Financial Literacy and Loan Repayment Behaviour: An Empirical Analysis of Borrowers

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Abstract

Financial literacy has the potential to impact financial borrowing decisions, the awareness of financial costs, and financial repayment. Having an understanding of the workings of interest rates, loan terms, equated monthly instalments (EMI), repayment dates, penalties, and credit scores will help consumers plan for their loans and fulfill their obligations. However, merely having financial awareness is not enough to ensure frequent repayments as income, age, education, loan amount and other personal factors can play a role in determining a borrower's choice. This study examines the association between financial literacy and individual borrowers' loan repayment behaviour. It takes into account borrowers' knowledge of financial principles and their repayment history including timely EMI payments, planning for scheduled payments and ensuring payments are not done late, thereby avoiding late payment penalties. Some demographic and loan specific factors are also taken into account. Why this topic is important: Better financial information and financial knowledge will likely result in more informed borrowing, a better ability to manage repayments, and healthier credit practices, and it is important to borrowers, lenders and policy makers. The study seeks to make a contribution to the financial education and awareness campaigns and programs to facilitate responsible loan management.

This study aims to explain the loan repayment behaviour of borrowers by analyzing their financial literacy, credit risk, and some other factors. The purpose of the study is to determine the loan repayment behaviour of borrowers by analysing the financial literacy and credit risk of the borrowers and other factors.

1. Introduction

Formal credit has become easier to access via digital lending platforms and microfinance and retail banks. Therefore, even many of the first time borrowers are now incorporated in the credit system. But merely having a loan is not enough to ensure it is well managed. It is important for borrowers to understand interest rates, how interest is compounded, how EMI is calculated, penalties and the repercussions of defaulting payments. If this information is not available, individuals can take on more debt than they can afford, forget to pay their bills or end up in a cycle of debt. The issues can also impact lenders as it raises the danger of non-performing possessions.

Financial literacy is defined as what people know, know-how and think about to make good financial choices. It is therefore a matter of great concern to regulators and policymakers. This issue is significant in India in the context of the National Strategy for Financial Education of the Reserve Bank of India and the financial-literacy survey carried out by the National Centre for Financial Education. Despite this, there is a need to further examine the association between financial knowledge and actual repayment practices based on information from individual borrowers. While delayed payments and defaults may put a strain on borrowers' and institutions' finances, the relationship between financial literacy and repayment (beyond income and demographics) may change. In this backdrop, the present study explores the financial literacy and loan repayment behaviour relationship. It involves primary data gathered from 200 borrowers and employs the chi-square test, one-way ANOVA and multiple linear regression for analysis.

2. Conceptual Framework

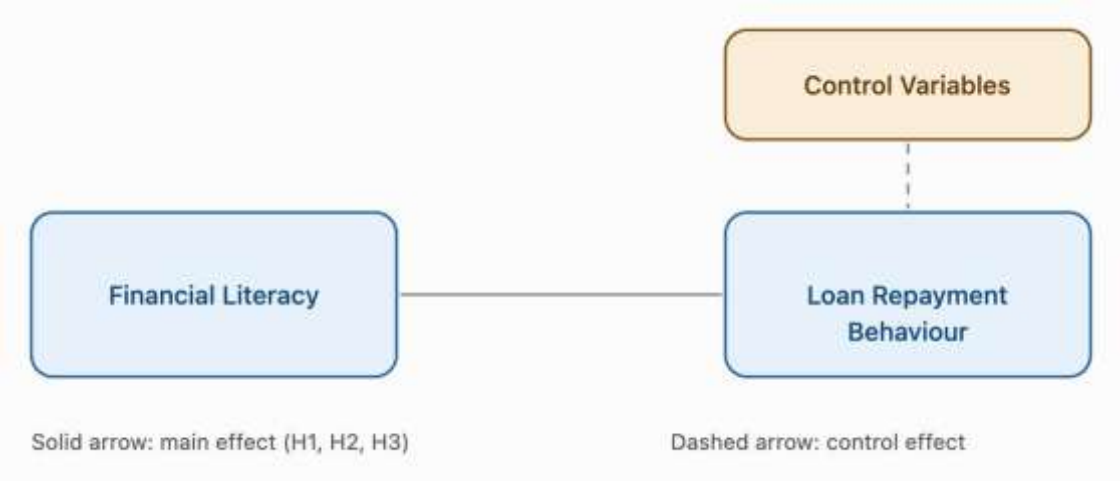


Figure 1. The study framework was conceptualized.

Research Objectives

i. To determine the financial literacy of borrowers of a loan.
ii. To investigate relationship between financial literacy level and loan repayment status.
iii. To compare the repayment behaviour of borrowers with low, medium and high financial literacy.
iv. To analyse the association between financial literacy and repayment behaviour, controlling for income, age, education, the amount of loan and gender.

3. Research Hypotheses

Alternate Hypothesis (H1-1): There is a significant association between financial literacy level and loan repayment status.

Alternative Hypothesis (H1-1): There is a significant association between the financial literacy level and loan repayment status (chi-square test).

Alternate Hypothesis (H1-2): At least one of the mean repayment behaviour for the low, medium and high financial literacy groups is different.

Alternative Hypothesis (H1-2): There is a significant difference in repayment behavior between the high financial literacy, medium financial literacy and low financial literacy groups (ANOVA).

Research Null Hypothesis (H0-3): After controlling for other variables, financial literacy does not have a significant effect on repayment behaviour.

Alternative Hypothesis (H1-3): Financial literacy, other things being equal, has a significant positive influence on repayment behaviour (regression).

4. Research Gap

Most of the research on over-indebtedness or credit-card usage is based on developed economies, whereas there are fewer studies examining retail borrowing in developing economies. A small number of studies evaluate the link between financial literacy and repayment, and a few of them also compare repayment rates between the different literacy groups and estimate the link between financial literacy and repayment while controlling for several borrower characteristics in the same study. This study fills that void by analysing financial literacy and repayment behaviour of retail borrowers based on Chi-square analysis, ANOVA and Multiple regression on one borrower sample.

5. Review of Literature

Lusardi and Mitchell (2014) commented on the importance of financial literacy in economic decisions. According to their review, low financial literacy is widespread among the countries and is associated with poorer financial planning and higher cost of borrowing, and reduced access to formal financial services.

According to the S&P Global Financial Literacy Survey (Klapper, Lusardi and van Oudheusden 2015), approximately one-third of all adults around the world are financially literate. Their results also identified regional and inter-country and inter-group disparities by gender and income.

Lusardi and Tufano (2015) explored debt literacy and people's experiences with debt. They discovered that individuals who don't understand borrowing expenses are more likely to be using high cost monetary products and to struggle with debt.

Gathergood (2012) explored financial literacy, self-control and over-indebtedness of consumers. The results showed that lower financial literacy and lower self-control were associated with increased risk of being over-indebted.

Disney and Gathergood (2013) studied the relationship between financial literacy and consumer credit portfolios. Their study indicated that people with insufficient financial literacy are more likely to take more expensive credit products.

Stango and Zinman (2009) studied the understanding of exponential growth in household finance. Their findings revealed that borrowers who do not comprehend compounding may have an understated estimation of interest costs and, in turn, may borrow more than they would if they understood the compounding process.

The OECD/INFE pilot study developed a measure of financial-literacy by Atkinson and Messy (2012). It assembled the financial knowledge, behaviour and attitudes, and has been used as a starting point in creating financial-literacy surveys.

Overall, these studies suggest that improved financial literacy is associated with better financial knowledge and more responsible credit behavior. But the connection between the behaviour of repayment and the setting, the calculations of literacy, and the other factors that are accounted for in the analysis, can vary.

7. Research Methodology

Designing a research plan and determining a data source.

This study is descriptive, cross sectional and quantitative. Primary data was gathered from the borrowers using a structured questionnaire. The study population comprised the individuals who have borrowed a personal loan, home loan, education loan, vehicle loan or business loan from banks, non-banking financial companies (NBFCs) or microfinance organizations (MFIs) in Vijayawada, Andhra Pradesh. The sample size was 200 subjects that were taken by stratified random sampling. It is a practical basis for a regression model with six predictors, as well as for analysing the categorical relationships; in addition, the suitability of statistical tests also depends on the distribution of the responses and the assumptions of each test.

7.2 Questionnaire and measurement

There are three parts to the questionnaire. Section A includes demographic information and loan characteristics of respondents. Section B is a series of 10 questions covering financial literacy - numeracy; interest/comprising; inflation; risk diversification; credit awareness; each correct answer is worth 1 mark. To measure repayment behaviour, section C uses five point Likert statements ranging from 'strongly disagree' (1) to 'strongly agree' (5). These statements cover timely EMI payments, avoiding penalties and avoiding default. Repayment status is also indicated as 'Timely' or 'Delayed'. The outline of the questionnaire is given in Appendix A and the variables and their measurement are summarised in Table 1.

Table 1: Variables and measurement

Variable	Type	Measurement
Repayment Behaviour Index	Dependent (continuous)	Mean of Likert items, 1–5
Repayment Status	Dependent (categorical)	Timely / Delayed
Financial Literacy Score	Independent	Correct answers, 0–10
Financial Literacy Level	Independent (categorical)	Low 0–4; Medium 5–7; High 8–10
Monthly Income	Control	Rs '000
Age	Control	Years
Education Years	Control	Years of schooling
Loan Amount	Control	Rs '000
Gender	Control (dummy)	Female = 1, Male = 0

Source: Author's questionnaire design.

7.3 Statistical tools

The data were analysed using Microsoft Excel. Descriptive statistics were used to describe the respondents and the main study variables. The chi-square test of independence was used to study the relationship between two categorical variables and Cramér's V was used to measure the association between these variables. The average repayment-behaviour index was therefore compared between the three financial-literacy groups by conducting one-way ANOVA. Eta squared was employed as an effect-size measure, and Bonferroni adjusted pairwise comparisons were employed to determine differences between groups. The relationship between financial literacy and repayment index was evaluated using multiple linear regression with LINEST which took into consideration financial income, age, years of education, loan size and gender. Throughout, a significance level of 5% ($\alpha = 0.05$) was used.

The regression model is given by $RBI = \beta0 + \beta1(FL\ Score) + \beta2(Income) + \beta3(Age) + \beta4(Education\ Years) + \beta5(Loan\ Amount) + \beta6(Gender) + \varepsilon$

8. Data Analysis and Interpretation

8.1 Demographic profile of respondents

Table 2: Profile of respondents (N = 200)

Variable	Category	Frequency	Percentage
Gender	Male	107	53.5%
	Female	93	46.5%
Education	Up to HSC	54	27.0%
	Graduate	94	47.0%
	Postgraduate	52	26.0%
Financial literacy level	Low (0–4)	54	27.0%
	Medium (5–7)	122	61.0%
	High (8–10)	24	12.0%
Repayment status	Timely	131	65.5%
	Delayed	69	34.5%

Source: Author's analysis.

Among the 200 respondents, 107 (53.5%) were male and 93 (46.5%) were female. In terms of education, 54 respondents (27.0%) had studied up to HSC, 94 (47.0%) were graduates and 52 (26.0%) were postgraduates. The mean age was 36.4 years and the standard deviation 9.1 years. In the area of financial literacy, 54 respondents (27.0%) belonged in the low-literacy group, 122 (61.0%) to the medium group and 24 (12.0%) to the high group. Overall, 131 borrowers (65.5%) indicated that they paid their loan on time, and 69 (34.5%) indicated they paid their loan late.

8.2 Descriptive statistics

Table 3: Descriptive statistics of numeric variables (n = 200)

Variable	Mean	SD	Min	Max
Repayment Index (1–5)	3.49	0.78	1.03	5.00
FL Score (0–10)	5.59	1.79	0	10
Monthly Income (Rs '000)	36.29	11.33	8.0	62.1
Age (years)	36.37	9.13	21	60
Education Years	14.71	1.84	12	17
Loan Amount (Rs '000)	628.16	206.65	56	1,121

Source: Author's analysis.

8.3 Chi-square test of independence

A chi-square test of independence was used to see if there was a relationship between ssfinancial-literacy level and repayment status. The first research hypothesis was tested in this analysis.

Table 4 shows the financial literacy level and repayment status.

FL Level	Timely	Delayed	Total	% Timely
Low	25	29	54	46.3%
Medium	86	36	122	70.5%
High	20	4	24	83.3%
Total	131	69	200	65.5%

Source: Author's analysis. Minimum expected count = 8.28.

The result of the chi-square formed was statistically significant, with a result of $\chi^2(2) = 13.54$, $p = .001$. Conclusion: The result value is greater than the value of 5% significance level, thus, the null hypothesis (H0-1) is rejected. The correlation was small to moderate with a Cramér's V correlation coefficient of .26. The percentage repayment increased from 46.3% of borrowers to 83.3% of borrowers in the high-literacy group. All numbers of cells counted were greater than 5 and the assumption made for this test was met because the minimum number of cells counted was 8.28. The results are in agreement with H1-1.

In addition, education level was cross tabulated with the repayment status. However, the correlation was not statistically significant at the 5% level (χ^2 (2) = 5.50, $p = .064$, V = Cramér .17). 53.7% of the education upto HSC said repayment was done in time, 67.0% among graduates and 75.0% among post graduates said they pay repayment on time. This trend of rising percentages in the test is not enough to make a statistically significant association at the selected value.

8.4 One-way ANOVA

One-way ANOVA was employed to compare the average repayment-behaviour index of the three groups – low, medium and high financial literacy. This is an investigation of the second hypothesis.

Table 5: Repayment Behaviour Index by financial literacy level

FL Level	N	Mean	SD	Variance
Low	54	2.81	0.74	0.548
Medium	122	3.64	0.60	0.356
High	24	4.26	0.51	0.259
Overall	200	3.49	-	-

Source: Author's analysis.

Table 6: ANOVA summary

Source	SS	df	MS	F	p
Between groups	41.659	2	20.830	52.53	< .001
Within groups	78.116	197	0.397		
Total	119.775	199			

Source: Author's analysis.

The ANOVA result was statistically significant, $F(2, 197) = 52.53$, $p < .001$. The value of F is much higher than the critical value F (3.04), so the null hypothesis (H0-2) is rejected. The effect size was large ($\eta^2 = .35$); roughly 35% of the variation in repayment-behaviour scores was explained by the difference between the financial-literacy groups. The results agree with H1-2.

Bonferroni's comparisons reveal that the differences among all of the literacy groups are statistically significant. The average score for the medium literacy group and the lowest score for the low literacy group were found, and the high literacy group had a score between the other two groups.

8.5 Multiple regression analysis

After controlling for income, age, years of education, loan amount and gender, multiple linear regression was performed to determine if financial literacy is related to the repayment-behaviour index. The third hypothesis was tested in this analysis.

Table 8: Regression model summary

R	R^2	Adjusted R^2	Std. error
0.736	0.541	0.527	0.534

Source: Author's analysis.

Table 9: ANOVA of the regression model

Source	df	SS	MS	F	Sig. F
Regression	6	64.842	10.807	37.97	< .001
Residual	193	54.933	0.285		
Total	199	119.775			

Source: Author's analysis.

Table 10: Regression coefficients (dependent variable: Repayment Behaviour Index)

Predictor	B	SE	t	p	Std. β	Sig.
Intercept	1.188	0.348	3.41	.001	-	Yes
FL Score	0.266	0.024	11.26	< .001	0.613	Yes
Income (Rs '000)	0.007	0.004	1.66	.099	0.098	No
Age	0.013	0.004	2.98	.003	0.147	Yes
Education Years	0.035	0.026	1.38	.170	0.084	No
Loan Amount (Rs '000)	-0.0007	0.0002	-3.74	< .001	-0.191	Yes
Gender (Female = 1)	0.108	0.079	1.38	.169	0.070	No

Source: Author's analysis.

The overall regression model was statistically significant ($F(6, 193) = 37.97$, $p < .001$), and accounted for 54.1% of the variance in the repayment-behaviour index (adjusted $R^2 = .527$). Repayment behaviour was found to be positively and statistically significantly related to financial literacy. When assuming all other variables are constant, each point on the literacy test was associated with a 0.27 point increase in the repayment index. This coefficient ($\beta = .61$) was the largest of the predictors in the model, and was standardised. Repayment behaviour was also positively correlated with age, and negatively correlated with loan size. After the other variables were taken into account, income and years of education and gender were not statistically significant. Finally, the highest correlation between the predictors was .53 between income and years of education, indicating little concern for high multicollinearity. The 3rd through 4th hypothesis is accepted, and the 1st through 2nd hypothesis is rejected.

9. Summary of Hypothesis Testing

Table 11: Summary of hypotheses

Hypothesis	Test applied	Key statistics	Decision
H0-1: No association between financial literacy level and repayment status	Chi-square	$\chi^2(2) = 13.54$, $p = .001$; $V = .26$	Rejected
H0-2: No difference in mean repayment behaviour across literacy groups	One-way ANOVA	$F(2, 197) = 52.53$, $p < .001$; $\eta^2 = .35$	Rejected
H0-3: Financial literacy has no effect on repayment behaviour after controls	Multiple regression	$R^2 = .541$, $F(6, 193) = 37.97$, $p < .001$; $\beta = .61$	Rejected

Source: Author's analysis.

10. Major Findings

The financial literacy level is significantly related with the repayment status. The percentage of those who paid timely increased from 46.3% to 83.3% for those who had high literacy level.

The average scores in repayment-behaviour showed marked difference between the low, medium and high literacy groups with means of 2.81, 3.64 and 4.26 respectively. This difference in repayment index was accounted for by the literacy groups, around 35% of the variation.

The most significant β value in the regression model was for financial literacy ($\beta = .61$). The repayment-behaviour index was raised by an average of 0.27 for each point on the literacy test.

The amount of the loan was related to repayment-behaviour scores, with smaller loans corresponding to lower scores, and larger ages corresponding to higher scores. Financial literacy and the other control variables were statistically significant variables when adding income, number of years in education and gender into the model.

There was no significant association between education level and the repayment status at 5% level ($p = .064$). This means that the years of schooling and practical financial knowledge must not be seen as synonymous.

11. Discussion

The three statistical analyses show that there is a positive trend, that is, financial literacy is positively related to the condition of loan repayment of the respondents. A significant difference between the two groups was identified using the chi-square test, with the high-literacy group being found more frequently when it came to repayment on time. The average repayment scores were higher for all three groups (low, medium and high-literacy) in the ANOVA results. The regression analysis also showed that the relationship was statistically significant even after the income, age, education and loan amount and gender was controlled. The overall trend is similar to that of previous research showing that financial literacy is connected to better debt management, including by Lusardi and Tufano (2015) and Gathergood (2012).

One of the important findings is that in the regression model, the financial literacy is significant, while income and years of education are not. A plausible explanation is that the impact of formal education on repayment is in part due to the ability of education to build skills in the practice of finance: if taken at the level of education alone, the negative association between education and repayment might become less apparent. A negative relationship between the size of the loan and the repayment behaviour might be attributed to the additional burden of larger loans. The positive relationship between age and the outcomes could be due to financial experience or perhaps more stable conditions, but this study is unable to account for the explanations for these relationships.

The results obtained are correlational and not causal. Regular repayments to the lender may lead the borrower to be more organised or disciplined in other aspects of their lives. Financial literacy could therefore be a reflection of other factors not measured in this research such as self-control. Since data were collected at one time, direction of relationship is not certain.

12. Suggestions and Implications

Lenders could also incorporate quick financial-literacy tests or counselling during the loan-assessment procedure, particularly for people who are buying their first home or are applying for bigger loans.

Banks, NBFCs and microfinance institutions could conduct practical EMI-planning sessions, and show the interest, fees and penalties that are payable in plain, everyday English.

Financial-education policymakers and financial-education providers could provide extra support to financial-literacy score low borrowers. It is a potential target for targeted literacy education because of the difference in the percentage of timely repayment between the low and medium literacy groups.

Borrowers need to understand how interest is calculated, and they will need to know more about the terms of the loan, as well as make a realistic budget before committing themselves to new credit.

13. Limitations and scope for future research.

The limitations of this study are the cross sectional nature and the fact that it is a sample of 200 borrowers from a single region, which may limit the extent to which the results can be generalised. Some data on repayment behaviour was self-reported, which could have resulted in responses that were influenced by presenting oneself positively. To further test the effects of financial literacy, future research can incorporate actual repayment data from financial institutions, use a larger sample size from multiple geographic areas, use logistic regression when the dependent variable is the dichotomous variable of timely/delayed repayment, and test for interactions like financial literacy and income. There is also the possibility that an improvement in financial knowledge will affect repayment behaviour over time, which can be tested using longitudinal studies or controlled financial-education programmes.

14. Conclusion

This study looked into the relationship between financial literacy and loan repayment behaviour of individual borrowers. The findings of chi-square, ANOVA and regression analysis all indicate that financial literacy is related to repayment outcomes. Those with higher literacy scores were more likely to report paying on time and had higher repayment-behaviour index scores. The association was also present when demographic and loan characteristics were controlled for. The study does not prove causality, but did indicate that practical financial education may enable borrowers to make more informed credit choices, to plan their repayment more effectively and to be able to borrow more sustainably.

References

1. Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. Journal of Economic Literature, 52(1), 5–44. https://doi.org/10.1257/jel.52.1.5[Open source]

2. Klapper, L., Lusardi, A., & van Oudheusden, P. (2015). Financial literacy around the world: Insights from the Standard & Poor's Ratings Services Global Financial Literacy Survey. https://gflec.org/initiatives/sp-global-finlit-survey/[Open source]

3. Lusardi, A., & Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. Journal of Pension Economics & Finance, 14(4), 332–368. https://doi.org/10.1017/S1474747215000232[Open source]

4. Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. Journal of Economic Psychology, 33(3), 590–602. https://doi.org/10.1016/j.joep.2011.11.006[Open source]

5. Disney, R., & Gathergood, J. (2013). Financial literacy and consumer credit portfolios. Journal of Banking & Finance, 37(7), 2246–2254. https://doi.org/10.1016/j.jbankfin.2013.01.013[Open source]

6. Stango, V., & Zinman, J. (2009). Exponential growth bias and household finance. The Journal of Finance, 64(6), 2807–2849. https://doi.org/10.1111/j.1540-6261.2009.01518.x[Open source]