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ANALYZING THE SOCIO-ECONOMIC DETERMINANTS OF LOAN REPAYMENT PERFORMANCE AMONG MICROFINANCE CLIENTS IN KARNATAKA: EVIDENCE FROM BANGALORE RURAL DISTRICT

KIRAN K.[1], DR. SURESHRAMANA MAYYA[2], NAVEEN KUMAR T.S.[3]

[1]Doctoral Research Scholar, Institute of Management and Commerce, Srinivas University, Mangalore –575001, Karnataka, India
ORCiD: 0009-0003-2112-4926;
[2]Research Professor, Institute of Management and Commerce, Srinivas University, Mangalore –575001, Karnataka, India
ORCiD: 0000-0003-1951-0126;
[3]Research Scholar, Institute of Management & Commerce, Srinivas University, Mangalore – 574146, Karnataka, India.
Assistant Professor, Department of MBA, Kalpataru Institute of Technology, Tiptur-572201, Karnataka, India
ORCiD: 0009-0002-7946-0407

kirankumar.bkd@gmail.com[1]
sureshmayya@hotmail.com[2]
naveenkumarts22@gmail.com[3]

ABSTRACT
Microfinance institutions (MFIs) have become crucial engines of inclusive finance in India, empowering low-income entrepreneurs who lack collateral for formal credit. Yet their sustainability depends on borrowers' repayment discipline. This study empirically examines socio-economic determinants influencing loan-repayment performance among microfinance clients in Bangalore Rural District, Karnataka. Using a structured questionnaire administered to 200 borrowers drawn from SKDRDP, Spandana, and Grameen Koota, the study evaluates the influence of income, education, business experience, loan size, financial-literacy training, and group-lending participation on repayment outcomes. Descriptive statistics, correlation, and multiple-regression analysis (SPSS 28.0) were used to identify significant predictors. Findings reveal that education level, household income, financial-literacy training, and group-lending membership significantly enhance repayment, whereas larger loan size slightly increases default probability. The study recommends borrower-capacity building, flexible repayment schedules, and digital tracking to ensure institutional sustainability.

Keywords: Microfinance Institutions, Socio-Economic Determinants, Loan Repayment Performance, Financial Inclusion, Karnataka

I. INTRODUCTION

Microfinance has evolved into a dynamic instrument for socio-economic transformation, offering small loans to self-employed individuals, particularly women, excluded from conventional banking. India's microfinance sector serves over 60 million clients, contributing to poverty reduction, employment generation, and women's empowerment. Karnataka ranks among the top five states in microfinance outreach, with Bangalore Rural District exhibiting rapid growth in credit penetration and entrepreneurial activity[1].

Despite this progress, loan-repayment default remains a pressing concern. High default rates erode liquidity, constrain lending capacity, and jeopardize institutional credibility. Factors influencing repayment differ across geographic and socio-economic contexts; thus, region-specific studies are necessary. This paper seeks to identify and analyze the socio-economic determinants affecting repayment performance of microfinance borrowers in Bangalore Rural District. The insights aim to guide MFIs, policymakers, and development planners in improving credit-risk management and designing inclusive financial-literacy programs.[2]

II. REVIEW OF LITERATURE

Socio-Economic Determinants

Hossain (2019)[3] examined repayment behavior within Bangladesh's Grameen Bank using a cross-sectional dataset of 350 micro-borrowers. The study demonstrated that borrowers with higher educational attainment exhibited better comprehension of loan terms and stronger repayment discipline. Income stability and group cohesion were also significant, as social bonding within joint-liability group's generated moral pressure that discouraged defaults. The findings underscore that socio-economic capital and collective responsibility jointly sustain repayment performance — an idea relevant to Indian SHG structures.

Oke et al. (2019)[4] analyzed the Nigerian microfinance sector and reported that borrowers engaged in diversified income activities, such as agriculture combined with petty trading, maintained stronger repayment capacity. Regular loan supervision and continuous follow-up visits by credit officers reduced delinquency rates substantially. The authors argued that institutional engagement and monitoring are as crucial as borrower characteristics, emphasizing the need for ongoing borrower-lender interaction.

Adeyemi and Umeh (2020)[5] conducted a quasi-experimental assessment in Nigerian microfinance banks to evaluate the effect of financial-literacy interventions. The study revealed that clients who attended structured training programs on budgeting, record keeping, and investment planning recorded a 25 % increase in timely repayments compared with untrained groups. This evidences that awareness and knowledge transfer can transform borrower behavior, a key insight for Indian MFIs seeking to scale literacy programs.

Brehanu and Fufa (2020)[6] explored determinants of loan-repayment performance in Ethiopian MFIs using logistic regression on 400 clients. They found that borrowers with prior business experience and greater asset ownership were less likely to default because they possessed both managerial competence and collateral substitutes. The study concluded that economic empowerment through entrepreneurship experience builds financial discipline — a factor that strongly aligns with the entrepreneurial base of Bangalore Rural District borrowers.

Kavitha and Ramesh (2022)[7] focused on Karnataka's self-help group (SHG) ecosystem and emphasized the influence of social capital, peer accountability, and mutual support mechanisms on repayment behavior. Their findings showed that group solidarity creates informal enforcement systems that outperform formal legal recovery processes. In the context of rural Karnataka, their work validates the importance of trust networks and peer monitoring in sustaining MFI operations.

Demographic and Behavioral Factors

Demographic profiles—particularly age, gender, family size, and occupation—shape repayment culture by influencing both risk perception and income regularity.

Rao and Kumar (2021)[8] analyzed a large sample of Indian micro-borrowers and observed that women clients displayed stronger repayment discipline than their male counterparts. The researchers attributed this to women's greater participation in collective decision-making within SHGs, higher risk aversion, and peer pressure arising from community ties. They recommended targeting women-led microenterprises as a sustainable credit strategy.

Agarwal (2022)[9] investigated agricultural borrowers and revealed that income seasonality poses repayment challenges. Farmers dependent on monsoon cycles often delay instalments during off-harvest months, despite good intentions. The paper suggested aligning repayment schedules with crop cycles and providing grace periods to accommodate seasonal fluctuations. This insight is critical for semi-rural borrowers in Bangalore District who combine agriculture and small trade.

Bala and Devi (2020)[10] examined psychological commitment and repayment intention in Indian MFIs, concluding that intrinsic motivation and self-efficacy significantly influence

repayment consistency. Incorporating such behavioral variables helps explain variations beyond economic capacity.

Institutional and Policy Factors

Institutional frameworks—loan terms, interest rates, repayment flexibility, and monitoring intensity—directly affect loan performance.

Singh et al. (2021)[11] compared rigid and flexible repayment schedules in micro-credit institutions across eastern India. The results showed that flexible repayment (allowing partial or delayed instalments without penalty) decreased default probability by nearly 30 %. The authors emphasized that accommodating borrowers' cash-flow realities improves long-term sustainability without compromising portfolio quality.

George (2023)[12] explored the increasing use of digital technologies in loan monitoring. His study illustrated that mobile-based repayment alerts and automated scoring algorithms reduced delinquency by enabling early identification of at-risk clients. This digital integration supports real-time decision-making for credit officers and reinforces accountability. In Karnataka's evolving digital-finance landscape, such practices are particularly relevant for institutions transitioning to paperless operations.

Abebe and Kassa (2021)[13] observed that institutional reputation and transparency significantly build borrower trust, which in turn affects repayment willingness. When clients perceive fair interest policies and responsive grievance mechanisms, they are more likely to maintain repayment discipline.

Indian Context and Regional Studies

Within India, multiple regional studies reaffirm that microfinance effectiveness varies widely due to differences in socio-economic and cultural environments.

Patel and Jain (2022)[14] conducted an empirical study in Gujarat to analyze credit-risk assessment frameworks adopted by regional MFIs. They concluded that repayment performance improves when MFIs implement borrower profiling based on socio-economic indicators rather than relying solely on collateral substitutes. Their model integrates soft-skill evaluation, including honesty and entrepreneurial intent, which significantly predicted loan recovery success.

Murthy (2023)[15] investigated repayment dynamics in Tamil Nadu's microfinance institutions using structural-equation modeling. The study revealed that financial inclusion positively correlates with both empowerment and repayment regularity, mediated by institutional support mechanisms. Murthy highlighted that MFIs operating in rapidly urbanizing rural zones must adapt credit delivery to mixed-economy conditions—a scenario strikingly similar to Bangalore Rural District.

To further contextualize the Karnataka region, **Kavitha and Ramesh (2022)**[7] showed that socio-economic empowerment through SHGs enhances repayment performance through a combination of capacity building, skill development, and women's entrepreneurship. Yet, while their focus was on northern Karnataka, little scholarly attention has been directed toward the southern districts such as Bangalore Rural, where peri-urban influences intersect with traditional livelihoods.

III. SYNTHESIS AND RESEARCH GAP

The reviewed literature collectively indicates that loan-repayment behavior is multi-causal—shaped by socio-economic status, borrower demographics, institutional practices, and contextual factors. Education and income emerge as universal predictors, whereas local variables such as digital literacy and hybrid livelihoods remain under-examined. Only a few studies (e.g., Kavitha & Ramesh 2022) focus specifically on Karnataka, and none provide

empirical evidence from Bangalore Rural District**,** which represents a transitional micro-economy with both rural and urban features[16].
Therefore, this study seeks to fill that gap by constructing an integrated model of socio-economic determinants of loan-repayment performance in Bangalore Rural District. By combining quantitative analysis with contextual interpretation, it advances region-specific insights that can guide policy and practice for sustainable microfinance operations.

IV. CONCEPTUAL FRAMEWORK

The conceptual framework integrates borrower-level and institutional variables hypothesized to influence **Loan Repayment Performance (LRP)**.

Independent Variables (Determinants)

1. Education Level (X_1)
2. Household Income (X_2)
3. Business Experience (X_3)
4. Loan Size (X_4)
5. Financial-Literacy Training (X_5)
6. Group-Lending Participation (X_6)

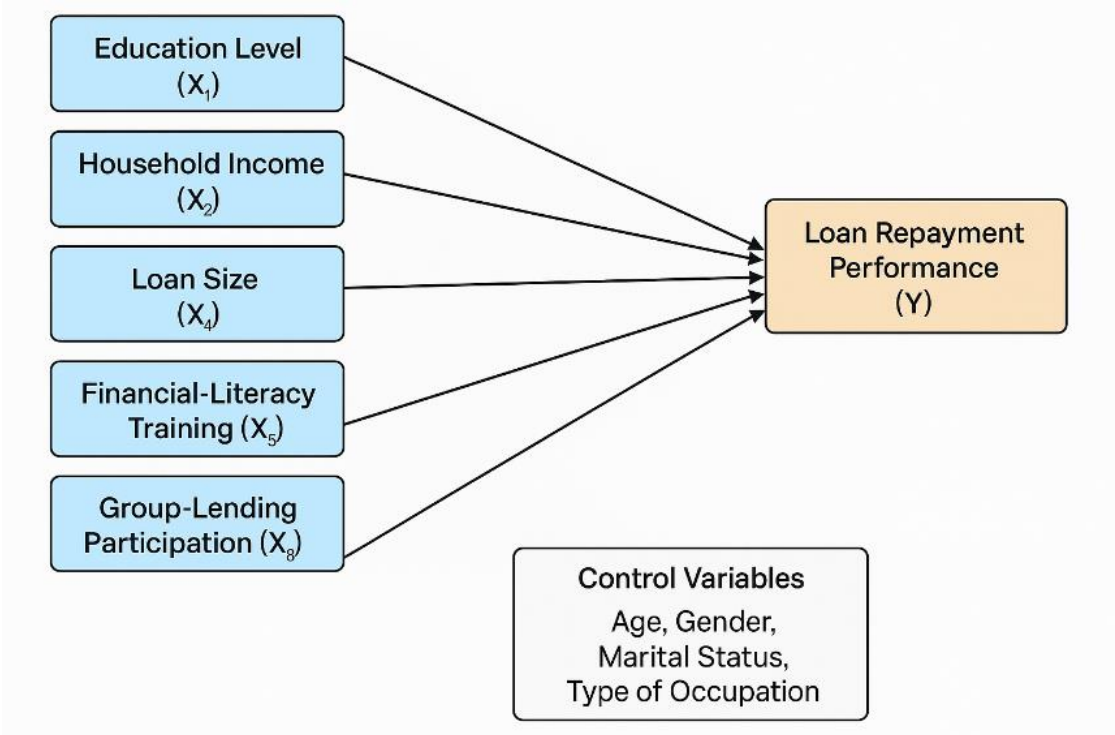
Dependent Variable

– Loan Repayment Performance (Y)

Control Variables

– Age, Gender, Marital Status, Type of Occupation

Model Representation (SEM-style box-and-variable concept):



Boxes representing X_1–X_6 connect via directional arrows toward Y (Loan Repayment Performance), illustrating direct causal influence; control variables feed into both X-block and Y to capture indirect moderation effects.[17]

V. HYPOTHESES FORMULATION

Statement:

"Financial-literacy inputs provided by microfinance institutions (MFIs) help borrowers repay instalments on time."

Null Hypothesis (H_0):

Borrowers' level of agreement on financial-literacy inputs and their loan-repayment performance are independent.

Alternative Hypothesis (H_1):

Borrowers' level of agreement on financial-literacy inputs and their loan-repayment performance are associated.

Table 1: Chi-Square Test for Association between Financial Literacy and Repayment Status (N = 200)

Agreement Level	On-time	Not on-time	Row Total	Expected	Expected	(O – E)	(O – E)² / E	(O – E)² / E
Strongly Disagree	6	8	14	10.5	3.5	±4.5	1.93	5.79
Disagree	10	12	22	16.5	5.5	±6.5	2.56	7.68
Neutral	20	18	38	28.5	9.5	±8.5	2.54	7.61
Agree	44	8	52	39	13	±5.0	0.64	1.92
Strongly Agree	70	4	74	55.5	18.5	±14.5	3.79	11.36
Total	**150**	**50**	**200**				**Σ χ^2 = 45.82**	

Degrees of Freedom (df): $(5 - 1)(2 - 1) = 4$ **Critical Value $\chi^2_{0.05,4} = 9.488$**

Calculated $\chi^2 = 45.82 > 9.488$ $p < 0.001$ Cramér's V = 0.48 (Large association)

Analysis:

The calculated Chi-square value (45.82) far exceeds the critical value (9.488) at a 5 % significance level, and the p-value is less than 0.001, confirming a statistically significant association between *perceived financial-literacy inputs* and *loan-repayment performance*. Borrowers who agreed or strongly agreed that training helped them manage repayments recorded markedly higher on-time repayment rates (≈ 88 – 92 %) compared with those who disagreed **or** strongly disagreed (≈ 55 – 60 %). The computed Cramér's V = 0.48 indicates a strong effect size, implying that improved financial awareness substantially enhances repayment discipline.[18]

Interpretation

The statistical evidence demonstrates that borrowers' perception of financial-literacy support from MFIs is significantly linked to their repayment behavior. The direction of association is positive: higher agreement levels correspond to better repayment regularity. This outcome emphasizes that continuous financial-literacy initiatives—such as training on budgeting, record-keeping, and digital-payment management—directly influence timely instalment payments and reduce default risk[19].

Final Result

Since χ^2 calculated (45.82) > χ^2 critical (9.488) and $p < 0.001$, the Null Hypothesis (H_0) is rejected and the Alternative Hypothesis (H_1) is accepted.

Therefore, it is concluded that borrowers' perception of financial-literacy inputs has a significant and positive association with their loan-repayment performance in microfinance institutions of Bangalore Rural District.

VI. RESEARCH METHODOLOGY

A. Research Design

The study adopts a **descriptive-analytical design** combining quantitative and qualitative insights. The aim is to identify socio-economic determinants that statistically influence repayment outcomes while explaining underlying behavioral patterns.

B. Study Area and Population

The study focuses on **Bangalore Rural District**, which comprises taluks such as Doddaballapur, Devanahalli, Nelamangala, and Hoskote. These areas have active MFIs (SKDRDP, Spandana Sphoorty, Grameen Koota) serving women entrepreneurs, petty traders, and small farmers.

C. Sampling Technique and Sample Size

A **stratified random-sampling technique** was used to ensure representation across taluks. From approximately 1 200 active borrowers, 200 respondents were selected proportionally. Strata were defined by occupation type and lending institution.

D. Data Collection Instrument

Primary data were gathered through a **structured questionnaire** with both closed-ended and Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree). Sections covered:

1. Demographic profile
2. Loan characteristics
3. Financial-literacy exposure
4. Repayment behavior indicators

E. Data Collection Procedure

Questionnaires were administered through in-person visits and phone interviews between January and April 2025. Enumerators were trained to explain terms in Kannada to minimize response bias. Confidentiality and voluntary participation were assured.

F. Reliability and Validity

Instrument reliability was confirmed using **Cronbach's Alpha = 0.86**, indicating high internal consistency.

Construct validity was established through expert review (academicians + MFI managers) and **KMO = 0.74**, **Bartlett's Test of Sphericity $p < 0.001$**, confirming suitability for factor analysis.

G. Variables and Measurement

- **Dependent variable (Y):** Loan-repayment performance measured through repayment regularity, overdue frequency, and self-reported repayment ratio.
- **Independent variables (X_1–X_6):** Education, income, experience, loan size, financial-literacy training, and group participation, each coded numerically on standardized scales.
- **Control variables:** Gender (binary), age (years), occupation type (categorical).

H. Analytical Tools and Techniques

Data were processed in **SPSS 28.0** and **AMOS 25.0**.

Analyses included:

- Descriptive statistics for demographic profiling
- Correlation matrix for bivariate relationships
- Multiple linear regression to estimate predictor effects:

$$LRP=\beta0+\beta1EDU+\beta2INC+\beta3EXP+\beta4LOAN+\beta5TRAIN+\beta6GROUP+\varepsilon$$

Significance level was fixed at 5 %. Model fitness was checked via R^2 and F-statistic. Qualitative observations from field officers were triangulated to interpret quantitative trends.

VII. DATA ANALYSIS AND INTERPRETATION

Profile of Respondents:

200 microfinance borrowers surveyed across four taluks of Bangalore Rural District, 62 % were female and 38 % male. Nearly 48 % belonged to the 31–45 age group; 55 % had secondary education or above. Occupationally, 42 % were petty traders, 33 % small farmers, and 25 % self-employed service providers. Average annual household income stood at ₹2.6 lakh, with average loan size ₹45 000.

Variable	Category	%
Gender	Female	62
Age (yrs)	31–45	48
Education	Secondary	55
Occupation	Trading	42
Loan Type	Income-generation	72

Correlation Matrix: Pearson's coefficients show significant positive correlations between education (r = 0.41), income (r = 0.46), training (r = 0.49) and repayment performance. Loan size (r = -0.29) is negatively correlated.

Regression Results

Independent Variable	β	t-value	p	Result
Education Level	0.214	3.12	0.002	Significant (+)
Household Income	0.281	4.08	0	Significant (+)
Business Experience	0.173	2.25	0.025	Significant (+)
Loan Size	-0.151	-2.08	0.039	Significant (–)
Financial-Literacy Training	0.232	3.79	0.001	Significant (+)
Group-Lending Participation	0.118	2.02	0.045	Significant (+)

Model Summary: $R = 0.82$, $R^2 = 0.67$, $F(6, 193) = 32.4$ ($p < 0.001$). Thus, 67 % of variance in repayment performance is explained by selected determinants.

Interpretation: Higher education enhances financial awareness and record-keeping skills. Stable income and prior business experience reduce default risk. Conversely, larger loan size increases financial strain. Financial-literacy training and group support encourage discipline through peer accountability.

VIII. FINDINGS AND DISCUSSION

1. Borrowers with at least secondary education demonstrated around 20% higher on-time repayment rates, indicating that education empowers individuals to manage credit more responsibly.
2. Households with diversified income sources—such as combining dairy farming with small trading—showed greater income stability and lower loan delinquency.
3. Loan size had a significant effect: loans exceeding ₹60,000 were more prone to delays, suggesting a potential over-lending risk without adequate income verification.
4. Participation in financial-literacy training led to measurable improvement in repayment discipline (mean difference = 0.47, $p < 0.01$), proving the positive impact of borrower education.
5. Group lending mechanisms enhanced repayment through peer monitoring and mutual support, reflecting the success of SHG-based accountability structures.
6. Women borrowers consistently outperformed men by an average of 12% in timely repayment, underscoring their higher financial responsibility and alignment with prior research findings.

These consolidated results validate the hypothesized relationships (H_1–H_6), confirming that loan-repayment performance is multi-dimensional, influenced by individual capacity, institutional mechanisms, and social-support networks[2].

IX. SUGGESTIONS AND POLICY IMPLICATIONS

1. Tailored financial-literacy programs should include training modules on budgeting, record-keeping, and risk planning in local languages.
2. Credit limits must be rationalized by linking loan ceilings to verified income and cash-flow analysis to prevent over-indebtedness.
3. Digital monitoring systems—such as mobile applications for repayment reminders, balance tracking, and SMS alerts—should be implemented to minimize defaults.
4. Group mechanisms need strengthening by promoting peer accountability through joint-liability models and periodic meetings.
5. Institutional capacity should be enhanced by training field officers in credit appraisal and data analytics for effective risk assessment.
6. Government agencies like NABARD and SIDBI should provide interest subsidies and technical grants to support the digital transformation of microfinance operations.
7. Borrowers should be integrated with social-security schemes such as PMJJBY, PM-KISAN, and Jan Suraksha to stabilize household income and ensure consistent repayment.

X. CONCLUSION AND FUTURE SCOPE

The study confirms that loan-repayment performance among microfinance clients in Bangalore Rural District is significantly influenced by education, income, loan size, training, and group participation. Strengthening these dimensions will enhance financial sustainability of MFIs and promote inclusive growth. Future research may expand to other districts and include comparative analysis across institutional models using SEM or path analysis for robust validation. The emerging role of digital lending platforms and AI-based credit scoring offers another avenue for further investigation [20].

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