Sri Balaji Societys The Balajian Journal of Management Research
3(2) 2026, 83-98
www.publishingindia.com/journals/bjmr/
ISSN: 3049-317X(Online)

FinTech-Enabled Financial Assistance and MSME Growth in India: A PRISMA 2020 Systematic Review and Non-Pooled Effect-Size Synthesis

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Abstract

Digital Lending, the rise of the Digital economy, Data Uploads, plus Financial Literacy impact on Indian MSMEs, the interconnections of which are minimally documented. This PRISMA 2020 review analyzed India confined studies published between 2020 to 2025. The search was conducted using DOI indexed literature, repositories, conference listings, and citation searches on July 18, 2026. From 53 records, 37 were screened, 15 were assessed, and 11 studies were incorporated (12,750 observations). Descriptive forest plot were created based on the studies of the remaining four; however, a Meta-analysis could not be performed as the studies were greatly disparate in their outcome, methods, and models. Associations were established between the use of FinTech and access to Credit, Transaction Processing, Visibility, Inclusion, and Enterprise Performance. Transaction Visibility also improved with Financial Literacy, Internet Empowerment, Record Keeping, Pristine Pricing, and Protection of Borrowers. The evidence to impact model operating under the assumption that Inclusive Sustainable MSME Growth is contingent on the protective barriers around enterprises and their capabilities, asserts FinTech has the potential to enhance the Financial Ecosystem.

Keywords: FinTech, MSMEs; Digital Lending, Digital Financial Inclusion, Digital Payments, Systematic Review

Introduction

Background and Management Context

Micro, small, and medium enterprises (MSMEs) are vital contributors to economic dynamism because they drive employment and exports. Therefore, financing MSMEs is an issue of management as well as inclusive-development. MSMEs contribute about 30% of GDP and over 45% of exports (Ministry of Micro, Small and Medium Enterprises, 2025) and can vary considerably across different dimensions, including size, formality, access to finance, digitization, and geography. Therefore, a home-based business, a retail business, and a manufacturing business will require different financial products.

Traditional businesses finance their operations using their own money and funds from incurred sales. Therefore, formal financial transactions are essential. MSMEs with limited business activities and informal financial transactions incur difficulty in financing. The main concern is whether such services will yield economic benefits or will only be a case of "technology for the sake of technology."

Indian MSME Financing Problem

Financing MSMEs entails high time and opportunity costs for lenders. Digital financing has the ability to turn financial records into formal and usable documents for the purposes of lenders. Although machine learning may assist MSMEs in financing their activities, it may not necessarily lead to appropriate financing (Berg et al., 2020). The same is evident in India, where digital financing increases the availability and speed of financing while not necessarily improving affordability (Dvara Research, 2020).

Digital finance may lead to more exclusion. Poor connectivity means subpar digital footprints, and cash-

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intensive businesses are put at a disadvantage by opaque systems. Rapid, app-based credit fuels over borrowing, loss of privacy, and predatory practices. The Reserve Bank of India's Digital Lending Directions, 2025 concern regulated entities' legibility, fact statements, consent, flows of funds and data, grievance redress mechanisms, and supervision of lending service providers (Reserve Bank of India, 2025). Enabling functions and governance mechanisms must be assessed.

Rationale, Review Questions, and Contribution

Indian studies on finance, entrepreneurship, and public policy incorporate a variety of approaches like regional studies, World Bank business surveys, and analyses employing logistic regression and partial least squares structural equation modeling. Benefits include financial inclusion, better access to credit, improved ease of doing business, sales, and other business outcomes. To fulfill the need for a systematic and transparent review, studies on the above topics must go beyond narrative reviews.

The main objective was to evaluate the connection between FinTech-related finance and formal access to credit, financing constraints, and business outcomes for Indian MSMEs and microenterprises. The assessment of digital lending, digital payments and bookkeeping, financial inclusion and literacy, gender, geography, pricing, data governance, algorithmic opacity, and multiple borrowing, formed the basis of the secondary objectives. This review presents an evidence-to-impact framework outlining the role of FinTech, enterprise capacity, governance, and financial outcomes.

Review of Literature

FinTech and Financial Intermediation

Digital Intermediation and Mediums manage and operate through the complete credit cycle. They are likely to reduce transaction costs. Analysis of the Platforms data may happen more frequently compared to the analysis of periodic financial statements. Automated digital workflows may provide the mechanisms for the lender to carry out the loan process and conduct the necessary due diligence on an ongoing basis and may provide the opportunity to grant smaller loans at lower marginal costs to the borrowers. These benefits are greater for creditworthy firms that may have limited formal records but have an active digital presence. Thus, FinTech, to a greater extent, modifies the connection in the lending relationship rather than eliminating the credit risk or the lending relationship (Beck, 2020; Cornelli et al., 2020).

Digital Lending and Alternative Credit Scoring

Digital lending employs electronic KYC, automated underwriting, digital documentation, and online disbursement. This suits Micro, Small and Medium Enterprises (MSMEs) that operate with short inventory cycles and extended payment collection periods. Alternative credit scoring tends to be a combination of bank cash flows, invoices, e-commerce, payments, taxes, and sales data. Given the possible data sparsity of an enterprise digital transaction, this data may be used in combination of other healthcare data to provide the context of minimal digital transactions (Kshetri, 2021; World Bank, 2022).

Digital Payments, Bookkeeping and Financial Visibility

Digital payments may represent the initial phase of enterprise digitization; however, they provide financing value only when integrated with bookkeeping, bank statements, invoices, taxes, and receivables. A QR code does not enhance creditworthiness. When creditors consider a verified transaction history in their cash-flow analysis, it may enhance the borrower's managerial control and provide the lender with greater visibility (Johri et al., 2024; Tay et al., 2022).

Digital Financial Inclusion and Enterprise Capability

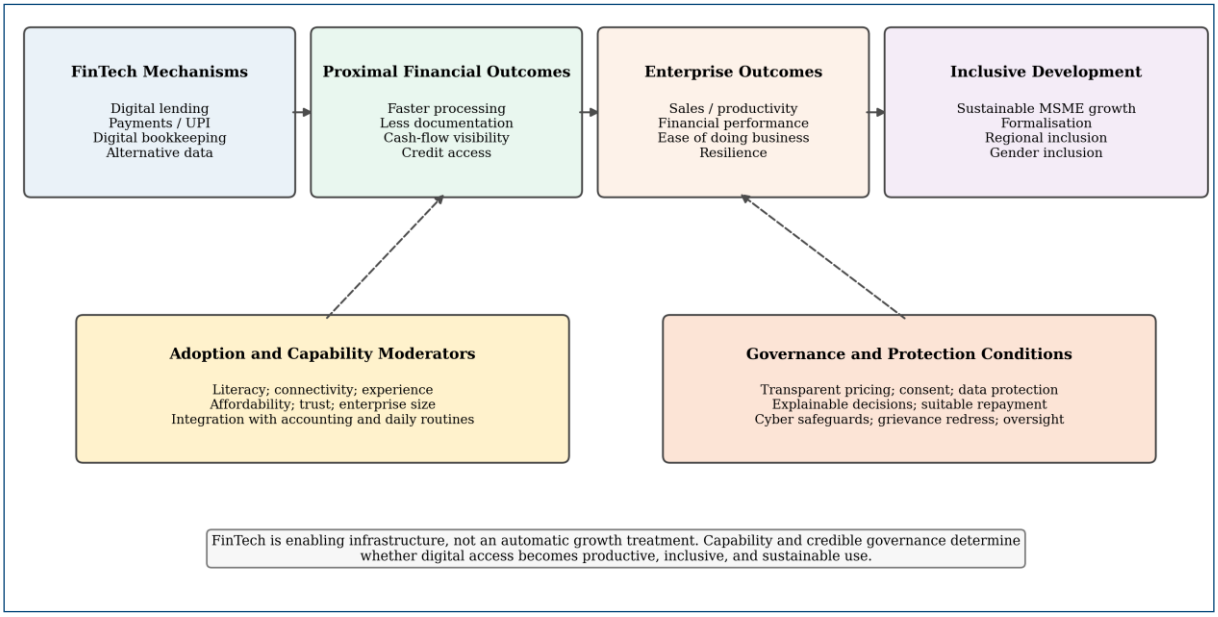
Trust, documentation, social barriers, poor service, and more can inhibit uptake to formal financing methods. These barriers are often more pronounced for women-led, rural, and informal businesses. Digital and financial inclusion enable service comparison, help identify fraud, aid in repayment scheduling, and support cash flow-based decisions (Khera et al., 2022; Malladi et al., 2021).

Responsible Fintech, Regulation, and Borrower Protections

Responsible FinTech means that the identity of the regulated lender, the APR, the fees, the repayment terms, and the data and recovery practices, as well as complaint mechanisms, are all clear. Using platform and lending service business models exposes small businesses to consumer-like risks. FinTech's 2025 Directions then demand regulated entities will be accountable for collecting data based on necessity, explicit consent, adequate preparation, direct credit donations, and complaint handling (Reserve Bank of India, 2025).

Establishing the Review Framework

The literature outlines four stages: FinTech alters the way information and transactions are processed, which in turn shapes the immediate impacts of processing time, visibility of cash flows, and access to formal credit; this, in turn, impacts the performance and the reach of the market, and these changes are moderated by literacy, infrastructure, cost, trust, and governance. To counter the belief that the use of technology will spur growth, an evidence-to-impact framework is shown in Fig. 1.



Source: Author-created synthesis of the included studies and regulatory evidence.

Fig. 1: Evidence-to-Impact Framework for Responsible FinTech-Enabled MSME Growth

Research Methodology

Review Design and Reporting Standards

This review adhered to the PRISMA 2020 guidelines and PRISMA-S reporting standards (Page et al., 2021; Rethlefsen et al., 2021). This review amalgamated the procedures of a systematic review with a structured narrative synthesis and the descriptive display of effect sizes. Only studies with methodologically similar outcomes published in independent studies (at least three studies) were pooled. There was no prior registration of the review.

Eligibility Criteria

This review included empirical studies published in the English language that were conducted in the geographical boundaries of the Republic of India. The studies were published in the temporal boundary of January 1, 2020, to December 31, 2025. Included populations were MSMEs, microenterprises, MSME and microenterprise owners, and women entrepreneurs. This review considered the impacts of FinTech and digital finance on access to formal credit, financing gaps, digital inclusion, ease of doing business, sales, productivity, profitability, employment, resilience, and performance. Studies based exclusively on households, studies on large corporations, systematic

reviews, commentaries, theory papers, and studies that do not report separate outcomes for the enterprise and do not have adequate methodological standards were excluded.

Information Sources and Search Strategy

On July 18, 2026, publicly accessible information was searched, including the publisher and DOI indexed pages, institutional repositories, proceeding of conferences, and backward and forward citation searches. Search terms FinTech and MSME or microenterprise combined with terms related to India and finance or the specified outcomes. Table 2 lists the sources, searches, their dates, and retrieval statistics. Exports from Scopus and Web of Science were not available; therefore, the search was conducted as a structured search of publicly available sources.

Study Selection and Data Extraction

Records were deduplicated by title, DOI, and bibliography. Deduplication continued by title/abstract and full-text screening. Deduplication and screening were performed by one reviewer. Due to this, Cohen's kappa and independent dual-screening claims were not relevant. Data were location, study design, sample, type of enterprise, exposure, outcome, model, effect and measure of effect, and precision. Sample overlap was assessed based on authors, study location, study period, and sample size.

Methodological Quality Appraisal

Quality of methodology was assessed based on JBI domains of analytical cross-sectional studies: sampling; measures of exposure and outcome; control of bias and confounding; analysis; and, quality of reporting and applicability (Aromataris & Munn, 2020). Studies were assigned lower, some, or high concern and not given a numeric rank.

Effect Size and Synthesis Methods

Pearson correlations were illustrated with confidence intervals estimated via Fisher's z with subsequent transformations. Regression coefficients were retained with original unit measurement, and confidence intervals were derived from reported standard errors. Due to variations, random-effects pooling was not possible, therefore a non-pooled forest plot was reported (See Fig. 2).

Thematic Synthesis

Thematic synthesis consisted of familiarisation, line-by-line coding, descriptive grouping, cross-study comparison, and development of analytical themes and interpretations addressing the review questions. Included studies were necessary to retain themes (See Table 8, Study-To-Theme Matrix.)

Table 1: PECO Eligibility Criteria

Element	*Inclusion Specification*	*Exclusion Specification*
Population	Indian MSMEs, microenterprises, SME owners, women entrepreneurs, or firms classified within a recognised MSME or microenterprise framework.	Consumers or households only; large corporations; non-Indian results without a separable Indian enterprise sample.
Exposure	FinTech adoption, digital lending, UPI/digital payments, digital financial inclusion, digital bookkeeping, alternative scoring, embedded or invoice finance.	General digitalisation with no financial-service component.
Comparator	Non-adopters, lower-use firms, pre-adoption conditions, or model-based variation in exposure.	No interpretable contrast or association.
Outcomes	Credit access, financing constraints, loan process/ cost, financial inclusion, EoDB, sales, productivity, profitability, employment, resilience, or performance.	No enterprise-level financial or performance outcome.

Element	*Inclusion Specification*	*Exclusion Specification*
Study design	Quantitative observational, longitudinal, quasi-experimental, experimental, cohort, case-control, or mixed-method study with extractable empirical results.	Review, commentary, editorial, purely conceptual paper, or descriptive report with insufficient methods/results.
Limits	English; 1 January 2020 – 2031 December 2025; India-specific or separately extractable Indian results.	Outside date/language/geographic limits, except context sources not treated as included studies.

Source: Review protocol developed for this study.

Table 2: Search Sources, Search String, and Retrieval Counts

Source Group	*Search Approach*	*Records*
Publisher and DOI-indexed scholarly discovery	Title/abstract/keyword combinations of FinTech OR digital finance OR digital lending OR digital payments OR UPI OR digital financial inclusion; MSME OR SME OR microenterprise; India; credit OR finance OR growth OR performance.	36
Institutional repositories and conference proceedings	Repository and proceedings searches for India-specific MSME digital finance, digital lending, EoDB, financial inclusion, and enterprise performance.	11
Citation searching	Backward reference checking and forward citation discovery from eligible and high-relevance papers.	6
Total	Search completed 18 July 2026; publication date filter 2020–2025; English language.	53

Source: Documented public-source search log completed on 18 July 2026.

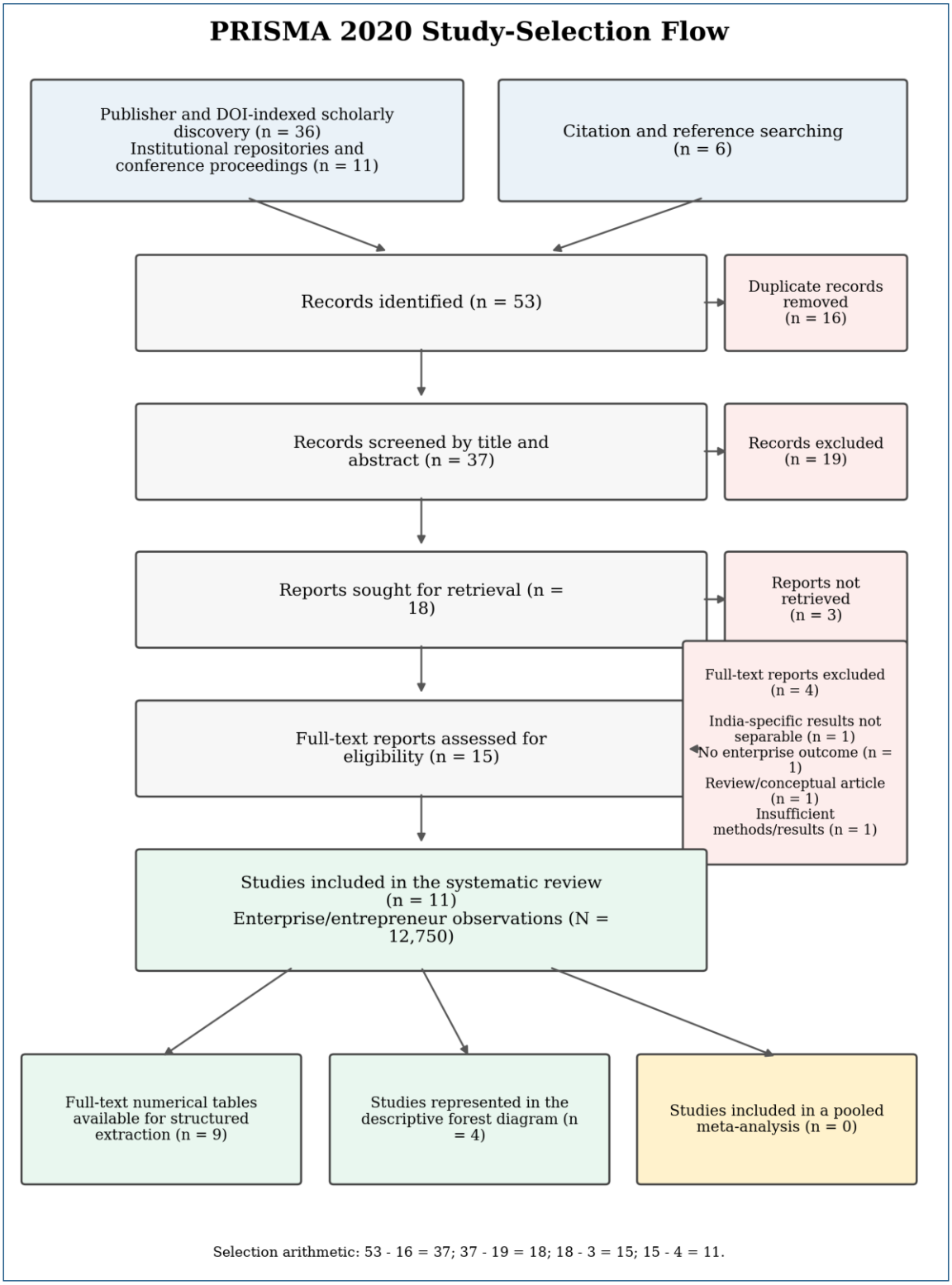
Table 3: Full-Text Exclusion Reasons

Principal reason	*Number excluded*
India-specific enterprise results could not be separated.	1
No enterprise-level financial or performance outcome.	1
Review or conceptual article without eligible empirical results.	1
Insufficient methods or numerical results for eligibility assessment.	1
Total full-text exclusions	4

Result and Discussion

Result and Study Selection

The search identified 53 records: 36 from publisher and DOI-indexed discovery, 11 from repositories and conference proceedings, and 6 through citation searching. After 16 duplicates were removed, 37 records were screened and 19 excluded. Of 18 reports sought, three were unavailable. Fifteen full texts were assessed and four excluded: one lacked separable Indian enterprise results, one lacked an enterprise-level outcome, one was conceptual or a review, and one reported insufficient methods or results. Eleven studies representing 12,750 enterprise or entrepreneur observations were included (Fig. 2).



Source: Review search and screening log. Arithmetic: 53 – 16 = 37; 37 – 19 = 18; 18 – 3 = 15; 15 – 4 = 11.

Fig. 2: PRISMA 2020 Study-Selection Flow Diagram

Characteristics of Included Studies

Cross-sectional studies dominated the sample. Two studies utilized World Bank enterprise datasets while the others relied on regional primary surveys or conference samples. There was limited national or multi-state coverage. Research study samples focused primarily on women entrepreneurs or MSMEs in Karnataka, Odisha, western Uttar Pradesh, Nagaland, Mumbai, Ahmedabad, and Tamil Nadu. Samples varied between 120 to 9,024. Digital finance, lending, UPI, inclusion, literacy, and awareness as well as digital-channel financing were the exposures of interest and finance access, ease of doing business, and self-reported growth and performance were the outcomes of the interest.

Table 4: Characteristics of Included Studies

Study	*Design/Location*	*Sample*	*Exposure/Outcome*	*Principal Finding*
Verma, Das and Misra (2024)	India; World Bank Enterprise Survey 2022; cross-sectional	9,024 MSMEs	Digital finance; sales growth, productivity, employment	Positive associations for sales growth/productivity; employment weaker or mixed.
Johri et al. (2024)	India; World Bank ESM 2022; cross-sectional	998 microenterprises	Access/use of digital finance; EoDB obstacles	Internet, education, and owner experience predicted inclusion; access/use linked with business-obstacle differences.
Sherwani et al. (2024)	Western Uttar Pradesh; primary survey; logistic model	321 women-owned informal enterprises	ICT/resource capability; financial inclusion	Machinery, ICT, education, duration, and experience were significant determinants.
Peter, Geetha and Gupta (2024)	India; primary survey; SEM	223 women entrepreneurs	Digital awareness/ knowledge and financial decisions; performance	Digital awareness and knowledge shaped decisions; decisions were positively related to performance.
Peter, Elangovan and Vidya Bai (2025)	India; primary survey; regression/SEM	216 women entrepreneurs	Traditional and digital financial inclusion; performance	Both were positive; digital inclusion had the larger reported coefficient.
Peter, Elangovan and Gupta (2025)	India; primary survey; moderated mediation	214 women entrepreneurs	Digital financial literacy, inclusion, behaviour; performance	Literacy predicted inclusion and performance; partial mediation through inclusion.
Mahato and Kanth (2025)	Mayurbhanj and Sundargarh, Odisha; SEM	312 women entrepreneurs in family firms	Digital financial inclusion; financial well-being; firm performance	Financial well-being mediated the positive inclusion–performance relationship.
Faishal (2025)	Kohima, Nagaland; purposive survey; multinomial logit	612 microenterprise operators	Digital access, UPI, loan approval; self-reported growth	UPI and loan approval predicted higher growth categories; UPI marginal effect for high growth was +12.6 percentage points.
Verma and Shome (2025)	Mumbai and Ahmedabad; convenience survey; PLS-SEM	326 usable micro-business responses	Adoption, risk, trust, support; financial inclusion	Adoption strongly predicted inclusion; perceived risk reduced behavioural intention.
Kumar et al. (2024)	Tamil Nadu; convenience survey; conference paper	120 MSME owners	Digital resources, awareness, digital finance; EoDB	Financing through digital channels correlated positively with EoDB; path table had internal anomalies.
Rajesh and Nagouda (2024)	Karnataka; convenience survey; conference paper	384 MSME owners	Digital lending; access to finance	Reported positive correlation, but r and R^2 were internally inconsistent.

Source: Author extraction from included reports.

Methodological Quality and Reporting

Two studies on the World Bank based on surveys were rated as lower concern because of better sample and analytic documentation. Six studies had some concern because of self-reporting cross-sectional data, regional and convenience sampling as well as a lack of treatment for common method bias. Three studies were rated as high concern. Faishal (2025) had self-reported growth and used purposive sampling. Second, Kumar et al. (2024) had path values that were inconsistent or of implausible value. Third, Rajesh and Nagouda (2024) reported r = .515 with R^2 = .396, while r^2 is approximately .265. This collection of weaknesses does not allow for confident effect magnitude reporting, but does not negate each directional finding.

Table 5: JBI-Informed Methodological-Quality Appraisal

Study	*Sampling*	*Measurement/Analysis*	*Reporting/Generalisation*	*Overall*
Verma, Das and Misra (2024)	Probability-based enterprise dataset	Objective/structured enterprise measures; adjusted analysis	Full bibliographic record; detailed full-model reporting was unavailable in the accessible source	Lower concern
Johri et al. (2024)	World Bank microenterprise dataset	Clear access/use definitions; logistic and ANOVA analyses	Strong reporting and broad India coverage	Lower concern
Sherwani et al. (2024)	Regional primary survey	Logistic model; some counterintuitive directions	Cross-sectional; limited geographic generalisability	Some concerns
Peter et al. (2024)	Primary survey of women entrepreneurs	SEM; self-reported constructs	Cross-sectional and common-method exposure	Some concerns
Peter et al. (2025a)	Primary survey of women entrepreneurs	Regression/SEM; self-reported performance	Cross-sectional and sample-specific	Some concerns
Peter et al. (2025b)	Primary survey of women entrepreneurs	Moderated mediation; self-reported constructs	Cross-sectional; accessible record did not provide every coefficient	Some concerns
Mahato and Kanth (2025)	Two-district regional survey	SEM and mediation	Regional, cross-sectional, women/family-business focus	Some concerns
Faishal (2025)	Purposive regional sample	Multinomial logit; self-reported growth	Selection and common-method risk; causal language not warranted	High concern
Verma and Shome (2025)	Convenience sample in two cities	PLS-SEM with multiple constructs	Sample-size discrepancy across report elements; cross-sectional	Some concerns
Kumar et al. (2024)	Convenience regional conference sample	Correlation/PLS-SEM	Path table contains implausible p-values and inconsistent signs	High concern
Rajesh & Nagouda (2024)	Convenience regional conference sample	Simple regression	Reported r = .515 and R^2 = .396 are mathematically inconsistent	High concern

Source: Author appraisal using JBI-informed analytical cross-sectional domains.

Credit Access, Financial Inclusion, and Process Friction

Digital capability and use were often aligned with financial inclusion or access. Johri et al. (2024) highlighted internet access, education, and experience of owners in differentiating inclusion and business barriers in their study of 998 microenterprises. Sherwani et al. (2024) reported that experience, education, ICT usage and business duration and machinery, differentiated inclusion in the study of 321 women-owned informal enterprises. Verma and Shome (2025) reported that the adoption of digital finance predicted inclusion in the study, while the perceived barrier of risk predicted reduction in the adoption, with a strong relation ($\beta = .70$, $p = .002$).

Digital lending studies were few and provided similar but weaker relations. Rajesh and Nagouda (2024) reported a relation of $r = .515$ of digital lending and access to Finance in a study of 384 Karnataka MSMEs. Kumar et al. (2024) reported a strong relation of $r = .80$ measuring digital channel finance and the ease of doing business in a study of 120 MSMEs from Tamil Nadu. Both studies should be taken with caution due to poor reporting and variation in study design.

Enterprise Performance and Growth

Performance studies reported a positive outcome but were inconsistent. In a study of 9,024 Indian MSMEs, Verma, Das and Misra (2024) linked digital finance with growth in sales and productivity, with lower effects on employment. Faishal (2025) studied 612 Kohima microenterprises and linked the use of UPI and the approval of loans to greater self-reported growth. He found that frequent UPI users were 12.6 percentage points more likely to report high growth. The use of purposive sampling and self-reported data affect interpretation of the results.

In women-owned businesses, Peter et al. (2024) examined how digital finance knowledge and awareness, which shaped financial choices, predicted performance ($\beta = .62$, $SE = .086$). Peter et al. (2025) examined how positive traditional financial inclusion and digital financial inclusion predicted performance, with a greater digital financial inclusion effect ($B = .69$, $SE = .15$; $\beta = .38$). In a related study, Peter et al. (2025) examined how digital financial literacy promoted financial inclusion and performance and how financial inclusion mediated the relationship. Similarly, Mahato and Kanth (2025) showed that financial well-being acted as a mediator between digital inclusion and performance of family firms.

Capability, Gender, Geography, and Risk

The construct of capability acted as a repeated moderator of the findings. Several factors influenced adoption/inclusion, such as the Internet and the use of digital finance, as well as awareness, education, and having the perceived usefulness and ease of use, trust, and low risk perception. For women, entrepreneurs' digital literacy promoted financial inclusion and performance; however, the effect of structural barriers and active financial inclusion exhibited inconsistency. Additionally, geographic concentration of the studies reduced the generalizability of the findings as connectivity, banking density, and sector varied across study locations.

Evidence of risk in general was quite poor. Verma and Shome (2025) showed that perceived risk had a negative effect on adoption; however, in a broader range of studies, privacy, price, fraud, and negative algorithmic exclusion and unsustainable repayment had a negative effect. In general, the evidence on the cost of borrowing, multiple digital loans, delinquency, grievance redress, and cyber losses was very limited.

Quantitative Synthesis and Forest Diagram

Of all estimates, only two correlations and two regression coefficients allowed for the direct display of confidence intervals. Fig. 3 shows them in separate panels. All estimates were positive; however, regression coefficients were not directly comparable and therefore not displayable. Additionally, no pooled estimate was provided, as shown in Table 7, due to the lack of compatible metrics and study quality.

Table 6: Extracted Quantitative Evidence and Statistical Inputs

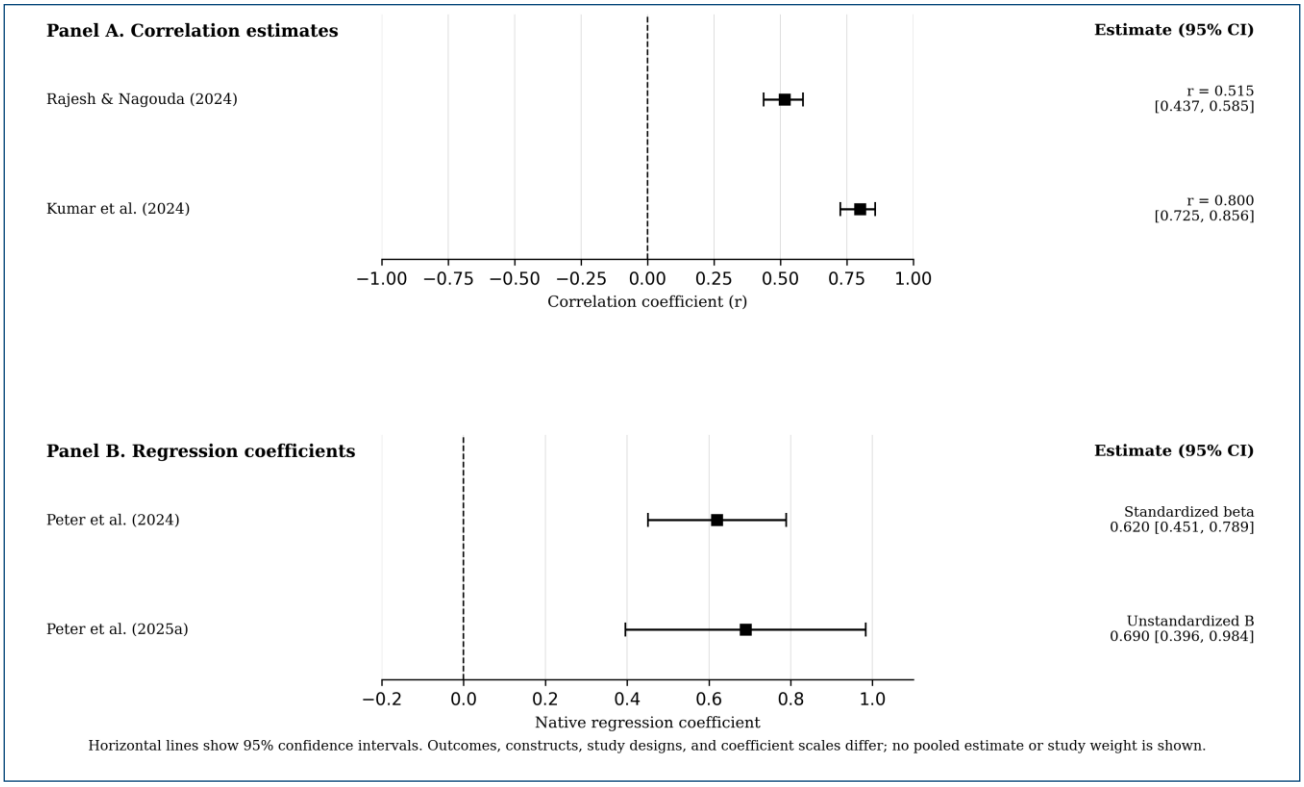
Study	*Exposure/Outcome*	*Estimate*	*Precision/Significance*	*Synthesis Use*
Johri et al. (2024)	Internet/education/ experience → digital financial inclusion	Logistic model and marginal effects; exact coefficients vary by model	Significant directions reported	Narrative/structured extraction
Sherwani et al. (2024)	Selected determinants → financial inclusion	Experience β = −.071; OR = .931; education > primary OR = 1.986; machinery OR = 4.377	Reported p = .033, .048, and .001	Narrative; reporting irregularities noted
Peter et al. (2024)	Financial decision-making → financial performance	Standardized β = .620	SE = .086; 95% CI [.451, .789]; p < .001	Forest diagram, native coefficient
Peter et al. (2025a)	Digital financial inclusion → financial performance	B = .690; standardized β = .380	SE = .150; 95% CI for B [.396, .984]; p < .001	Forest diagram, native coefficient
Faishal (2025)	UPI use/loan approval → high growth	Log-odds: UPI = 1.47; loan approval = 1.39; interaction = .78	Reported significance; UPI marginal effect +12.6 pp	Narrative; self-reported outcome
Verma and Shome (2025)	Digital-finance adoption → financial inclusion	β = .700	p = .002; R^2 for inclusion = .64	Narrative; construct-level SEM
Kumar et al. (2024)	Financing through digital channels ↔ EoDB	r = .800	95% CI [.724, .856] from Fisher z	Forest diagram; high reporting concern
Rajesh and Nagouda (2024)	Digital lending ↔ access to finance	r = .515	95% CI [.439, .583] from Fisher z; reported p < .001	Forest diagram; r/R^2 inconsistency
Verma, Das and Misra (2024)	Digital finance → sales/ productivity/employment	Adjusted regression direction positive for sales/productivity; employment weaker/mixed	Exact full-model coefficients were unavailable in the accessible record	Narrative due inaccessible model detail

Source: Author extraction and confidence-interval calculations. Native metrics are not mutually interchangeable.

Table 7: Quantitative-Synthesis Decision

Outcome Domain	*Evidence Base*	*Available Metrics*	*Decision and Rationale*
Formal-credit access/ financial inclusion	Multiple studies	Logistic odds ratios, latent-variable paths, correlations, and descriptive access/use measures.	No pooling: incompatible outcomes and effect metrics; some overlapping conceptual constructs.
Ease of doing business	Johri et al. (2024); Kumar et al. (2024)	Group comparisons/logistic determinants versus correlation and inconsistent PLS table.	No pooling: fewer than three comparable estimates and high concern in one study.
Enterprise performance/ growth	Verma et al. (2024); Peter studies; Mahato & Kanth (2025); Faishal (2025)	Regression coefficients, mediation paths, latent scores, multinomial log-odds, and survey growth categories.	No pooling: construct, scale, model, and population heterogeneity.
Publication bias	11 included studies	Funnel plot/Egger test considered.	Not conducted: no set of at least 10 comparable effects.

Source: Prespecified synthesis rule and post-extraction comparability assessment.



Source: Author calculations from reported estimates.

Fig. 3: Descriptive Non-Pooled Forest Diagram of Selected Associations

Correlation confidence intervals use Fisher's z; regression intervals use coefficient ± 1.96 × SE. No pooled estimate, weight, I^2, tau-squared, Q, or prediction interval is reported because the metrics and outcomes are incompatible.

Table 8: Study-to-Theme Evidence Matrix

Analytical Theme	*Contributing studies*	*Cross-Study Synthesis*
Credit access and financial inclusion	Johri et al.; Sherwani et al.; Verma & Shome; Rajesh & Nagouda	Digital capability and use are generally associated with access/inclusion, but local designs and metric variation limit magnitude claims.
Payments, UPI, and transaction visibility	Johri et al.; Faishal; Verma, Das, & Misra	Digital transactions support visibility and may complement credit and growth, especially when integrated with records.
Performance and growth	Verma, Das, & Misra; three Peter studies; Mahato & Kanth; Faishal	Positive performance associations recur, but reverse causality and self-report remain plausible.
Literacy, awareness, and capability	Johri et al.; Peter studies; Verma & Shome; Kumar et al.	Education, awareness, usefulness, trust, and experience condition adoption and productive use.
Gender and regional inclusion	Sherwani et al.; Peter studies; Mahato & Kanth; Faishal	Women-owned and regional microenterprises benefit unevenly; structural and geographic constraints persist.
Risk, governance, and responsible lending	Verma & Shome; Rajesh & Nagouda; Kumar et al.; contextual RBI evidence	Perceived risk, privacy, pricing, data quality, and reporting weaknesses require transparent design and regulatory oversight.

Source: Evidence-derived thematic coding of included studies.

Discussion and Analysis

Principal Findings

FinTech enhanced access for the Indian MSME sector and offers benefits around inclusion, visibility of transactions, ease of trade, and operational performance. There were broadly consistent directional findings and variable magnitudes. Many large secondary datasets documented broad correlations of digital finance, and regional studies highlighted the importance of awareness, trust, literacy, UPI and loan approval. Most studies were cross-sectional, thus stronger firms may adopt digital finance, making reverse causality possible.

Understanding Heterogeneity

Heterogeneity was conceptual and methodological. Digital lending, UPI, literacy, and inclusion, are different exposures, and so are loan access, ease of doing business, sales growth, and performance latent. National datasets versus convenience samples also comprise different populations. Combining such estimates would obscure findings. The next meta-analysis will require working definitions, full standard-error, better study quality, and separation of samples.

How FinTech Impacts MSMEs

FinTech interacts with MSMEs through three mechanisms. First, the digitization of records formalizes cash flows and sales and improves payment behavior and reduces friction of asymmetric information. Second, the automation of onboarding and underwriting eliminate working capital gaps. Lastly, payment systems linked with bookkeeping lead to heightened control of account receivables and inventory. While these mechanisms may benefit firms, they do not ensure firms are profitable. Credit must be affordable, timely, and able to be productively used along with adequate records.

Governance and Data Protection Interpretation

Governance shapes innovation. Thin-file prevalence is data dependent but trust erodes with data collection that is aggressive or opaque. Easy credit can alleviate liquidity problems but can be counterproductive if repayment terms are out of alignment. Broader scoring may be more encompassing, but black-box systems may reproduce exclusion. RBI 2025 Directions endorse infrastructure through identification of lenders, Key Fact Statements, consent, direct funding flows, data protection and security, and grievances redress mechanisms (Reserve Bank of India, 2025).

Theoretical Contribution

FinTech is viewed more as a conditional enabling system than a direct system of growth. The variance in technology may alter the ways in which information or transactions may be accessed or managed; these may affect performance. The variance of capability and governance may affect all instances of change. This framework may justify the occurrence of positive adoption results amidst exclusion, risk, and fragmented usage. It also proposes the interplay of information asymmetry, enterprise capability, and governance with an intent on future longitudinal studies.

Strength and Certainty of the Evidence

For the most part, evidence of moderate strength exists for associative direction and low strength for causal direction. Evidence is somewhat more robust due to big enterprise data and studies with less reliance on self-report and common-method bias. However, as most FinTech clients are likely to have better enterprise management and recordkeeping practices and are more oriented towards growth, mere statistical significance would not be sufficient for stronger claims. Stronger claims would need more robust study design including prior adoption baselines, longitudinal, and validated studies with a more stringent approach.

Balancing Evidence and Policy for Practical Significance

Regarding practical significance, the focus is on policy improvement, not an overarching effect size. For liquidity-constrained microenterprises, quicker verification and easier access to transaction histories may be worthwhile, even if the typical performance impacts are small. On the

other hand, expensive credit, inconvenient repayment schedules, and an insufficient understanding of repayment terms may mean a positive statistical relationship is of little managerial concern. Policy should avoid both completely denying FinTech and considering digital advancements as inherently riskless. A middle pathway is a model that merges the quickness of automation with the relevance of judgment, relationship, clarity, and borrower safety.

Convergence on Institutional Evidence

The findings of the studies are, on the whole, in agreement with institutional evidence on formalization, digital payments, data-driven underwriting, and MSME credit. However, institutional documents do not identify specific services on the causation front. Firm-level studies detail the how and the when, but are often limited and of a cross-sectional nature. When pooled together, institutional evidence provides the reach and context for policy, whereas enterprise studies illustrate the variability of impacts. This is in favor of cash flow finance with interoperability and a more stringent control of credit, repayment, stress, and long-term viability of the enterprise.

Conclusion

While FinTech is sure to play an important role in developing India's MSME financing infrastructure, we do not view it in the same light as the Digital Lending, Payment, Transaction Data, or Literacy Tools as solutions to reduce friction and enhance financial visibility that encourage firms to engage with the system. There was a positive association found in the majority of the studies, however, the predominance of cross-sectional designs, convenience sampling, subjective assessments, varying terminology, and partial reporting of relevant statistics limited the causal inference and precluded the opportunity for meta-analysis. The evidence-to-impact framework opines that to achieve MSME growth that is both inclusive and sustainable, it is essential that the framework is value-based, clear, affordable, and safely designed, in addition to having the capability to support enterprises and a regulatory buffer.

Research and Managerial Implications

MSME Owner and Manager Implications

Payments, bookkeeping, bank reconciliations, invoices, tax records, and receivables should all be consolidated. Digital receipts should be considered payment records. When comparing credit options, consider the cooling-off period, tenor, total repayment and cost, and the APR, as well as grievance mechanisms and data sale clauses.

FinTech, Banks and NBFCs

Enterprise cycle cash-flow focused FinTech solutions are preferred over consumer credit focused FinTech solutions. Responsible and simple adoption of FinTech is necessary. Real-time compliance may be flexible if local language support, grievance, and fraud response systems are present. Greater relational systems and alternative data fused with adequate sector knowledge, systems and research are necessary for cash-intensive and rural enterprises.

Regulators and Policy Makers

Cascading systems and multi-level policies should be presented. Training should be invoicing, cost comparison, cyber hygiene, and L2 response focused. Regulations should encompass all lending services, embedded finance, loss-default models, recurring lending, and grievance and response systems. Legislation should provide borrower capacity to comprehend the terms and disclosures.

Management Research

Saturation and scope of management research should be centered on integrated finance within payments, systems, and lending. Adoption of unified language with systemic results is necessary. Research should be thoroughly documented with all sampling, confidence intervals, and other estimations.

Table 9: Research and Managerial Action Matrix

Stakeholder	*Priority Action*	*Expected Contribution*
MSME owners/ managers	Integrate payments with bookkeeping, invoices, inventory, receivables, and bank reconciliation; compare total credit cost and data permissions.	Improves credit readiness, operational control, and safer borrowing.
FinTech platforms	Use transparent pricing, explainable decisions, vernacular and assisted onboarding, need-based data, and human escalation.	Builds trust and reduces exclusion, mis-selling, and opaque rejection.
Banks/NBFCs	Combine digital cash-flow data with sector and relationship knowledge; monitor repeat borrowing and stress.	Improves underwriting without treating digital footprints as context-free truth.
Regulators/ policymakers	Strengthen connectivity, practical literacy, LSP oversight, consent, complaints, cyber response, and outcome monitoring.	Supports innovation while protecting MSMEs and improving market accountability.
Researchers	Use longitudinal/causal designs, common outcome definitions, complete effect reporting, and preregistered protocols.	Enables credible effect estimation and future meta-analysis.

Source: Author synthesis of review findings and responsible-lending guidance.

Scope for Future Research

Future studies should implement matched comparisons, panel data, quasi-experiments, and staggered platform deployment to find the causal impacts of credit costs, approval times, delinquency, productivity, and profitability, as well as platform survival and resilience, instead of focusing only on adoption. Research heterogeneity should look at size, sector, state, location (urban vs. rural), owner gender, firm age, and digital literacy. Moratoriums are needed on multiple borrowing, cyber loss, injury, grievance redress, and platform dependence. To allow future quantitative analysis, prospective protocol registration and shared outcome sets are required.

Study Limitations

This review has major limitations. In this study, we may miss literature published on subscription databases since our public and restricted bibliographies searched the literature only on freely available databases. We did not evaluate whether selection and extraction were in agreement, as we relied on only one reviewer. The geographic, cross-sectional, and self-report concentration of the included studies, as well as the reporting of outcome and measurement heterogeneity, also limited us. These limitations focused on the framework and directions proposed in the lack of cross-country generalizability. Heterogeneity of measurement and outcome also limited us in analysis.

Acknowledgement

The authors would like to thank the editorial team and reviewers of The Balajian Journal of Management Research, Sri Balaji University, Pune, for their constructive feedback, which improved the quality of this manuscript. The authors also thank the Department of Commerce of concerned university for the institutional support extended during this research.

AI Disclosure

AI-based tools were used solely for basic grammar checking and language polishing of this manuscript. All research design, literature synthesis, analysis, and writing were conducted independently by the authors, who take full responsibility for the accuracy and integrity of the content.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study. All data extracted for this review are derived from the publicly available published studies cited in the reference list.

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