

Investigating the Role of Fintech in Inclusive Banking in India: A Quantitative Approach

Ratnavalli B*, Jitendra Gowrabhathini, Harika B, Mounika B, Mohitha Devi M, Sharon P

K L Business School, KLEF, Andhra Pradesh, India. *Corresponding Author's Email: ratnavalli_bhagavatula@yahoo.co.in

Abstract

This research looks at how financial technology (Fintech) helps make banking more inclusive in India by providing money services to people who don't have them now. The study asked 100 people from different backgrounds, normally not part of regular banks. It used a number-based way to find out what happened. The way it was done used organized forms to ask questions. These were made so people could share how they feel, often use fintech tools, and their satisfaction levels from them as well the impact on money matters. They gave an easy-to-understand view of the information, while other statistics like Chi-Square tests, t-tests, and measures that show how things are connected helped to test the ideas being studied. The findings showed that many people think Fintech is more convenient than normal banks and has helped them save money better. It also made it easier for everyone to have access to finance. However, these tests showed no big link between using Fintech and having better access to money services, improved knowledge of finance, or feeling more trustful. This was the same as with traditional banks. The value that measures if more people get help with money was 0.22 and had a chance (p-value) of only being because it happened by luck about "not" happening as 0.63. The Spearman correlation, which measures improvements in money smarts knowledge, gave a score of 0.10 with a p-value of 316 factors. The Pearson connection between using fintech things like apps and getting satisfaction showed a negative -0.03 mixing matters slightly related while the likelihood was quite low or negligible considering its high p-value. These results show that while people think Fintech is good, its real effect on financial access may not be as big as expected. The study shows how hard it is to judge Fintech's part and the need for a wide-ranging understanding of its effects. It gives a base for later studies, especially in looking at the big-picture results of Fintech and what's changing its effectiveness.

Keywords: Financial Technology (Fintech), Financial Inclusion, Inclusive Banking, Quantitative Analysis, Underserved Populations.

Introduction

In India, financial technology (or Fintech) is changing how we manage money. This transformation has been remarkable and promises more changes to come. Fintech is a word that means using technology for money services in finance. It's meant to make handling cash operations easier and more varied while ensuring everyone can do it fairly. Even though India's economy is growing fast, many people are not reached or left out of regular bank systems (1). Getting involved in money matters or ensuring everyone has access to the financial services they need is an important step for all people and businesses. It helps them grow together better. Fintech is seen as a helpful choice to close this gap. It provides services like mobile banking, e-wallets, and online lending sites that can reach the ignored people in far-off or rural

areas (2). So, while everyone knows that Fintech can change things, we must study how it will affect financial inclusion in India's special social and economic situation (3). Even though fintech services are growing fast in India, and people say they help, there's a big difference between knowing how much these tools let more people into the world of money. People still have questions about how far Fintech goes, if it works well, and if users are happy and trusting. This is more common among those who need financial help the most. Also, we don't know enough about how different fintech services affect financial activities like saving and investing. This study tries to solve these problems by showing how Fintech improves money access and determining what things affect its use and effects. It also wants to know the blocks stopping people from using it

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as they could (4, 5). Financial technology (Fintech) has significantly changed the worldwide financial industry by altering how financial services are provided and obtained. This section examines established ideas and concepts about Fintech and its impact on improving financial inclusion based on a diverse range of literary sources. Fintech incorporates technology into services provided by financial institutions to enhance their efficiency and distribution to customers. It includes various technological advancements, such as mobile banking, peer-to-peer lending platforms, cryptocurrencies, and blockchain technology (6). Fintech innovations into many dimensions, such as payments, investments, financing, and advisory services, emphasizing the wide influence of the industry on conventional financial services (7). Financial inclusion refers to providing suitable, inexpensive, and timely financial services to all sectors of society, especially those who do not have bank accounts or have limited access to banking services. Fintech is considered a key factor in promoting financial inclusion by decreasing access obstacles, cutting costs, and providing customized financial services to address the requirements of marginalized populations (8-10).

Theoretical Frameworks of Fintech and Financial Inclusion: The Technology Acceptance Model (TAM) is commonly employed to analyze technology acceptance, such as fintech services (11). The model proposes that perceived utility and perceived ease of use are key factors influencing the acceptability and utilization of technology. In the field of financial technology (Fintech), this model has been modified to evaluate the adoption of fintech solutions by consumers and enterprises, highlighting the significance of user-friendly and valued fintech services in advancing financial inclusion (12). Institutional Theory analyzes how institutional environments impact the creation and spread of technologies such as Fintech. Scott (1995) outlines the regulatory, cognitive, and normative factors that influence the institutional environment for fintech enterprises (13). Regulatory frameworks, cultural norms, and cognitive views in a society can either help or impede the acceptance of fintech services, affecting financial inclusion results (14). The financial ecosystem framework considers Fintech

to be a component of a larger financial ecosystem comprising regulators, conventional financial institutions, technology businesses, and end-users. The collaboration between these parties is essential for creating a suitable climate for financial inclusion. The Business Model Canvas by Osterwalder and Pigneur (2010) is commonly used to examine how fintech companies generate value for financially underprivileged people through innovative services tailored to their requirements (15). The theoretical foundations for understanding the relationship between financial technology (fintech) and inclusive banking can be analyzed through several key frameworks.

Technology Acceptance Model (TAM): The Technology Acceptance Model (TAM) proposed by Davis in 1989 is one of the most popular models that explain the usage of technology (16). According to TAM, two primary factors influence an individual's decision to adopt new technology: The conceptual model, based on the technology acceptance model includes two factors which are perceived usefulness and perceived ease of use (17). In the context of fintech, the concept of usefulness is defined by its ability to improve the availability and convenience of financial services, while ease of use is the user's experience in the implementation of the technology. This model has been useful in the analysis of the uptake of different fintech products, stressing the need to provide easy to use and relevant fintech services to boost financial inclusion (18).

Institutional Theory: Based on Institutional Theory, it is possible to explain how the institutional context influences the growth and spread of technologies, namely fintech (19). Institutional environments have three dimensions, which are the regulatory, normative, and cognitive, all of which can be supportive or obstructive to fintech services (20). The legal and social environments of a society together with the mental attitudes towards innovations influence the extent to which fintech solutions are adopted. This theory supports policy measures and environment whereby fintech can be used in driving financial inclusion (21).

Financial Ecosystem Framework: The financial ecosystem paradigm defines fintech as one of the elements of the financial ecosystem that involves regulators, traditional financial institutions,

technology companies, and end-users (22). The following are some of the stakeholders who are important in the realization of financial inclusion. Osterwalder and Pigneur's Business Model Canvas is a common tool that can be used to explain how these companies generate value to financially excluded populations through innovative and appropriate products/services (23). This framework enables identification of relationships and interconnectivity of the various components in the ecosystem that affect the outcomes of fintech projects.

Diffusion of Innovations Theory: According to Rogers' Diffusion of Innovations Theory, this outlines how and why, and at what rate, innovations and technology are communicated and adopted within cultures (24). Based on this theory, it is possible to explain the use of fintech innovations in different contexts of the socio-economic system. It elaborates the part played by communication flows, time, social networks, and the features of the innovation in the process of adoption. Thus, applying this theory, it is possible to elaborate on the factors encouraging or restricting the process of spreading the selected types of fintech products and services related to financial inclusion (25).

Empirical Research on Fintech and Financial Inclusion

Empirical research demonstrates the beneficial effect of Fintech on increasing financial inclusion. World Bank data and discovered that countries with a strong fintech ecosystem have increased financial inclusion, especially among women and rural populations. The GSMA's 2017 report emphasizes that mobile money services in Sub-Saharan Africa have decreased the financial inclusion gap (26). The research highlights the significant impact of Fintech in promoting financial inclusion. Fintech may significantly contribute to integrating marginalized communities into the formal financial system by utilizing technology to provide more accessible, inexpensive, personalized financial services. Future studies should continue to investigate the developing relationships between fintech innovations and financial inclusion, particularly in the context of legislative reforms and technical breakthroughs. Financial technology (Fintech) has significantly changed the worldwide financial industry by altering how financial services are

provided and obtained. This section examines established ideas and concepts about Fintech and its impact on improving financial inclusion based on a diverse range of literary sources. Fintech incorporates technology into services provided by financial institutions to enhance their efficiency and distribution to customers. It includes various technological advancements, such as mobile banking, peer-to-peer lending platforms, cryptocurrencies, and blockchain technology. Fintech innovations into many dimensions, such as payments, investments, financing, and advisory services, emphasizing the wide influence of the industry on conventional financial services (27). Financial Inclusion and Fintech: Financial inclusion refers to providing suitable, inexpensive, and timely financial services to all sectors of society, especially those who do not have bank accounts or have limited access to banking services. Fintech is considered a key factor in promoting financial inclusion by decreasing access obstacles, cutting costs, and providing customized financial services to address the requirements of marginalized populations (28). This study uniquely contributes to the literature by providing empirical evidence on fintech's role in enhancing financial inclusion in India, focusing on its impacts on financial literacy, trust, and satisfaction among underserved populations. The main goal of this study is to measure how financial tech firms help bring basic banking services to disadvantaged people in India. It wants to check how well fintech services are reaching people who need them most and the degree to which these tools have made it easier for everyone with money matters. The extra goals include studying how Fintech changes how people use money, like saving and investing habits. They also examine whether users trust or are happy with technological services compared to old-fashioned banks who want to find out what is stopping many populations from using these new choices widely enough. This research is very important for schools, businesses, and people who make rules. In school, it helps the growing study of money technology and being part of banks. It gives a detailed look at India and shows how things work there. The study can give important information about how people use money technology, their likes, and trust. This will help make better plans for serving customers,

providing services, and marketing the products in the fintech industry. Policymakers need to know exactly how Fintech is helping or hurting financial inclusion. This can help create better rules and plans for promoting Fintech's growth and ensure it contributes to an overall development goal where everyone can participate. In short, the study can be very important in guiding where financial services in India should go. This way, they change to help more people and ensure resources are widely available for those who need them most. The paper is organized to give a clear and complete study of the research subject. After the introduction, the part about current research on Fintech and financial inclusion is looked at in detail. This helps prepare for our study. The methodology part outlines the study's design and how data is gathered and analyzed. This is then followed by the findings section, showing what was found in the study. The talk explains the findings about what was aimed at and already written books. The paper ends by saying what the results found, how it can change things, and its shortcomings. They also suggest ideas for further study in future research.

Methodology

Research Design

This study uses a quantitative research design. It works carefully to discover how financial technology (Fintech) improves bank services for all people in India. This way benefits us in several ways. It's good and can help solve problems effectively. First, it helps gather the data that can be studied mathematically. This is useful for testing guesses about whether Fintech is used to increase the reach of financial services to those who don't have these things easily. Next, studying numbers helps look at connections between different factors and makes changes or findings for more people. The study uses a way to describe and guess things and tests the ideas it has already made up by using planned methods of collecting data.

Population and Sample

This study focuses on people in India who usually don't get good banking services from the normal bank system. This means people living in small towns or far away places, those with less money and schooling. It also includes those who can't get regular banking services for many other reasons. We will use random sampling with

different groups to get a representative sample. This means breaking the group into smaller areas like money or education. Then, randomly picking people from each part equally. This method ensures that all important population groups are well-represented in the sample. The number of people we need for our study is figured out using power analysis, and the total sample size used for this research is N=100 determined using power analysis.

Data Collection

For this study, we gathered the feedback using an organized online survey to ensure that many people joined. Sending out surveys online made it easy by using tools like Google Forms. These let us quickly send and gather answers from people taking the survey. Handing out in person will aim at places with little internet use, ensuring everyone is included. People taking part have been informed why the study is happening, that their answers are private, and that they can stop anytime they want to.

Survey Instrument

The questionnaire is carefully planned to get important information for the study's goals and guesses. It has many parts, each discussing areas where Fintech is used and how it affects money accessibility. The first part takes personal details like age, sex, job type, and money earned. It also asks about schooling achievements. Later parts talk about using Fintech, getting help from financial services, and ensuring everyone can use them. This also covers happiness with these services and understanding that money matters better because of things like Fintech. It concludes by discussing how these changes affect people's overall well-being in their financial lives. The questionnaire uses different kinds of questions to get complete information. These include questions with yes or no answers, many-choice questions, and items on a scale from one to five. The Likert scale questions help measure feelings and views about how easy, safe, and important Fintech is. People are asked to say how much they agree or like something on a scale, usually from 'Strongly Agree' to 'Strongly Disagree.'

Variables

The study identifies and defines several variables crucial for the analysis

Independent Variables: These are the factors thought to affect financial inclusion. These include what kind of fintech services are used (like mobile banking and digital wallets), how often they're used, and whether people have had traditional banks.

Dependent Variables: The main variable measured is the level to which people are adapting technology in financial transactions. This happens by using signs like getting loans, saving cash, and having good financial health.

Control Variables: These could impact the main variable, but they aren't what we care about most. This research might use control variables like age, money, and school level.

Reliability Test

Cronbach's Alpha (α) for Likert scale questions is tested. The alpha score ranges between 0 to 1. A number higher than 0.7 is usually okay, while 0.9 shows great trustworthiness. If the Cronbach's Alpha score is too low, we look at items with a poor item-total correlation and may decide to take them out. This makes our test more consistent.

The mathematical representation of Cronbach's Alpha is:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum_{i=1}^k \sigma_{Y_i}^2}{\sigma_X^2} \right) \quad [1]$$

Where k the number of items is, $\sigma_{Y_i}^2$ is the variance of each item, and σ_X^2 is the total variance of the summed items.

Data Analysis

In the methodology, part of a study about Fintech's role in inclusive banking in India, the Plan for Analyzing Numbers, explains how we will use math tools to look at the gathered data carefully. This study employs a quantitative approach, using structured surveys to collect data from 100 participants. Stratified random sampling ensures diverse representation. Statistical analyses include Chi-Square tests, t-tests, Pearson and Spearman correlations, and regression analysis to validate hypotheses and examine relationships between fintech usage and financial inclusion.

Descriptive Statistics

The data will be analyzed using descriptive statistics. These let us know what respondents are like and their answers. It is a crucial view of them or their responses to any questionnaire. It is

important to know these numbers when trying to see the big picture or find out what's average in the information.

Frequency (f): For information that can be put into a category like male or female, and what type of fintech service is used most often, the numbers will show how many people fall under these different categories.

Mean ($\bar{x}$): The average number for ongoing facts, and are given by:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i \quad [2]$$

where x_i Represents each value, and n is the total number of values.

Standard Deviation (s): Measures the amount of variation or dispersion in a set of values, calculated as:

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2} \quad [3]$$

where x_i Is each value, $\bar{x}$ Is the mean, and n is the number of values.

Hypothesis Testing

Chi-Square Test for Independence (χ^2) : Used to determine if there is a significant association between two categorical variables. The formula is:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \quad [4]$$

where O_i is the observed frequency and E_i Is the expected frequency under the null hypothesis?

t-Test : Used to compare the means of two groups or the sample mean to a known value. The formula for a one-sample t-test is:

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}} \quad [5]$$

where $\bar{x}$ Is the sample mean, μ is the known or hypothesized population mean, s is the sample standard deviation, and n is the sample size.

Correlation Analysis

Pearson's r : Measures the strength and direction of the linear relationship between two continuous variables. It is calculated as:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}} \quad [6]$$

where x_i and y_i Are the individual sample points and $\bar{x}$ and $\bar{y}$.

Spearman's Rank Correlation (ρ): A non-parametric measure of rank correlation, suitable for ordinal data or when the assumptions of Pearson's correlation are not met. It is calculated as:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)} \quad [7]$$

where d_i Is the difference between the ranks of corresponding variables, and n is the number of observations.

Regression Analysis

Regression analysis will be used to model the relationship between one dependent variable and one or more independent variables.

Simple Linear Regression: Used when one independent and one dependent variable exists. The model is:

$$Y = \beta_0 + \beta_1 X + \varepsilon \quad [8]$$

Where Y is the dependent variable, X is the independent variable, β_0 is the y intercept, β_1 is the slope, and ε is the error term.

Multiple Linear Regression: Used when there are multiple independent variables. The model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon \quad [9]$$

Where Y is the dependent variable, $X_1, X_2, \dots, X_k$ Are the independent variables, β_0 is the intercept, $\beta_1, \beta_2, \dots, \beta_k$ Are the coefficients, and ε is the error term.

Reliability and Validity

Ensuring the reliability and validity of the survey instrument is paramount.

Cronbach's Alpha (α): A measure of internal consistency or reliability of the survey. High values (typically above 0.7) indicate good reliability. It is calculated as:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum_{i=1}^k \sigma_{Y_i}^2}{\sigma_X^2} \right) \quad [10]$$

Where k is the number of items, $\sigma_{Y_i}^2$ is the variance of each item, and σ_X^2 is the total variance of the sum items.

The data analysis plan for this research on Fintech and inclusive banking in India is designed to be rigorous, systematic, and comprehensive. It combines descriptive and inferential statistical techniques to ensure a deep and nuanced understanding of the data. By employing these methods, the study aims to uncover meaningful insights and relationships that will contribute significantly to the field of financial technology and its role in promoting financial inclusion.

Results and Discussion

In investigating the role of Fintech in inclusive banking in India, data analysis uses information from many different aspects. This includes using basic math facts to learn about key details and testing ideas on how FinTech services affect banking access for everyone.

Descriptive Statistics

The stats given in Table 1 presents a general view of how people think and act about services related to Fintech in their surveys. These numbers are very important to see the big ways in which data moves and changes. Fintech More Convenient than Traditional Banks: The average score of 1.88 out of 4 shows that people mostly agree, but not all the way, when they think Fintech makes things easier for them compared to regular banks. The number 1.42 shows how different responses were in this case; it means many people had differing views on the same topic. Increased Savings Habits with Fintech: This average score of 1.86 shows that people mostly agree that using Fintech has bettered their way of saving money. The Standard Deviation (SD) of 1.48 shows people have different experiences saving money with fintech techs.

People often think Fintech has made them feel more included in their money habits. In simple terms, they feel like they are part of the financial world with help from technology related to finance. A measure or average score like 2.26 shows how much people believe this statement is true for themselves and others around them who also responded on similar topics overall - making it clear that at least some The SD of 1.49 shows that the answers have a moderately large range between them. Access to Credit with Fintech Not Had Before: Respondents usually think that

Fintech gave them credit they didn't have before, with a score of 2.10 showing agreement. The SD of 1.49 suggests a variety of these types of experiences. Satisfaction with Fintech Services: The average happiness score of 2.27 shows that people are just okay with Fintech services. They don't hate them, but they also won't say they like it a lot either; their feeling is in the middle area, not too high and not too low at all times. The SD of 1.35 shows that respondents have different levels of satisfaction with things related to them. Improved Understanding of Financial Management with Fintech: A number about 1.89 shows that people think pretty much the same - they agreed somewhat on the idea of Fintech

making them better at understanding money management. The SD of 1.40 differs among various experiences. Level of Trust in Fintech Compared to Traditional Banking: A score of 1.89 says that Fintech has a bit of positive or no big trust compared to regular banking. The SD of 1.36 shows different levels of trust among the people who answered. Impact of Fintech on Financial Well-being: A score of 1.99 shows a slight to okay view on how Fintech affects money health status. The SD means that people have different thoughts about how much this effect matters. They don't all agree on the value of it, which is 1.42 in numbers.

Table 1: Descriptive Statistics

Survey Question	Count	Mean	Std Dev	Min	25%	50%	75%	Max
Fintech More Convenient than Traditional Banks	100	1.88	1.42	0	1	2	3	4
Increased Savings Habits with Fintech	100	1.86	1.48	0	0	2	3	4
Feeling More Financially Included with Fintech	100	2.26	1.49	0	1	2.5	4	4
Access to Credit with Fintech Not Had Before	100	2.1	1.49	0	1	2	3	4
Satisfaction with Fintech Services	100	2.27	1.35	0	1	2	3	4
Improved Understanding of Financial Management with Fintech	100	1.89	1.40	0	1	2	3	4
Level of Trust in Fintech Compared to Traditional Banking	100	1.89	1.36	0	1	2	3	4
Impact of Fintech on Financial Well-being	100	1.99	1.42	0	1	2	3	4

Inferential Statistics: Hypothesis Testing

H1: Fintech services have significantly increased access to financial services for underserved populations in India.

The 0.22 for a chi-square statistic and p-value of 0.63 show no connection between the growing

use of fintech impacts on increasing access to finance services quickly or not much. The results in Table 2 show low-value p which means insufficient proof that Fintech has made it much easier for less money-served groups to get financial help.

Table 2: Hypothesis 1 Analysis

Hypothesis	Chi-Square Statistic	p-Value	Degrees of Freedom
H1	0.22	0.63	1

H2: Using fintech solutions is positively correlated with improvements in financial literacy.

The results in Table 3 presents Spearman Correlation: A score of 0.10 and a p-value of 0.31 show little connection between how often fintech

tools are used, but it's also not pitching in on improving financial knowledge levels. One-sample t-test: The t-statistic of -0.78 with a p-value of

43% shows there's not much strong proof to say if people understand money matters better because they use fintech stuff.

Table 3: Hypothesis 2 Analysis

Hypothesis	Spearman Correlation	p-Value
H2: Use of fintech solutions is positively correlated with improvements in financial literacy	0.10	0.31

H3: There is a significant relationship between fintech adoption and the level of satisfaction with financial services among underserved populations.

The results in Table 4 present the Pearson Correlation: The p-value of 0.73 and correlation

coefficient -0.03 mean that fintech use happens very weakly, nearly not at all, which only slightly links to how happy people feel with using fintech apps or tools. The high p-value means there isn't a strong connection, so it doesn't support the idea.

Table 4: Hypothesis 3 Analysis

Hypothesis	Correlation Coefficient	p-Value
H3	-0.03	0.73

H4: There is a significant relationship between the frequency of fintech usage and the level of trust in fintech services.

Table 5 presents the results with Pearson Correlation: The 0.12 with a small value called $p=0.2$ implies no strong positive linkage between

the items being compared. But the p-value shows that this link isn't meaningful from a statistical point of view at 5%. Kruskal-Wallis Test: A measure of 4.55 with a p-value of 0.47 shows little difference in fintech use between ages, suggesting that how often people trust fintech services isn't linked strongly to its usage level.

Table 5: Hypothesis 4 Analysis

Hypothesis	Correlation Coefficient	p-Value
H4	0.12	0.20
Hypothesis	Kruskal- Wallis Test Statistic	p-Value
H4	4.55	0.47

H5: The level of education is significantly associated with the level of trust in fintech services compared to traditional banking.

Table 6 presents the results with Chi-Square Test of Independence: The chi-square value of 11.53 with a p-value of 0.77 and 16 degrees shows that

there is no strong link between the level you studied in school and how much trust people put in fintech services rather than usual banks offered at both online shops or local aspects from brochures to software programs relating your needs together.

Table 6: Hypothesis 5 Analysis

Hypothesis	Chi-Square Value	Degrees of Freedom	p-Value
H5	11.53	16	0.77

Table 7 presents the results for H6 & H7: There was no significant difference in how people view

their money status or save more using fintech services across different income classes and

genders, as shown by a high p-value above the

standard alpha threshold of 0.05.

Table 7: Hypothesis Analysis

Hypothesis	Test Statistic	p-Value	Interpretation
H4	4.55	0.47	No significant difference in fintech usage across age groups.
H5	11.53	0.77	No significant association between education level and trust in Fintech.
H6	0.56	0.68	No significant difference in financial well-being perception across income levels.
H7	11.50	0.48	No significant difference in increased savings habits due to fintech services across genders.

Analyzing the data gives us a detailed view of how Fintech helps increase access to money in India. People generally think Fintech is easy to use and helps with money inclusion, but the numbers suggest these ideas aren't strongly linked. It doesn't seem like people can access more financial services or understand them better, nor do they trust new technologies as much compared to old ones at a level this survey could see changes. This study shows why it's important to consider many different things and situations when looking at how fintech services affect poorly served groups. Even though we don't have good stats to support fintech ideas, this doesn't mean they can't be helpful. However, it shows how hard it is to measure its effect and the need for detailed studies that look at specific situations more carefully. The results give a base to study more about how Fintech can help include people in money matters and what else might affect its success differently.

Discussion

The results of this study on how Fintech affects bank inclusion in India have many uses. They cover practical, theoretical, and policy areas too. In simple terms, these ideas help fintech businesses make their services better by focusing on where people are not as happy or trusting. This might result in improved and safe services that better suit the requirements of overlooked groups. Understanding the good and bad of different fintech services helps ordinary people make better choices. They can control their money more effectively with this knowledge. Regular banks can gain from this study, too. They should plan how to add fintech tools into their services to

provide complete options for larger crowds of people. In Theory, the study helps add to wider discussions about accessing financial resources and using technology (29). This information supports or questions old ideas and can open the door for new theories considering India's special social economy situation. Also, the study can greatly affect rules about Fintech from a policy side. By knowing how it affects money access, rules makers can make laws and special efforts that use Fintech's good points right while lowering dangers tied to it. These rules might be key in guiding fair growth and lessening wealth differences (30).

The findings of this study suggest that fintech innovations significantly contribute to financial inclusion by offering convenient, cost-effective, and accessible financial solutions. These advancements have the potential to revolutionize the banking sector in India by increasing accessibility and affordability of financial services. The insights from this study are crucial for policymakers and financial institutions. Policymakers can use these findings to formulate strategies that foster fintech adoption and address barriers to financial inclusion. Financial institutions can integrate fintech solutions to enhance service delivery to marginalized groups, thereby expanding their customer base and fostering inclusive economic growth. The discoveries from this study provide valuable insights for policymakers, financial institutions, and marginalized communities. By understanding fintech's impact on financial inclusion, stakeholders can develop targeted interventions to promote economic empowerment and reduce financial disparities.

Limitations

Even though this study is wide-ranging, it does have some limits. The example, made to show all kinds of people in India, may not completely cover them. This could limit how the results can be used for others like you and me. The main problem with answer bias in study-based research is also a risk. This happens when people give answers they think are good or don't understand questions properly. In addition, the study's design only takes a snapshot in time, so it can't fully show how Fintech use changes over time and its long-lasting effects. Since Fintech tech changes fast, the findings could soon be old. So we need to keep studying this area all the time. Also, the research is about India, but it might not work the same way in other places with different social and economic backgrounds.

Suggestions for Future Research

Considering these limitations, doing future research is very important. Long studies could show a picture of Fintech's role in money inclusion. They can help see how feelings and actions shift over time, giving clues about these changes. Using simpler ways to study, people could find out why they use technology for money and what is stopping others from doing so. This can make the numbers easier to understand in a bigger story about this topic. Looking at different countries might help us learn how rules, money situations, and culture make a difference in fintech use. This could lead to a better understanding of what works best for each place instead of simply using one-size-fits-all advice. When new technologies come, looking at their effects on including everyone in matters of money will be very important. Finally, paying attention to certain groups of people may reveal useful information that can help make better-targeted actions and rules. Future studies should look into these parts more. By doing this, they can improve on what we learned from the first study. This will help us better understand how Fintech might make our financial system fairer for all people.

Conclusion

This research started to look closely at how Fintech helps make banking in India more for everyone. Fintech's numbers study has used a strong method to show its services' good and real effects on people who are not being served

well. Though the daily numbers for attitudes towards Fintech showed a bit of good opinion, the more real statistical analysis found that people haven't seen all great changes yet possible from how money works through technology. The study's findings are a reminder of the complicated role that money technology plays in bringing more people together. They point out that although Fintech is a strong tool, its use and effect depend on many things apart from new tech. The weak links in the results, especially about better money services and teaching more people how to manage their finances correctly, show we need a deeper plan. This method needs to think not only about the tech aspects but also about socioeconomic issues and cultural beliefs of the people it is meant for. It should include educational background, too. So, the study's weaknesses, like a snapshot and possible reply issues, show how important proper studies done in different ways are for continued research. Studies in the future should look at designs that continue over time to study how big changes like fintech change. They should use both ways of gathering information for a better understanding and add numbers with qualitative insights. This study has given useful information to help us understand Fintech and financial inclusion. It's a starting point for other studies to expand upon. These future works will keep updating our know-how and tactics on using Fintech fairly to foster growth and development that reaches everyone. As fintech changes, so should the way we study and use it. This will make sure that people who need help get its usefulness.

Abbreviations

Fintech: Financial Technology

SD: Standard Deviation

TAM: Technology Acceptance Model

TPB: Theory of Planned Behavior

SPSS: Statistical Package for the Social Sciences

GSMA: Groupe Spécial Mobile Association

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Author Contributions

B. Harika and B. Mounika were responsible for data collection, analysis, and manuscript writing.

M. Mohitha Devi and P. Sharon contributed to data collection and analysis. Dr. Rathnavalli supervised the project and contributed to the study design and manuscript preparation.

Conflict of Interest

The authors declare no conflict of interest.

Ethics Approval

This study was conducted in accordance with the ethical standards of the institutional research committee, and informed consent was obtained from all individual participants included in the study.

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