National Research Journal of Human Resource Management
Volume No: 12, Issue No: 2, Year: 2025 (July-December)
PP: 54-68
ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
Journal Website www.nrjhrm.in

CUSTOMER PERCEPTION AND SATISFACTION TOWARD FINTECH-ENABLED MICROFINANCE SERVICES IN KARNATAKA

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ABSTRACT

The rapid integration of Financial Technology (FinTech) into microfinance has reshaped access to financial services, particularly in developing regions. This study examines customer perception and satisfaction toward FinTech-enabled Microfinance Institutions (MFIs) in Karnataka, where technology-driven microfinance initiatives are expanding. Primary data were collected from 400 clients across eight districts using a structured questionnaire, and analyzed through descriptive statistics, correlation, multiple regression, and Structural Equation Modelling (SEM). The results reveal that perceived usefulness, trust, and ease of use significantly influence customer satisfaction, while transparency shows a modest effect. Education and age act as moderating factors, indicating that younger and more educated clients are more responsive to FinTech adoption. The findings confirm that FinTech enhances the operational efficiency, accessibility, and service quality of MFIs but highlight continuing challenges related to digital literacy and trust. The study provides managerial, policy, and technological recommendations to strengthen customer-centered FinTech practices and promote inclusive financial participation across Karnataka.

Keywords

FinTech; Microfinance Institutions (MFIs); Customer Perception; Customer Satisfaction; Digital Financial Inclusion; Karnataka; Structural Equation Modelling (SEM)

1. INTRODUCTION

Background of fintech revolution and its role in microfinance

The emergence of Financial Technology (FinTech) has transformed the global financial ecosystem by integrating digital innovations such as mobile banking, artificial intelligence, data analytics, and blockchain into service delivery (Arner et al., 2020). FinTech solutions have particularly revolutionized microfinance by enabling faster, cost-effective, and customer-centric operations. In India, the FinTech sector has evolved as a key driver of financial inclusion, complementing the mission of Microfinance Institutions (MFIs) to reach underserved populations (RBI, 2023). Through mobile applications, digital payments, and AI-based credit assessment tools, MFIs can now offer services with greater efficiency and transparency, thereby expanding outreach and improving operational sustainability (Kaur & Arora, 2021).

Globally, digital financial systems have been recognized as enablers of poverty reduction by promoting accessible and inclusive financial services (World Bank, 2022). In India, the introduction of digital identity (Aadhaar), Unified Payments Interface (UPI), and mobile payment infrastructures has accelerated FinTech adoption. Within this context, MFIs serve as a critical link between technology and low-income households, bridging financial gaps

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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through innovative digital models that reduce transaction costs and enhance customer convenience.

Importance of customer perception and satisfaction in sustaining fintech-driven MFIs

The long-term success of FinTech-enabled MFIs depends on customer perception, trust, and satisfaction. Clients' acceptance of digital microfinance platforms is influenced not only by technological efficiency but also by perceived usefulness, ease of use, and security (Davis, 1989). Customer satisfaction, in turn, determines loyalty, service continuity, and word-of-mouth promotion, which are essential for the sustainability of MFIs in competitive financial markets (Parasuraman et al., 1988).

In rural and semi-urban contexts, digital adoption is often shaped by demographic factors such as education, income, and age. Studies indicate that while FinTech enhances access and convenience, digital literacy and trust remain key barriers for full participation among low-income groups (Gupta & Jain, 2022). Therefore, understanding customer perception is vital for developing adaptive, inclusive FinTech strategies that align with users' socio-economic realities.

Current scenario of microfinance and fintech adoption in Karnataka

Karnataka is among India's leading states in microfinance penetration and FinTech innovation. Cities such as Bengaluru have become FinTech hubs, while districts like Mandya, Mysuru, and Belagavi host active MFI networks supported by mobile-based platforms and digital loan management systems. Despite strong urban adoption, rural areas still experience gaps in digital readiness due to limited infrastructure, lower financial literacy, and intermittent network connectivity (NABARD, 2023).

Government and institutional initiatives, such as the Digital India campaign and state-level financial inclusion programs, have encouraged MFIs to integrate digital services for credit disbursement, repayment tracking, and customer communication. Yet, the extent to which customers perceive these innovations as reliable, useful, and satisfactory remains underexplored—especially in Karnataka's diverse regional and socio-economic settings.

Objectives of the study

In light of the identified gaps, the present study seeks to:

1. Examine customer perception toward FinTech-enabled microfinance services in Karnataka.
2. Evaluate the level of customer satisfaction with FinTech-based microfinance offerings.
3. Analyze the influence of demographic factors on customer perception and satisfaction.
4. Investigate the relationship between customer perception and satisfaction in FinTech adoption.
5. Provide practical recommendations to strengthen customer-centric FinTech implementation in MFIs.

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Peer Reviewed & Refereed Journal (IF: 7.25)
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2. REVIEW OF LITERATURE

2.1 Fintech and microfinance: Conceptual overview

The term Financial Technology (FinTech) refers to the application of innovative digital tools that enhance financial service delivery through automation, data analytics, and mobile platforms (Arner et al., 2020). FinTech has reshaped the financial ecosystem by enabling low-cost, customer-focused, and technology-driven solutions across banking, lending, and insurance sectors. Within microfinance, FinTech has improved loan disbursement, repayment tracking, and risk assessment through mobile applications, digital wallets, and AI-based credit scoring systems (Gupta & Jain, 2022).

In the Indian context, FinTech adoption within MFIs has been facilitated by the expansion of mobile connectivity, Aadhaar-linked identity verification, and the Unified Payments Interface (UPI). These initiatives have helped MFIs reduce operational costs, improve outreach, and provide transparent services to rural and semi-urban clients (Kaur & Arora, 2021). Studies by Sharma and Mehta (2022) found that FinTech integration enhances customer convenience, though its success depends on user awareness and institutional capacity. The transformation from traditional field-based microfinance to digital models reflects a shift toward customer-centric, data-enabled microfinance ecosystems (NABARD, 2023).

2.2 Customer perception and technology adoption in financial services

Customer perception is a critical behavioral component influencing the adoption of technology-based financial services. Several theoretical frameworks explain this behavior. The Technology Acceptance Model (TAM) by Davis (1989) emphasizes perceived usefulness and perceived ease of use as key determinants of user acceptance. The Unified Theory of Acceptance and Use of Technology (UTAUT) further incorporates social influence, facilitating conditions, and performance expectancy as explanatory factors (Venkatesh et al., 2012).

In the financial services context, SERVQUAL (Parasuraman et al., 1988) has been applied to assess perceived service quality and satisfaction. Similarly, the Expectation–Confirmation Model (ECM) (Bhattacherjee, 2001) posits that satisfaction results from the confirmation of user expectations through actual performance.

Empirical studies demonstrate that positive customer perception enhances digital adoption. Alalwan et al. (2018) found that convenience and trust strongly predict satisfaction in mobile banking. In microfinance, users' confidence in digital security, transaction speed, and accessibility directly influences satisfaction and continued usage (Gupta & Jain, 2022). However, lower digital literacy and limited technological trust among rural clients often constrain the potential benefits of FinTech-based microfinance (Kaur & Arora, 2021.

2.3 Determinants of customer satisfaction in fintech-enabled MFIs

Customer satisfaction in FinTech-based MFIs depends on technological, functional, and emotional dimensions of service experience. Key determinants include ease of use, trust, security, accessibility, transaction speed, and cost (Parasuraman et al., 1988). Perceived usefulness and system reliability are central to satisfaction, as they affect clients' confidence in digital tools (Davis, 1989). Trust has emerged as a pivotal construct, reflecting customer belief in data protection, ethical use, and consistent service delivery (Gupta & Jain, 2022).

Accessibility—measured in terms of platform reach, mobile compatibility, and language availability—also influences satisfaction, particularly among rural clients with limited connectivity (Sharma & Mehta, 2022). The dimension of digital literacy support has gained

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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prominence, as clients with higher technological awareness exhibit stronger satisfaction and sustained use (Kaur & Arora, 2021).

Demographic factors such as gender, age, education, and income further shape customer experiences. Younger and educated clients tend to show greater adaptability and satisfaction with digital microfinance platforms, whereas older and less literate users often rely on intermediaries for assistance. These findings underscore the need for inclusive FinTech design tailored to diverse user profiles (Venkatesh et al., 2012).

2.4 Research gap and conceptual framework

While existing studies recognize the transformative role of FinTech in financial inclusion, empirical evidence on customer perception and satisfaction within FinTech-enabled MFIs remains scarce, particularly at the state and regional levels. Prior research has focused on institutional performance, credit access, or digital infrastructure but has not adequately examined customer-centric outcomes (Gupta & Jain, 2022; Kaur & Arora, 2021).

The present study fills this gap by analyzing how perception dimensions—perceived usefulness, ease of use, trust, transparency, and accessibility—affect satisfaction among MFI clients in Karnataka. The conceptual framework integrates TAM and SERVQUAL dimensions, hypothesizing that these perception variables significantly predict customer satisfaction. Furthermore, demographic factors such as age, education, and income are posited to moderate the relationship between perception and satisfaction, offering a comprehensive model for evaluating FinTech adoption in microfinance.

3. RESEARCH METHODOLOGY

3.1 Research design

The study adopts a descriptive and analytical research design to examine customer perception and satisfaction toward FinTech-enabled Microfinance Institutions (MFIs) in Karnataka. The descriptive approach helps capture clients' demographic and perceptual characteristics, while analytical tools assess relationships among perception constructs and satisfaction variables. This mixed empirical design ensures both statistical precision and contextual relevance.

The framework integrates behavioral constructs derived from the Technology Acceptance Model (TAM) (Davis, 1989) and SERVQUAL dimensions (Parasuraman et al., 1988), providing a multidimensional view of FinTech adoption and satisfaction in microfinance services.

3.2 Study area

The study was conducted across eight districts of Karnataka—Bengaluru Rural, Tumakuru, Mandya, Mysuru, Belagavi, Kalaburagi, Ballari, and Udupi. These districts were selected to represent diverse socio-economic and geographical conditions, capturing both advanced and emerging FinTech adoption regions. Karnataka's strong MFI network, supported by progressive digital initiatives and mobile penetration, provides an ideal context for examining the customer experience with FinTech-enabled financial services (NABARD, 2023).

3.3 Population and sampling design

The population comprises clients of MFIs who have used FinTech-based services such as mobile payments, digital loan applications, or online repayment systems. To ensure representativeness, stratified random sampling was employed based on district and client type.

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Peer Reviewed & Refereed Journal (IF: 7.25)
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A total of 400 respondents were surveyed—50 from each district. This sample size meets statistical adequacy criteria for regression and Structural Equation Modelling (SEM) analyses (Hair et al., 2019).

3.4 Data collection

Primary data were collected through a structured questionnaire designed to capture perception and satisfaction variables along with socio-demographic details. The questionnaire included five-point Likert scale items ranging from "strongly disagree" (1) to "strongly agree" (5). The survey covered dimensions such as perceived usefulness, ease of use, trust, transparency, accessibility, and satisfaction, based on validated instruments from prior studies (Davis, 1989; Parasuraman et al., 1988).

The questionnaire was pre-tested for clarity and reliability through a pilot survey involving 30 MFI clients, following which necessary modifications were made. Data collection was conducted between January and March 2025 using both in-person and digital modes to ensure inclusivity.

3.5 Data analysis tools

Data analysis was conducted using SPSS (Version 21) and AMOS (Version 24) software. The following statistical tools were employed:

1. Descriptive statistics: To summarize respondents' demographic characteristics and mean responses for each variable.
2. Reliability analysis: Cronbach's Alpha was used to test internal consistency of the constructs, with all coefficients exceeding the acceptable threshold of 0.70 (Nunnally & Bernstein, 1994).
3. Correlation analysis: Pearson's correlation measured the strength and direction of relationships among variables.
4. Multiple regression analysis: Examined the predictive influence of perception variables on customer satisfaction.
5. ANOVA and t-tests: Used to assess differences in satisfaction across demographic groups.
6. Structural Equation Modelling (SEM): Validated the conceptual model and tested hypothesized paths linking perception dimensions and satisfaction outcomes.

4. RESULTS AND DISCUSSION

4.1 Profile of respondents

Table 1 provides the information on demographic variables of 400 respondents across eight districts of Karnataka to ensure representation of diverse socio-economic and regional contexts.

Table 1: Socio-demographic profile of respondents

Demographic variable	Category	No. of respondents	Percentage (%)
Gender	Male	176	44.0
	Female	224	56.0
	Total	**400**	**100.0**
Age (years)	Below 25	68	17.0
	26–35	152	38.0

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
Journal Website www.nrjhrm.in

	36–45	108	27.0
	Above 45	72	18.0
	Total	**400**	**100.0**
Education level	No formal/primary	120	30.0
	Secondary	164	41.0
	College and above	116	29.0
	Total	**400**	**100.0**
Monthly income (₹)	Below 20,000	180	45.0
	20,000–30,000	132	33.0
	Above 30,000	88	22.0
	Total	**400**	**100.0**
Location	Rural	272	68.0
	Semi-urban	128	32.0
	Total	**400**	**100.0**

Source: *Field study*

The study surveyed 400 MFI clients from eight districts of Karnataka. As shown in Table 1, 56% were female, confirming women's predominant participation in microfinance programs (NABARD, 2023). Most respondents (38%) were aged 26–35 years, representing an economically active group more receptive to FinTech services. Educationally, 41% had secondary education, and 29% had college-level qualifications, suggesting growing digital literacy.

In terms of income, 45% earned below ₹20,000 per month, indicating that low-income groups continue to form the primary customer base of MFIs. The majority (68%) lived in rural areas, while 32% were from semi-urban regions. This demographic distribution confirms that FinTech-enabled MFIs have reached rural populations but still face infrastructural and literacy barriers (Kaur & Arora, 2021).

4.2 Customer perception toward fintech-enabled MFIs

Table 2 presents the descriptive statistics of perception constructs.

Table 2: Descriptive statistics of customer perception constructs

Constructs	Mean	Std. Dev. (SD)
Perceived Usefulness	4.12	0.64
Ease of Use	3.98	0.71
Trust	3.74	0.78
Transparency	3.87	0.69
Accessibility	4.05	0.66

Source: *Field study – Output obtained generated through SPSS 21*

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Peer Reviewed & Refereed Journal (IF: 7.25)
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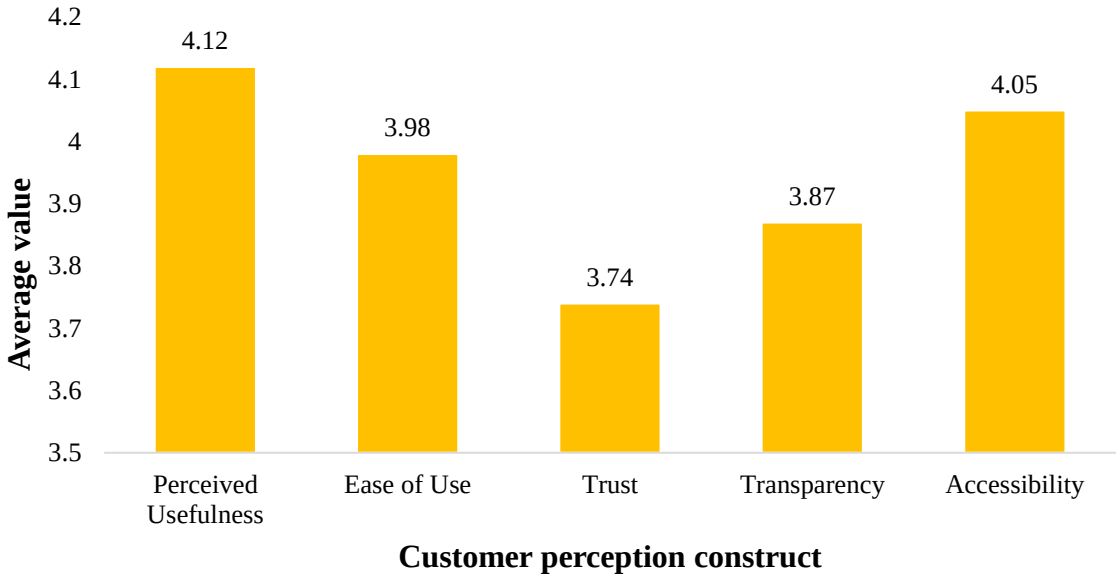

Figure 1: Customer perception towards fintech-enabled MFIs

The results reveal a high mean score for perceived usefulness (M = 4.12, SD = 0.64), indicating that clients view FinTech as efficient and convenient for microfinance activities. Ease of use (M = 3.98) and accessibility (M = 4.05) also scored well, reflecting that most users find digital platforms user-friendly and accessible.

However, trust (M = 3.74) received a lower score, suggesting persistent concerns regarding data security and transaction reliability. Transparency (M = 3.87) indicates moderate satisfaction with the clarity of digital financial operations. Overall, customers perceive FinTech as useful and convenient but emphasize the need for enhanced security and reliability (Gupta & Jain, 2022).

4.3 Level of customer satisfaction

Table 3 demonstrate the information on descriptive statistics of customer satisfaction dimensions

Table 3: Descriptive statistics of customer satisfaction dimensions

Dimensions	Mean	Std. Dev. (SD)
Service quality	3.96	0.73
Convenience	4.15	0.61
Reliability	3.89	0.68
Digital literacy support	3.58	0.82
Overall satisfaction	**4.03**	**0.65**

Source: *Field study– Output obtained generated through SPSS 21*

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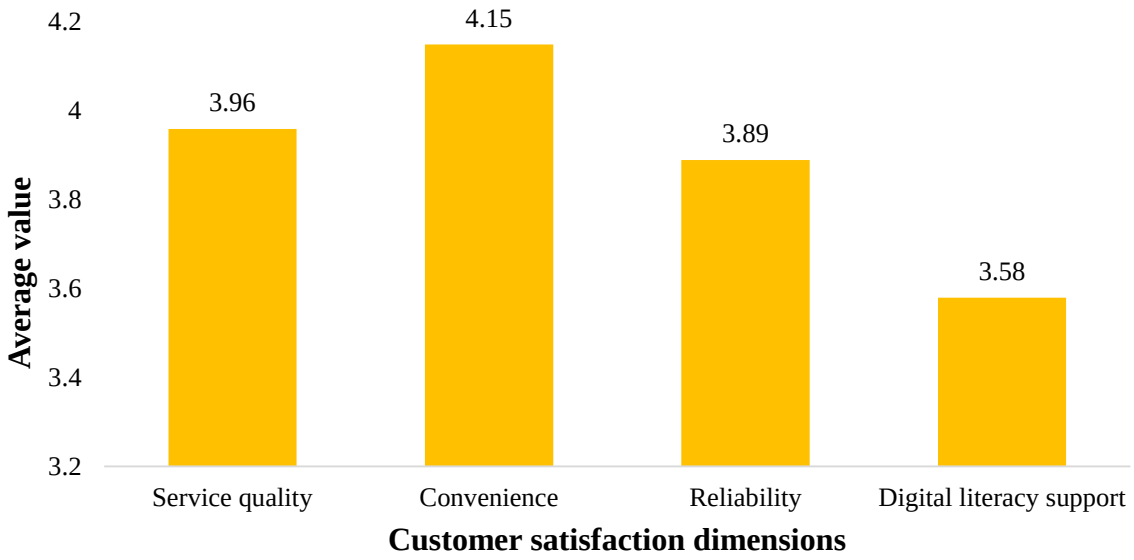

Figure 2: Customer satisfaction dimensions

As shown in Table 3, the overall satisfaction mean score (M = 4.03, SD = 0.65) indicates generally high satisfaction levels. Convenience (M = 4.15) ranked highest, followed by service quality (M = 3.96) and reliability (M = 3.89). This reflects customer appreciation for time efficiency, accessibility, and improved service responsiveness. Conversely, digital literacy support (M = 3.58) scored lower, implying that many clients still require assistance in operating digital platforms. The results reaffirm that FinTech-driven convenience enhances satisfaction, but capacity-building in digital literacy is essential for inclusive service delivery (Alalwan et al., 2018).

Table 4 summarize the internal consistency of constructs used to measure customer perception and satisfaction toward FinTech-enabled microfinance services in Karnataka.

Table 4: Reliability analysis (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha (α)	Interpretation
Perceived usefulness	4	0.83	Reliable
Ease of use	3	0.81	Reliable
Trust	4	0.79	Acceptable
Transparency	3	0.80	Reliable
Accessibility	3	0.82	Reliable
Satisfaction	5	0.86	Highly Reliable
Overall scale	**22**	**0.88**	**Highly Reliable**

Source: *Field study– Output obtained generated through SPSS 21*

Table 4 shows Cronbach's alpha values ranging from 0.79 to 0.86, with an overall reliability of 0.88, confirming internal consistency across constructs (Nunnally & Bernstein, 1994). The satisfaction scale (α = 0.86) and perceived usefulness (α = 0.83) recorded the highest reliability, indicating robust item coherence. Thus, the scale is statistically reliable for assessing perception and satisfaction constructs among MFI clients.

Table 5 indicates strong, positive, and significant correlations among all perception variables and satisfaction ($p < 0.01$). The strongest correlation is between perceived usefulness and

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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satisfaction (r = 0.78), followed by accessibility (r = 0.71) and ease of use (r = 0.69). These results suggest that users who find FinTech services beneficial and easily accessible report higher satisfaction levels. The findings align with the Technology Acceptance Model (TAM) (Davis, 1989), confirming that perceived usefulness and ease of use shape satisfaction in digital microfinance.

Table 5: Correlation matrix

Variables	Perceived Usefulness	Ease of Use	Trust	Transparency	Accessibility	Satisfaction
Perceived Usefulness	1.00					
Ease of Use	0.62**	1.00				
Trust	0.58**	0.49**	1.00			
Transparency	0.55**	0.51**	0.46**	1.00		
Accessibility	0.64**	0.59**	0.53**	0.48**	1.00	
Satisfaction	0.78**	0.69**	0.65**	0.57**	0.71**	1.00

Source: *Field study– Output obtained generated through SPSS 21;* **Note:** *p < 0.01 (2-tailed).*

4.4 Hypothesis testing and model analysis

Table 6: Multiple regression analysis

Predictor variables	**Standardized Beta (β)**	**t-value**	**Sig. (p-value)**	**Hypothesis result**
Perceived Usefulness	0.34	6.11	0.000**	Supported
Ease of Use	0.21	3.48	0.001**	Supported
Trust	0.29	5.02	0.002**	Supported
Transparency	0.08	1.37	0.171	Not Supported
Accessibility	0.12	1.95	0.052	Marginal
$R^2 = 0.61$; Adjusted $R^2 = 0.59$; $F = 35.42$; $p < 0.001$				

Note: *Dependent variable - Customer satisfaction; * p < 0.05, ** p < 0.01*

As shown in Table 6, the regression model is statistically significant ($R^2 = 0.61$, $F = 35.42$, $p < 0.001$), explaining 61% of the variance in customer satisfaction. Among predictors, perceived usefulness ($\beta = 0.34$, $p < 0.01$) and trust ($\beta = 0.29$, $p < 0.01$) emerged as the strongest determinants, followed by ease of use ($\beta = 0.21$, $p < 0.01$). Transparency had no significant effect, while accessibility ($\beta = 0.12$, $p = 0.052$) showed a marginal impact. These results demonstrate that functional benefits and user confidence are the key factors influencing satisfaction, emphasizing that digital systems must prioritize reliability and security to strengthen client trust (Kaur & Arora, 2021).

The ANOVA results in Table 7 show significant differences in satisfaction across age ($p = 0.007$), education ($p = 0.002$), income ($p = 0.012$), and location ($p = 0.001$), while gender differences were not significant. Younger and more educated respondents exhibited higher satisfaction due to greater familiarity with technology, while rural clients reported lower satisfaction owing to limited digital access. These findings support the argument that

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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education and digital literacy are crucial drivers of FinTech acceptance (Venkatesh et al., 2012).

Table 7: ANOVA results by demographic variables

Demographic variable	F-value	Sig. (p-value)	Interpretation
Gender	2.64	0.105	No significant difference
Age group	4.18	0.007**	Significant difference
Education level	5.23	0.002**	Significant difference
Income group	3.71	0.012*	Significant difference
Location	6.04	0.001**	Significant difference

Note: *Dependent variable - Customer satisfaction; * $p < 0.05$, ** $p < 0.01$*

Table 8: Structural Equation Modelling (SEM) – Model fit indices

Fit Index	Recommended threshold	Obtained value	Model fit status
χ^2/df	< 3.0	2.41	Good Fit
GFI (Goodness of Fit Index)	> 0.90	0.91	Acceptable
CFI (Comparative Fit Index)	> 0.90	0.93	Good Fit
TLI (Tucker–Lewis Index)	> 0.90	0.92	Good Fit
RMSEA (Root Mean Square Error of Approximation)	< 0.08	0.052	Good Fit

As shown in Table 8, the SEM results demonstrate an excellent model fit ($\chi^2/df = 2.41$, GFI = 0.91, CFI = 0.93, TLI = 0.92, RMSEA = 0.052). All indices meet recommended thresholds (Hair et al., 2019), confirming the suitability of the conceptual model. The model validates that perception constructs collectively explain customer satisfaction within FinTech-enabled MFIs, establishing empirical support for the proposed theoretical framework.

Table 9: Standardized SEM path coefficients

Path	Estimate (β)	p-value	Hypothesis
Perceived Usefulness → Satisfaction	0.36	0.001**	Supported
Ease of Use → Satisfaction	0.22	0.003**	Supported
Trust → Satisfaction	0.28	0.004**	Supported
Transparency → Satisfaction	0.09	0.13	Not Supported
Accessibility → Satisfaction	0.14	0.045*	Supported

Note: ** $p < 0.05$, ** $p < 0.01$*

Table 9 presents the standardized SEM results. The strongest direct effect was from perceived usefulness ($\beta = 0.36$, $p < 0.01$), followed by trust ($\beta = 0.28$, $p < 0.01$), ease of use ($\beta = 0.22$, $p < 0.01$), and accessibility ($\beta = 0.14$, $p < 0.05$). Transparency was not significant ($p = 0.13$). These findings confirm that clients value FinTech for its practicality and dependability,

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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consistent with earlier studies emphasizing utility and trust as satisfaction drivers in digital finance (Gupta & Jain, 2022).

Table 10: Moderation analysis – Demographic factors

Moderator	Moderation effect (β)	p-value	Interpretation
Age	-0.12	0.043*	Older clients show weaker perception–satisfaction linkage
Education	0.17	0.008**	Higher education strengthens relationship
Income	0.09	0.091	Mild positive effect
Gender	0.05	0.185	Not significant

Table 10 shows that education (β = 0.17, p = 0.008) positively moderates the perception–satisfaction relationship, suggesting that educated clients derive greater benefits from FinTech platforms. Conversely, age (β = -0.12, p = 0.043) shows a negative moderation effect, indicating that older clients find digital interfaces less convenient. Income has a mild positive influence (p = 0.091), while gender is insignificant. These results reinforce that digital literacy and age-sensitive design strategies are essential to strengthen inclusive FinTech adoption (Hayes, 2018).

4.5 Discussion of findings

The study confirms that FinTech integration has substantially improved microfinance service delivery by enhancing efficiency, convenience, and transparency. However, customer satisfaction is most influenced by perceived usefulness, trust, and ease of use, validating the TAM framework (Davis, 1989). While FinTech has expanded financial access, challenges persist regarding digital literacy and trust among rural clients.

Regional variations show that clients in Bengaluru Rural, Mandya, and Udupi reported higher satisfaction due to better connectivity, whereas Kalaburagi and Ballari lag behind. These findings are consistent with NABARD (2023), which reported uneven digital adoption across Karnataka.

Overall, FinTech-enabled MFIs have strengthened financial inclusion and operational efficiency but require ongoing efforts to improve digital literacy, cybersecurity, and infrastructure to ensure sustainable customer satisfaction.

5. IMPLICATIONS OF THE STUDY

Managerial implications

The study highlights that perceived usefulness, trust, and ease of use most strongly influence customer satisfaction in FinTech-enabled microfinance. Hence, MFI managers should prioritize client-centric digital strategies that improve usability, reliability, and transparency. Strengthening trust through robust cybersecurity, data-protection protocols, and timely grievance redressal will enhance confidence in digital transactions (Gupta & Jain, 2022). Regular digital-literacy workshops for clients and field officers can improve user competence, while feedback-driven platform upgrades will sustain engagement. Institutions should also invest in localized language interfaces and simple app navigation to support first-time users and rural borrowers.

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Peer Reviewed & Refereed Journal (IF: 7.25)
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Policy implications

At the policy level, FinTech adoption must align with broader goals of financial inclusion and consumer protection. Regulators and government bodies such as the Reserve Bank of India (RBI) and NABARD should integrate digital-literacy initiatives into microfinance programs, ensuring low-income clients can safely access digital tools. Policy frameworks should promote inter-institutional collaboration among MFIs, FinTech startups, and local cooperatives to extend affordable credit through secure channels. Moreover, establishing standardized cybersecurity norms, clear data-privacy guidelines, and uniform grievance systems will foster customer trust. Targeted incentives—such as tax relief or digital-infrastructure subsidies—can encourage MFIs to adopt cost-efficient technologies and extend outreach to remote regions (RBI, 2023).

Technological implications

Technologically, MFIs should adopt secure, low-bandwidth, and multilingual FinTech platforms tailored to rural clients. Systems must feature offline transaction modes, biometric verification, and AI-based credit analytics to simplify risk assessment and inclusion (Arner et al., 2020). FinTech developers should design user-friendly mobile interfaces compatible with basic smartphones and adaptable to varying network conditions. Integration of blockchain-based ledgers could enhance transparency and minimize fraud.

Long-term sustainability will depend on creating human-centered digital ecosystems where technology complements personal trust built by MFI field officers. Blending innovation with inclusivity ensures equitable access and continuous satisfaction among marginalized borrowers (Kaur & Arora, 2021).

6. SUGGESTIONS

Summary of major findings

This study confirms that FinTech integration has improved the efficiency, convenience, and transparency of microfinance operations in Karnataka. Among perception constructs, perceived usefulness emerged as the most influential determinant of satisfaction, followed by trust, ease of use, and accessibility, while transparency showed limited impact.

Demographic moderation revealed that education enhances the perception–satisfaction linkage, whereas older clients display weaker digital adaptability. These results affirm that digital awareness and user confidence are central to customer satisfaction in FinTech-enabled MFIs. The overall model ($R^2 = 0.61$) demonstrates that FinTech variables explain a substantial share of satisfaction variance, validating the relevance of the Technology Acceptance Model (TAM) in microfinance contexts (Davis, 1989).

Regional differences highlight that district with advanced connectivity and active MFI networks—such as Bengaluru Rural, Udupi, and Mandya—record higher satisfaction, while Ballari and Kalaburagi lag behind due to weaker digital infrastructure (NABARD, 2023).

Reaffirmation of fintech's role in improving MFI customer experience

The results reaffirm that FinTech acts as a transformational enabler for MFIs by streamlining operations, reducing transaction costs, and deepening financial inclusion. Digital systems facilitate real-time loan management, faster service delivery, and broader outreach to unbanked communities (Gupta & Jain, 2022). However, FinTech's success depends on sustained customer trust, digital literacy, and affordable access. Without addressing these social dimensions, technological advancement alone cannot guarantee inclusive growth.

ISSN: 2349-059X
Peer Reviewed & Refereed Journal (IF: 7.25)
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Strategic and policy recommendations for sustainable digital microfinance

To strengthen customer satisfaction and sustainability of FinTech-enabled MFIs, the study offers the following recommendations:

1. Enhance digital literacy: MFIs should collaborate with NGOs and state agencies to conduct community-level digital-skills training, especially for women borrowers and rural entrepreneurs.
2. Strengthen data security and trust: Implementation of multi-layer authentication, encryption, and customer-awareness campaigns will improve confidence in digital transactions (RBI, 2023).
3. Improve technological accessibility: Developers should ensure multi-language options, visual cues, and simplified interfaces for low-literacy users.
4. Promote public–private collaboration: Coordination between FinTech innovators and MFIs can foster scalable digital-credit ecosystems supported by government infrastructure programs.
5. Focus on inclusive policy design: Establishing satisfaction and trust-index tracking mechanisms will help institutions measure the long-term impact of FinTech interventions.

7. SCOPE FOR FUTURE RESEARCH

Future studies could expand this analysis through comparative assessments across states or between different FinTech models—such as mobile lending, digital wallets, or AI-driven scoring systems—to capture contextual variations (Kaur & Arora, 2021). Longitudinal research would reveal evolving satisfaction trends and user retention over time, accounting for regulatory and technological changes (Gupta & Jain, 2022).

Further, incorporating institutional performance indicators—including Non-Performing Assets (NPA), loan-recovery rates, and outreach metrics—would clarify how FinTech affects both client satisfaction and financial sustainability (Arner et al., 2020). Such multidimensional inquiry would strengthen the evidence base for policymaking in digital financial inclusion**.**

8. CONCLUSION

FinTech has emerged as a catalyst of transformation in Karnataka's microfinance landscape. The study establishes that customer satisfaction is primarily driven by perceptions of utility, trust, and usability rather than technological novelty. FinTech's potential to achieve inclusive growth lies in bridging digital divides through equitable access, robust security, and human-centered design.

Sustained collaboration among policymakers, MFIs, and FinTech innovators will be vital for balancing innovation with inclusiveness. By embedding technology within social trust and literacy frameworks, FinTech can ensure that digital microfinance truly empowers marginalized communities and strengthens the foundations of financial inclusion in India.

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