

Modeling AI-driven fintech adoption and microenterprise performance in India : An information systems perspective

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Abstract

AI is transforming FinTech by improving financial access and operational efficiency for micro-entrepreneurs. AI-enabled FinTech shows potential, but evidence on informal micro-business performance remains limited. This study examines how AI-enabled FinTech adoption affects micro-entrepreneurial performance in India. A quantitative study used primary data from 450 informal micro-entrepreneurs in India. Data were collected via a structured questionnaire and analysed using PLS-SEM, with technology readiness and financial literacy as moderators. AI-enabled FinTech significantly improves micro-entrepreneurial performance, strengthened by technology readiness and financial literacy. The findings emphasize inclusive digital finance, financial literacy, and affordable AI-powered FinTech solutions.

The study provides evidence linking AI-powered FinTech adoption, moderating factors, and micro-entrepreneurial performance in India.

Subject Classification (2020): 68T01, 97P80, 91-05.

Keywords: AI-enabled FinTech, Micro-entrepreneurial performance, Informal economy, Financial literacy, Technology readiness, India, PLS-SEM.

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1. Introduction

Financial technology (FinTech) has emerged as a major force in financial services since the development of Internet-based banking in the 1990s [1]. AI has transformed FinTech through automation and predictive analytics, improving financial efficiency, transparency, and accessibility [2]. AI-enabled FinTech improves business efficiency and financial inclusion [3]. These technologies improve access to credit and data-driven decision-making by reducing transaction costs and information gaps [4]. COVID-19 accelerated FinTech adoption, improving digital payments, efficiency, cash-flow management, and business resilience [5], [6]. Limited research examines how AI-enabled FinTech affects informal micro-entrepreneurial performance, considering technology readiness and financial literacy [7]. PLS-SEM and TAM studies show that trust influences FinTech adoption and performance [8].

2. Literature Review

Digital finance improves efficiency through traceable transactions, alternative credit, and real-time monitoring [7]. Micro-entrepreneurial performance is enhanced by AI-FinTech through improved financial management, efficiency, and decision-making [9], [10], [11]. AI-powered systems and analytics improve operational efficiency, personalization, and decision-making [12], [13]. The study also reported that AI adoption supports innovation, productivity, and sustainable business growth [14]. The studies noted that information systems enhance organizational responsiveness and operational effectiveness [15], [16]. The studies found that sustainable digital banking enhances financial accessibility and transparency, while resilient digital financial systems support business continuity and adaptability [17], [18]. AI-driven FinTech improves financial management, business performance, and continuity among small businesses [19]. Technology readiness and digital capabilities strengthen technology adoption, business growth, and performance [20], [21], [22], [23].

3. Methodology

A quantitative survey of 450 micro-entrepreneurs used purposive sampling and PLS-SEM to examine AI-powered FinTech and business performance [24]. A validated 5-point Likert questionnaire measured key constructs, with data analyses using SPSS and SmartPLS [24].

4. Results

The study surveyed 450 Gujarat micro-entrepreneurs, predominantly young, male, and graduates.

4.1 Measurement Model Assessment

As shown in Table 1, All indicator loadings were found to be above the recommended threshold value of 0.70, indicating satisfactory indicator reliability. Although one indicator (MDR5) showed a slightly lower loading, it remained within the acceptable range for applied behavioural and micro-entrepreneurship research contexts.

Table 1
Measurement Model Assessment

Construct	Item	Loading	Cronbach's α	CR	AVE
AI-Enabled FinTech Adoption	FA1	0.865	0.916	0.941	0.799
	FA2	0.931			
	FA3	0.917			
	FA4	0.860			
Micro-Entrepreneurial Digital Readiness	MDR1	0.856	0.888	0.919	0.695
	MDR2	0.890			
	MDR3	0.880			
	MDR4	0.812			
	MDR5	0.718			
Regulatory Environment	RE1	0.857	0.872	0.912	0.722
	RE2	0.826			
	RE3	0.864			
	RE4	0.851			
Micro-Entrepreneurial Performance	FP1	0.903	0.829	0.898	0.747
	FP2	0.887			
	FP3	0.799			

Note: All loadings are significant at $p < 0.001$.

4.2 Discriminant Validity

Discriminant validity was assessed using the HTMT ratio with a threshold of 0.90. As shown in Table 2, all HTMT values were below 0.90, confirming adequate discriminant validity and distinctness among the constructs.

Table 2
Discriminant Validity (HTMT Ratios)

Construct	Performance	FinTech Adoption	Digital Readiness	Regulatory Environment
Performance	0.864			
FinTech Adoption	0.743	0.894		
Digital Readiness	0.779	0.674	0.834	
Regulatory Environment	0.798	0.676	0.703	0.849

4.3 Structural Model Assessment

The model showed no multicollinearity, explained 76.1% of performance variance, and had acceptable fit (SRMR = 0.087; NFI = 0.809).

4.4 The structural model

Figure 1 presents the structural model, showing the estimated path coefficients and values. It illustrates the hypothesised relationships among

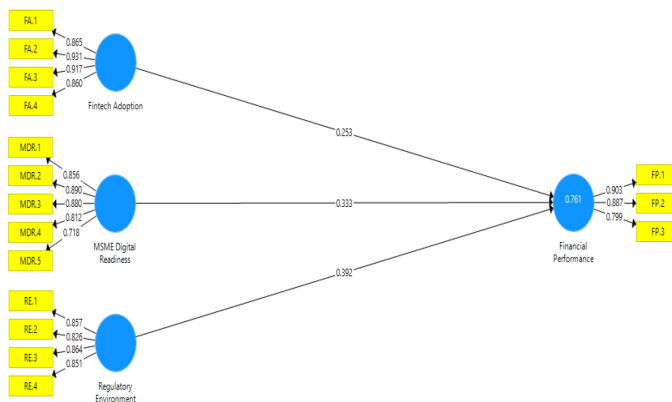


Figure 1
Structural Model with Path Coefficients

FinTech adoption, MSME digital readiness, regulatory environment, and financial performance.

Table 3
Structural Model Results

Path	B	t-value	p-value
FinTech Adoption → Performance	0.253	2.915	0.004
Digital Readiness → Performance	0.333	4.060	0.000
Regulatory Environment → Performance	0.392	4.593	0.000

4.5 Hypothesis Testing

As shown in Figure 1 and Table 3, AI-enabled FinTech adoption ($\beta = 0.253$, $p < 0.01$), digital readiness ($\beta = 0.333$, $p < 0.001$), and regulatory environment ($\beta = 0.392$, $p < 0.001$) positively and significantly influence micro-entrepreneurial performance, supporting H1, H2, and H3, respectively. The findings also indicate that a supportive regulatory environment strengthens the benefits of FinTech adoption and digital readiness.

5. Discussion

Prior studies suggest that digital payments, AI-based credit assessment, and FinTech awareness can reduce financing barriers, improve cash-flow management, and enhance financial inclusion among informal micro-entrepreneurs, with outcomes influenced by digital literacy and ecosystem maturity [25], [26], [27]. Digital readiness includes technological skills, awareness, and adaptability, which enhance technology adoption, especially in resource-constrained settings [19]. Regulatory sandboxes and staged compliance can promote responsible FinTech innovation in developing economies [28], [29], [30]. Accounting information systems improve micro-entrepreneurs' financial decision-making and profitability by effectively managing financial data [31].

6. Conclusion

The study shows that AI-enabled FinTech adoption, digital readiness, and regulatory support enhance informal micro-entrepreneurial performance in India. It contributes to FinTech literature by addressing

resource-constrained contexts and suggests future research on sectoral, longitudinal, behavioral, and cognitive factors. AI-enabled FinTech, digital skills, and infrastructure can improve micro-entrepreneurial performance, while supportive regulation, digital literacy, regulatory sandboxes, and simplified compliance can promote responsible FinTech adoption and financial inclusion in India.

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