



Role of Fintech in Accelerating Financial Inclusion

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: <https://doi.org/10.9734/ajebe/2024/v24i71433>

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/120038>

Minireview Article

Received: 14/05/2024

Accepted: 16/07/2024

Published: 22/07/2024

ABSTRACT

Sustainable economic growth depends heavily on financial inclusion or the accessibility and availability of financial services to all people and enterprises. Fintech, a combination of finance and technology, produces innovative solutions for people and businesses and has become an effective tool for attaining financial inclusion on a worldwide scale. This article explores the transformative power of Fintech in promoting financial inclusion and focuses on the challenges of adopting Fintech. Global and national leaders must reduce the digital divide between and within nations in order to benefit from digital financial services and create inclusive societies. This will address growing disparities that have arisen during and after the continuing crisis. To ensure adequate competition, it is necessary to strike a balance between promoting financial innovation and mitigating various risks, such as inadequate consumer protection, low financial and digital literacy, uneven access to digital infrastructure, and data biases that require national action. Additionally, money laundering and cyber risks must be addressed through international agreements and information sharing, including on antitrust laws.

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Cite as: M L, Ashoka, and Aswathy P. 2024. "Role of Fintech in Accelerating Financial Inclusion". *Asian Journal of Economics, Business and Accounting* 24 (7):598-607. <https://doi.org/10.9734/ajebe/2024/v24i71433>.

Keywords: *Fintech; financial inclusion; financial institutions; financial services; digital financial services.*

1. INTRODUCTION

Financial technology, or Fintech, is crucial in accelerating financial inclusion by leveraging technology to provide financial services to underserved populations. Fintech companies offer innovative solutions such as mobile banking, digital payments, peer-to-peer lending, and crowdfunding platforms, making financial services accessible to unbanked or underbanked individuals. These technologies help reduce the barriers to traditional banking services, such as high costs, limited accessibility, and lack of infrastructure. By expanding access to financial services, Fintech contributes to economic empowerment, poverty reduction, and financial stability in underserved communities.

“Fintech is the umbrella term for a wide range of technical advancements in the financial industry that improve or alter the delivery of financial services” [1]. The innovations that help lower costs and hazards while also reaching out to unbanked populations include crowdsourcing, insurance, budgeting software, blockchain technology, cryptocurrency, electronic payments and transfers, robo-advisors, and trading applications [2,3].

Fintech refers to advancements in the financial sector's digital and technologically enabled business models [4,5,6,7]. These developments have the potential to upend established industry structures, blur industry lines, promote strategic disintermediation, transform the way that businesses now operate in terms of producing and delivering goods and services, open up new avenues for entrepreneurship, and democratise access to financial services. However, they also pose serious problems for privacy, regulations, and law enforcement, and they may make some forms of discrimination more likely [8-11]. The many applications of blockchain technology, new digital advising and trading platforms, artificial intelligence and machine learning, peer-to-peer lending, equity crowdfunding, and mobile payment systems are a few examples of developments that are at the heart of Fintech today [12,13-15].

Digital financial services refer to financial services that are accessible and provided via digital channels, such as mobile devices, such as credit, remittances, and payments [16,17]. These

technology opportunities have shown to be incredibly beneficial, especially in times of health crises, and even more so during the COVID-19 epidemic.

2. FINANCIAL INCLUSION

Financial inclusion is the term used to describe the accessibility and availability of financial services and products to people and communities, particularly those underserved or excluded by traditional financial institutions. It intends to ensure everybody can participate and gain from the formal financial system.

3. IMPORTANCE OF FI

Lack of access to basic financial services such as savings accounts, credit, insurance, and payment systems can perpetuate poverty. By providing financial services to the under-banked, we can enable individuals to save money, build assets, invest in education or business ventures, and protect themselves against unexpected financial shocks.

Financial inclusion is vital in promoting social equality by reducing disparities and creating opportunities for marginalized groups. It helps empower women, rural communities, low-income individuals, and other disadvantaged populations, enabling them to participate in economic activities, build resilience, and improve their standard of living.

When more people have access to formal financial services, it strengthens the overall financial system. It reduces the reliance on informal and often risky financial channels, promotes transparency, and helps prevent predatory lending practices and fraud.

Initiatives to promote financial inclusion in India have had mixed outcomes over the last several years. Due to a significant push in policy and regulation, access to bank accounts has dramatically risen. However, access to these accounts and formal financial services beyond savings accounts has remained challenging.

4. FINTECH

Fintech innovations, such as mobile banking, digital payments, and microfinance platforms,

have expanded access to financial services and brought millions of individuals into the formal financial fold. This digital transformation has accelerated financial inclusion efforts, particularly in regions with limited physical banking infrastructure.

According to the Financial Stability Board (FSB) of the Bank of International Settlements (BIS), "Fintech is technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services." Using these technologies, financial institutions can achieve more inclusion with reduced cost, more accessibility, and better products and services.

Fintech promotes financial inclusion in India by providing innovative financial solutions accessible to a larger population. Fintech companies leverage technology to reach underserved communities, offering services such as digital payments, microloans, and insurance products. These services help individuals and small businesses access formal financial services, reducing reliance on traditional banking systems. Additionally, fintech solutions are cost-effective and convenient, making them more appealing to those previously excluded from the financial system.

5. TYPES OF FINTECH

Blockchain and Cryptocurrency: Blockchain is one of the most well-known finance breakthroughs; it opened the door for cryptocurrencies. In essence, blockchain is a public record that is updated continuously with transactions that have been confirmed by other network users. Blockchain's decentralised nature stems from its public nature, which prevents data from being held in a single, hacker-prone location.

Electronic Payments and E-Commerce: Digital payments and mobile money are examples of fintech developments. In 2019, every smartphone user might send money in the over \$1 trillion global mobile payment market. In emerging markets and developing countries, the value of payments related to digital commerce increased from \$1.2 trillion in 2017 to \$1.3 trillion in 2018 and \$1.5 trillion in 2019, a rise of roughly 8% and 15%, respectively.

Insurance: Insurance businesses may now underwrite insurance policies and handle claims more smoothly by utilising artificial intelligence and data analytics thanks to fintech developments. Data protection, house insurance, and auto insurance are all covered by insurance platforms.

Investments: Retail investors have more access to domestic and international investment options, thanks to fintech platforms. One of the most well-liked developments in the fintech field has been the creation of stock-trading applications, which enable users to purchase and sell stocks on their mobile devices with a simple finger tap.

6. REVIEW OF LITERATURE

Fintech helps traditional banking: "FinTech can help remove obstacles to universal access to financial services and accelerate financial inclusion. Several FinTech companies are using a combination of technology and local partnerships to reach customers in smaller towns of India, helping to increase financial inclusion and provide access to credit to those who may have been excluded from traditional banking services" (Maheshwari, 2020).

A comprehensive overview of the current state of FinTech and digital finance research and future research directions [18]. The article highlights the importance of FinTech in the financial industry and its potential to transform the way financial services are delivered. The regulatory environment for FinTech is evolving, with regulators seeking to balance innovation with consumer protection.

FinTech can potentially increase access to financial services and reduce the cost of financial transactions, particularly for underserved populations [19]. The rapid digitalization of economies and financial technology (Fintech) offers a viable way to handle the issues by mobilizing capital for equitable and efficient intermediation and ensuring a long-term route to economic recovery. Financial inclusion can be promoted while improving financial efficiencies through Fintech, blockchain-based technology, artificial intelligence advancements, and other quickly developing developments.

"The Role of Fintech in Transforming Traditional Financial Services", mentioned the role of Fintech in changing traditional financial services [20]. Focusing on the transformation of the

financial industry through technological innovation, this research explores the impact of Fintech in improving efficiency, accessibility and innovation. The literature review clearly explains key concepts, such as openness (Open Banking), financial security, operational efficiency, financial inclusivity, and user experience. Through a systematic literature review approach, this research investigates the implications of Fintech's transformation of traditional financial services and identifies emerging trends and challenges. Results and discussion include an analysis of the impact of Fintech in improving financial services, solving existing problems, and providing a holistic perspective on paradigm shifts in the financial industry. The findings of this research contribute to a deep understanding of the evolution of Fintech and open space for further research in optimizing the benefits of financial technology for society and the global economy.

The article "Determinants of Fintech and Bigtech lending: the role of financial inclusion and financial development" states that Credit markets worldwide are undergoing digital transformation, leading to the rise in Fintech and Bigtech lending [21]. "Fintech and Bigtech lending provides credit by Fintech and Bigtech providers who have more capital, cutting-edge IT systems, worldwide recognition, greater online presence and can handle more big data on computers and mobile phones than traditional banks. Fintech and Bigtech lending is growing in importance, but the determinants of Fintech and Bigtech lending have received little attention in the literature. The study investigated the determinants of Fintech and Bigtech lending and focused on the effect of financial inclusion and financial development on Fintech and Bigtech lending. Using data from 18 countries from 2013 to 2019 and employing the difference-GMM and 2SLS regression methods, the findings reveal that financial inclusion and financial development are significant determinants of Fintech and Bigtech lending. Financial development is a positive determinant of Fintech and Bigtech lending, while financial inclusion has a significant effect on Fintech and Bigtech lending. Also, Fintech and Bigtech lending lead to greater banking sector stability and also pose the risk of rising nonperforming loans. There is also a significant positive correlation between financial development and Fintech and Bigtech lending" [21].

The study "Examining the Role of Fintech in Financial Inclusion and its Impact on Financial

Services to Underbanked Population in India" aimed to find out how much technological advances in finance have advanced financial inclusion, affordability, and accessibility, particularly in marginalized populations [22]. "He used Descriptive statistics, two-sample t-tests, regression, ANOVA, correlation, and two-sample z-tests in statistical analyses to find trends, causal connections, and correlations using a large dataset of secondary data sources and Fintech stock values. The results highlight Fintech's ability to solve issues with financial inclusion while outlining differences in its effects on various demographic groups. To maximize Fintech's benefits, policy suggestions emphasize the necessity for stakeholder cooperation and ongoing regulatory support. To ensure that no part of the underbanked population remains behind, initiatives to improve knowledge of finances and equally distribute the benefits of Fintech are essential. In summary, this study offers important new perspectives on the complex interactions in India between Fintech, the underbanked, and financial inclusion. India may direct itself toward more equitable and sustainable financial systems, promoting economic expansion and bettering the well-being of millions by utilizing the revolutionary capabilities of Fintech while solving related concerns" [22].

"The Impact of Fintech and Digital Financial Services on Financial Inclusion in India" states that financial inclusion has significantly improved during the last several years [23]. "In recent years, there has been a rise in the number of Indians who have bank accounts, with this figure believed to be close to 80%. Fintech businesses in India are progressively becoming more noticeable as the Government of India (GoI) continues to strive to expand financial services to the underbanked sector of the population" [23]. "India must seek to increase financial inclusion to reach the underbanked segments of the population and provide a stable operating environment for fintech businesses. In this study, regression and correlation were employed and secondary data gathered from the RBI to analyze this influence. The aim was to determine the impact of fintech and digital financial services on financial inclusion in India. According to the results, fintech businesses have significantly aided financial inclusion in this nation, especially for the middle class. These findings will be helpful for policy-makers working hard to bring every individual in this country into an organized financial system" [24].

The study "The Impact of Fintech on Financial Inclusion: Opportunities, Challenges, And Future Perspectives", explored the impact of Fintech on financial inclusion, focusing on the opportunities, its challenges, and the future perspectives of its integration [25]. "Financial inclusion refers to the accessibility and availability of financial services to individuals and businesses, particularly those historically underserved or excluded from the traditional banking system. On the other hand, Fintech encompasses technology to provide innovative financial solutions and services. By analyzing existing literature, case studies, and empirical evidence, this research provides valuable insights into the potential of Fintech to enhance financial inclusion, bridge the digital divide, and foster economic empowerment for underserved populations. It also examines the key challenges associated with Fintech adoption and proposes recommendations for policymakers and industry stakeholders to leverage the full potential of Fintech in promoting inclusive financial ecosystems" [25].

The study "Role of FinTech in Accelerating Financial Inclusion in India", take stock of the technological revolution that is shaping the future of finance in India and the important role FinTech can play in accelerating Financial Inclusion in India [24]. "It also discusses the regulatory initiatives taken to spur the FinTech movement in India, the framework for Regulatory Sandbox in India, and the steps required to help achieve the sector's potential for growth and inclusion. The paper draws insights from the work of leading FinTech firms focused on enhancing financial inclusion in our country and discussions with industry experts and officials leading the FinTech agenda in our country. It proposes accelerating the agenda of financial inclusion through innovation and offers solutions on how FinTech can help. The paper also discusses the importance of an ecosystem that promotes collaboration and advocates for banks and FinTech firms to work together for their mutual benefit. It discusses how to harness the benefits of FinTech while ensuring that concerns relating to data confidentiality and customer protection are also addressed. As regards the potential risks and their mitigation, the important role of RegTech and SupTech, i.e., technologies that help improve efficiency through the use of automation, introducing new capabilities, and streamlining workflows, is also discussed. The key to success in FinTech is to harness the benefits while managing the risks" [24].

The study "Role of Fintech in Financial Inclusion and Financial Integration", stated that FinTech refers to firms that are utilizing technology-based frameworks somehow to either give financial administrations specifically or attempt to make the financial framework more proficient [1]. "The purpose of this paper presentation is to review the role of FinTech services in India in establishing financial inclusion and integration. Various research studies were reviewed on FinTech development, financial inclusion, and financial integration in India and globally" [24]. The gist of these findings shows the present trends in FinTech services and the development of its providers. The data reviewed also brings out some challenges and areas that need to be concentrated better by the government, financial institutions and FinTech companies for the betterment.

The study "Conceptualization of the Effectiveness of Fintech in Financial Inclusion" mentioned about "Fintech" (financial technology) [26]. "The research paper is conceptualized and based on secondary data collected from various resources like books, journals, newspapers, blogs and websites. Fintech has extensive applications in inclusive financial goal accomplishment. The shifting trend in the financial system is quite evident. Conventional banking technologies, when applied innovatively, have significantly reduced costs and increased outreach and penetration of the microfinance model. Management Information Systems (MIS), Point of Sale (POS) technologies, Automatic Teller Machines (ATMs), Interactive Voice Response (IVR) systems and smart cards are among the major technologies that have entered microfinance over the years from the formal financial sector. The transformation from brick-and-mortar-driven financial institutions to mobile/e-banking is beneficial in increasing outreach. Besides the vast implications of Fintech in financial inclusion, restraints exist, too. Though the challenges are tough, they must be addressed along with the changing trend at the same pace. The conclusion is theorized and constructed on secondary data; it could have been more valid if based on primary data. It contributes to the understanding of the public and policymakers towards the role of technology in providing inclusion-directed financial services. The study also reveals the effectiveness of Fintech in financial inclusion programs" [24].

The study "Role of Fintech in Financial Inclusion in India", mentioned that Financial Technologies

(Fintech) have been playing a crucial role in banking the unbanked population, thereby accelerating financial inclusion in India [27,28]. "In the aftermath of the 2008 financial crisis, the advent of fintech companies began, which has been tremendously impacting every segment of the Indian economy in general and banking in particular. As such, fintech has emerged as one of the hotspots, introducing a variety of technologies to traditional banking to suit the different needs of the masses with a view to reaching out to every nook and corner of the country. Meanwhile, several initiatives implemented by the government have propelled the process of financial inclusion, such as Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Vaya Vandana Yojana (PMVVY), Pradhan Mantri Mudra Yojana (PMMY), etc., which are all being advanced by fintech companies at large. In this way, the present paper sheds light on the role of fintech in financial and outcomes of the study reveal that fintech has a significant role in spurring financial inclusion through diverse technology such as Unified Payment Interface (UPI)" [27].

7. FINTECH FOR FINANCIAL INCLUSION

According to a recent study, Indian households exhibit three distinctive financial behaviour. First, they allocate a startling 95% of their household's balance sheet, or a disproportionately large chunk of their wealth, to tangible assets. Second, households borrow from sources beyond financial institutions. Less than 15% of debt in advanced nations is unsecured, compared to over 56% worldwide. Third, investment in pension goods is barely present, and life and non-life insurance only make up a small portion of household balance sheets, which is less than 5%.

Limited supply-side innovation has contributed to the problem. According to a recent study on the financial well-being of low-income sectors in India, there is a strong reliance on financial goods from non-institutional sources because these are frequently better suited to their financial circumstances. Additionally, households lack access to reliable, affordable, high-quality financial guidance. Decisions are either made based on hearsay or by local advisors who can have conflicting interests.

In the Indian context, Fintech is helping to overcome long-standing obstacles to financial inclusion, the deepening of the financial sector,

and sector development. Digital financial services are increasingly overcoming the geographic obstacles to financial inclusion.

Financial Inclusion is one of the areas where FinTech solutions have been identified as potentially revolutionary since they assist in solving many financial frictions, according to an IMF Paper titled "Fintech: The Experience so Far" (2019). Among these are: (a) delivery costs for financial services, which are exceptionally high in remote rural areas and among disadvantaged populations like women, the urban poor, and migrants; (b) information gaps between service providers and customers, particularly for the unbanked who lack the knowledge necessary to assess risk properly; (c) a lack of a verifiable ID and challenges in meeting customer due diligence requirements; and (d) a lack of suitable financial products for lower income groups [24].

Consumers and small businesses may contribute to more potent and inclusive growth if they have appropriate access to financing. Banks and financial institutions are collaborating with FinTechs and utilizing their resources because of the enormous gap between MSME funding and consumer lending. Lending to these sectors is part of their credit decision-making processes. Customers with little credit history and no documents but a strong digital presence, a history of on-time bill payments, etc., are given credit, accelerating India's financial inclusion. FinTechs have recently grown beyond payments to include credit and other financial services like investments, insurance, etc.

In specific complex situations, technology can be useful in three different ways. Firstly, technology can provide consumers with more specialized financial goods in the mass market. For instance, by providing acceptable credit products (low-ticket size, no collateral restrictions, quick disbursement, etc.), alternative data-based lenders are starting to meet the significant unmet credit needs of those typically relying on a non-institutional source.

Secondly, the difference between getting money using a mobile wallet and the previous experience of receiving and depositing cheques shows that technology may deliver a more straightforward and seamless user experience.

Thirdly, the cost of service is drastically reduced by implementing public good technology

infrastructure. The time it takes to onboard a customer has already been cut in half, from a few days to a few minutes, thanks to electronic know-your-customer systems based on the Aadhaar platform. Fintech thus holds great promise to drive financial inclusion in India.

8. COLLABORATION OF FINTECH AND FINANCIAL INSTITUTIONS

Partnerships between financial institutions and fintechs are mutually beneficial. Through partnership, both parties can scale up business to reach a more extensive customer base, bolster their competitive position, and improve product efficiency.

The article emphasizes the need for FinTech companies to focus on the underserved segments of the population and provide them with access to affordable financial services.

The authors also highlight the need for collaboration between FinTech companies and traditional financial institutions to promote financial inclusion [19].

"Traditional banking and financial institutions can leverage their existing customer base and adopt digital products that nurture strong financial relationships while improving service efficiency and broadening access to meet changing needs. The disruptive potential of Fintech firms can provoke the much-needed modernization of the traditional sector, reducing costs in the process and increasing the size of the banking population" [24].

The most recent research from the Centre for Financial Inclusion (CFI) and the Institute of International Finance (IIF) explores the importance of collaborations between fintech firms and financial institutions. The discussion started with the African proverb, "If you want to go fast, go on your own. If you want to go far, go together." The fintech sector has been pushed by service providers and technology. A sufficient digital infrastructure is essential, encompassing energy access, good internet coverage, mobile connectivity, Digital ID, and communication services that enable Internet and mobile connectivity.

Fintechs can scale their technology and gain access to funding through partnerships, while financial institutions receive support in their efforts to expand their product offerings, boost

productivity, and cut costs. Digital financial service delivery is changing as different kinds of interaction between disruptors and incumbents emerge. Innovation usually originates from fintech companies. Since there is enormous potential for comprehensive financial services that integrate users' financial demands and behaviours, like healthcare, entrepreneurship continues to be essential to innovation. In order to include payments and other financial goods into health services, government agencies must update current patient data regulations while upholding privacy rights.

As it turns out, all of these objectives are particularly pertinent to low-income consumers who seek out products that are more convenient, more affordable, and of higher quality, and this makes partnering with fintech companies and financial institutions an essential tactic for meeting the financial needs of the unbanked and underbanked around the world. According to a 2017 report by the Financial Stability Board, Financial Stability Implications from FinTech, technology can help provide "easy to understand and convenient services, which tend to lower costs of adoption and lower barriers to access for customers." According to the research, technology contributes to sustainable economic growth by making financial services more convenient and accessible to individual businesses and tiny and medium-sized enterprises (SMEs).

If regulation and oversight of digital financial services does not keep up with technological advancements in fintech to guarantee consumer and data protection, cybersecurity, and cross-border interoperability, there is a risk to the stability of the financial system. In order to facilitate access to digital financial services, it is necessary to implement legal and regulatory requirements. These requirements include allowing the use of third-party agents, building a robust local agent network, establishing a risk-based and proportionate anti-money laundering (AML) framework, and promoting interoperability and competition.

Establishing a shared vision for the future of the international monetary system is imperative for all fintech industry institutions. Additionally, there is a need to enhance international collaboration, enact policies, and establish legal and regulatory frameworks that will promote innovation and mitigate risks for the benefit of all nations. For instance, traditional financial services providers

shouldn't be squeezed out because their knowledge may contain insights into optimal procedures.

9. CURRENT STATUS AND SCOPE OF FINTECH

Financial services are a universal requirement. However, the urban elite have easy access and a greater range of possibilities than the low-income group, who must settle for less formal, more expensive, and riskier methods to meet their demands. There is an imbalance between the supply and demand of financial services for people with low incomes, with the supply being severely hampered by the unavailability and unsustainable nature of the existing business models.

Though Fintech is a powerful enabler, it is crucial to address the potential risks and ensure responsible deployment of these technologies. Regulatory frameworks must evolve to accommodate the changing landscape and strike a balance between promoting innovation and safeguarding consumer interests. Additionally, efforts should be made to provide adequate digital literacy and financial education to empower individuals to understand and utilize these new financial tools effectively.

10. CONCLUSION

When fintech companies and financial institutions collaborate, they create synergies that propel financial inclusion. By leveraging technology and expertise, we can overcome barriers, extend financial services to underserved populations, and foster economic empowerment. Fintech companies often possess agility, innovation, and a deep understanding of customer needs, while traditional financial institutions possess regulatory compliance, trust, and extensive industry experience. Fintech has revolutionised the financial industry by embracing digitization, particularly in developing and emerging economies. Digital money, both public and private, is entering a new era marked by rapid technological progress. Payments will quickly cross boundaries and get easier, faster, cheaper, and more accessible. Enhancements like these could promote inclusivity and efficiency, which would be very beneficial to a lot of individuals. By combining their resources and capabilities, both parties can effectively bridge the gaps in financial inclusion. Financial institutions can benefit from Fintech's advanced data analytics and

automation tools, enhancing risk assessment processes and expanding customer reach. At the same time, fintech companies can leverage financial institutions' established infrastructure and customer trust, gaining access to a broader customer base. Through these partnerships, we can build a more inclusive and resilient financial ecosystem that benefits individuals, communities, and economies as a whole.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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