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Does Artificial Intelligence Strengthen the Relational Between Fintech Adoption and Financial Inclusion? A Conceptual Study

S. Hemapriya

Research Scholar, AMET Business School, AMET University, Chennai

Dr. S. Poongavanam*

Professor, AMET Business School, AMET University, Chennai

*Corresponding Author: hemaravi14@ametuniv.ac.in

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ABSTRACT

Fintech is changing how people save, borrow and pay, especially in regions with little access to banking services. However, simply having access to these services does not necessarily mean that individuals use them meaningfully (Ozili, 2018). This research will examine whether artificial intelligence may provide a 'booster' effect upon the adoption of fintech; transforming it into actual financial inclusion. A large number of individuals have established their accounts at a Fintech company and then stop using them due to lack of trust, understanding, or direction (Gabor and Brooks, 2017). AI can provide solutions to many daily problems faced by Fintech users through the use of tools such as chatbots, credit scoring models, fraud detection and personalised recommendations (Chen, Wu and Yang, 2019). This paper provides a theoretical framework that ties together three themes previously identified in past research: fintech adoption, financial inclusion, and Artificial Intelligence (AI) as a catalyst for both. The authors identify why further academic research is warranted on this subject, address gaps in the current literature, and provide an overview of prior studies related to these themes. Additionally, the authors offer a basic framework for researchers to use in employing actual data to test their hypotheses. This paper concludes with practical recommendations for how government agencies, lenders, and

fintechs can utilize AI ethically in order to promote increased financial access especially among rural communities and individuals with low or no income.

Introduction

Most of the world does not have an actual connection with banks. Many keep their cash at home, use local usury (high-interest) moneylenders to borrow money, and don't have a secure way to save. (Beck, Demirguc-Kunt, and Levine 2007). Financial inclusion was designed to bring everyone into formal banking, particularly poor and rural households (Sarma and Pais 2011). Governments supported it by pushing for it, creating new branches, and establishing supporting policies. But, progress has been slow in many countries, since it costs so much to expand physical banking, and it is very difficult to maintain physical banking in remote areas.

FinTech changed the financial services landscape very quickly with mobile wallets, apps that utilize UPI (Unified Payments Interface), micro-lending platforms, and digital insurance (Gomber et al., 2017). No longer was it required to visit a physical location (i.e., a bank branch) for transactions such as opening an account or sending money; a smartphone alone provided consumers with all of the functionality needed. For example, mobile-based money experiments such as M-Pesa demonstrated just how far such technology could reach to serve the under-banked (Jack & Suri, 2014; Suri & Jack, 2016) and were viewed as a way to foster financial inclusion. However, another interesting trend that has emerged over the past few years is: while many consumers download a financial technology application (FinTech) and use the application one or two times after the initial download, they subsequently stop using the application. Therefore, merely adopting the technology (i.e., downloading) does not mean that consumers will continue to utilize the application or that the application will enable access to financial products or services (Ozili, 2020). This can be illustrated by two hypothetical examples. The first example is a farmer who has installed a lending application on her smartphone, but she does not fully understand how interest is computed on the loan that the application provides to her. Therefore, the farmer will have adopted the technology, but she will not have full access to a financial product. The second example is a daily wage earner who has downloaded a savings application, but he does not trust a chatbot that is available through the application to hold his savings. Hence, while the consumer has adopted the technology, he does not have access to a financial service.

AI also represented an opportunity for organizations looking to leverage new technologies to help shape the future of financial services (Buchak et al., 2018). For example, AI offers organizations a simple way to increase trust and comfort in their fintech-related activities by leveraging small, behind-the-scenes tools

such as an automated loan decisioning system that relies on no physical documentation; a chatbot that provides product information in real-time (e.g., in U.S. English) at 12:00 AM; a predictive algorithm that identifies potentially fraudulent transactions before funds are lost. These are just a few examples of tools that have created trust and comfort as a foundational element of inclusion. This research paper seeks to conceptually examine how AI can either create a stronger connection between the use of fintech products and true financial inclusion or simply provide a new level of technology that excites early adopters, while leaving everyone else behind (Frost, 2020).

Objectives of the study

- Assess the existing link between Fintech adoption and Financial Inclusion.
- Assess how AI tools and technologies are integrated into Fintech Platforms.
- Assess if AI plays a role as facilitates or moderating variables between Fintech Adoption and Financial Inclusion.
- Review the available literature on the topic and identify gaps in the existing literature.
- Develop a simple conceptual framework linking Fintech Adoption, AI, and Financial Inclusion.
- Make practical recommendations to Banks, Fintech Companies, and Policy Makers.

Need for the Study

Most research on financial inclusion primarily focuses on whether or not there is access to a bank account, ATM or loan (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018). The inclusion access metrics used are often not indicative of true inclusion/financial ability to use these services over time. For instance, an individual may have an account but may not have used it in months. Therefore, in addition to assessing access, there is an absence of consideration regarding the quality of use, specifically how confident/consistent a person is utilizing a service and whether or not the technology serious assists or creates confusion in the use of products (Klapper, El-Zoghbi, & Hess, 2016).

Additionally, with the rapid spread of introducing AI solutions across the world (and particularly in the area of fintech), little attention is being paid to whether or not users who have low digital literacy and technology adoption will actually benefit from innovative solutions. There also has been little conceptual effort creating unified literature on the area of fintech, AI and financial inclusion. Most papers have examined two of the three areas but do not integrate all three areas of concern into one position (Philippon, 2016). It is the very lack of conceptual integration of these three areas of research that motivated the development of this paper

for providing a foundational resource upon which other researchers can conduct future work using valid, empirical data.

There is also a reason why this is practical: India and other developing countries are pursuing a cashless society that includes digitisation, therefore it's important to understand if Artificial Intelligence (AI) adds value to an application or service or confusion for the application user. It's critical to have a clearer way of designing better applications, policies, and user training methodologies for individuals who are using a digital financial system for the first time (Aker & Mbiti, 2010).

Statement of the Problem

Despite the vast number of fintech applications and digital wallets that have emerged in a very short period of time, there is still a significant amount of users in rural, semi-urban, and low-income areas of the country that either stop using a digital financial service after their first transaction or use the service only to receive money (e.g., once they receive money via a digital financial service, they don't save, borrow, or otherwise use the digital financial service for the remainder of the time) (Gabor & Brooks, 2017). AI is being implemented as a method to address this issue through personalised services, alternate credit scoring systems and fraud protection. Existing research has not provided a definitive answer as to whether AI has helped to fill this gap or if it has only placed additional barriers to access (e.g., distrust of automated decision making, fear of algorithmic bias, and the fear of using a machine instead of a person to interact with) (Aker & Mbiti, 2010; Gabor & Brooks, 2017). This article will explore this ambiguity and will attempt to generate a conceptual framework for the clarity of understanding.

Review of Literature

The study of financial inclusion as an objective of development has occurred for decades. Work by Demirguc-Kunt et al., through a series of Global Findex reports, provided evidence that account ownership has grown globally, and that mobile money has been a factor in Sub-Saharan Africa where traditional banks do not reach as many persons (Demirguc-Kunt et al., 2018). Their work showed that while access to a formal account is the first step toward financial inclusion, it is not the whole story. Sarma and Pais (2011) developed an index of financial inclusion which brought together the components of financial inclusion, focus on different methods of capturing financial penetration levels as well as the availability and use of services, rather than simply counting the number of accounts.

Ozili's study of fintech and financial inclusion indicates that digital financial services have a lower cost of providing access to impoverished and rural populations; however, he also observed that while the technology is available to enable inclusion, regulation and digital literacy gaps are still barriers to meaningful inclusion (Ozili, 2018). Additionally, Ozili (2020) found the majority of global research on financial inclusion remains widely dispersed across disciplines and countries, inhibiting the ability to draw one common conclusion.

Based on research by Gomber, Koch, and Siering (2017), fintech should be understood as an innovation that blends several distinct components like payment services, lending, insurance, or wealth management and can provide users with new digital platforms. In this case, the authors found interesting differences between what constitutes "fintech adoption." For example, these authors determined that "fintech adoption" is not a singular phenomenon occurring at once. Rather, "fintech adoption" reflects a range of distinct and incremental changes in different user behaviours spanning many different financial services categories. Another meaningful contribution to our understanding of fintech was provided by the research conducted by Arner, Barberis, and Buckley (2016), who argued that the post-crisis period was instrumental in fuelling the development of tech companies and regulators' toolkit and increased the use of affordable and/or accessible financial products.

The real-life case study of growing the East African population's access to financial services via mobile money has provided evidence for scholars to understand how digital finance has improved the ability of individuals to achieve financial objectives. Jack & Suri (2014) found that M-Pesa provided consumers living in Kenya with less expensive options for sending money between households as well as increasing the ability of households to better manage income shocks. A follow-up study (by Suri & Jack, 2016) found that mobile money services improved access to these financial instruments and helped the most impoverished households move to a higher standard of living while simultaneously enhancing women's autonomy. At the same time Aker & Mbiti (2010) have discussed more broadly how mobile phones themselves, regardless of the particular applications being used, have changed the dynamics of information, supply chain and market access within Africa.

Research Methodology

The focus of this research is to provide a description of the relationship between fintech, AI, and financial inclusion through a literature review rather than using direct data from actual transactions or interviews. Therefore, there are no empirical elements in this study. The literature review is based on prior academic literature about all three reactive categories and includes published literature from the World Bank and RBI

regarding fintech and AI in current contexts (World Bank, 2022; Reserve Bank of India, 2023). A narrative literature review, as well as the conceptual reasoning method, were employed. This allowed for a progression of concepts individually before being integrated into a narrative wherein this being the framework for future experimental studies to follow, as future researchers will be able to develop surveys or obtain transaction-level datasets to evaluate the expected relationships.

FinTech Adoption

Fintech adoption refers to users beginning to use digital financial tools rather than Traditional Types of Banking or alongside Traditional Types of Banking. Examples of fintech include mobile wallets and different types of payment methods such as UPI, peer-to-peer lending applications, robo-advisory platforms, and insurance applications (Gomber et al., 2017). Generally, convenience, low-cost products, and government initiatives push people toward adopting fintech; this is similar to what has occurred with demonetization and direct benefit transfers in India (Frost, 2020). In comparing the factors driving fintech adoption, however, it is vital to understand that adoption and usage do not have the same meaning. For example, many rural customers have adopted digital payment applications to receive government subsidies and therefore do not use/understand the savings or investment capabilities that are offered by the application because they do not completely understand them, nor do they feel comfortable using them (Venkatesh et al., 2003).

Financial Inclusion

A common measure of financial inclusion is the number of individuals who have bank accounts; however, true financial inclusion allows consumers to save securely; borrow when needed; insure themselves against unforeseen circumstances; and make payments without concern (Sarma & Pais, 2011). Further, the cost of financial inclusion should be affordable and sustainable, therefore, if financial inclusion allows consumers to fall into debt traps because they did not comprehend loan terms, then they are not truly financially included. In addition to providing access, true financial inclusion also requires the consumer to possess a basic level of financial literacy (Klapper et al., 2016).

Role of Artificial Intelligence in Fintech

Fintech uses AI in numerous ways:

- Alternative credit scores can be created by analysing data such as how frequently one recharges their mobile phone or pays their energy bills, which allows lenders to determine the creditworthiness of borrowers who don't have a conventional credit history (Buchak et al., 2018).
- Chatbots and voice assistants provide help with everyday questions and guide users through their first use in a local language.
- AI can detect unusual transactions through various means; therefore, users will not be afraid to use a banking app because they know that their money will be secure.
- AI can provide timely nudges to help people budget and save based on their spending patterns.
- Using facial recognition and document scanning allows accounts to be created instantly without the use of paper; thus, using AI to automate KYC (Women).

Each of these tools helps to eliminate the barriers (effort and fear) that typically dissuade individuals from using formal financial services (Chen et al., 2019). Yet all of these innovations also create additional fears; individuals may fear being monitored, being unfairly judged by an algorithm, or losing their money because they do not understand how the decision was made (Gabor & Brooks, 2017).

A Proposed Conceptual Framework

Fintech alone will allow people to try an app and create an account. AI-driven features such as easy verification processes, local language support, fair credit access, and secure payment processing act as an invisible glue that turns an infrequent app user into a consistent app user. Therefore, AI provides additional support for the user after they download the app, but it does not operate independently. If the AI-enabled features are well-designed and customers trust the features, then the customer will have an easier path to becoming included rather than excluded. Conversely, If the AI-enabled features are not adequately explained, contain bias, or act intrusive, the customer will lose trust in the AI-enabled features and revert to using informal or traditional means (Gabor & Brooks, 2017; Ozili, 2020).

Findings

The following points can be drawn from the literature review and conceptual analysis presented above:

1. Fintech use has grown significantly faster than true financial inclusion for many users, particularly older, rural, and low-income users (Ozili, 2020).

2. AI applications, such as alternative credit scores and chatbots in local languages, have great potential to create access for individuals who are currently not served by traditional financial institutions (Buchak et al 2018).

3. It is likely that trust, rather than the technology itself, will be the primary factor in determining whether or not AI will help or hinder the transition from adoption to inclusion (Davis, 1989; Venkatesh et al, 2003).

4. Insufficient digital literacy continues to be a serious barrier preventing people from gaining access; even the most sophisticated AI cannot help someone if they do not have the confidence to use a smartphone (Aker & Mbiti, 2010).

5. There is also a risk of algorithmic bias if the AI credit scores developed using primarily urban datasets are used to evaluate rural and informal income users (Gabor & Brooks, 2017).

6. Much of the current research only looks at fintech, AI, and financial inclusion as separate topics; therefore, there is a significant gap in the literature related to mixed-methodological and theoretical perspectives.

Suggestion

- It is important for fintechs to develop their AI features (chatbots, credit scoring) to be easy to understand (using local languages, simple wording) and to use visual indicators instead of complex textual indicators.
- Along with launching apps, they need to offer continuous user education (specifically in rural areas) through regular training and awareness programs to help users understand how AI works.
- Credit scoring AI models should be regularly evaluated for bias and should use representative sample data for the rural and informal income groups as well as for urban income groups, not just for urban users.
- Policymakers need to establish clear data privacy and explainability regulations so that users can understand why they were approved or denied by an AI system.
- Human help (phone support) should always be available in addition to AI to help support older and/or first-time users, rather than completely replacing human assistance.

- Future researchers should use alternative survey data collected from fintech users in future studies by comparing results from those who used features assisted by AI versus those who did not use any features assisted by AI to verify that inclusionary outcomes are truly different.

Conclusion

Fintech has allowed access to financial services for many people who were previously unsuccessful in the traditional banking system. However, opening a door and going through it are two very different things. A lot of users of fintech apps have also apparently used them very little or have stopped using the app altogether, because they found the app to be confusing, unsafe or not designed for them (Ozili, 2018, 2020). AI can help resolve many of these difficulties by making the experience less confusing, safer and more personal for the user, specifically by providing support for local language, using fair credit decisions and providing prompt fraud protection (Chen et al., 2019; Buchak et al., 2018). In order for the potential of AI to be realized in the context of improving the relationship between fintech adoption and financial inclusion, AI needs to be developed with the actual end-user in mind, rather than just focusing on the technology. If AI is built without considering end-user needs, the outcome could be increased and enhanced disenfranchisement of users (Gabor & Brooks, 2017). This paper seeks to connect research areas of significant interest to each of the studied groups and to provide a simple framework for further research within that area. The next step is needed to complete this process is to conduct real-world, on-ground research with actual consumers to validate whether the conceptual link holds true.

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