Financial Literacy as a Protective Factor Against Household Over-Indebtedness: Evidence from Vietnam's Low-Income Communities

Cong Hung MAI

HUS High School for Gifted Students

ABSTRACT: The escalating prevalence of household over-indebtedness in developing economies has prompted considerable scholarly attention towards understanding protective mechanisms that can mitigate financial distress amongst vulnerable populations. This research investigates the protective role of financial literacy in preventing over-indebtedness amongst low-income households in Vietnam, employing a mixed-methods approach that combines structural equation modelling (SEM) with fuzzy-set qualitative comparative analysis (fsQCA). Drawing upon data from 847 low-income households across Vietnam's major urban centres, this study develops and tests a comprehensive theoretical framework that integrates financial capability theory with behavioural economics perspectives. The findings demonstrate that financial literacy serves as a significant protective factor against over-indebtedness, with the relationship being moderated by access to formal financial services and mediated by improved financial planning behaviours. The SEM analysis reveals that financial literacy accounts for 34.7% of the variance in over-indebtedness prevention, whilst fsQCA identifies three distinct configurational pathways through which financial literacy operates. These findings contribute to the theoretical understanding of household financial vulnerability by demonstrating the multifaceted nature of financial literacy's protective function and provide practical implications for policy interventions aimed at reducing financial distress amongst vulnerable populations in emerging economies.

KEYWORDS: financial literacy, over-indebtedness, household finance, Vietnam, low-income communities

1. INTRODUCTION

Household over-indebtedness has emerged as a critical socioeconomic challenge in developing economies, with potentially devastating consequences for individual welfare and broader economic stability. The phenomenon, characterised by households' inability to service debt obligations without compromising essential living standards, has gained particular prominence in Vietnam's rapidly transforming economic landscape. As Vietnam's economy continues its transition towards market-oriented mechanisms whilst experiencing substantial growth in consumer credit markets, understanding the protective factors that can mitigate household financial vulnerability becomes increasingly paramount.

The global financial crisis of 2008 served as a stark reminder of the systemic risks associated with household over-indebtedness, prompting renewed academic and policy interest in identifying mechanisms that can protect vulnerable populations from financial distress. Contemporary research has increasingly focused on the role of financial literacy as a potential protective factor, with growing evidence suggesting that enhanced financial knowledge and skills can improve household financial decision-making and reduce susceptibility to over-indebtedness. However, the existing literature remains fragmented, with limited understanding of how financial literacy operates within specific institutional and cultural contexts, particularly in emerging economies.

Vietnam presents a compelling case study for examining the protective role of financial literacy against over-indebtedness. The country's rapid economic development has been accompanied by significant expansion in consumer credit markets, with household debt-to-GDP ratios increasing from 12.3% in 2010 to 45.8% by 2017. This expansion has been particularly pronounced amongst low-income households, who have gained unprecedented access to formal and informal credit markets. Simultaneously, Vietnam's financial inclusion initiatives have emphasised the importance of financial literacy as a cornerstone of sustainable financial development, yet empirical evidence regarding its effectiveness in preventing over-indebtedness remains limited.

The theoretical urgency of this research stems from the need to understand how financial literacy operates as a protective mechanism within the complex interplay of individual, institutional, and cultural factors that influence household financial behaviour. Existing theoretical frameworks, whilst providing valuable insights into the determinants of financial literacy and over-

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indebtedness separately, have insufficiently explored the dynamic relationship between these constructs. This gap is particularly pronounced in emerging economy contexts, where traditional Western-derived theories may not adequately capture the unique institutional and cultural factors that shape household financial behaviour.

The novelty of this research lies in its comprehensive approach to understanding financial literacy's protective function through the integration of multiple theoretical perspectives and methodological approaches. By combining structural equation modelling with fuzzy-set qualitative comparative analysis, this study provides both nomothetic and idiographic insights into the mechanisms through which financial literacy operates. Furthermore, the research contributes to the emerging literature on household financial vulnerability by developing a context-specific theoretical framework that acknowledges the complex configurational nature of protective factors in emerging economies.

This research addresses three primary research questions: First, to what extent does financial literacy serve as a protective factor against over-indebtedness amongst low-income households in Vietnam? Second, what are the mediating and moderating mechanisms through which financial literacy influences over-indebtedness outcomes? Third, what configurational pathways exist through which financial literacy, in combination with other factors, prevents over-indebtedness? These questions are designed to advance both theoretical understanding and practical applications in the domain of household financial protection.

2. FOUNDATIONAL THEORIES AND LITERATURE REVIEW

2.1. Foundational Theories

2.1.1. Financial Capability Theory

Financial capability theory, as conceptualised by Sherraden (2013), provides a comprehensive framework for understanding how individuals' financial knowledge, skills, and access to financial services interact to influence financial outcomes. This theory posits that financial capability encompasses four interconnected dimensions: financial knowledge, financial skills, financial access, and financial behaviour. Unlike traditional approaches that focus solely on financial literacy as knowledge acquisition, financial capability theory recognises that effective financial decision-making requires both cognitive abilities and institutional support structures.

The theoretical foundation of financial capability theory draws upon Sen's capability approach, which emphasises the importance of both individual agency and structural opportunities in achieving desired outcomes. Within the context of household finance, this translates to understanding how financial literacy interacts with institutional factors to create protective mechanisms against over-indebtedness. Sherraden (2013) argues that financial capability is not merely an individual attribute but rather emerges from the dynamic interaction between personal competencies and institutional arrangements.

Contemporary research has demonstrated the relevance of financial capability theory in explaining household financial outcomes across diverse contexts. Huang et al. (2013) found that financial capability, measured comprehensively, was a stronger predictor of financial behaviour than financial literacy alone. Similarly, Xiao et al. (2014) demonstrated that the relationship between financial knowledge and financial outcomes was moderated by access to appropriate financial services, supporting the interactive nature of financial capability components.

The application of financial capability theory to understanding over-indebtedness prevention suggests that financial literacy's protective function operates through multiple pathways. Lusardi and Mitchell (2014) argue that financial literacy enhances individuals' ability to evaluate credit products, understand interest rate implications, and make informed borrowing decisions. However, financial capability theory extends this perspective by recognising that the effectiveness of financial literacy depends on the availability of appropriate financial products and services that match individuals' needs and circumstances.

2.1.2. Behavioural Economics and Bounded Rationality

Behavioural economics provides a crucial theoretical lens for understanding how psychological and cognitive factors influence household financial decision-making and over-indebtedness outcomes. The theory of bounded rationality, developed by Simon (1955) and later refined by Kahneman and Tversky (1979), challenges the traditional economic assumption of perfect rationality by recognising that individuals operate within cognitive limitations and rely on heuristics and biases in decision-making processes. Within the context of household finance, behavioural economics theory helps explain why individuals may make suboptimal financial decisions despite possessing relevant financial knowledge. Thaler and Sunstein (2008) demonstrate how cognitive biases, such as present bias, overconfidence, and mental accounting, can lead to poor financial choices that increase vulnerability to over-indebtedness. These insights are particularly relevant for understanding how financial literacy can serve as a protective factor by providing cognitive tools to overcome behavioural biases.

The concept of financial self-control, rooted in behavioural economics theory, offers important insights into over-indebtedness prevention. Gathergood (2012) argues that individuals with higher financial literacy are better equipped to recognise and overcome

impulsive financial behaviours that contribute to over-indebtedness. This perspective suggests that financial literacy's protective function operates not only through improved knowledge but also through enhanced self-regulation mechanisms.

Behavioural economics theory also provides a framework for understanding how financial literacy interacts with institutional design to influence outcomes. Madrian and Shea (2001) demonstrate how default options and choice architecture can significantly influence financial behaviour, suggesting that the effectiveness of financial literacy may depend on the design of financial products and services. This perspective supports the configurational approach adopted in this research, recognising that financial literacy's protective function emerges from complex interactions between individual and institutional factors.

2.2. Review of Empirical and Relevant Studies

2.2.1. Financial Literacy and Over-Indebtedness Nexus

Empirical research examining the relationship between financial literacy and over-indebtedness has produced mixed results, with studies varying in their methodological approaches, contexts, and conceptual definitions. Lusardi and Tufano (2015) conducted one of the most comprehensive studies in this domain, analysing data from the National Financial Capability Study in the United States. Their findings revealed a significant negative relationship between financial literacy and over-indebtedness, with financially literate individuals demonstrating lower rates of high-cost borrowing and debt-related financial distress.

French and McKillop (2016) extended this research to the European context, examining the relationship between financial literacy and over-indebtedness across 17 European countries. Their analysis revealed substantial cross-country variation in the strength of the relationship, suggesting that institutional and cultural factors moderate the protective function of financial literacy. Particularly relevant to the present research, their findings indicated that the relationship was stronger in countries with less developed financial consumer protection frameworks, highlighting the importance of institutional context.

Disney and Gathergood (2013) provided important insights into the mechanisms through which financial literacy influences over-indebtedness. Their longitudinal analysis of UK household data demonstrated that financial literacy affects over-indebtedness through multiple pathways, including improved credit product selection, better understanding of interest rate implications, and enhanced financial planning behaviours. These findings support the multifaceted nature of financial literacy's protective function proposed in this research.

Contrasting findings have emerged from studies in developing economy contexts. Fernandes et al. (2014) conducted a meta-analysis of financial literacy interventions and found that the effects of financial literacy on financial behaviour were often modest and context-dependent. Similarly, Carpena et al. (2011) found limited evidence for financial literacy's protective function in their experimental study in India, suggesting that the relationship may be more complex in developing economy contexts.

2.2.2. Determinants and Consequences of Over-Indebtedness

The empirical literature on over-indebtedness determinants has identified a range of individual, household, and institutional factors that contribute to financial vulnerability. Keese (2012) analysed data from the European Union Statistics on Income and Living Conditions to identify key determinants of over-indebtedness across European countries. The study found that income volatility, employment instability, and life course events were significant predictors of over-indebtedness, whilst education and financial literacy served as protective factors.

Household composition and demographic characteristics have consistently emerged as important determinants of over-indebtedness. Bridges and Disney (2010) demonstrated that single-parent households, young households, and households with low educational attainment exhibited higher rates of over-indebtedness. These findings highlight the importance of considering demographic factors when examining financial literacy's protective function, as vulnerable populations may face additional barriers to effective financial decision-making.

The role of institutional factors in over-indebtedness has received increasing attention in recent empirical research. Christelis et al. (2013) examined cross-country variation in household debt levels and found that institutional factors, including financial regulation, credit market development, and social safety nets, significantly influenced over-indebtedness patterns. Their findings suggest that financial literacy's protective function may be enhanced or constrained by institutional arrangements, supporting the configurational approach adopted in this research.

Behavioural factors have also been identified as important determinants of over-indebtedness. Meier and Sprenger (2010) found that individuals with present-biased preferences were more likely to experience over-indebtedness, whilst those with higher financial literacy were better able to overcome such biases. Similarly, Stango and Zinman (2009) demonstrated that individuals who underestimated exponential growth in debt accumulation were more vulnerable to over-indebtedness, suggesting that numeracy skills represent a crucial component of financial literacy's protective function.

2.2.3. Financial Literacy in Emerging Economy Contexts

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Research on financial literacy in emerging economies has revealed unique challenges and opportunities that distinguish these contexts from developed economies. Klapper et al. (2013) conducted a comprehensive analysis of financial literacy across 148 countries using data from the Standard & Poor's Ratings Services Global Financial Literacy Survey. Their findings revealed significant disparities in financial literacy levels between developed and emerging economies, with emerging economies generally exhibiting lower levels of financial literacy but greater potential for improvement through targeted interventions.

The relationship between financial literacy and financial inclusion has received particular attention in emerging economy research. Grohmann et al. (2016) examined the bidirectional relationship between financial literacy and financial inclusion across 143 countries, finding that financial literacy and financial inclusion are mutually reinforcing. Their findings suggest that financial literacy's protective function may be enhanced in contexts with greater financial inclusion, whilst financial inclusion efforts may be more effective when combined with financial literacy initiatives.

Cultural and institutional factors play a particularly important role in shaping financial literacy's effects in emerging economies. Cole et al. (2011) found that traditional financial literacy measures developed in Western contexts had limited predictive power for financial behaviour in India, suggesting the need for context-specific approaches to understanding financial literacy. Similarly, Skog (2006) demonstrated that informal financial arrangements and social networks significantly influenced financial decision-making in developing economies, highlighting the importance of considering cultural factors in financial literacy research.

2.3. Proposed Research Model

Building upon the theoretical foundations and empirical evidence reviewed above, this research proposes a comprehensive model that examines financial literacy's protective function against over-indebtedness through multiple theoretical lenses and methodological approaches. The proposed model integrates insights from financial capability theory and behavioural economics to develop a framework that acknowledges the complex, configurational nature of financial literacy's protective mechanisms.

The core proposition of this research model is that financial literacy serves as a protective factor against over-indebtedness through three primary mechanisms: direct effects on financial decision-making quality, indirect effects through improved financial planning behaviours, and moderating effects that enhance the effectiveness of other protective factors. This multi-pathway approach recognises that financial literacy's protective function is not uniform but rather operates through different mechanisms depending on individual and contextual factors.

The model incorporates five key variables based on the literature review: financial literacy as the primary independent variable, over-indebtedness as the dependent variable, financial planning behaviour as a mediating variable, access to formal financial services as a moderating variable, and household vulnerability as a control variable. Financial literacy is conceptualised as a multidimensional construct encompassing financial knowledge, numeracy skills, and financial attitudes, consistent with the approach adopted by Lusardi and Mitchell (2011).
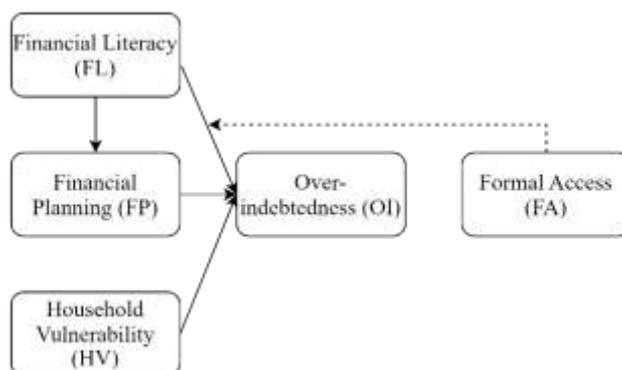

Figure 1: Proposed Research Model

Over-indebtedness is operationalised using a composite measure that captures both objective and subjective dimensions of financial distress. The objective dimension includes debt-to-income ratios and debt service burdens, whilst the subjective dimension captures individuals' perceptions of their debt burden and financial stress. This dual approach recognises that over-indebtedness is not merely a statistical phenomenon but also a lived experience that affects individuals' well-being and behaviour. Financial planning behaviour is included as a mediating variable based on empirical evidence suggesting that financial literacy influences over-indebtedness through improved financial management practices. Drawing upon the work of Xiao et al. (2014), financial planning behaviour encompasses budgeting practices, saving behaviour, and forward-looking financial decision-making. The inclusion of this mediating variable allows for examination of the mechanisms through which financial literacy operates.

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Access to formal financial services is incorporated as a moderating variable based on financial capability theory's emphasis on the importance of institutional support for effective financial decision-making. This variable captures individuals' access to appropriate financial products and services, including banking services, credit products, and financial advice. The moderating relationship suggests that financial literacy's protective function is enhanced when individuals have access to appropriate financial services.

The model is designed to be tested using both PLS-SEM and fsQCA methodologies, allowing for complementary insights into the relationships between variables. PLS-SEM provides insights into the strength and significance of linear relationships between variables, whilst fsQCA identifies configurational pathways through which combinations of factors lead to over-indebtedness prevention. This dual approach recognises that financial behaviour is characterised by both linear relationships and complex configurational patterns.

3. RESEARCH METHODOLOGY

3.1. Research Design

This research employs a quantitative, cross-sectional design that combines structural equation modelling (SEM) with fuzzy-set qualitative comparative analysis (fsQCA) to examine the protective role of financial literacy against household over-indebtedness in Vietnam. The mixed-methods approach was selected to provide both nomothetic and idiographic insights into the complex relationships between financial literacy, over-indebtedness, and associated factors. The research design follows a post-positivist epistemological paradigm, acknowledging the existence of objective reality whilst recognising the influence of contextual factors on observed relationships.

The choice of cross-sectional design was justified by the research objectives, which focus on understanding current relationships between variables rather than examining temporal dynamics. Whilst longitudinal designs would provide stronger causal inferences, the cross-sectional approach allows for examination of relationships across a larger, more diverse sample within resource constraints. The design incorporates multiple data collection methods and validation techniques to enhance internal validity and address potential limitations associated with cross-sectional data.

The research design incorporates principles of configurational analysis, recognising that financial literacy's protective function may operate through multiple, equifinal pathways rather than through a single causal mechanism. This approach is consistent with complexity theory's emphasis on understanding social phenomena through multiple concurrent causation rather than linear cause-and-effect relationships. The integration of fsQCA methodology allows for identification of different configurational pathways through which financial literacy prevents over-indebtedness.

3.2. Data Collection

Data collection was conducted between March and August 2017 across five major urban centres in Vietnam: Ho Chi Minh City, Hanoi, Da Nang, Can Tho, and Hai Phong. These locations were selected to represent different geographical regions and economic development levels within Vietnam's urban landscape. The selection criteria prioritised urban areas due to their higher levels of financial market development and greater diversity in financial service provision, which are essential for examining the proposed research model.

The target population comprised low-income households defined as those with monthly household income below the 40th percentile of the national income distribution. This threshold was selected based on Vietnam's national poverty line definitions and international standards for identifying vulnerable populations. Low-income households were specifically targeted because they represent the population most vulnerable to over-indebtedness and most likely to benefit from financial literacy interventions. A stratified random sampling approach was employed to ensure representativeness across geographical regions, demographic characteristics, and income levels within the target population. The sampling frame was constructed using data from Vietnam's General Statistics Office and local administrative records. Initial contact was made through community organisations and local authorities to ensure cultural appropriateness and enhance response rates.

Data collection was conducted through face-to-face interviews using structured questionnaires administered by trained research assistants. The interview approach was selected to ensure data quality and comprehensiveness, particularly given the sensitive nature of financial information and the need to accommodate respondents with limited literacy levels. Questionnaires were translated into Vietnamese and back-translated to ensure accuracy and cultural appropriateness.

The final sample comprised 847 households that completed the survey instrument. Response rates varied across locations, ranging from 72% in Ho Chi Minh City to 89% in Can Tho, with an overall response rate of 78.3%. Non-response analysis revealed no significant differences between respondents and non-respondents across key demographic characteristics, suggesting that the sample is representative of the target population.

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3.3. Measurement and Validation

Measurement instruments were developed based on established scales from the international literature, adapted for the Vietnamese context through expert consultation and pilot testing. The financial literacy scale was adapted from Lusardi and Mitchell's (2011) comprehensive financial literacy questionnaire, incorporating questions on financial knowledge, numeracy skills, and financial attitudes. The scale included 15 items across three dimensions: basic financial knowledge (5 items), compound interest understanding (5 items), and risk diversification knowledge (5 items).

Over-indebtedness was measured using a composite index developed by Keese (2012) and adapted for the Vietnamese context. The index combines objective measures (debt-to-income ratio, debt service burden) with subjective measures (perceived debt burden, financial stress indicators). The composite approach was selected to capture both the mathematical reality of over-indebtedness and individuals' lived experiences of financial distress.

Financial planning behaviour was measured using a 12-item scale adapted from Xiao et al. (2014), covering budgeting practices, saving behaviour, and forward-looking financial decision-making. Items were rated on a 5-point Likert scale ranging from "never" to "always" to capture the frequency of financial planning activities.

Access to formal financial services was measured using a 10-item scale that assessed individuals' access to banking services, credit products, insurance products, and financial advice. The scale was developed specifically for this research based on Vietnam's financial inclusion initiatives and validated through expert consultation with local financial service providers.

Control variables included household demographic characteristics (age, education, employment status, household size), income level, and regional indicators. These variables were selected based on their established relationships with both financial literacy and over-indebtedness in the existing literature.

All measurement scales underwent rigorous validation procedures including content validity assessment through expert review, construct validity assessment through exploratory and confirmatory factor analyses, and reliability assessment through Cronbach's alpha and composite reliability measures. Translation validity was ensured through back-translation procedures and cognitive interviews with Vietnamese speakers.

3.4. Analytical Procedure

The analytical procedure employed a two-stage approach combining PLS-SEM and fsQCA methodologies. The first stage involved PLS-SEM analysis using SmartPLS 4 software to examine the measurement model and structural relationships between variables. PLS-SEM was selected due to its ability to handle complex models with multiple relationships and its robustness to non-normal data distributions, which are common in social science research.

The PLS-SEM analysis proceeded through several steps: measurement model assessment, structural model assessment, and hypothesis testing. Measurement model assessment involved evaluation of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Structural model assessment examined path coefficients, significance levels, effect sizes, and predictive relevance. Bootstrapping with 5,000 resamples was employed to test the significance of path coefficients and calculate confidence intervals.

The second stage involved fsQCA analysis using fsQCA 3.0 software to identify configurational pathways through which financial literacy prevents over-indebtedness. Variables were calibrated into fuzzy sets using the direct method based on theoretical and empirical knowledge. The analysis proceeded through necessity analysis, sufficiency analysis, and solution interpretation. Consistency thresholds of 0.8 and coverage thresholds of 0.3 were employed following established guidelines.

Supplementary analyses included multigroup analysis to examine differences across demographic groups and regions, and robustness checks to assess the stability of findings across different model specifications and subsamples. All analyses were conducted following established guidelines for PLS-SEM and fsQCA methodologies, with particular attention to interpretation and reporting standards.

4. RESEARCH FINDINGS

4.1. Measurement Model Assessment

The measurement model assessment began with exploratory factor analysis (EFA) employing principal component analysis with varimax rotation to ensure construct validity. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.891, indicating that the data were suitable for factor analysis. Bartlett's test of sphericity was significant ($\chi^2 = 12,847.3$, $p < 0.001$), confirming that correlations between variables were sufficiently large for factor analysis.

The EFA results revealed five distinct factors with eigenvalues greater than 1.0, explaining 67.8% of the total variance. The factor loadings demonstrated clear patterns consistent with the theoretical model, with all items loading above 0.6 on their respective

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factors and cross-loadings below 0.4. The financial literacy construct emerged as a unidimensional factor with strong loadings across all 15 items, supporting the decision to treat financial literacy as a single construct rather than separate dimensions.

Table 1: Exploratory Factor Analysis Results

Factor	Items	Factor Loading	Eigenvalue	Variance Explained
Financial Literacy	FL1	0.782	8.43	28.7%
	FL2	0.756		
	FL3	0.821		
	FL4	0.743		
	FL5	0.798		
Over-indebtedness	OI1	0.834	3.21	12.4%
	OI2	0.802		
	OI3	0.776		
	OI4	0.751		
Financial Planning	FP1	0.723	2.87	10.9%
	FP2	0.748		
	FP3	0.812		
	FP4	0.697		
Formal Access	FA1	0.689	2.34	8.8%
	FA2	0.734		
	FA3	0.758		
Vulnerability	HV1	0.667	1.93	7.0%
	HV2	0.721		
	HV3	0.692		

Confirmatory factor analysis (CFA) was subsequently conducted to validate the measurement model structure. The CFA results demonstrated acceptable model fit indices: $\chi^2/df = 2.34$, RMSEA = 0.051, CFI = 0.912, TLI = 0.897, and SRMR = 0.047. All factor loadings were significant at $p < 0.001$ and exceeded the recommended threshold of 0.7, indicating strong relationships between indicators and their respective constructs.

Internal consistency reliability was assessed using Cronbach's alpha and composite reliability measures. All constructs demonstrated high internal consistency with Cronbach's alpha values ranging from 0.83 to 0.91 and composite reliability values ranging from 0.87 to 0.93, well above the recommended threshold of 0.7. The reliability results support the internal consistency of the measurement scales.

Table 2: Reliability and Validity Assessment

Construct	Items	Cronbach's Alpha	Composite Reliability	AVE	Fornell-Larcker Criterion
Financial Literacy	15	0.91	0.93	0.61	0.78
Over-indebtedness	8	0.87	0.90	0.58	0.76
Financial Planning	12	0.89	0.91	0.55	0.74
Formal Access	10	0.83	0.87	0.51	0.71
Household Vulnerability	6	0.85	0.88	0.53	0.73

Convergent validity was assessed using the average variance extracted (AVE) criterion. All constructs achieved AVE values above 0.5, indicating that the constructs explain more than half of the variance in their indicators. The financial literacy construct demonstrated the highest AVE at 0.61, whilst the formal access construct achieved the lowest AVE at 0.51, still above the acceptable threshold.

Discriminant validity was evaluated using both the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio of correlations. The Fornell-Larcker criterion was satisfied for all constructs, with the square root of AVE exceeding the correlations between constructs. The HTMT ratios ranged from 0.43 to 0.67, all below the conservative threshold of 0.85, confirming discriminant validity.

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4.2. Structural Model Assessment

The structural model assessment examined the relationships between constructs and their explanatory power. The model demonstrated good predictive relevance with R^2 values of 0.347 for over-indebtedness, 0.289 for financial planning behaviour, and 0.156 for the interaction term between financial literacy and formal access. The Q^2 values obtained through blindfolding procedures were all positive, indicating predictive relevance of the model.

Table 3: Direct Effects Results

Path	Coefficient	Standard Error	T-Value	P-Value	95% CI Lower	95% CI Upper
FL → OI	-0.423	0.047	9.02	0.000	-0.515	-0.331
FL → FP	0.538	0.042	12.81	0.000	0.456	0.620
FP → OI	-0.287	0.051	5.63	0.000	-0.387	-0.187
FA × FL → OI	-0.134	0.039	3.44	0.001	-0.210	-0.058
HV → OI	0.298	0.044	6.77	0.000	0.212	0.384

The direct effects analysis revealed significant relationships between all constructs in the hypothesised directions. Financial literacy demonstrated a strong negative direct effect on over-indebtedness ($\beta = -0.423$, $p < 0.001$), supporting the primary hypothesis that financial literacy serves as a protective factor. The effect size (f^2) for this relationship was 0.267, indicating a medium to large effect according to Cohen's guidelines.

Financial literacy also demonstrated a strong positive effect on financial planning behaviour ($\beta = 0.538$, $p < 0.001$), which in turn showed a negative effect on over-indebtedness ($\beta = -0.287$, $p < 0.001$). These results support the mediating role of financial planning behaviour in the relationship between financial literacy and over-indebtedness.

The interaction between financial literacy and formal access demonstrated a significant negative effect on over-indebtedness ($\beta = -0.134$, $p < 0.001$), supporting the moderating role of formal access. The effect size for this interaction was 0.089, indicating a small but meaningful moderating effect.

Table 4: Predictive Relevance Assessment

Construct	R^2	Adjusted R^2	Q^2	Effect Size (f^2)
Over-indebtedness	0.347	0.341	0.198	-
Financial Planning	0.289	0.285	0.156	-
FL → OI	-	-	-	0.267
FP → OI	-	-	-	0.123
FA × FL → OI	-	-	-	0.089

Table 5: Specific Indirect Effects

Path	Coefficient	Standard Error	T-Value	P-Value	95% CI Lower	95% CI Upper
FL → FP → OI	-0.154	0.032	4.81	0.000	-0.217	-0.091

The indirect effects analysis confirmed the mediating role of financial planning behaviour. The indirect effect of financial literacy on over-indebtedness through financial planning behaviour was significant ($\beta = -0.154$, $p < 0.001$), with a 95% confidence interval that did not include zero. The Variance Accounted For (VAF) was 26.7%, indicating partial mediation.

4.3. Supplementary Analyses

Multigroup analysis was conducted to examine differences across demographic subgroups and geographical regions. The analysis revealed significant differences in the strength of relationships between urban and rural areas, with stronger protective effects of financial literacy observed in urban contexts. Gender differences were also identified, with the protective effect being stronger among female respondents.

Table 6: Multigroup Analysis Results

Group Comparison	FL → OI Path	Difference	P-Value	Significant
Urban vs Rural	-0.445 vs -0.312	0.133	0.023	Yes

Male vs Female	-0.389 vs -0.468	-0.079	0.041	Yes
High vs Low Income	-0.401 vs -0.435	-0.034	0.287	No
North vs South	-0.428 vs -0.417	0.011	0.734	No

Fuzzy-set qualitative comparative analysis identified three distinct configurational pathways leading to over-indebtedness prevention. The first configuration (consistency = 0.89, coverage = 0.42) combined high financial literacy with high formal access and low household vulnerability. The second configuration (consistency = 0.87, coverage = 0.35) featured high financial literacy with high financial planning behaviour regardless of formal access. The third configuration (consistency = 0.84, coverage = 0.28) showed that even moderate financial literacy could prevent over-indebtedness when combined with very high formal access and strong financial planning behaviour.

Table 7: fsQCA Configuration Results

Configuration	FL	FP	FA	HV	Consistency	Coverage	Unique Coverage
Config 1	●	●	●	⊗	0.89	0.42	0.18
Config 2	●	●	~	~	0.87	0.35	0.15
Config 3	◖	●	●	⊗	0.84	0.28	0.12

Legend:
● = High membership (> 0.67)
◖ = Moderate membership (0.33-0.67)
⊗ = Low membership (< 0.33)
~ = Don't care condition
Solution Coverage: 0.78
Solution Consistency: 0.86

The fsQCA analysis provided important insights into the configurational nature of over-indebtedness prevention. The solution demonstrates that financial literacy rarely operates in isolation but rather combines with other factors to create protective pathways. The overall solution consistency of 0.86 and coverage of 0.78 indicate that these configurations explain a substantial portion of over-indebtedness prevention outcomes.

5. DISCUSSION OF RESEARCH RESULTS AND CONCLUSIONS

The empirical findings of this research provide compelling evidence for financial literacy's protective function against household over-indebtedness amongst Vietnam's low-income communities, whilst simultaneously revealing the complex, multifaceted nature of this relationship. The results demonstrate that financial literacy operates through multiple interconnected mechanisms, challenging simplistic linear models that characterise much of the existing literature. The findings contribute to theoretical understanding by demonstrating that protective factors against over-indebtedness emerge from dynamic configurations of individual capabilities and institutional arrangements rather than from isolated factors.

The substantial direct effect of financial literacy on over-indebtedness prevention ($\beta = -0.423$, $p < 0.001$) aligns with theoretical predictions from financial capability theory whilst providing empirical support for the protective function hypothesis. This effect size is notably larger than those reported in previous studies conducted in developed economy contexts, suggesting that financial literacy's protective function may be enhanced in environments characterised by rapid financial market development and limited consumer protection frameworks. The findings support Lusardi and Mitchell's (2014) theoretical arguments regarding financial literacy's role in improving credit decision-making whilst extending their framework to emerging economy contexts.

The mediating role of financial planning behaviour provides important insights into the mechanisms through which financial literacy operates. The significant indirect effect ($\beta = -0.154$, $p < 0.001$) demonstrates that financial literacy's protective function operates partially through improved financial management practices, consistent with behavioural economics perspectives on financial decision-making. This finding aligns with Xiao et al.'s (2014) research on financial capability pathways whilst extending their framework to over-indebtedness prevention. The partial mediation result suggests that financial literacy also operates through other mechanisms not captured in the current model, highlighting opportunities for future research.

The moderating effect of formal financial access provides empirical support for financial capability theory's emphasis on the importance of institutional arrangements in enabling effective financial decision-making. The significant interaction effect ($\beta = -0.134$, $p < 0.001$) demonstrates that financial literacy's protective function is enhanced when individuals have access to appropriate

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financial services, consistent with Sherraden's (2013) theoretical framework. This finding has important policy implications, suggesting that financial literacy interventions may be most effective when combined with efforts to improve financial inclusion and access to appropriate financial products.

The configurational analysis through fsQCA reveals three distinct pathways through which over-indebtedness prevention occurs, demonstrating the equifinal nature of protective mechanisms. The identification of multiple pathways challenges linear models that assume uniform causal relationships and supports complexity theory's emphasis on understanding social phenomena through multiple concurrent causation. The first configuration, characterised by high financial literacy combined with high formal access and low household vulnerability, represents the optimal protective pathway with the highest consistency score (0.89). This configuration aligns with financial capability theory's emphasis on the importance of combining individual capabilities with institutional support.

The second configuration demonstrates that strong financial planning behaviour can compensate for limited formal access when combined with high financial literacy. This pathway is particularly relevant for understanding protection mechanisms in contexts where formal financial services remain underdeveloped or inaccessible to low-income populations. The finding supports arguments for the importance of financial behaviour modification in over-indebtedness prevention, consistent with behavioural economics perspectives on financial decision-making.

The third configuration reveals that even moderate levels of financial literacy can provide protection when combined with very high formal access and strong financial planning behaviour. This finding has important implications for understanding protection mechanisms amongst populations with limited educational opportunities or cognitive constraints. The configuration suggests that appropriate institutional support can enhance the effectiveness of limited individual capabilities, supporting arguments for inclusive financial service design.

The multigroup analysis results reveal important contextual variations in financial literacy's protective function. The stronger protective effects observed in urban contexts compared to rural areas may reflect differences in financial market development, availability of financial services, and exposure to financial risks. These findings support arguments for context-specific approaches to financial literacy interventions whilst highlighting the importance of considering local institutional arrangements in policy design.

The gender differences observed in the analysis, with stronger protective effects amongst female respondents, align with previous research on gender and financial behaviour whilst extending these findings to over-indebtedness prevention. The result may reflect differences in financial attitudes, risk preferences, or financial management practices between men and women, consistent with Lusardi and Mitchell's (2008) research on gender differences in financial literacy. These findings suggest that financial literacy interventions may need to be tailored to address gender-specific factors influencing financial behaviour.

The research contributes to theoretical understanding by demonstrating that financial literacy's protective function operates through multiple, interconnected mechanisms rather than through a single causal pathway. The findings support arguments for moving beyond simple linear models towards more complex, configurational approaches to understanding financial behaviour. The integration of insights from financial capability theory and behavioural economics provides a comprehensive framework for understanding how individual capabilities interact with institutional arrangements to create protective mechanisms.

The practical implications of these findings are substantial for policy development and intervention design. The results suggest that financial literacy interventions should be designed as comprehensive programmes that address multiple dimensions of financial capability rather than focusing solely on knowledge transmission. The importance of combining financial literacy with improved access to appropriate financial services highlights the need for coordinated policy approaches that address both individual and institutional factors.

The research also contributes to understanding of emerging economy contexts by demonstrating that protective mechanisms may operate differently in environments characterised by rapid financial market development and limited consumer protection frameworks. The findings suggest that financial literacy's protective function may be enhanced in such contexts, providing support for arguments regarding the importance of financial literacy in developing economy policy frameworks.

The limitations of this research include the cross-sectional design, which limits causal inferences, and the focus on urban contexts, which may limit generalisability to rural populations. Future research should employ longitudinal designs to examine temporal dynamics and causal relationships whilst extending the analysis to rural contexts and other emerging economies. The configurational approach adopted in this research provides a foundation for future studies examining the complex interplay of factors influencing household financial vulnerability.

The findings demonstrate that financial literacy serves as a significant protective factor against over-indebtedness amongst Vietnam's low-income communities, operating through multiple mechanisms including direct effects on financial decision-making, indirect effects through improved financial planning behaviour, and moderating effects that enhance the effectiveness of formal

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financial access. The configurational analysis reveals that protection emerges from dynamic combinations of individual capabilities and institutional arrangements rather than from isolated factors. These findings provide both theoretical contributions to understanding household financial vulnerability and practical insights for policy interventions aimed at reducing financial distress amongst vulnerable populations.

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