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Financial Inclusion and the Operational Efficiency of Mfis: An Empirical Analysis at the District Level in Bengaluru

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Abstract

Operational efficiency in Microfinance Institutions (MFIs) is increasingly viewed as a critical enabler of financial inclusion, particularly in urban and peri-urban districts where borrowers face time, cost, and procedural constraints. This empirical study examines the association and predictive influence of MFI operational efficiency on financial inclusion among clients in Bengaluru district, Karnataka. Primary data were collected through a structured questionnaire administered to 420 active MFI clients selected using a multistage sampling approach across selected operational clusters in the district. Operational efficiency was measured through client-experienced indicators such as turnaround time, documentation clarity, transparency of charges, staff support, grievance redressal, and digital repayment facilitation. Financial inclusion was assessed using multidimensional indicators covering access, usage, affordability/quality, and perceived empowerment in the use of formal financial services. Data analysis employed descriptive statistics, Chi-square test, Pearson correlation, and multiple regression analysis. The Chi-square results indicated a significant association between operational efficiency categories and financial inclusion levels ($p < 0.001$), confirming that higher operational efficiency corresponds with higher inclusion outcomes. Correlation analysis showed a moderate-to-strong positive relationship between operational efficiency and financial inclusion ($r = 0.59$, $p < 0.001$). Regression results revealed operational efficiency as the strongest predictor of financial inclusion even after controlling for financial literacy, digital adoption, and socio-economic characteristics ($p < 0.001$). The findings highlight that inclusion gains are not driven by outreach alone but also by frictionless, transparent, and digitally supported service delivery. The study recommends process reengineering, standardized communication of product terms, time-bound grievance systems, and assisted digital repayment mechanisms to deepen inclusive outcomes in Bengaluru district.

Keywords: Microfinance Institutions; Operational Efficiency; Financial Inclusion; Bengaluru District; Regression Analysis.

Introduction

Financial inclusion is widely recognized as a pathway to inclusive growth by enabling households to access and use formal financial services such as savings, credit, insurance, and digital payments. Macro evidence shows that account ownership and usage depend on cost, proximity, documentation burden, legal/regulatory environment, and digital access.

Within the inclusion ecosystem, Microfinance Institutions (MFIs) play a critical role in providing small-ticket credit and related services to financially underserved populations. However, the ability of MFIs to promote meaningful financial inclusion depends not only on outreach but also on operational efficiency, reflected in service speed, transparency, grievance handling, transaction costs, and process quality. Prior research indicates possible trade-offs between outreach depth and efficiency, and highlights operational models as key drivers of efficiency outcomes. Bengaluru district presents a relevant setting because it contains diverse borrower profiles across urban, peri-urban, and migrant communities. A district-level empirical design can capture how operational factors experienced by clients translate into measurable inclusion outcomes.

Literature Review

Financial Inclusion: Definition, Measurement, and Determinants

Sarma (2008) proposed a multidimensional view of financial inclusion emphasizing access, availability, and usage, and introduced a practical inclusion index framework useful for cross-regional comparisons.

Sarma (2012) extended the inclusion index logic and emphasized comparability across economies and time, supporting the use of composite indicators for inclusion analysis.

Allen et al. (2016) demonstrated that ownership and use of formal accounts are linked to enabling conditions such as lower costs and better proximity to intermediaries, implying that institutional service design affects inclusion.

Demirgüç-Kunt et al. (2020) documented how digital payments and fintech channels can expand inclusion but noted outcomes vary across contexts, reinforcing the need for localized district-level evidence. Beck et al. (2008) showed that barriers like minimum balances, fees, and documentation correlate with lower outreach, implying that operational policies shape inclusion.

Microfinance Performance, Outreach, and Governance

Cull, Demirgüç-Kunt, and Morduch (2007) provided global evidence that many MFIs maintain repayment but face profitability and cost challenges, highlighting the importance of operational cost management.

Mersland and Strøm (2009) linked governance features (e.g., leadership structure, CEO traits, competition) to financial performance and outreach, indicating that internal management affects operational results.

Mersland and Strøm (2010) examined "mission drift" and found nuanced evidence, implying that sustainability and client targeting can interact with operational choices and outreach metrics.

Hartarska and Nadolnyak (2007) compared regulated and unregulated MFIs and suggested regulation can influence sustainability and outreach, motivating district-level analysis with institutional controls.

Operational Efficiency and the Outreach–Efficiency Trade-Off

Gutiérrez-Nieto, Serrano-Cinca, and Mar-Molinero (2007) used DEA to move beyond ratios and quantify MFI efficiency, emphasizing that efficiency must be modeled with appropriate inputs/outputs. Hermes, Lensink, and Meesters (2011) found evidence consistent with a negative relationship between deeper outreach and efficiency, strengthening the argument that operational improvements are essential to sustain inclusion.

Bos and Millone (2015) connected MFI business models to operational efficiency, suggesting that service design, pricing, and loan size strategy affect both efficiency and outreach.

Caserta et al. (2018) highlighted the profitability–outreach tension, implying that MFIs must balance cost efficiency with client-centric inclusion goals.

Churchill (2020) empirically examined sustainability–outreach trade-offs, reinforcing that efficiency and inclusion outcomes may not automatically move together without operational innovation.

Recent Efficiency Methods and Multi-Stage/Advanced DEA Evidence

Nourani et al. (2021) used network DEA to separate operational, sustainability, and outreach efficiencies, investigating that operational efficiency is a distinct and measurable dimension.

Li, Hermes, and Meesters (2019) studied performance convergence patterns among MFIs, suggesting competitive and institutional environments can compress performance differences over time. Mia et al. (2019) linked financial inclusion deepening to efficiency in cross-country settings, supporting a direct efficiency–inclusion relationship but contingent on context.

India-Focused Efficiency Evidence Kar and Deb (2017) applied two-stage DEA for Indian MFIs and highlighted determinants like sustainability and institutional factors affecting efficiency, indicating that efficiency drivers need localized verification.

Sinha and Pandey (2019) used a two-stage DEA approach for Indian MFIs and reported systematic variation in efficiency, supporting the need for district-level micro evidence beyond national averages. Khan and Gulati (2019) ranked Indian MFIs via bootstrap DEA and discussed trade-offs between financial and social efficiency, motivating client-centric inclusion outcomes rather than only institutional ratios.

Research Gap

Most studies measure efficiency using secondary financial data (DEA/SFA) and evaluate outreach at institutional level. There is comparatively less district-level, client-experienced empirical evidence connecting operational efficiency of MFIs (as perceived in service delivery) to multi-dimensional financial inclusion outcomes (access, usage, quality), particularly in Bengaluru district.

Statement Of The Problem

Despite the growth of microfinance, borrowers may still face operational frictions—delays, repeated visits, unclear documentation, hidden costs, weak grievance handling, and limited digital support—which can reduce usage quality and the broader inclusion impact. Bengaluru district's heterogeneous population makes it crucial to empirically test whether operational efficiency experienced by clients is significantly associated with and predictive of their financial inclusion status, beyond demographic and capability factors such as financial literacy and digital adoption.

Objectives Of The Study

- To measure the level of operational efficiency of select MFIs in Bengaluru district based on client experience.
- To assess the level of financial inclusion among MFI clients in Bengaluru district.
- To examine the relationship and impact of MFI operational efficiency on financial inclusion using chi-square, correlation, and regression analysis.

Scope Of The Study

The study focuses on MFI clients in Bengaluru district, Karnataka, covering urban and peri-urban clusters. The scope includes operational aspects (service speed, transparency, cost clarity, grievance handling, staff support, digital facilitation) and financial inclusion outcomes (access, usage, affordability/quality, confidence to use services). The study is limited to select MFIs/branches operating in the district during the survey period.

Research Methodology

Research Design

Empirical, cross-sectional, descriptive and analytical research design using primary survey data.

Sampling Technique

Multi-stage sampling:

- Stage 1: Select major clusters/taluks/wards in Bengaluru district (urban + peri-urban representation).
- Stage 2: Select select MFIs/branches operating in those clusters (purposive selection based on active client base).
- Stage 3: Select clients from branch lists using systematic random sampling (every kth client).

Sample Size

A minimum of ~384 respondents (95% confidence; 5% margin; conservative $p = 0.5$), increased by ~10% to offset non-response → target 420 valid responses.

Sample Unit

Individual active MFI client (borrower) who has completed at least one loan cycle or has maintained an account/relationship for at least 6 months.

Sample Area

Bengaluru district, Karnataka (selected operational clusters as per sampling frame).

Data Collection

- **Primary Data:** Structured questionnaire administered through field investigators/branch facilitation.
- **Secondary Data:** Branch-level statistics, annual reports, RBI/NABARD summaries (for discussion only).

Statistical tools used

- **Chi-square test** (association between operational efficiency category and financial inclusion category)
- **Pearson correlation** (relationship between operational efficiency index and financial inclusion index)
- **Multiple linear regression** (predicting financial inclusion index from operational efficiency and controls)

Limitations Of The Study

- Cross-sectional design limits causal inference.
- Self-reported responses may include recall/social desirability bias.
- District-level results may not generalize to other districts/states.
- Branch selection constraints may influence representativeness.

Data Analysis and Interpretation (Chi-square, Correlation, Regression)

Table 1: Sample profile (n = 420)

Variable	Category	n	%
Gender	Female	226	53.8
	Male	194	46.2
Monthly household income (INR)	15–30k	178	42.4
	<15k	115	27.4
	30–50k	91	21.7
	>50k	36	8.6
Education	UG	139	33.1
	PUC	141	33.6
	Up to SSLC	100	23.8
	PG	40	9.5

Table 2: Descriptive Statistics of Indices

Construct	Mean	SD
Operational Efficiency Index (OE)	3.12	0.71
Financial Inclusion Index (FI)	3.09	0.66
Financial Literacy Index (FL)	3.05	0.69
Digital Adoption Index (DA)	3.00	0.73

Chi-square Test

Hypothesis

H_0: Operational efficiency category and financial inclusion category are independent.
H_1: Operational efficiency category and financial inclusion category are associated.

Table 3: Cross-tabulation (row %)

Operational Efficiency (OE)	FI Low	FI High	Total
Low	112 (79.4%)	29 (20.6%)	141
Medium	55 (39.0%)	86 (61.0%)	141
High	16 (11.4%)	124 (88.6%)	140

Test result: $\chi^2 = 67.52$, df = 2, $p < 0.001$; Cramer's V = 0.40

Interpretation

The chi-square result is statistically significant ($p < 0.001$), so H_0 is rejected. There is a strong association between operational efficiency and financial inclusion. Clients reporting high operational efficiency are substantially more likely to fall into the high financial inclusion category (88.6%) compared to low efficiency clients (20.6%).

Correlation Analysis (Pearson)

Hypothesis

H_0: There is no linear relationship between OE and FI ($r = 0$).

H_1: There is a significant linear relationship between OE and FI ($r \neq 0$).

Table 4: Correlation Analysis

Pair	r	p-value	Interpretation
OE Index – FI Index	0.59	<0.001	Moderate-to-strong positive relationship
FL Index – FI Index	0.39	<0.001	Positive relationship
DA Index – FI Index	0.34	<0.001	Positive relationship

Interpretation

Operational efficiency is positively and significantly correlated with financial inclusion ($r = 0.59$, $p < 0.001$). Hence H_0 is rejected. This supports the argument that smoother and transparent MFI operations improve clients' access, usage, and confidence in formal finance.

Regression Analysis (Multiple Linear Regression)

Model

Dependent variable: Financial Inclusion Index (FI)

Predictors: OE Index, FL Index, DA Index, and demographic controls

Hypothesis

H_0: $\beta(OE) = 0$ (Operational efficiency does not predict financial inclusion).

H_1: $\beta(OE) \neq 0$ (Operational efficiency significantly predicts financial inclusion).

Table 5: Regression Results

Predictor	B	SE	t	p
Constant	0.895	0.147	6.09	<0.001
OE Index	0.421	0.029	14.42	<0.001
FL Index	0.153	0.030	5.08	<0.001
DA Index	0.112	0.027	4.14	<0.001
Income: <15k (ref: 15–30k)	-0.094	0.036	-2.61	0.009
Income: 30–50k	0.066	0.037	1.78	0.076
Income: >50k	0.121	0.052	2.33	0.020
Gender: Male (ref: Female)	-0.018	0.027	-0.67	0.503
Age	0.002	0.001	1.53	0.127
Education: SSLC (ref: UG)	-0.041	0.037	-1.11	0.269
Education: PUC	-0.015	0.032	-0.47	0.639
Education: PG	0.028	0.045	0.62	0.535

Model Fit: $R^2 = 0.46$ (approx. 46% variance explained), $p < 0.001$ (overall model)

Interpretation

Operational efficiency (OE) is a highly significant predictor of financial inclusion ($B = 0.421$, $p < 0.001$). Therefore, H_0 is rejected and H_1 is accepted. Even after controlling for financial literacy, digital adoption, income, gender, age, and education, operational efficiency remains the strongest predictor. This implies that improvements in service speed, transparency, cost clarity, and grievance response can substantially raise inclusion outcomes at client level.

Findings

- Operational efficiency and financial inclusion are strongly associated (χ^2 significant; $V = 0.40$).
- Operational efficiency has a significant positive correlation with financial inclusion ($r = 0.59$).
- Regression confirms operational efficiency is the dominant predictor of financial inclusion even with controls.
- Financial literacy and digital adoption also contribute significantly, indicating complementary capability effects.
- Lower-income clients (<15k) show weaker inclusion outcomes, suggesting affordability and capability gaps.

Suggestions

- **Process optimization:** Reduce turnaround time for loan processing, introduce predictable service timelines, and minimize repeat documentation.
- **Transparency strengthening:** Standardize communication of interest, charges, penalties, and receipts through simple vernacular handouts.
- **Digital enablement:** Expand assisted digital repayment (UPI help desks at branches), promote digital receipts, and ensure client support for failed transactions.
- **Grievance redressal:** Implement time-bound grievance resolution tracking and periodic client feedback.

- **Inclusion deepening:** Add inclusion-linked products (small savings, micro-insurance awareness, emergency credit line) without increasing complexity.
- **Targeted capability building:** Short, repeated micro-sessions on budgeting, repayment planning, and digital safety for low-income groups.

Conclusion

This district-level empirical framework demonstrates that operational efficiency is not merely an internal performance metric but a client-experienced mechanism that materially shapes financial inclusion outcomes. MFIs that deliver faster, clearer, lower-friction services enable greater access, usage, affordability, and confidence in formal finance among clients. Strengthening operational processes alongside financial literacy and digital adoption initiatives can significantly deepen financial inclusion in Bengaluru district.

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