comprehensive coverage of peer-reviewed literature across various disciplines. The data retrieval process involved a targeted keyword search within titles, abstracts, and keywords, using terms such as "digital financial inclusion," "mobile money," "fintech," and "financial technology," combined with "developing countries" or "emerging economies." To ensure the relevance of the findings, the search was restricted to publications within the subject areas of Economics, Business, Management, and Finance. The final dataset consists of scholarly articles and reviews published from 2015 to 2025 to ensure that each study's situation was recent.

Limiting the dataset to open-access journal articles was an important methodological choice. The primary upside of this limitation is that the approach follows accessibility principles and shares knowledge worldwide. By focusing on open sources, the review encompasses studies available to scholars, policymakers, and practitioners worldwide, including in the countries of interest, where they could also be part of grey literature. This ensures that the articles that form the basis of the study are open to access, thus enhancing the practical relevance of its results. However, by leaving out important studies published in traditional, pay-walled journals, the method potentially introduces a selection bias that the study acknowledges as a limitation. The resulting map is only a small, accessible snapshot of the landscape; therefore, some influential or highly cited works might be missing wherever they have been published in prestigious non-open-access titles.

Meanwhile, VOSviewer, a powerful software tool for constructing and visualizing bibliometric networks, was used to process and analyze the collected bibliographic data. Two types of analysis were employed in the study. A co-word analysis was conducted to identify the main thematic clusters and research topics in the literature about digital financial inclusion. Through co-word analysis, the frequency of usage of keywords is mapped, and this approach illuminated the central themes in research and their interplay (Khasseh et al., 2021). Second, the study conducted a co-citation analysis on reference citations to identify the field's intellectual foundations. This analytic method provides a comprehensive, data-driven perspective of the knowledge domain's theoretical structure and intellectual base.

Results
Co-citation Analysis

The top ten most co-cited papers, as determined by the Co-Citation analysis, are shown in Table 1 in order of the overall connection strength. The database yielded 16,518 cited references, all satisfying the minimum criteria of 60 cited references. The threshold was tried multiple times until the best visualization was acquired, and strong, evenly distributed clusters were obtained. The representation may be overly complicated or simple if the threshold is high or low. On the other hand, the Total Link Strength shows how strong all the links are between an article and the other articles in the sample under analysis.

The network structure in the co-citation analysis is displayed in Figure 1. Six separate groups are produced using co-citation analysis based on the network visualization. Each cluster is labeled and described based on the representative articles and the researcher's inductive interpretation and comprehension of the six groups.

Table 1. Top 10 documents with the Highest Co-citation and Total Link Strength

| Documents	Citation	Total link strength
Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of financial Intermediation*, *27*, 1-30.	78	136
Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.	53	84
Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.	68	81
Ahamed, M. M., & Mallick, S. K. (2019). Is financial inclusion good for bank stability? International evidence. *Journal of economic behavior & organization*, *157*, 403-427.	47	78
Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.	78	68
Ahmad, A. H., Green, C., & Jiang, F. (2020). Mobile money, financial inclusion and development: A review with reference to African experience. Journal of economic surveys, 34(4), 753-792.	28	56
Abor, J. Y., Amidu, M., & Issahaku, H. (2018). Mobile telephony, financial inclusion and inclusive growth. *Journal of African Business*, *19*(3), 430-453.	23	55
Heilbroner, R. L., Ajzen, I., Fishbein, M., & Thurow, L. C. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.	28	48
Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. Journal of economic growth, 12(1), 27-49.	30	46
Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Journal of economic Perspectives*, *24*(3), 207-232.	24	40
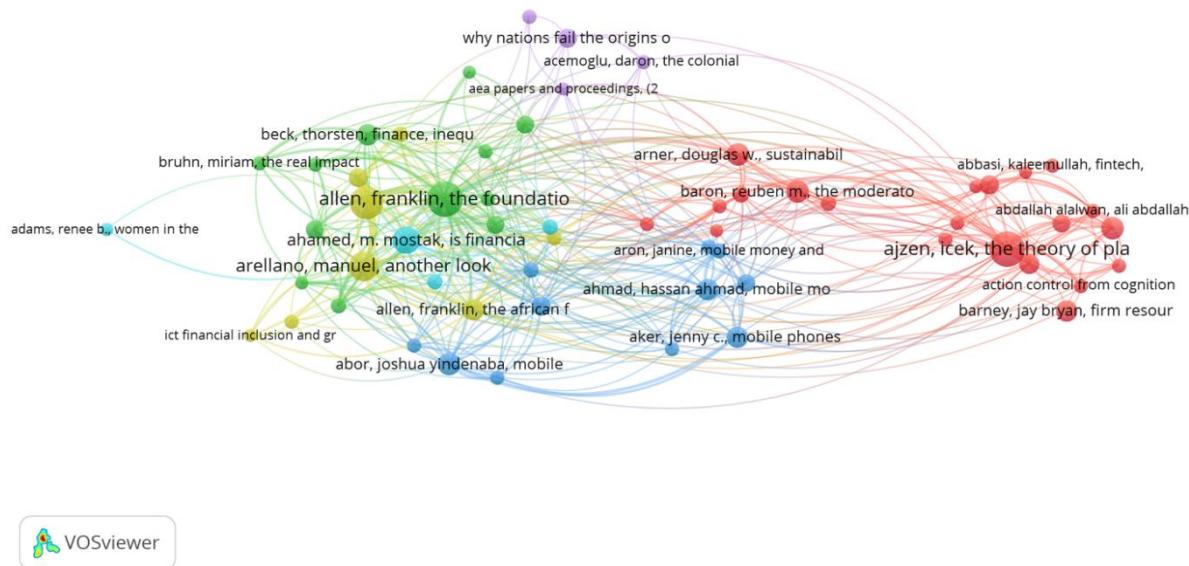
Figure 1. Co-citation analysis of big data analytics on the Digital Financial Inclusion in Developing Countries

Cluster 1 (Red): FinTech, Technology Adoption, and Behavioral Models

This category relies on established behavioral and technology acceptance models and is the research frontier concerning factors facilitating digital financial inclusion uptake. One of the foundations of this cluster represents Ajzen's (1991) Theory of Planned Behavior, a basic model to understand how intentions affect behavior. Scholars like Alalwan et al. (2017) build and test this theory in digital finance by examining the reasons behind adopting internet and mobile banking services in developing countries, such as Jordan, based on the UTAUT2 model. Their analysis emphasizes the role of user concerns, including expectation, risk, and trust. This is fundamental to digital financial inclusion in developing countries because it provides diagnostic instruments for understanding why certain digital financial products succeed or fail. It also offers a pathway to user-friendly service designed around behavioral obstacles to utilization.

Cluster 2 (Green): Foundations and Measurement of Financial Inclusion

The green cluster represents the intellectual spine of financial inclusion research by emphasizing its fundamental ideas and measurement and drawing the connection to poverty and inequality. Beck et al. (2007) demonstrate key linkages between finance, inequality, and the poor's economic welfare. At the same time, papers such as Allen et al. (2016) investigate the underlying reasons for the possession and usage of formal financial accounts. The cluster also incorporates research to enhance measurement by creating multidimensional financial inclusion indices or assessing financial literacy. This cluster has strong roots in digital financial inclusion in low-income countries, as it describes the problem that digital financial inclusion tries to solve.

Cluster 3 (Blue): Mobile Technology and Economic Development

This cluster is concerned primarily with the disruptive power of mobile technology as the leading push factor for digital financial inclusion, with a geographical focus. This body of work also has some of the most robust empirical evidence on the effects of digital financial inclusion. Key works such as Aker and Mbiti (2010) suggest a robust positive relationship between mobile phone usage in Africa and economic growth. Variations on this have provided the raw data for a literature that has already generated plenty of output about specific economic effects of mobile money, which Aron (2018) goes over in detail. The most robust evidence of the effects of digital financial inclusion is drawn from this body. The prevalence of phones and general economic development are positively correlated.

Cluster 4 (Yellow): Econometric Methods and Macro-Level Drivers

This cluster emphasizes advanced econometric techniques, particularly panel data analysis, to ensure robustness and causality in financial inclusion studies. A cluster of methodological papers consists of the landmark studies by Arellano and Bond (1991) and Arellano and Bover (1995). Their development of the Generalized Method of Moments provides macroeconomists with a statistical methodology to tackle fundamental issues in macro-level studies, such as endogeneity and unobserved heterogeneity. Other scholars in the cluster then apply these advanced methods to investigate some of the root causes and effects of financial inclusion across countries at different times. For example, these methods include analyzing the relationship between remittances and financial development, studying the persistent differences in financial development across Africa, and conducting empirical research on communication technology (ICT), financial inclusion, and economic growth.

Cluster 5 (Violet): Institutional Economics and Long-Term Development

This tiny but highly concentrated cluster offers a desperately needed big picture structure for financial inclusion through the lens of institutional economics in development conversation. Origins of this cluster are Robinson and Acemoglu (2011), whose argument is that deep, long-term national wealth results from good or bad political and economic institutions. Going beyond their work, including the watershed paper on the colonial origins of

development, growth is inclusive and generated by institutions that protect property rights and allow for widespread participation. Simultaneously, stagnation arises from extractive institutions, which concentrate riches and power. This perspective is an important warning for digital financial inclusion in developing countries. It is a reminder that technology is no silver bullet in and of itself.

Cluster 6 (Light Blue): Financial Inclusion, Banking Stability, and Governance

This cluster examines how a rise in financial inclusion affects the performance and stability of the conventional banking sector. One key issue is the analysis of possible trade-offs between increasing access to the financial system and safeguarding systemic stability. The study by Ahamed and Mallick (2019) is crucial in this investigation as it provides worldwide evidence on the benefits and costs of broader financial inclusion for bank stability. This investigation is important for financial regulators in emerging markets with the twin mandate of promoting inclusion and safeguarding the financial system. For example, studies such as those by Adams and Ferreira (2009) on the representation of women in boardrooms point to the broader governance dynamics often associated with inclusion goals. A direct link can be established between including low-income people in digital financial services in emerging markets. Overall, this cluster provides the analytical tools to assess that inclusion-stability nexus, thereby helping ensure the thrust towards digital financial inclusion is handled sustainably and soundly systemic.

Co-word Analysis

Table 2 summarizes the top 15 co-occurred keywords with their number of occurrences and total link strength. The co-word analysis applies to the same database. From the 7,541 keywords, 60 met the minimum of 23 occurrences, resulting in 5 clusters.

Table 2. Top 15 keywords in the co-occurrence of keywords analysis

Ranking	Keyword	Occurrences	Total link strength
1	Financial Inclusion	323	470
2	Finance	108	342
3	Fintech	184	248
4	Economic Growth	134	242
5	Innovation	109	237
6	Sustainable Development	106	222
7	Sustainability	90	199
8	Economics	56	184
9	Developing Countries	61	168
10	Financial Development	76	158
11	Financial System	35	143
12	Technology Adoption	52	134
13	Economic and Social Effects	32	126
14	Financial Services	60	122
15	Africa	48	122

Cluster 1 (Red): Technological Innovation and Adoption

The red cluster centers on the concept that technological innovation is the most incredible power to drive change in the financial industry. This group focuses on the popular terms Fintech, innovation, technology adoption, and blockchain. This group is concerned with emerging and spreading new tools, platforms, etc., corresponding to the supply-side perspective on digital financial inclusion. This area of research investigates how digital transformation initiatives stimulate entrepreneurship within the financial services industry. Moreover, it examines social factors, such as how gender influences technology uptake and how much confidence users must have to embrace

these new systems. This set is critical for developing countries since it inquires into those

devices that could facilitate digital financial inclusion.
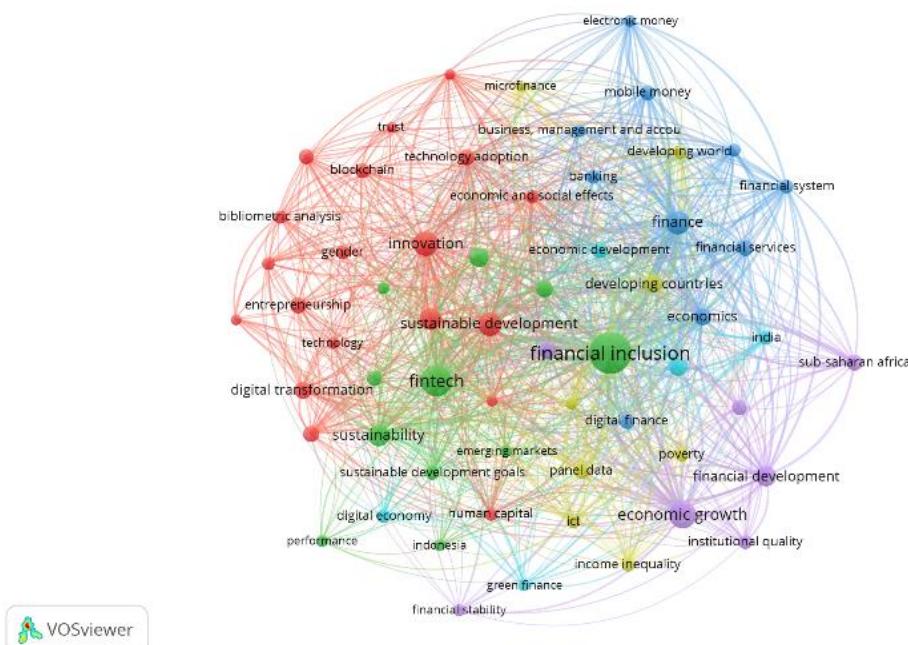
Figure 2. Co-word analysis of big data analytics on Digital Financial Inclusion in Developing Countries

Cluster 2 (Green): Sustainability and Human Development

Financial inclusion in the broader context of global development and sustainability is summarized in the green cluster. The most visited words are the Sustainable Development Goals, sustainable development, and human capital. This strand of research connects the provision of financial services to broader-level objectives, arguing that while financial inclusion is an important enabler, it is not an end goal in and of itself. It explores emerging topics such as green finance, its relationship to financial stability, and how access to financing affects nationalism and firm-level performance. This perspective is particularly relevant to developing countries because it integrates digital financial inclusion into national strategic plans and those set by international development partners.

Cluster 3 (Blue): The Evolving Financial System

The blue cluster encapsulates the heart of the financial system and its relationship to new

digital tools, particularly in developing countries. Key expressions include finance, banking, financial services, and the whole financial system. Mobile money is a key descriptor that highlights the most innovative innovation in this traditional space. This cluster explores how digital technologies are altering the provision of financial services and driving economic growth. This set focuses on how the existing financial system includes, competes with, and adapts to new digital platforms. This is an important theme for emerging economies since digital financial inclusion must coexist with existing banks and regulatory constraints. The research this cluster generates helps financial institutions and policy makers transition from a traditional, bank-centric banking model to a more distributed and mobile-first one.

Cluster 4 (Yellow): Core Mechanisms of Digital Financial Inclusion

The yellow cluster, centered on the central theme of financial inclusion, is the conceptual core of the research map. The largest node in this term indicates its relative importance. The

primary enabler of digital finance is digital finance, and its context is emerging markets. Panel data is the econometric method most suited to analyze how digital financial inclusion affects welfare over time empirically. Information and Communication Technology (ICT) refers to ongoing fixed investments where access will enable these services. This cluster is dominated by the overarching theme of understanding digital financial inclusion's context, extent, and dynamics. The work in this cluster is vital for developing countries. It offers the detailed empirical analysis necessary to learn what works, for whom, and under what conditions. It also conceptualizes and measures digital financial inclusion and tracks its spread in the developing world.

Cluster 5 (Purple): Macroeconomic Outcomes and Institutions

Finally, the purple cluster represents macroeconomic and social outcomes of financial inclusion. The key objective is to assess how digital financial inclusion impacts essential development indicators such as income inequality, poverty reduction, and economic growth. This paper investigates the process, from overall financial development to additional financing accessibility. One important idea from this group of clusters is institutional quality, which suggests that the effects of digital financial inclusion do not fall upon a country automatically, but are mediated through a country's regulatory framework, human behavior, and rule of law. The "so what?" for digital financial inclusion is delivered by this cluster, offering policymakers evidence on whether and how investment in digital finance translates into measurable gains for social justice and national prosperity.

Table 3 provides a brief overview of the top research on the economics of artificial intelligence. It presents the paper's objective, primary findings, and suggestions for future work that are relevant for future researchers and studies.

Table 3. Summary of Key Papers

Authors	Objective	Findings	Suggestions for Future Work
Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of financial Intermediation*, *27*, 1-30.	To analyze the factors determining the ownership and use of formal financial accounts using the Global Findex database.	Individual characteristics like income, education, and age are key determinants. The cost of accounts and distance to financial institutions are significant barriers. Greater financial inclusion is associated with lower income inequality.	Investigate the impact of new technologies, such as mobile banking, on financial inclusion and the role of financial literacy in promoting the use of accounts.
Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.	To propose a unified Generalized Method of Moments (GMM) framework for dynamic panel data models that improves upon existing estimators by using additional moment conditions.	The proposed GMM estimator, which combines moment conditions for both differenced and level equations, is more efficient for analyzing dynamic panel data. It provides a robust method for handling unobserved individual effects and endogeneity.	Extend the framework to accommodate more complex, non-linear models and investigate its properties in different data settings.
Arellano, M., & Bond, S. (1991). Some tests of specification for panel	To develop a GMM estimator for dynamic panel data	The proposed "Arellano-Bond estimator" effi-	Apply the methods to a wider range of economic problems

Authors	Objective	Findings	Suggestions for Future Work
data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.	models and to propose specification tests to check the validity of the instruments used.	ciently handles endogenous variables and fixed effects. The paper introduces crucial diagnostic tests (m1 and m2) for serial correlation in the residuals to ensure model validity.	and conduct further Monte Carlo studies to assess the small sample properties of the estimators.
Ahamed, M. M., & Mallick, S. K. (2019). Is financial inclusion good for bank stability? International evidence. *Journal of economic behavior & organization*, *157*, 403-427.	To empirically examine the relationship between financial inclusion and the stability of the banking sector across different countries.	The relationship is non-linear (an inverted U-shape); financial inclusion enhances bank stability up to a certain point, after which it can lead to instability. The effect is conditioned by institutional quality and economic development.	Explore the specific channels through which financial inclusion affects bank stability and analyze the separate roles of different dimensions of inclusion (e.g., access vs. usage).
Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.	To introduce the Theory of Planned Behavior (TPB) as an extension of the Theory of Reasoned Action, aiming to predict and explain a wide range of human behaviors.	Behavior is best predicted by intention. Intention is determined by three factors: attitude toward the behavior, subjective norms (social pressure), and perceived behavioral control (the perceived ease or difficulty of performing the behavior).	Apply the TPB to diverse behavioral domains (e.g., health, finance, consumer choice) and refine the measurement of its core constructs.
Ahmad, A. H., Green, C., & Jiang, F. (2020). Mobile money, financial inclusion and development: A review with reference to African experience. Journal of economic surveys, 34(4), 753-792.	To review the existing literature on how mobile money has impacted financial inclusion and economic development, with a special focus on Africa.	Mobile money has significantly advanced financial inclusion by overcoming traditional barriers. It has shown positive effects on poverty reduction, household consumption, and the growth of small enterprises.	Conduct more rigorous micro-level studies on the long-term welfare impacts and investigate the regulatory challenges presented by the evolving digital financial services landscape.
Abor, J. Y., Amidu, M., & Issahaku, H. (2018). Mobile telephony, financial inclusion and inclusive growth. *Journal of African Business*, *19*(3), 430-453.	To investigate the combined impact of mobile technology adoption and financial inclusion on inclusive growth (growth that reduces poverty) in Africa.	Both mobile telephony and financial inclusion independently have a significant positive impact on inclusive growth. Importantly, they have a synergistic effect, where the presence of one enhances the positive impact of the other.	Investigate the specific mechanisms of this synergy and analyze how digital financial services can be used to target specific dimensions of inequality (e.g., gender, rural-urban gap).

Authors	Objective	Findings	Suggestions for Future Work
Heilbroner, R. L., Ajzen, I., Fishbein, M., & Thurow, L. C. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.	To present the Theory of Reasoned Action (TRA), a framework for predicting behavior based on pre-existing attitudes and social norms.	The theory posits that behavioral intention is the most direct determinant of behavior. This intention is shaped by two key factors: the individual's attitude toward the behavior and the subjective norms surrounding it.	Test the theory's predictive power across a wider range of behaviors and populations and identify the specific conditions under which it holds most strongly.
Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. Journal of economic growth, 12(1), 27-49.	To investigate the relationship between the development of a country's financial sector, income inequality, and poverty levels.	Financial sector development disproportionately benefits the poorest segments of the population, leading to a reduction in both income inequality and poverty. This contradicts the notion that financial development primarily helps the rich.	Analyze which specific financial policies are most effective at making finance work for the poor and explore the precise channels through which finance reduces inequality and poverty.
Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Journal of economic Perspectives*, *24*(3), 207-232.	To review and synthesize the evidence on the rapid spread of mobile phones in Africa and assess their impact on economic outcomes.	Mobile phones have significantly reduced communication and information costs, leading to improved market efficiency (especially in agriculture and labor), better household risk-sharing, and the facilitation of financial inclusion via mobile money.	Research the long-term and general equilibrium effects of mobile phone adoption, as well as the technology's impact on social areas such as health, education, and political engagement.

One common thread among these studies is their interrelation to form a multifaceted view of financial inclusion. Identifying three main pillars in a broad sense of this research is possible. The first is the methodological foundations, such as Arellano Bond (1991) and Arellano and Bover (1995), which provide robust GMM econometric methods for analyzing the dynamic panel data commonly used in this field. Second, models for understanding the use of financial services are also presented by theories about human behavior, like the Theory of Reasoned Action and Ajzen´s (1991) Theory of Planned Behavior. Third, most papers are empirical applications that connect technology and financial inclusion with significant development outcomes such as inclusive growth, bank stability, and poverty alleviation.

However, the studies have key scope, focus, and chronology distinctions. The main differences are in the theoretical papers and applied research. The research of the 1980s and 1990s is interesting only in that it contributes to general theories of behavior or specific econometric methods. The newer research, carried out since 2007, uses tools within the context of technology and finance in the developing world. Moreover, the empirical group is quite heterogeneous in terms of units of analysis. Some focus on micro-level determinants by exploring individual factors affecting the likelihood of holding a formal account. In contrast,

others take the macro-level approach and study effects on national outcomes such as bank soundness and inclusive growth. This difference reveals that the general concept of financial inclusion is seen from multiple perspectives, whether they are household decisions or for national economic security.

A bibliometric study like this has three key implications for digital financial inclusion. It is multidisciplinary, drawing heavily from behavioral psychology, development economics, and econometrics. While it also links the citation in these divergent yet related fields, it is important to consider this when analyzing. Second, the papers by Beck et al. (2007), Ajzen (1991), and Arellano and Bond (1991) are very likely important citation clusters that represent the thought foundations of further empirical work on finance and development. Finally, a consistent indication is provided by the "Suggestions for Future Work" column of a research frontier around long-term welfare effects, regulatory frictions, and specific micro-mechanisms of digital finance. This could imply that a bibliometric analysis would be able to follow the progress of the field and let us know if recent research is actually filling those gaps, moving from general correlation towards more complex causal explanations.

Conclusion

This bibliometric analysis has strategically mapped the complex array of instruments and tactics used in producing knowledge on digital financial inclusion in developing countries, revealing a multifaceted field. Key seminal work on the measurement and determinants of financial inclusion, behavioral theories to explain technology adoption, and econometric methodologies for the analytical rigor, are some of the knowledge underpinnings distilled from co-citation analysis and situate at a cornerstone bloc of the banking system. The study also underscores the weight of mobile technology as a primary theme and data source for the development impact of digital financial inclusion, particularly in Africa.

In macro-historical research, specifically in its political economy aspects, Institutional economics argues that the effectiveness of any financial innovation depends on the quality of institutions in a country, which is quite an important factor for the long term. On the contrary, the micro-level of the study, user adoption, is based on the theory of human behavior developed by experts in psychology, and thereby the Theory of Planned Behavior and Technology Acceptance Model, which studies intentions, attitudes, and perceived control factors on an individual level. The analysis connects the superordinate theoretical domains in their totality. This theoretical integration remains a quested area. However, most of all, this paper fills a remarkable gap in the literature. This bibliometric methodology transcends the bounds of the standard literature review by providing a first empirical "bird's-eye view" of the knowledge base around digital financial inclusion in academia. It is not just councils' research instinctively and through themes considered fundamental in digital financial inclusion research. It is, therefore, essential to recognize and manage feasibility. This landscape helps researchers navigate this intricate realm and offers policymakers a robust, evidence-based platform to integrate fintech to design further resilient and embracing financial landscapes.

Recommendations and Future Research Directions

The policy implications are both practical and policy-relevant for the practitioners. There are two reasons: technology works because of the institutional context. That implies that when we strengthen the legal framework and public trust, we must also cultivate Fintech. Second, user-centered design is important. The policy implications of the technology adoption literature and behavioral constraints also underscore the need for financial products to be accessible but also user-friendly, trustworthy, and responsive to the preferences of different segments, like the marginalized groups. This study suggests a few interesting directions for further investigation. As hundreds of legacy authors have pleaded, one must also push the industry towards more causal and micro-level research—only then can one understand the long-term welfare implications for households

and small businesses of digital financial inclusion. Research topics such as cybersecurity, data privacy, and how digital financial inclusion can contribute to building climate resilience through green finance are also urgently needed. Finally, additional inquiry into the complicated relation between technology, culture, and institutional context is necessary to comprehend why what works in one context (e.g., M-Pesa in Africa) may not travel easily across contexts. This then calls for comparative research.

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