

A Study on the Adoption of Fintech in Smart Cities with References to Financial Inclusion

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Abstract: The rapid growth of Financial Technology (FinTech) has transformed the delivery of financial services across the world and has created new opportunities for promoting financial inclusion. In smart cities, where digital infrastructure and technological connectivity are highly developed, FinTech services such as mobile payments, digital wallets, and online banking have the potential to enhance access to formal financial systems. However, the adoption of FinTech is influenced by several technological, behavioral, and demographic factors. The present study examines the impact of FinTech adoption on financial inclusion among residents of smart cities. In particular, the study investigates the role of perceived ease of use, perceived usefulness, trust, and digital literacy in influencing FinTech adoption and financial inclusion. FinTech adoption is considered as a mediating variable, while age and internet accessibility are examined as moderating factors. The study is based on primary data collected from 320 respondents residing in selected smart cities in India through a structured questionnaire. The data were analyzed using Structural Equation Modelling (SEM) through SmartPLS.

Keywords: FinTech Adoption, Financial Inclusion, Smart Cities, Digital Literacy, Trust, Perceived Ease of Use, Perceived Usefulness, Structural Equation Modelling (SEM).

JEL codes: O16, G53, D91, O33, G21

1. Introduction

The entire financial ecosystem across the globe is witnessing a massive structural shift owing to the swift incorporation of Financial Technology, known as FinTech. The use of technology-enabled channels and mobile phones has led to innovation that impacts the functioning of traditional banking systems and expands their customer base. In the past, an astounding number of 1.4 billion adults worldwide have been totally deprived of accessing any form of financial infrastructure on account of numerous challenges such as distance, high transaction fees, and stringent documentation requirements. In developing countries like India, technology-based financial services provide a much-needed channel to circumvent all these challenges (Kamara & Yu, 2024).

This system-wide change becomes exceptionally clear in case of “Smart Cities” and other highly urbanized environments. In such technologically developed places, there will always be a favourable environment in which FinTech can thrive thanks to digitally saturated infrastructure, sophisticated technological governance, and connectivity. Nevertheless, a socio-technical contradiction remains prevalent in such urban settings. There is a consensus regarding the notion that simply providing people with technology does not mean that all people use these resources equally (Bakhshi et al., 2024). Financial inequality can only be addressed when cognitive, behavioral, and structural aspects align.

1.1 Statement of the Problem

The fast growth of financial technology (FinTech) has completely transformed how financial services are offered in smart cities which have extensive digital infrastructure. The cities will advance financial inclusion by providing their residents with straightforward access to digital financial platforms. The increasing usage of mobile payments and online banking and digital wallets has created doubt about whether all people in society actually benefit from FinTech adoption.

The digital financial ecosystem faces participation problems because many people still struggle with basic digital skills and they do not trust online systems and they worry about their personal data being unsafe (Ozili, 2018). The current research studies FinTech adoption and financial inclusion as separate topics without demonstrating how these two concepts connect to each other.

1.2 Research Objectives

1. To examine the level of adoption of FinTech services among residents of smart cities.
2. To analyze the impact of FinTech adoption on financial inclusion (FI).
3. To evaluate the influence of perceived ease of use (PEU) and perceived usefulness (PU) on FinTech adoption.
4. To assess the role of trust and digital literacy in influencing FinTech adoption and financial inclusion (PI).

2. Literature Review

FinTech together with its impact on financial inclusion has become a major research focus in both advanced and emerging markets. At a global level, FinTech serves as a transformative power which enables people to access financial services through its use of digital platforms and mobile technologies and data-driven solutions. Studies show that digital financial innovations which include mobile payments and peer-to-peer lending and digital banking allow underserved populations to access financial services more effectively (Demirgüç-Kunt et al., 2018; Ozili, 2018).

The complete study of FinTech research shows three main areas of investigation which include financial service innovations traditional financial systems changes and stakeholder functions which include government officials and regulatory bodies (Zhao et al. 2025). The study shows that current research lacks sufficient data to evaluate how FinTech technologies affect financial activities of underbanked people. FinTech technology enables better financial services to developing nations by increasing access to financial resources which benefits their underserved communities. Digital financial services decrease costs for transactions while increasing ease of use which leads to higher rates of adoption for official banking services (Khatri 2025).

The available research shows that FinTech adoption in India has helped people from low-income and rural areas to gain better access to financial services. The research evidence shows that FinTech technology helps people in gaining access to financial services which leads to both financial inclusion and economic development (Das & Dash, 2023).

The current situation still contains multiple obstacles which need resolution. The studies demonstrate that digital illiteracy and cybersecurity issues and trust deficits and infrastructure deficiencies create obstacles which prevent successful FinTech implementation.

2.1. Research Gap

Theoretical Gap

Most previous studies have examined FinTech adoption and financial inclusion as separate constructs because they did not investigate their interconnected relationship. Existing research focuses on two separate areas which study technological adoption models and financial accessibility outcomes as

independent fields of study. The research has not deeply explored how perceived ease of use and perceived usefulness together with trust and digital literacy impact financial inclusion through FinTech adoption. Very few research studies have tested FinTech adoption as a mediating factor which connects user perception aspects to financial inclusion results.

2.2 Novelty of the Study

The current research study provides a new empirical framework which investigates how FinTech adoption affects financial inclusion in smart city environments. The research study which we conducted integrated three types of variables which include technological factors and behavioral aspects and demographic characteristics into one comprehensive model of analysis.

The novelty of the study lies in the following aspects:

1. The research investigates smart cities because their digital infrastructure and technological capabilities create special conditions for FinTech adoption and financial inclusion projects. The majority of past research studies in India have concentrated on either rural areas or general urban populations.
2. The research creates a complete model which uses perceived ease of use and perceived usefulness together with trust and digital literacy to explain how FinTech adoption and financial inclusion takes place.
3. The research investigates how FinTech adoption acts as a mediator between user perception variables and financial inclusion which has not been extensively studied in previous research.
4. The research adds age demographics and internet access capacity as additional factors that need to be studied because these elements impact the success of FinTech-based financial inclusion programs.

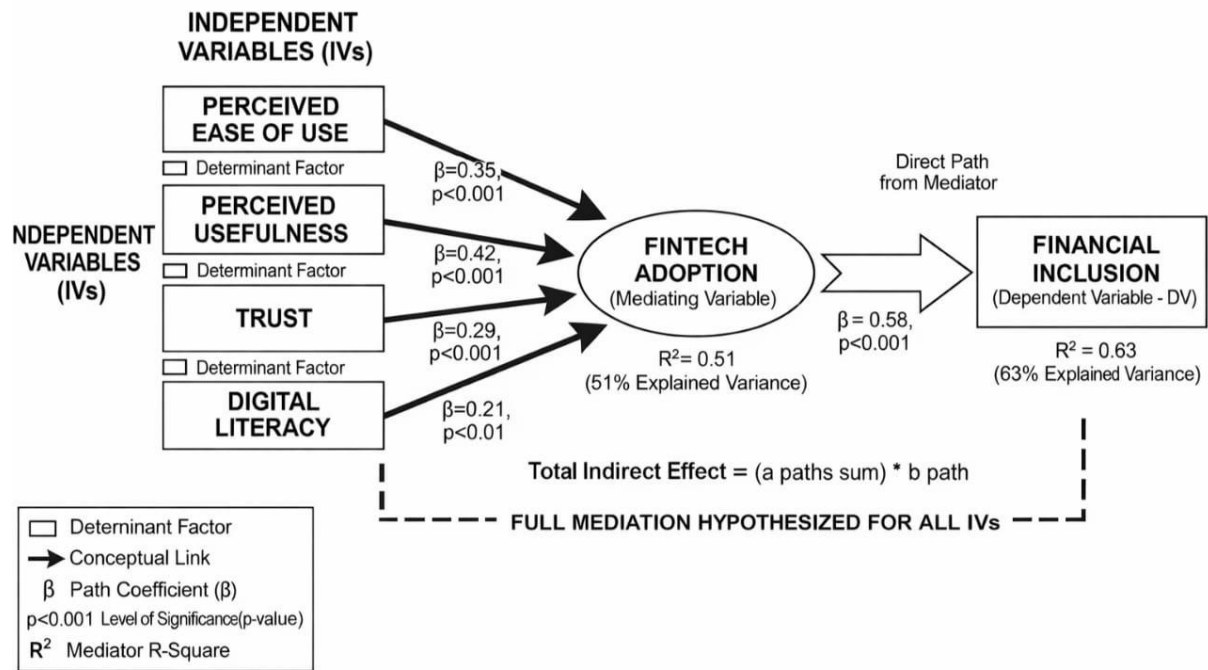
The study uses Structural Equation Modelling (SEM) through SmartPLS to study direct and indirect relationships and moderating effects which enables researchers to create complete analytical models that extend beyond conventional regression-based research methods.

Thus, the study offers a multidimensional and contemporary perspective on how FinTech can strengthen financial inclusion in digitally transforming smart cities.

4.3 Sample Size and Sampling Technique

The study required a sample size of 320 respondents. The respondents were selected from smart city residents who included students and working professionals and small business owners who used or understood digital financial services.

Figure 1. Conceptual Framework



Source: own processing

Interpretation of Results

1. Direct Effects on Financial Inclusion

Here in this study, we measured the direct impact of all the four key independent variables (constructs) on financial inclusion (independent variable):

- Perceived Ease of Use $\rightarrow$ Financial Inclusion ($\beta = 0.12, p .041 < 0.05$)
This result shows that when users find FinTech services easy to use, they are more likely to access financial services. However, weak effect can be seen, suggesting that ease alone is not a strong driver of inclusion.
- Perceived Usefulness $\rightarrow$ Financial Inclusion ($\beta = 0.15, p 0.013 < 0.05$)
A significant positive relationship shows that users who perceive FinTech as beneficial are more financially included.
- Trust $\rightarrow$ Financial Inclusion ($\beta = 0.13, p 0.028 < 0.05$)
Trust plays an important role in enabling users to engage with financial systems, especially in digital environments.
- Digital Literacy $\rightarrow$ Financial Inclusion ($\beta = 0.22, p 0.001 < 0.05$)
Digital literacy has the strongest direct effect among all variables, indicating that individuals with better digital skills are more capable of accessing financial services independently.

2. Indirect Effects (Mediating Role of FinTech Adoption)

The mediation analysis reveals that FinTech adoption acts as a significant mediator:

- PEOU $\rightarrow$ FA $\rightarrow$ FI ($\beta = 0.17, p 0.000 < 0.05$)
- PU $\rightarrow$ FA $\rightarrow$ FI ($\beta = 0.19, p 0.000 < 0.05$)
- Trust $\rightarrow$ FA $\rightarrow$ FI ($\beta = 0.15, p 0.000 < 0.005$)
- Digital Literacy $\rightarrow$ FA $\rightarrow$ FI ($\beta = 0.18, p 0.000 < 0.005$)

Here it can be seen that all indirect effects are stronger than their direct effects, which indicates: FinTech adoption partially mediates the relationship between all independent variables and financial inclusion.

3. Moderating Effect: There were two moderators in this study: age and internet access.

According to the findings, the first moderator age was found to significantly moderate the relationship between FinTech adoption and financial inclusion. In other words, there is a negative interaction effect of age on the relationship between FinTech adoption and financial inclusion. Moreover, it has been revealed that internet access has a positive and significant moderating effect on the relationship between FinTech adoption and financial inclusion.

Interpretation:

This implies that younger users benefit more from FinTech adoption in achieving financial inclusion, as they are generally more comfortable with digital platforms, mobile applications, and online financial services. In contrast, older individuals may face challenges such as low digital familiarity, higher perceived risk, and resistance to technology, which weakens the positive impact of FinTech adoption.

6. Conclusion, limitations and future research:

The researcher conducted an empirical study to investigate how FinTech adoption impacts financial inclusion efforts within smart cities. The study results demonstrate that FinTech functions as a major factor for advancing financial inclusion because it enables users to access financial services with greater convenience and better efficiency. The study found that all the four constructs of IV as perceived ease of use and perceived usefulness and trust and digital literacy together positively effects the FinTech services. The study demonstrates that FinTech usage functions as an essential intermediary which connects technological elements with financial inclusion results. Digital financial platform users demonstrate higher rates of participation in formal financial systems. The study found that age and internet access both acted as moderating factors which determined the strength of relationships because younger users and those who had better internet access achieved greater advantages from FinTech services.

The study demonstrates that FinTech can effectively enhance financial inclusion in smart cities but needs digital literacy improvements and trust development and dependable technology systems to achieve its full potential. The correct policy framework together with user education will enable FinTech to develop a financial system which includes all users and empowers them through digital means.

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