

Influence of FinTech on Financial Inclusion in Kolkata and outskirts

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Abstract:

The financial inclusion had an exponential growth during the last ten years in India. To keep pace with the “Digital India” mission of the Indian Government, an abrupt increase in the number of bank account holders has been observed. FinTech in India is gradually becoming more prominent as the Indian Government continues to endeavour for enhancing financial services to the underbanked sector. To reach out the entire mass and provide a dependable working environment for fintech organisations, India must pursue to enhance financial inclusion. In this paper, regression and correlation is used on the secondary data from the RBI, to look over this influence. The objective was to analyse the effect of fintech and digital financial services on progressing the effort to make financial services and products accessible and affordable to everyone in India. Based on the outcomes, fintech business have significantly abetted financial inclusion in India, especially for the middle income section of the society. These detections will be useful for the strategists to frame the policies to bring every Indian citizens into an organized financial system.

Keywords: *Fintech; financial services; financial inclusion; behavioral intention; service trust; usability; social influence*

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I. Introduction

This paper aspires to assess how behavioral intentions influence the endorsement of financial technology (fintech). The key determinants of behavioural intention include trust, usability, and social influence. Therefore, this study focuses on evaluating these factors as critical dimensions affecting the uptake of fintech for advancing financial inclusion in India, the world's most populous country experiencing rapid financial growth. Although, large portions of rural and tribal lands lack access to formal banking services, hindering the development of economy and perpetuating extensive poverty in these areas. (Oskarsson 2018). Individuals from underprivileged backgrounds often face greater challenges in managing their finances due to the unpredictability of their income. (Chouhan et al. 2021a). They require easy access to savings (Khan 2012), microcredit facilities (Chang et al. 2020), insurance coverage (Okoye et al. 2017), also transfer and payment services (Gautam and Rawat 2017) to meet diverse financial requirements. Financial inclusion initiatives aim to provide diverse economic and essential financial services to the traditionally dispossessed. Nevertheless, due to limited access to the traditional financial services, many rely on informal networks, that are often less reliable, less secure, and more costly compared to mainstream options (Haque et al. 2020).

The emergence of fintech, born out of the 2007-2008 financial crisis, has transformed the financial services sector by initiating innovative technologies (Chouhan et al. 2021). Technology-driven banking has become foundational to modern banking's evolution (Li et al. 2021), particularly in India, where rapid expansion of mobile networks into previously underserved areas has played a pivotal role (Chouhan et al. 2021). The brick and mortar banks have further complemented to online and mobile mode of banking, enhancing productivity and reducing costs associated with servicing rural and semi-urban customers (Schuetz and Venkatesh 2020;).

The formation of a comprehensive financial sector serves dual purposes (Anagnostopoulos 2018): it connects excluded populations to economic opportunities and fosters broader economic participation. Promotion in financial inclusion can mitigate poverty by facilitating savings mobilization, entrepreneurial opportunities, risk mitigation, and improved living standards (Kim et al. 2018).

This study explores the influence of behavioral intention, usability, trust in fintech services, and social influence on fintech adoption for financial inclusion (Nguyen 2022). While regulatory flexibility from the Reserve Bank of India and supportive government policies have bolstered numerous fintech startups, traditional

institutions leverage their established infrastructure and client base to enhance service delivery (Davis and Fred 1989).

Addressing trust of the consumers in fintech remains crucial, as Indian customers are known for their cautious financial behavior (Bagozzi and Yi 1988). Overcoming these challenges involves understanding consumer needs, influencing financial behaviors, and establishing robust regulatory frameworks to keep pace with technological advancements (Dang and Nguyen 2021).

Despite fintech's disruptive potential, collaboration between traditional banks and fintech startups can drive industry modernization, reduce costs, and expand banking access (Dang and Nguyen 2021). Initiatives like the RBI's promotion of financial inclusion through innovative fintech solutions, such as Unified Payments Interface and digital payments, underscore the sector's evolution and commitment to inclusive growth. Although, fintech innovations hold promise in enhancing competition, reducing costs, and expanding financial services access for underserved populations in India, thereby fostering economic inclusion.

IV. Reviews of Literature

The initiation of microfinance in developing countries aimed primarily at fostering essential growth within the financial sector (Iqbal et al. 2019). This also assists micro and small enterprises enhance their sales by reducing the costs that are related to alternative payment solutions (Frost et al. 2019). Additionally, this facilitates micro and small enterprises in boosting the sales by reducing costs related to alternative payment methods (Mia et al. 2018). An empirical study was conducted by (Aron, 2018) on mobile money, identified its role in boosting risk-sharing mechanisms. Other important studies by Wieser et al. (2019), shows that greater adoption of fintech correlates with decreased reliance on informal savings methods and increased frequency of settlement of transactions. Other studies have explored the effect of digitizing public welfare programs for unprivileged populations in this area (Ghosh 2020). It is the key task to find out the pros and cons for each stakeholders (Kim et al. 2018). To enable elderly individuals to access fintech, financial organisations and fintech organisations should develop user-friendly products and services. Moreover, governments in developing nations— where financial literacy may be lower, should prioritize consumer protection measures (Nguyen 2022). By evaluating 534 institutional data from 24 OIC nations, the research work analysed whether enhanced fintech-based financial inclusion (FFI) bring about an acceleration in taking risk by banks. It reveals that banks' behaviour of risk-taking is mostly run by FFI. The study focuses on the importance to comprehend blockchain technology as an ecosystem as its prospective depends mostly on network approval and extension for the overall benefit of the entire nation. The various innovative business probabilities by understanding the financial prospect of technology and its effects may also be pondered on. It may also act as a blueprint for forthcoming studies on financial inclusion. End-users, individuals, private and government organisations are at different tiers of the environment, and they play a vital role by highlighting their needs for resolving a particular issue, creating a market, and taking part in the development of technology by blockchain alliances (Dang and Nguyen 2021).

Research Gap and Objectives

As per Oskarsson (2018), there is ongoing recognition that exclusion from the formal economic system poses a significant obstacle to poverty eradication efforts in near future. Stakeholders in the fintech ecosystem face challenges due to cultural and habitual obligations, hindering their full potential. Moreover, researchers remain divided on whether mobile money systems can achieve optimal growth in rural sectors. Schuetz and Venkatesh (2020) noted that research on financial inclusion for the bottom of the pyramid (B.O.P.) In India, society must evolve focusing on developing technological solutions for underserved populations that have been beyond our reach for long. Hence, Mannan and Pek (2021) analysed that there is a pressing need to innovate in delivering financial services to economically challenged individuals. Researchers have paid minimal attention to the social and cultural contexts in which these technologies are implemented, as indicated in Table 1. Furthermore, empirical studies specific to India are scarce in identifying key factors critical to the proper implementation of technology for expanding financial services. This study focused on the insufficient research dedicated to promoting the inclusion and empowerment of economically disadvantaged individuals, emphasizing the requirement for such investigations. Additionally, it conducted empirical research to assess how digital technology impacts job creation and poverty reduction through entrepreneurial initiatives in economically disadvantaged communities (Reddy 2021).

Table 1: Constructs and Variables

Construct	Code	Variable
Behavioural Intention (BI)	BI1	The study intends to contribute to the expansion of access to financial services through the application of fintech
	BI2	The study will always give first priority to using mobile services based on financial technology whenever possible.
	BI3	The study intends to keep implementing fintech for financial inclusion.

	BI4	It is the Intention of the study to contribute to financial inclusion through the application of fintech.
Social Influence (SI)	SI1	Financial technology and services for the financially excluded are things that are supposed to be used.
	SI2	Peers who have an impact on the decisions recommended that are tried out for financial inclusion offerings powered by fintech.
	SI3	It is more likely that to use financial inclusion services based on fintech if they are judged well by people whose opinion is valued.
Service Trust (UB)	ST1	Services for the financially excluded that are based on fintech have been proven to be reliable.
	ST2	Financial technology (fintech) based services for the underserved must be handled with care.
	ST3	Due to prior positive experience with such services, there is faith in services based on financial technology.
Usability (UB)	UB1	When it comes to financial inclusion, it is likely to use services powered by financial technology.
	UB2	The regular use of services that promotes financial inclusion that are enabled by advances in financial technology.
	UB3	Several of the services that are based on fintech are quite important.
Use of Fintech for Financial Inclusion (FTFI)	FTFI1	It is possible to employ fintech to expand access to banking services in India's rural areas.
	FTFI2	Financial inclusion in India's rural areas can be achieved through the usage of fintech by increasing household income.
	FTFI3	Financial inclusion in rural India can be achieved through the usage of fintech by increasing savings rates.

As per Menz et al. (2021), there is a scarcity of empirical studies in developing economies focused on identifying the key factors essential for achieving financial inclusion through mobile technology. Schuetz and Venkatesh(2020) stated these studies adopt a contextual approach to poverty alleviation in less developed regions. Additionally, it is crucial to establish effective policy-making guidelines in this dynamic and evolving market. This article aimed to fill a research gap concerning financial inclusion and the impact of financial technology on service delivery. Li et al. (2021), highlighted empirical methods to assess how technology promotes entrepreneurship in underdeveloped regions and identified critical factors for future fintech adoption in rural areas. Both qualitative and quantitative methods were used in this study. The qualitative technique was utilized to obtain an understanding of the many different adoption theories and psychological aspects that are associated with the adoption of technology (Thomas and Hedrick-Wong 2019). Testing hypotheses through quantitative techniques typically involves employing inferential statistics. Confirmatory factor analysis was employed to identify factors, and structural equation modeling was utilized to quantify the impact of fintech on expanding financial inclusion in rural India. The model presented in Figure 1 illustrates this framework.

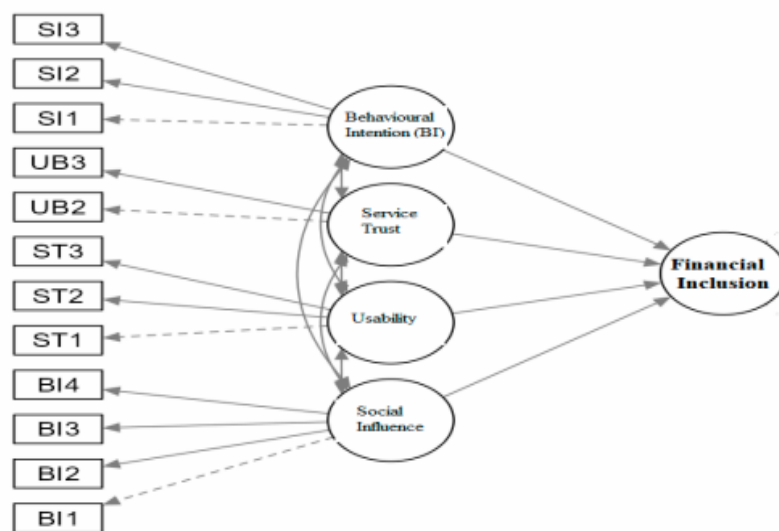


Figure 1: Conceptual Framework

V. Research Methodology

In this study, hypotheses were tested using inferential statistics in a quantitative approach. Quantifying the impact of fintech on promoting financial inclusion in rural India involved researchers using confirmatory factor analysis to identify critical contributing factors and structural equation modeling to analyze the data. The findings indicate that behavioural intention to adopt technology in India's rural sector is positively influenced by

factors creating social influence. Users accustomed to financial technology services are more likely to act on their intentions. Therefore, confirmatory factor analysis was pivotal in identifying variables for financial innovation adoption early in the study. Statistical tests were then employed to assess the strength of associations. Structural equation modeling served as the primary statistical method to test hypotheses and examine the influence of fintech on financial inclusion through mobile money services.

Sample Design

The research focused on users of financial technology and rural business owners utilizing mobile money and other fintech services. Due to the impracticality of surveying the entire global population of 7.9 billion people, a structured sampling method was employed. Specifically, stratified judgmental sampling was utilized to select a representative sample from three districts of West Bengal — Kolkata, Howrah and Hooghly. The survey involved 400 respondents chosen randomly within these districts. Closed-ended questionnaires were administered, and data collection was initiated by the researcher and her friends, colleagues and relatives personally from September 2023 to February 2024 as respondents were unfamiliar with Google Forms.

Data Collection Method

The research work is based both on Primary and Secondary data. Primary Data was collected through structured questionnaire to attain the outlined objectives whereas Secondary Data is obtained from various sources. The data was mainly collected from the rural parts of Kolkata, Howrah and Hooghly districts of West Bengal. A well-structured questionnaire using Likert Rating Scale and rank order Scales are used to facilitate data scaling.

Results

Table 2 reflects, the indicated variables have been coerced. To consider the model valid, both Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) need to be atleast 0.90. According to Table 3, the values of CFI and TLI were found to be 0.997 and 0.996, respectively.

Table 2: Model Information

Number of Observations	400
Free Parameters	85
Model	Behavioral Intention = BI1+BI2+BI3+BI4 Service Trust = ST1+ST2+ST3 Usability = UB2+UB3 Social Influence = SI1+SI2+SI3 Fintech for Financial Inclusion = FTFI1+FTFI2+FTFI3 Fintech for Financial Inclusion = Behavioral Intention+ Service Trust+ Usability+ Social Influence

Note: Variables (BI1, BI2, BI3, BI4, ST1, ST2, ST3, UB2, UB3, SI1, SI2, SI3, FTFI1, FTFI2, FTFI3) have been coerced to ordered type.

Table 3: User Model versus Baseline Model

	Model
Comparative Fit Index (CFI)	0.997
Tucker-Lewis Index (TLI)	0.996

Estimates

Table 4 presents the parameter estimations for four predictors—Behavioral Intention (BI), Service Trust (ST), Usability (UB), and Social Influence (SI)—and their effects on financial inclusion, specially considering the disruption caused by fintech organisation throughout the past decade. The analysis indicates that Service Trust with an estimate of (0.3823) is the most influential factor in fostering financial inclusion, demonstrating that users perceive fintech services as reliable for their monetary transactions followed by Social Influence (0.2304). Although its impact was not statistically significant. Behavioral Intention turned out as the third most significant factor with a significant outcome on financial inclusion. Usability (0.0839) also played an important role in influencing financial inclusion. All constructs, other than Social Influence, were found to be statistically significant.

Table 4. Parameter estimates at 95% Confidence Level

Dependent Variable	Predictors	Estimate	SE	Lower	Upper	β	z	p
FTFI	BI	0.2221	0.0860	0.05350	0.391	0.0902	2.58	0.010
FTFI	ST	0.3823	0.1560	.0764	0.688	0.3968	2.45	0.014
FTFI	UB	0.0839	0.0247	0.0355	0.132	0.0721	3.40	<0.001
FTFI	SI	0.2304	0.1795	-0.1215	0.582	0.1794	1.28	0.199

In structural equation modelling (SEM), the two key components are the measurement model and the structural model. The measurement model describes how observable data relate to latent variables through specific measurement instruments, while the structural model outlines the connection between these latent variables. Table 5 illustrates the utility of measurement model in research work, focusing on the correlation between latent and observed variables. For the behavioral intention construct, it was observed that BI4 (3.030) had a strong association with the latent variable of behavioral intention, whereas BI2 (0.814) showed the weakest association

Table 5. Measurement model at 95% Confidence level

Latent	Observed	Estimate	SE	Lower	Upper	β	z	p
Behavioral Intention	BI1	1.000	0.00000	1.000	1.000	0.187		
	BI2	0.814	0.12667	0.566	1.062	0.152	6.43	<0.001
	BI3	2.988	0.35217	2.297	3.678	0.557	8.48	<0.001
	BI4	3.030	0.35601	2.333	3.728	0.565	8.51	<0.001
Service Trust	ST1	1.000	0.00000	1.000	1.000	0.477		
	ST2	1.183	0.23975	0.713	1.653	0.564	4.94	<0.001
	ST3	0.915	0.16722	0.588	1.243	0.437	5.47	<0.001
Usability	UB1	1.000	0.00000	1.000	1.000	0.395		
	UB2	0.983	0.00503	0.973	0.993	0.389	195.42	<0.001
Social Influence	SI1	1.000	0.00000	1.000	1.000	0.358		
	SI2	1.307	0.37785	0.566	2.048	0.468	3.46	<0.001
	SI3	1.313	0.37914	0.570	2.056	0.470	3.46	<0.001
Fintech for Financial Inclusion	FTFI1	1.000	0.00000	1.000	1.000	0.460		
	FTFI2	1.148	0.24792	0.662	1.634	0.528	4.63	<0.001
	FTFI3	0.592	0.16694	0.265	0.919	0.272	3.55	<0.001

For the service trust construct, ST2 was identified as the most significant variable with estimate of 1.183, whereas ST3 showed a lower level of association with 0.915. In the usability domain, there were only two variables, with both demonstrating a significant association; however, UB1 had a stronger association compared to UB2. Social Influence, the second latent variable SI2 with estimate 1.307 associated with its construct, and SI3 with 1.313 was found to have the highest correlation. For the fintech-related financial inclusion construct, FTFI2 exhibited a strong association, while FTFI had a weaker association.

Figure 2. Reflects the causal relationships in the structural equation model diagram. Assuming that we have defined set of parameters of the model, each arrow in the diagram represents an estimated parameter based on a covariance or correlation matrix.

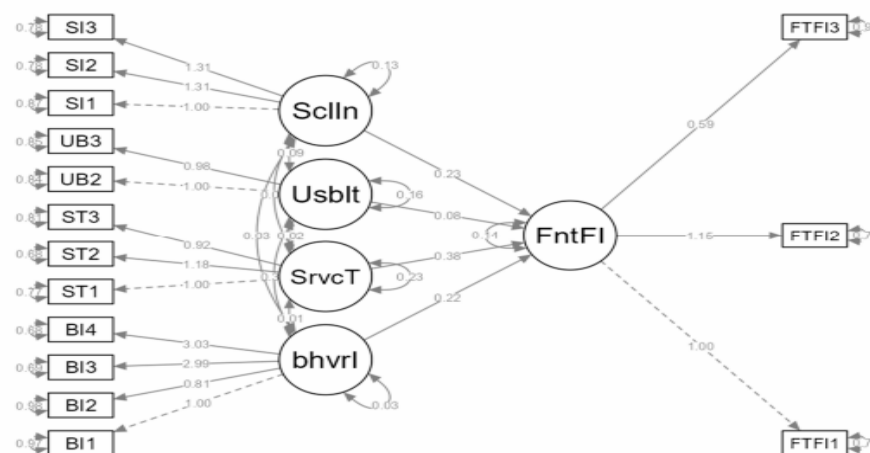


Figure 2. Estimated framework.

In the path diagram, the four latent variables—behavioral intention, service trust, usability, and social influence—are depicted as circles, while the 12 manifest variables are shown as rectangles. The diagram reveals that not all latent variables have strong associations with each other. Specifically, social influence and usability of fintech products have a low but relatively strong association (0.09) compared to other relationships. Usability and service trust exhibit a weaker association (0.02), which is less pronounced than the connection between social influence and usability. The relationship between service trust and behavioral intention (0.01) is the weakest among the latent variable pairs, falling below both the association between social influence and usability and the association between usability and service trust. The connection between social influence and behavioral intention, while not highly significant, is stronger than the relationships between service trust and usability, as well as between service trust and behavioral intention.

VI. Conclusions

Financial inclusion is widely recognized as essential for reducing poverty, fostering balanced economic growth, and ensuring economic stability. In many underdeveloped countries, a significant portion of the population lacks access to even basic banking services, with a large number residing in Asian and Middle Eastern regions. In particular, many individuals in India's most remote and rural areas still do not have access to essential financial services. Leveraging financial technology and mobile money services is crucial for conducting transactions and enhancing living standards through investments in new enterprises or self-employment initiatives. The rapid development in these areas is driven by advancements in the sharing economy, legislation, and information technology. However, research into fintech is still in its early stages. In developing nations, policymakers prioritize financial inclusion as a key development goal.

This study focuses to the growing body of research on factors influencing the utility of fintech for financial inclusion, particularly among economically disadvantaged people in rural India. One of the key findings from this empirical investigation is the importance of including rural residents in financial decision-making processes. Structural equation modeling and path analysis revealed that users who engage with fintech services are committed to continuing their use due to the convenience and effectiveness of these services. Many respondents reported that fintech-based financial inclusion services have enhanced their profitability and savings, and allowed them to transfer money globally at a low cost (Orlov, 2021). Rural residents in India view fintech as a tool to boost rural income and improve access to financial services, a perspective supported by earlier research (Demir, 2022). The simplicity of fintech services is well-regarded, and social influences, particularly from those expecting the use of fintech services, also impact user behavior. Many users have integrated fintech-based financial inclusion services into their daily routines and perceive the associated fees as fair and valuable. They also express confidence in the facilitators of these services, though they acknowledge the necessity for being alert while dealing with fintech-based financial inclusion services.

Overall, this research highlights the significant role of fintech in advancing financial inclusion for rural populations in India. The study finds that Behavioral Intention, Service Trust, Usability, and Social Influence significantly affect the use of fintech services (Thomas and Hedrick-Wong, 2019). Trust in fintech is crucial, as it directly effects users' financial well-being. The findings align with previous literature, although the study was limited to examining behavioral intention, service trust, usability, and social influence. The potential role of government support as a mediating factor was not explored, despite its significant impact on fintech companies in India since 2014.

VII. Managerial Implications

This study introduces innovative best practices for policymakers, regulators, and investors in the field of evolving financial conditions. It provides empirical evidence to identify key success factors and growth drivers for fintech services. The research offers valuable insights for decision-makers, helping them to craft strategies to address current barriers to inclusive financial development. Based on these findings, policymakers and industry stakeholders can utilize mobile technology to create new services and policies aimed at improving job prospects, income, and overall well-being.

The study also focuses to the development of a comprehensive dataset of financial technology beneficiaries, assisting the mobile service sector in finding economies of scale that allow for cost-effective service provision while maximizing societal benefits. Access to financial resources is a major growth obstacle for large populations in developing countries like India. The research advances societal well-being in two key ways: first, by increasing awareness of accessible financial services such as payments, transfers, microcredits, insurance, and savings accounts; and second, by providing marginalized individuals with opportunities for economic advancement. An inclusive financial sector attracts more participants, which, in turn, supports rural development and economic growth. Beyond its business implications, entrepreneurship significantly impacts society by mobilizing savings, improving social welfare, and reducing vulnerability, thereby contributing to poverty alleviation and overall economic development (Russell, 1980).

Scope of Future Research

Fintech has experienced rapid growth recently, driven by new businesses and technologies that are reshaping our approach to banking and money management. Experts predict that the future of fintech will bring even more innovation, with a focus on delivering comprehensive, seamless financial services and addressing traditional barriers like high fees and complex regulations. Looking ahead, researchers could investigate how commercial banks perceive their role in this evolving landscape. To be competitive, banks need to stay at the cutting edge of financial services by partnering with innovative entrepreneurs and leveraging their own resources to integrate technological advancements.

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