# Financial literacy's role among formally employed adults in Solwezi district, Zambia: Income as the proximate determinant of personal loan approval

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## ABSTRACT

Formal personal credit is widely recognized as a pathway to household financial resilience in sub-Saharan Africa. In Zambia, overall financial inclusion reached 69.4% in 2020; however, formal credit uptake remained limited for many adults, particularly in provincial districts where income-verified lending dominates the consumer market. This study examines the relationship between financial literacy and personal loan application decisions, approval outcomes, and repayment experiences among adults in Solwezi District, a rapidly urbanizing mining town in Zambia's North-Western Province. The research is grounded in human capital theory and the theory of planned behavior. A convergent parallel mixed-methods design was used. Quantitative data were collected from 309 adults using structured questionnaires and analyzed through point-biserial correlations, chi-squared tests, and binary logistic regression across three nested models. The target population comprised all adults aged 18 years and above in urban and peri-urban Solwezi who were actual or potential users of personal loans from formal financial institutions. A multi-stage sampling design was employed. Qualitative data from 15 semi-structured interviews were analyzed thematically, with both strands integrated during interpretation. Financially literate adults were more likely to be approved at the bivariate level (rnb = .174, p = .002); however, income was the only statistically significant predictor of approval in multivariate models (OR = 2.107, 95% CI [1.55, 2.87], p < .001). Financial literacy was not a statistically significant independent predictor of approval (OR = 1.53, 95% CI [0.70, 3.33], p = .288). The wide confidence interval, ranging from 0.70 to 3.33, indicates that the non-significant result likely reflects limited statistical power rather than a true absence of effect. Financial literacy was not associated with the application decision (p = .841) nor with repayment difficulty among successful borrowers (p = .546). The overall model explained approximately 21% of the variance in loan approval (Nagelkerke $R^2$ = 0.207), suggesting that most determinants of formal lending decisions in this market extend beyond what standard survey predictors can capture. The 79% unexplained variance in approval implies that pre-application dropout among low-literacy adults may represent a critical, currently unmeasured barrier to credit access. Financial literacy appears to influence upstream borrowing behavior, particularly application preparation and lender selection, rather than directly affecting formal lender decisions in income-dominated consumer credit markets. These findings clarify the boundary conditions under which financial literacy influences formal loan approval, specifically highlighting the dominance of income in underwriting decisions within salaried consumer credit markets. This study provides the first district-level empirical evidence on the dynamics of personal loan acquisition in Zambia's salaried consumer lending context. The study recommends targeted numerical literacy training, lender tracking of application abandonment, and district-level profiling to guide NFIS II (2024-2028) interventions.

**Keywords:** Consumer Credit; Financial Inclusion, Financial Literacy; Personal Loan Approval

## I. INTRODUCTION

Across sub-Saharan Africa, formal personal credit has become more than a financial product. For working adults, it is often the only practical way to finance education, manage health emergencies, or invest in housing without resorting to informal moneylenders who charge rates far beyond those offered by regulated institutions (Klapper & Lusardi, 2020; Disney & Gathergood, 2013). At the heart of debates about whether adults can access and benefit from formal credit is financial literacy, defined as the ability to apply knowledge of financial concepts to real-life financial decisions (Lusardi & Mitchell, 2014). The relationship between literacy and access to formal credit has drawn sustained research attention globally (Xiao et al., 2022; Khan et al., 2022), yet evidence from provincial African towns remains limited, particularly in salaried consumer lending contexts where income verification, rather than borrower self-presentation, drives underwriting.

Zambia's financial sector has changed significantly over the past decade. Financial inclusion rose from 59.3% in 2015 to 69.4% in 2020, largely driven by mobile money services (FinScope Zambia, 2020). Building on this progress, the National Financial Inclusion Strategy II (2024-2028), launched on 13 March 2024, set an 85% inclusion target for 2028 and prioritized expanding access to formal credit for underserved adult segments (Ministry of Finance

and National Planning [MoFNP], 2024). Despite these developments, the 2020 FinScope survey found that only 23.6% of Zambian adults demonstrated competence in core financial concepts, while 32.3% continued to rely on informal lenders. Access to services and the ability to use them productively are not the same thing.

Solwezi District in North-Western Province occupies an interesting middle ground in this national picture. Investment in copper and cobalt mining drove rapid urbanization in the 2010s, attracting formal employers and banks, as well as a growing workforce (Mwila et al., 2025). The district's adult population has higher average educational qualifications than those in rural Zambia and is disproportionately employed in the formal sector, creating conditions in which payroll-backed personal loans from commercial banks are actively marketed and frequently used (Sichuundu, 2024). However, prior to this study, no empirical research had examined how financial literacy relates to personal loan acquisition, specifically among Solwezi's general adult population. The only available district-level evidence came from a study of SME owners and digital lending products (Mwila et al., 2025), leaving ordinary personal consumer loans entirely unexplored.

Internationally, the literature presents competing pictures of how literacy relates to credit. Hussain et al. (2018) documented that low financial literacy led UK business owners to experience anticipatory shame, deterring them from applying for credit altogether, regardless of their objective eligibility. Murendo and Mutsonziwa (2017) found that higher literacy was associated with greater use of formal financial products, including credit, among Zimbabwean adults. On the approval side, Disney and Gathergood (2013) showed that UK consumers with higher literacy received more favorable credit terms, suggesting that literacy influenced both access and credit quality. Cabueñas et al. (2025) reported correlations ranging from .70 to .78 between literacy and repayment behavior in Philippine microfinance. None of these studies, however, examined salaried personal loan markets in sub-Saharan African provincial towns, where standardized income verification, rather than a subjective assessment of borrowers' capability, drives lenders' decisions.

### 1.1 Statement of the Problem

In an ideal scenario, in line with Human Capital Theory (Becker, 1964) and the Theory of Planned Behavior (Ajzen, 1991), financially literate adults would apply for loans more confidently, be approved more frequently, and manage their repayments more successfully, because they possess the tools to navigate complex credit environments effectively (Lusardi & Mitchell, 2014; Xiao et al., 2022). Evidence supporting this ideal exists in business lending in Europe (Białowolski et al., 2025), microfinance in Asia (Cabueñas et al., 2025), and agricultural credit in Africa (Benedict et al., 2024). The challenge is determining whether this pattern holds in a salaried consumer loan market in a Zambian provincial town.

The current situation in Solwezi departs from this ideal in ways that are not yet empirically documented. Although the district's formal financial sector has expanded substantially, only 23.6% of Zambian adults nationally demonstrated competence in core financial concepts as of 2020 (FinScope Zambia, 2020), and there are no equivalent figures at the district level for Solwezi. Mwila et al. (2025) found that 26.7% of SME respondents in Solwezi identified inadequate financial literacy as a constraint on their access to financial services. However, the study focused on business owners using digital platforms rather than ordinary adults seeking personal consumption loans from commercial banks. No study has tracked how financial literacy relates to the full personal loan acquisition sequence, from the decision to apply, through the approval outcome, to the repayment experience, among general adult residents in any Zambian district.

This gap creates concrete problems. Without district-level evidence, financial literacy programs targeting adults in Solwezi cannot be distinguished from generic national programs that may be poorly calibrated for the district's formally employed population (Mwila et al., 2025). Lenders cannot determine whether literacy constraints limit their market reach, or whether income-based underwriting already adequately explains who does and does not obtain credit. Policymakers under NFIS II (2024-2028) cannot determine whether financial education or structural lending reforms should take priority in secondary cities (MoFNP, 2024). More broadly, the boundary conditions of the literacy-approval relationship remain untested in income-verified formal consumer credit contexts in Africa (Disney & Gathergood, 2013; Sebatta et al., 2014).

### 1.2 Research Objectives

i. To determine whether financial literacy level is associated with the decision to apply for a formal personal loan among adults in Solwezi District.
ii. To examine whether financial literacy level is associated with loan approval outcomes among applicants in Solwezi District, after controlling for income and other demographic variables.
iii. To assess whether income level independently predicts loan approval beyond what financial literacy and demographic variables explain.
iv. To determine whether financial literacy level is associated with loan repayment difficulty among adults who successfully obtained personal loans in Solwezi District.

### 1.3 Research Hypotheses

*Ho*$_1$: Financial literacy level is significantly associated with the decision to apply for a formal personal loan among adults in Solwezi District.

*Ho*$_2$: Financial literacy level is significantly and positively associated with loan approval outcome among applicants in Solwezi District.

*Ho*$_3$: Income level is a significant predictor of loan approval after controlling for financial literacy and other demographic variables.

*Ho*$_4$: Financial literacy level is significantly associated with repayment difficulty among adults who successfully obtained personal loans in Solwezi District.

## II. LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.1.1 Human Capital Theory

Becker's (1964) Human Capital Theory holds that individuals who invest in knowledge and skills accumulate returns that manifest across many life domains, including financial decision-making. Lusardi and Mitchell (2014), in their landmark review of the economic importance of financial literacy, applied this logic directly to credit markets: literate individuals are better equipped to evaluate loan terms, compare competing offers, and negotiate from an informed position. Klapper and Lusardi (2020) extended this argument globally, demonstrating across 140 countries that financial literacy was positively associated with resilient financial behavior, including better use of formal credit products. The theory grounds three of the four hypotheses in this study: specifically, the expectation that literacy is positively associated with approval ($H_2$), that repayment outcomes differ by literacy level ($H_4$), and that literacy's effect remains visible even after controlling for income.

#### 2.1.2 Theory of Planned Behavior

Ajzen's (1991) Theory of Planned Behavior offers a mechanism that Human Capital Theory does not fully address: the psychological route by which knowledge gaps lead to behavioral avoidance. The theory proposes that attitudes toward that behavior jointly predict behavior, subjective norms about its social appropriateness, and perceived behavioral control over its execution. In a credit context, low financial literacy is expected to reduce perceived behavioral control: an adult who does not understand how loan applications are assessed, what documentation is required, or how interest is calculated is likely to perceive the entire process as beyond their competence, even when they are objectively eligible (Hussain et al., 2018). This mechanism is directly relevant to $H_1$, specifically to the question of whether literacy variation shapes the application decision, and it explains the qualitative finding of anticipatory shame among non-applicants documented in this study

### 2.2 Empirical Review

#### 2.2.1 Financial Literacy and the Credit Application Decision

Whether financial literacy predicts credit-seeking behavior depends largely on the credit market's institutional structure. When borrowers must proactively approach loan officers and articulate their financial situation, literacy gaps pose a real deterrent. Hussain et al. (2018) found precisely this among small business owners in the United Kingdom, where low-literacy owners avoided bank applications not because they had assessed themselves as ineligible, but because anticipated embarrassment in financial conversations with loan officers paralyzed them before they ever submitted a form. This anticipatory shame pattern has also been documented in the Zambian context: Nonde and Handema (2021) found that shop owners in Lusaka who lacked financial management skills frequently described formal credit as not meant for people like them, a psychological stance rather than a rational economic calculation.

In contrast, where formal employment creates a pre-existing bank relationship through payroll accounts, the application decision becomes largely routine and less dependent on individual financial literacy. Chibesa and Mwange (2024), studying informal traders in Zambia, found that most respondents had attempted formal borrowing at least once, regardless of literacy level, a pattern they attributed to the normalization of formal credit within specific employment contexts. Sebatta et al. (2014), examining agricultural credit in five Zambian provinces, found that education level influenced credit-seeking, but only partly through structural channels, such as documentation capacity, rather than purely through financial knowledge itself. Murendo and Mutsonziwa (2017) documented in Zimbabwe that higher financial literacy was associated with greater uptake of formal financial products overall. However, the mechanism operated through attitudes and confidence rather than a direct knowledge-to-behavior pathway.

#### 2.2.2 Financial Literacy and Loan Approval Outcomes

The evidence on literacy's direct effect on loan approval is more mixed than the application decision literature. Disney and Gathergood (2013), analyzing UK household survey data on consumer credit portfolios, found

that financially literate adults held more favorable credit terms and were better positioned in credit markets. Their argument was that literacy enabled borrowers to recognize and avoid high-cost credit traps, which, over time, produces a more advantageous credit profile. Białowolski et al. (2025) extended this logic longitudinally using PSID data from the United States, demonstrating that financially literate consumers accumulated more diversified and less expensive credit portfolios across time.

For sub-Saharan Africa, however, the evidence is more constrained. Nonde and Handema (2021) found that low-literacy business owners in Lusaka faced loan rejections, in part, because they could not present financial information in the structured formats banks expected. Their accounts suggest that literacy influenced approval indirectly through the quality and completeness of loan applications, rather than through any direct effect on lender assessment criteria. Changwesha and Mutezo (2023) found in South Africa that financial literacy was positively associated with formal credit access among SMEs, with financial record-keeping quality as a key mediating pathway. What remains absent from this body of literature is evidence on personal consumer loans among formally employed populations in African provincial towns, where standardized income-verification protocols may structurally limit the space for literacy to influence underwriting decisions independently of income.

### 2.2.3 Financial Literacy and Loan Repayment

Among the most consistently documented relationships in the financial literacy literature is the connection between literacy and loan repayment performance. However, this evidence is drawn almost entirely from microfinance and agricultural credit settings. Cabueñas et al. (2025) found correlations of .70 to .78 between financial literacy and repayment behavior among rural Philippine microfinance borrowers. They attributed this to the superior budgeting capacity of literate borrowers and their ability to track repayment schedules without defaulting. Baidoo et al. (2020) documented similar patterns in Ghana, where numerical literacy was specifically linked to fewer missed payments among formal-sector borrowers.

A boundary condition emerges, however, when repayment is structured rather than left to the borrower's discretion. Zambia's commercial banking sector commonly deducts personal loan repayments directly from borrowers' monthly salaries before crediting them to their accounts, a structural arrangement that makes repayment automatic and removes the need for active monthly financial management (FinScope Zambia, 2020; Nonde & Handema, 2021). Under this arrangement, repayment performance is driven primarily by whether the borrower remains employed at the same institution, not by their capacity to budget or plan. Whether this structural reality eliminates the literacy-repayment relationship in Solwezi's salaried lending context is one of the specific questions this study was designed to answer.

### 2.2.4 The Endogeneity of Literacy and Income

A recurring methodological challenge in this literature is that financial literacy and income are positively correlated, so bivariate associations between literacy and credit outcomes may reflect income effects rather than literacy effects. Hasan et al. (2021) demonstrated, in a cross-country panel, that the apparent effect of literacy on financial inclusion substantially weakened after controlling for income, suggesting that the two variables share overlapping pathways to credit access. Grohmann et al. (2017) reached a similar conclusion in their multi-country study, finding that the association between literacy and inclusion was attenuated in higher-income subsamples. Xiao et al. (2022), in their systematic review of financial capability research, noted that income and literacy frequently co-vary, and attributing credit outcomes to either variable independently requires careful model specification. In the Solwezi context, income and literacy are positively correlated (Spearman's $r = .266$, $p < .001$), and higher-income adults have higher median financial literacy scores (Kruskal-Wallis $H(4) = 23.485$, $p < .001$). To address this, the present study estimates nested regression models that sequentially introduce income and literacy, allowing the attenuation of the literacy coefficient following income adjustment to be observed and interpreted directly.

Three specific gaps justify this study. First, no traceable prior study has examined the literacy-loan acquisition relationship across all three stages of the credit lifecycle, specifically the application decision, the approval outcome, and the repayment experience, in a single sample from a salaried consumer lending context in any Zambian district. Second, financial inclusion research in Zambia remains concentrated at the national level or within specific economic sectors, leaving the general adult population in provincial towns completely unstudied regarding personal loan acquisition. Third, the boundary conditions of the literacy-approval relationship documented in microfinance and business lending remain untested in income-verified formal consumer credit markets in sub-Saharan Africa (Disney & Gathergood, 2013; Sebatta et al., 2014). This study addresses all three gaps within a single integrated design.

## III. METHODOLOGY

### 3.1 Research Design

A convergent parallel mixed-methods design (Creswell & Plano Clark, 2018) was employed, with quantitative and qualitative data collected simultaneously from the same population and integrated during interpretation. This design was selected to provide both statistical breadth to establish population-level associations between literacy and loan outcomes in a sample sufficient for regression analysis, and qualitative depth to elucidate the psychological mechanisms and contextual meanings underlying those associations, particularly among individuals who never applied or were rejected. Neither method alone could address the full scope of the research objectives. Quantitative analysis cannot reveal anticipatory shame, while qualitative interviews cannot establish population-level correlations.

### 3.2 Study Population and Sampling

The target population comprised all adults aged 18 years and above in urban and peri-urban Solwezi who were actual or potential users of personal loans from formal financial institutions. A multi-stage sampling design was employed. First, four geographic strata were purposively selected to represent the district's urban and peri-urban diversity: the established town center, newer residential areas, commercial zones, and peri-urban settlements. Second, within each stratum, three community gathering points were identified, specifically markets, bus stations, and church premises, giving twelve gathering points in total. Third, at each gathering point, every third adult passerby was systematically approached for participation, using a fixed sampling interval of three, and fieldwork continued until stratum quotas were fulfilled. This approach balanced geographic representativeness with practical feasibility and minimized enumerator selection bias. The final quantitative sample was 309 adults.

For the qualitative strand, 15 participants were purposively selected from the survey sample using maximum variation sampling to achieve diversity in loan experience (8 successful borrowers, 4 rejected applicants, and 3 adults who had never applied) and financial literacy level (high and low scorers within each experience category). Thematic saturation was reached at the 13th interview; the 14th and 15th yielded no new substantive themes (Mason, 2010). All participants provided written informed consent, and ethical clearance was obtained through the University of Zambia, Graduate School of Business.

### 3.3 Data Collection Instruments

The structured questionnaire contained four sections. The financial literacy assessment used a validated composite measure aligned with the OECD (2020) framework and Lusardi and Mitchell (2014), incorporating four objective knowledge items, five financial behavior items, and five financial attitude items. Responses were standardized to produce subdimension scores ranging from 0 to 1 and a composite score ranging from 0 to 3. Six financial literacy-related barrier items were rated on a 4-point ordinal scale ranging from 1 (not a barrier) to 4 (major barrier). Loan outcome data were captured categorically as applied and approved, applied and rejected, applied but withdrawn, or never applied. The semi-structured interview guide covered financial knowledge, loan application experiences, perceived barriers, trust toward formal lenders, and financial education needs.

### 3.4 Data Analysis

Quantitative analysis proceeded through several stages. Point-biserial correlations ($r_{pb}$) were used to examine bivariate associations between the FL Composite Score and binary loan outcomes. Chi-squared tests with Cramér's V were used to assess categorical associations between FL tertiles and loan outcome categories. Binary logistic regression estimated predictors of loan approval among the 283 applicants across three nested models: Model 1 included demographic controls only (education, gender, income band, and age); Model 2 added the FL Composite Score; and Model 3 added FL sub-dimension scores instead of the composite. An additional reference model (Model 0) estimated the FL Composite Score alone, without income controls, to make the attenuation bias visible and interpretable. Model fit was assessed through the likelihood ratio test and Nagelkerke $R^2$. A test of linear trend across income bands was conducted to verify the proportional odds assumption for income as an ordinal predictor; the result confirmed a significant linear effect ($p < .001$). All tests used a two-tailed significance threshold of alpha = .05. Qualitative data were analyzed using Braun and Clarke's (2006) six-phase thematic analysis framework, and both strands were formally integrated during interpretation to identify both convergence and divergence.

## IV. FINDINGS & DISCUSSION

### 4.1 Participant Profile

Of the 309 participants, 65.0% were male and 35.0% were female. A majority held at least a degree (56.3%), while 43.7% held a certificate or diploma. Formal employment accounted for 87.7% of the sample, with the remainder self-employed, casual workers, or unemployed. Monthly income was distributed across five bands, with 60.8%

earning between K5,000 and K19,999. The mean age was 34.47 years (SD = 8.50, range 20 to 49). This profile is notably different from the rural, informally employed populations that dominate much of the Zambian financial inclusion literature (Nonde & Handema, 2021; Chibesa & Mwange, 2024), and that difference matters for interpreting the results.

### 4.2 Financial Literacy Profile and the Income-Literacy Gradient

The FL Composite Score was approximately normally distributed (M = 1.649, SD = 0.379, Mdn = 1.667, 95% CI [1.607, 1.691]). Education was the strongest predictor of financial literacy (degree vs. certificate or diploma: t(307) = 9.845, p < .001, d = 1.12). Gender did not significantly differentiate FL scores (p = .463, d = 0.09). Income band showed a significant, positive, but nonlinear relationship with FL (Kruskal-Wallis H(4) = 23.485, p < .001, $\eta^2$ = .073). Table 1 presents this income-literacy gradient, which is central to understanding the multivariate regression results that follow.

**Table 1**

*Financial Literacy Composite Score by Monthly Income Band (N = 309)*

| Income Band | n | Median FL Score | IQR | Spearman $r^2$ (Income) | Model-Predicted Approval (%)[a] |
|---|---|---|---|---|---|
| < K2,000 | 21 | 1.458 | 0.417 | | ~33% |
| K2,000-K4,999 | 61 | 1.500 | 0.417 | | ~40% |
| K5,000-K9,999 | 94 | 1.667 | 0.521 | | ~48% |
| K10,000-K19,999 | 94 | 1.792 | 0.490 | | ~60% |
| >= K20,000 | 39 | 1.750 | 0.438 | | ~71% |
| **Total** | **309** | **1.667** | **0.458** | **$r^2$ = .266*** ** | **50.5%** |

*Note.* [a] Model-predicted approval probabilities are derived from logistic regression Model 2 (Table 2), with all other predictors held at their sample means. Kruskal-Wallis H(4) = 23.485, p < .001, $\eta^2$ = .073. Spearman $r^2$ = .266 reflects the overall income-FL correlation across the sample (p < .001). Dunn-Bonferroni post-hoc tests identified significant pairwise contrasts between K2,000-K4,999 and K10,000-K19,999 ($p_a^{dj}$ = .001) and between K2,000-K4,999 and K20,000 and above ($p_a^{dj}$ = .015). No other pairwise contrasts reached statistical significance. *** p < .001.

Table 1 demonstrates that financial literacy and income increase together from the lowest income group through the K10,000-K19,999 range, then plateau at the highest income band. This pattern is critical for interpreting the regression results. Given the correlation between income and literacy, the observed association between literacy and loan approval partially reflects income effects rather than literacy alone. Hasan et al. (2021) identified a similar pattern in other countries, where the relationship between literacy and financial inclusion weakened substantially after controlling for income. Grohmann et al. (2017) reported comparable findings in their multi-country study. To clarify this effect, the subsequent regression analysis includes a model that presents the impact of literacy before income is introduced, allowing for a clearer assessment of the extent to which the literacy effect is attributable to income.

### 4.3 Loan Application and Outcome Distribution

Among the 309 respondents, 283 (91.6%) had applied for a formal personal loan from a regulated financial institution at least once. Of those applicants, 143 (50.5%) were approved and received their loans, 118 (41.7%) were rejected, and 22 (7.8%) withdrew before a decision was made. The 26 respondents (8.4%) who had never applied were retained for barrier analyses and qualitative investigation. However, they were not included in the logistic regression because approval can only be observed among those who applied.

#### 4.3.1 Financial Literacy and the Application Decision ($H_1$)

Financial literacy tertile was not significantly associated with whether adults had ever applied for a formal personal loan ($\chi^2(2) = 0.347$, p = .841, Cramér's V = .034). $H_1$ was therefore not supported. The near-universal application rate of 91.6%, which held across all three literacy tertiles, indicates how personal loan decisions are made in Solwezi's formally employed population: applying for a salary-backed loan from one's payroll bank is not a deliberative, literacy-sensitive decision but rather a routine institutional transaction.

This finding contrasts with Hussain et al. (2018), who reported that low-literacy UK business owners avoided bank visits entirely due to anticipated shame. It also differs from the Zimbabwean pattern reported by Murendo and Mutsonziwa (2017), in which higher literacy was associated with broader adoption of formal financial products. The divergence, however, is grounded in context. Business lending requires borrowers to self-present to loan officers, explain revenue projections, and argue for their creditworthiness in a subjective negotiation in which literacy directly mediates the quality of the interaction. In Solwezi, six of the eight successful borrowers in the qualitative sample

described going directly to the bank where their salaries were deposited, not because they had evaluated competing lenders, but because the relationship already existed and the process felt familiar. For these adults, the application decision was less a function of financial literacy than of employment tenure.

That said, a closer look at the qualitative data reveals something the survey could not surface. All three non-applicant participants were low-literacy adults, and each framed their non-application as a prediction of failure rather than as an informed assessment of ineligibility. As one participant put it, 'I have never applied for a loan from a bank." I have thought about it before, but I was not sure how the process works, and I felt like I might not qualify' (P04, low literacy, never applied). This aligns with the anticipatory shame pattern described by Hussain et al. (2018) in a completely different context. The reason it did not reach statistical significance is that non-applicants made up only 8.4% of the sample, which is too small a proportion to achieve significance in a chi-squared test. The divergence between quantitative non-significance and qualitative salience is further explored, which discusses the integration of mixed-methods.

### 4.3.2 Financial Literacy, Income, and Loan Approval ($H_2$ and $H_3$)

At the bivariate level, the FL Composite Score was positively associated with loan approval ($r_{pb}$ = .174, p = .002), providing initial support for $H_2$. The financial literacy tertile was also significantly associated with the loan outcome category ($\chi 2(4) = 10.591$, p = .032, Cramér's V = .137), indicating a small but meaningful relationship between higher literacy and more favorable outcomes. However, the multivariate picture tells a different story. Table 2 presents the logistic regression results.

**Table 2**

*Binary Logistic Regression: Predictors of Loan Approval (DV: Approved = 1; Applicants Only, n = 283)*

| Predictor | Model 0 OR | p | Model 1 (Demographics) OR [95% CI] | p | Model 2 (+ FL Composite) OR [95% CI] | p |
|---|---|---|---|---|---|---|
| FL Composite | 1.818 | .003** | - | - | 1.527 [0.70, 3.33] | .288 |
| Income Band[a] | - | - | 2.134 [1.56, 2.92] | < .001*** | 2.107 [1.55, 2.87] | < .001*** |
| Education | - | - | 1.367 [0.79, 2.36] | .258 | 1.195 [0.66, 2.16] | .558 |
| Gender | - | - | 1.176 [0.69, 2.01] | .555 | 1.177 [0.69, 2.01] | .553 |
| Age | - | - | 0.984 [0.95, 1.02] | .294 | 0.983 [0.95, 1.02] | .278 |
| **Nagelkerke $R^2$** | - | - | 0.203 | | 0.207 | |
| **LR Test vs. Model 1** | - | - | - | - | $\chi^2(1) = 1.14$, p = .286 | ns |

*Note.* Model 0 = FL Composite Score only, shown as a reference to make the attenuation visible. Model 1 = demographic controls only. Model 2 = Model 1 plus FL Composite Score. OR = Odds Ratio. CI = Confidence Interval. Income modelled as an ordinal band variable scored 1 to 5. Hosmer-Lemeshow for Model 2: chi-square (8) = 6.71, p = .568, indicating adequate fit. ** p < .01; *** p < .001. Sensitivity: regression results are conditional on having applied (n = 283) and do not correct for selection into the application stage. If low-literacy, lower-income adults are less likely to apply, restriction of range at the lower end of both distributions would attenuate both the income and literacy coefficients in Model 2, meaning both estimates may marginally understate their respective unconditional effects on credit access.

Table 2 indicates that the apparent effect of financial literacy on loan approval was reduced after adjustment for income and other background variables. When the Financial Literacy (FL) Composite Score was examined in isolation in Model 0, it significantly predicted loan approval (OR = 1.818, p = .003). Once income, education, gender, and age were added to Model 2, the coefficient for financial literacy fell to an OR of 1.527 and was no longer statistically significant (p = .288). This attenuation suggests that the bivariate relationship between financial literacy and loan approval was partly attributable to the income-financial literacy gradient identified earlier in the analysis. Accordingly, Hypothesis 2, which stated that financial literacy level would be significantly and positively associated with loan approval outcome, was only partially supported. In contrast, Hypothesis 3, which stated that income level would significantly predict loan approval after controlling for financial literacy and demographic factors, was clearly supported. Income remained a strong independent predictor in the adjusted model, with each higher income band associated with more than twice the odds of loan approval (OR = 2.107, p < .001). Taken together, these findings show that financial literacy had an initial unadjusted association with approval, but income emerged as the more stable and influential predictor in the multivariate analysis.

A note on conditional interpretation is warranted. The regression results in Table 2 are estimated using only applicants (n = 283) and do not account for selection into the application stage. If low-literacy, lower-income adults are less likely to apply, restricting the range at the lower end of both distributions would attenuate the income and

literacy coefficients in Model 2, meaning both estimates may marginally understate their respective unconditional effects on credit access. As a conservative sensitivity check, if all 26 non-applicants had been assumed rejected had they applied, the bivariate literacy-approval correlation would strengthen to approximately rnb = .22. Readers should therefore interpret the Table 2 coefficients as conditional on having applied, not as unconditional estimates of literacy's total effect on credit access.

The non-significant literacy coefficient should not be interpreted as evidence that literacy has no effect. The 95% confidence interval for the FL Composite in Model 2 ranges from 0.70 to 3.33, with the upper bound representing a substantively large effect. The non-significant p-value reflects limited statistical power in the applicant-only subsample (n = 283), rather than providing a precise estimate of a null effect. Therefore, the study cannot rule out a meaningful positive literacy effect in multivariate analysis, and a larger or better-powered study may be required to detect it.

The income-dominance finding makes theoretical sense when the institutional context is carefully considered. Disney and Gathergood (2013) argued that literacy's effect on credit access is most pronounced when lenders' subjective assessments of borrowers' capabilities are central to the decision. In Zambia's formal personal loan market, approval decisions are based primarily on income verification, existing debt service obligations, credit history, and salary account records, all assessed against fixed institutional criteria. There is limited room in this process for a loan officer's subjective judgment about borrower competence to shift the outcome. By contrast, in business lending, Białowolski et al. (2025) showed, in a longitudinal study, that literate borrowers accumulated more favorable credit portfolios over time, partly because they could identify and avoid low-value products. In Solwezi's consumer context, product terms are largely fixed, with income as the gating variable.

The 79.3% unexplained variance (Nagelkerke $R^2 = 0.207$) is informative. Income, education, age, gender, and financial literacy together account for roughly one-fifth of the variation in approval outcomes. The remaining four-fifths likely reflects lender-specific policies, existing credit bureau records, debt-to-income ratios, and the quality of the application itself, none of which this cross-sectional survey was designed to capture. Changwesha and Mutezo (2023) observed a similar pattern in South African SME research, where formal credit outcomes were only partially explained by measurable borrower characteristics, with institutional gatekeeping factors accounting for much of the residual variation. This large unexplained fraction also points to where future research should focus, particularly on what happens before a formal application is submitted.

The qualitative data confirmed and humanized the income-dominant approval pattern. Successful borrowers consistently described approval as a routine income-documentation exercise: 'I decided to go to the bank because I already had an account there and I trusted them more than other lenders. The application process involved filling out forms and submitting documents such as my business records and my NRC (P02, high literacy, successful borrower).' Rejected applicants, by contrast, described processes that felt confusing and opaque: 'The process involved filling in forms, but I found it very confusing' (P15, low literacy, rejected). The contrast is telling: financial literacy shaped the experience of the process, but the formal underwriting decision responded to what was in the income documentation rather than to the applicant's comprehension.

### 4.3.3 Financial Literacy and Loan Repayment ($H_4$)

Among the 143 successful borrowers, financial literacy did not significantly predict self-reported repayment difficulty (Spearman rs = -.051, p = .546). Therefore, $H_4$ was not supported. This finding contrasts notably with the .70 to .78 correlations documented by Cabueñas et al. (2025) in Philippine microfinance and with the significant literacy-repayment associations found by Baidoo et al. (2020) in Ghana.

The structural explanation is clear. When commercial banks deduct loan repayments directly from borrowers' monthly salaries before the funds are disbursed, the cognitive and behavioral demands typically addressed by financial literacy, such as budgeting, scheduling, and self-control, are effectively eliminated. The ability to calculate compound interest does not influence whether an employer processes payroll in a given month. In this context, repayment performance depends primarily on employment continuity rather than financial management skills. This boundary condition, in which the literacy-repayment relationship is context-dependent and disappears when repayment is structurally automated, has not previously been documented in a Zambian urban consumer lending context. This finding provides an important qualification to the broader literature, which has largely established the literacy-repayment relationship in settings where repayment requires active monthly financial decision-making (Nonde & Handema, 2021).

## 4.4 Mixed Methods Integration: Convergence and Productive Divergence

A formal integration of the two data strands reveals both points of convergence and one meaningful divergence, together strengthening the overall interpretation. The quantitative and qualitative evidence converge on the central finding of this study: income is the proximate predictor of loan approval in Solwezi's consumer lending market. Regression results identify income as the only statistically significant predictor across all model

specifications, and interview accounts from both successful and unsuccessful borrowers consistently describe the approval process as involving income verification. This convergence across two independent data sources considerably strengthens confidence in the finding, more than either strand could alone.

The divergence arose around the application decision. Quantitatively, the financial literacy tertile was unrelated to whether adults had ever applied ($p = .841$). Qualitatively, every non-applicant interviewed was low-literate, and each described their non-application as an anticipated failure rooted in comprehension gaps, rather than a reasoned assessment of ineligibility. This divergence is not a contradiction and does not undermine either result. Rather, it exemplifies methodological complementarity, the principle that each methodological strand reveals a different facet of the same phenomenon that the other strand cannot access alone. The quantitative instrument captures the behavior of the majority of applicants, while the qualitative strand surfaces the experiences of the minority who self-exclude before any application is recorded. Sebatta et al. (2014) encountered exactly this limitation in their Zambian agricultural credit research, noting that the most financially constrained potential borrowers are often absent from applicant databases precisely because their constraints prevent them from appearing there.

What the integration ultimately reveals is that the total effect of financial literacy on credit access in Solwezi is likely larger than the regression results indicate. The regression estimates a conditional effect, literacy's influence among those who applied, and cannot speak to the exclusion operating upstream of the application stage. The qualitative data provides that upstream view. Together, the two strands tell a more complete story than either could alone: for the majority of Solwezi adults who apply, income determines whether they are approved; for the small minority who never apply, literacy-linked comprehension gaps and anticipated shame are barriers the formal credit market never even sees.

### 4.5 Qualitative Themes: Trust, Avoidance, and Comprehension-Based Distrust

Five themes emerged from the thematic analysis: gaps in financial knowledge and comprehension; loan application experiences; multi-layered barriers to access; trust and attitudes toward formal lenders; and financial education needs. Two findings are particularly noteworthy because they add dimensions that the quantitative instrument was not designed to capture.

First, trust in formal lenders varied by literacy level, but not as experiential models of trust would predict. Low-literacy participants who had never applied or had been rejected expressed distrust rooted not in bad treatment, but in simply not understanding how banks work: 'I do not fully trust them because I do not understand how they work' (P01, low literacy, never applied). High-literacy borrowers expressed something different: conditional trust managed through personal vigilance: 'I trust banks, but I am still careful. I always make sure I understand what I am signing' (P02, high literacy, successful borrower). This distinction between epistemological distrust, arising from comprehension failure, and experiential distrust, arising from bad treatment, has not previously appeared in the Zambian financial inclusion literature. It matters for intervention design: building trust among low-literacy adults requires building comprehension, not just improving customer service.

Second, all 15 participants expressed a strong demand for practical financial education. When asked which specific topics they wanted covered, they overwhelmingly focused on interest calculation and on comparing total loan costs. These are exactly the areas where the quantitative knowledge assessment showed the deepest deficits: only 25.2% correctly answered the simple interest question, and only 24.6% correctly answered the compound loan cost question, with over 60% selecting 'I do not know' for each. The convergence between what participants said they needed and what the data showed they lacked is unusually direct and precise, pointing to the content priorities that financial literacy programs in Solwezi should address.

## V. CONCLUSIONS & RECOMMENDATIONS

### 5.1 Conclusions

Four principal conclusions emerge from this study, each addressing one of the research objectives and each contributing something that prior literature had not established in a Zambian provincial consumer lending context. Financial literacy level was not significantly associated with the decision to apply for a formal personal loan ($\chi^2(2) = 0.347$, $p = .841$), so H1 was not supported. In Solwezi's formally employed population, the application decision is a routine institutional transaction conducted through pre-existing payroll bank relationships, and variation in literacy among the majority of applicants does not materially affect who initiates an application. At the same time, qualitative evidence shows that among the small minority who do not apply, low literacy produces anticipatory shame and comprehension-based avoidance that the survey cannot detect. The total effect of literacy on credit access, therefore, extends upstream into pre-application behavior in ways that standard applicant-sample surveys are structurally unable to measure.

At the bivariate level, financial literacy was positively associated with loan approval ($r_{pb} = .174$, $p = .002$), providing initial support for H2. In the multivariate model, however, the literacy coefficient attenuated substantially

and fell below statistical significance (OR = 1.527, 95% CI [0.70, 3.33], p = .288), indicating that H2 was not fully supported in the multivariate analysis. Income was the only statistically significant predictor across all three model specifications (OR = 2.107, p < .001), thereby supporting H3. Each step up the income band more than doubled the odds of approval, regardless of literacy, education, age, or gender. The wide confidence interval around the literacy odds ratio suggests the study is underpowered rather than providing evidence of a zero literacy effect.

Financial literacy did not significantly predict repayment difficulty among successful borrowers (rs = -.051, p = .546), indicating that H4 was not supported. The strong literacy-repayment associations documented by Cabueñas et al. in Philippine microfinance and by Baidoo et al. in Ghana do not replicate among formally employed, payroll-deducted borrowers in Solwezi. When repayment is structurally automated, borrower literacy does not determine whether payments are made on time.

Perhaps the most striking finding is what the models could not explain: approximately 79.3% of the variance in loan approval outcomes remained unaccounted for by income, education, age, gender, and financial literacy combined. Given qualitative evidence of anticipatory shame and comprehension-based avoidance among non-applicants, some of this unexplained variance likely reflects application behavior that occurs before formal underwriting decisions are made. We propose that lenders operating in markets like Solwezi track application abandonment as a key performance indicator of inclusive lending practice, and that future research should design studies with sufficient power and appropriate methods to detect and quantify this pre-application exclusion.

### 5.2 Recommendations

The findings carry specific, actionable implications for three audiences. For financial literacy program designers in Solwezi and comparable mining-district populations, the data indicate that conceptual awareness of interest is already widespread. However, procedural competence, specifically the ability to calculate interest and compare total loan costs across competing products, remains insufficient. Programs incorporating practical numerical exercises with real loan product examples are likely to address this deficit, whereas those focused solely on definitional content will reinforce knowledge already present. Resource allocation should be aligned with these priorities.

For lenders operating in Solwezi, income-centric underwriting criteria are both administratively efficient and statistically dominant in this study. However, the 79% unexplained variance in approval, together with qualitative evidence of anticipatory avoidance among low-literacy potential borrowers, suggests that eligibility and access are not the same. Creditworthy adults whose literacy deficits prevent them from completing applications are invisible to standard credit data. Tracking application abandonment rates and investing in simplified application pathways and plain-language product disclosure would make these potential borrowers visible and reduce the pre-application dropout that current lending data cannot capture.

For policymakers under Zambia's NFIS II (2024-2028), secondary cities like Solwezi have distinct, internally differentiated literacy profiles that generic national programs will not address effectively. Formally employed adults with post-secondary qualifications and surface financial awareness but limited numerical calculation ability represent a distinct segment that needs numeracy-focused training, not awareness campaigns. District-level diagnostic literacy profiling should become a standard input into program design before national templates are deployed in provincial towns with socioeconomic compositions different from those of Lusaka or rural Zambia.

For future researchers, three specific priorities follow from this study's limitations. Studies specifically designed to detect selection effects, using Heckman correction methods or prospective designs that track potential borrowers from before application through the outcome, would generate unconditional estimates of literacy's total effect on credit access that cross-sectional applicant surveys cannot provide. Longitudinal studies that track whether targeted literacy training translates into changes in application rates and approval outcomes would establish temporal order. Most importantly, pre-application dropout rates should be treated as a primary outcome variable in future financial inclusion research rather than an unmeasured background phenomenon. The formal credit market currently has no visibility into adults who, before submitting any application, conclude that formal credit is not for them. Designing research and lending practices to reach these individuals is the most consequential next step for financial inclusion in rapidly urbanizing Zambian districts.

## REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Baidoo, S. T., Yusif, H., & Ayesu, E. K. (2020). Improving loan repayment in Ghana: Does financial literacy matter? *Cogent Economics & Finance*, *8*(1), 1787693. https://doi.org/10.1080/23322039.2020.1787693

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Benedict, I., Wilson, E., Ugwu, C., & Ibe, C. (2024). Investing in rural agriculture in the face of innovative financial services: Does financial literacy matter in Nigeria? *SAGE Open, 14*(2), 1–14. https://doi.org/10.1177/21582440241244685

Białowolski, P., Cwynar, A., & Węziak-Białowolska, D. (2025). Financially literate consumers and their credit portfolios: Longitudinal evidence from PSID data. *International Journal of Bank Marketing, 43*(7), 1513–1540. https://doi.org/10.1108/IJBM-06-2024-0363

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cabueñas, G., Guay, C., Montermoso, S., Pawaon, J., Pawaon, L., & Tilud, B. (2025). Financial literacy and loan repayment behavior: Empirical evidence from rural borrowers in the Philippines. *Asian Journal of Education and Social Studies, 51*(8), 1–15. https://doi.org/10.9734/ajess/2025/v51i82251

Changwesha, M., & Mutezo, A. (2023). The relationship between financial literacy and financial access among SMEs in the Ekurhuleni municipality. *Acta Commercii, 23*(1), Article a1142. https://doi.org/10.4102/ac.v23i1.1142

Chibesa, K., & Mwange, A. (2024). Financial literacy and entrepreneurial decision-making among informal traders in Zambia. *East African Finance Journal, 3*(2), 295–301. https://doi.org/10.59413/eafj/v3.i2.11

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

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

FinScope Zambia. (2020). *FinScope Zambia 2020 survey report*. Bank of Zambia. https://www.boz.zm/sites/default/files/2026-03/FinScope-2020-Survey-Report.pdf

Grohmann, A., Klühs, T., & Menkhoff, L. (2017). Does financial literacy improve financial inclusion? Cross-country evidence. *DIW Berlin Discussion Papers, No. 1632*. https://doi.org/10.2139/ssrn.3034178

Hasan, M., Le, T., & Hoque, A. (2021). How does financial literacy impact inclusive finance? *Financial Innovation, 7*(1), 1–23. https://doi.org/10.1186/s40854-021-00259-9

Hussain, J., Salia, S., & Karim, A. (2018). Is knowledge that powerful? Financial literacy and access to finance: An analysis of enterprises in the UK. *Journal of Small Business and Enterprise Development, 25*(6), 985–1003. https://doi.org/10.1108/JSBED-01-2018-0021

Khan, F., Siddiqui, M., & Imtiaz, S. (2022). Role of financial literacy in achieving financial inclusion: A review, synthesis and research agenda. *Cogent Business & Management, 9*(1), 2034236. https://doi.org/10.1080/23311975.2022.2034236

Klapper, L., & Lusardi, A. (2020). Financial literacy and financial resilience: Evidence from around the world. *Financial Management, 49*(3), 589–614. https://doi.org/10.1111/fima.12283

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

Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum: Qualitative Social Research, 11*(3), Article 8. https://doi.org/10.17169/fqs-11.3.1428

Ministry of Finance and National Planning. (2024). *National Financial Inclusion Strategy II 2024–2028*. Government of the Republic of Zambia. https://www.mofnp.gov.zm/?wpdmpro=nfis-ii-2024-2028

Murendo, C., & Mutsonziwa, K. (2017). Financial literacy and savings decisions by adult financial consumers in Zimbabwe. *International Journal of Consumer Studies, 41*(1), 95–103. https://doi.org/10.1111/ijcs.12318

Mwila, M., Mwanza, B. G., & Kalenga, D. (2025). Analyzing innovative strategies to enhancing financial inclusion for SMEs in Solwezi, Zambia. *African Journal of Management and Business Research, 18*(1), 368–386. https://doi.org/10.62154/ajmbr.2025.018.010648

Nonde, M., & Handema, M. (2021). The effect of financial literacy on small business financing decisions: A case of shop owners at Chelston Big Market (Unpublished master's thesis). University of Zambia, Lusaka.

OECD. (2020). *OECD/INFE 2020 international survey of adult financial literacy*. OECD Publishing. https://www.oecd.org/financial/education/oecd-infe-2020-international-survey-of-adult-financial-literacy.pdf

Sebatta, C., Wamulume, M., & Mwansakilwa, C. (2014). Determinants of smallholder farmers' access to agricultural finance in Zambia. *Journal of Agricultural Science, 6*(11), 63–74. https://doi.org/10.5539/jas.v6n11p63

Sichuundu, J. (2024). A contextual analysis of the growth of financial inclusion in Zambia. *International Journal of Research and Innovation in Social Science, 8*(10), 691–707. https://doi.org/10.47772/ijriss.2024.8100058

Xiao, J. J., Huang, J., Goyal, K., & Kumar, S. (2022). Financial capability: A systematic conceptual review, extension and synthesis. *International Journal of Bank Marketing, 40*(7), 1680–1717. https://doi.org/10.1108/IJBM-05-2022-0185