

Financial Behavior Determinants and Literacy Gaps Among Vietnamese University Students: Evidence for Early-Stage Financial Education Policy

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ABSTRACT: This study investigates the determinants of financial behaviour and literacy gaps among Vietnamese university students, providing empirical evidence for early-stage financial education policy development. Through a comprehensive quantitative analysis employing structural equation modelling (SEM) and fuzzy-set qualitative comparative analysis (fsQCA), the research examines the complex relationships between financial knowledge, attitudes, behaviours, and socio-demographic factors among 487 university students across Hanoi's leading institutions. The findings reveal significant literacy gaps in investment knowledge and debt management, with financial attitudes serving as a critical mediating factor between knowledge and actual financial behaviours. The analysis demonstrates that family financial socialisation, peer influence, and institutional support collectively explain 64% of the variance in financial behaviour patterns. Supplementary fsQCA results identify three distinct pathways to optimal financial behaviour: knowledge-driven, attitude-mediated, and socially-influenced configurations. These empirical findings provide compelling evidence for implementing systematic financial education programmes at the tertiary education level, with particular emphasis on experiential learning approaches that bridge the knowledge-behaviour gap. The study contributes to the growing literature on financial socialisation theory whilst offering practical insights for Vietnamese policymakers seeking to enhance financial inclusion and economic stability among emerging adults.

KEYWORDS: financial literacy, university students, financial behaviour, financial education policy, Vietnam

1. INTRODUCTION

The global imperative for enhanced financial literacy has intensified considerably following the 2008 financial crisis, with policymakers increasingly recognising the fundamental role of financial competence in promoting economic stability and individual wellbeing (Lusardi & Mitchell, 2014). This recognition has become particularly acute in emerging economies, where rapid financial market development and increasing complexity of financial products demand sophisticated consumer capabilities (Grohmann et al., 2017). Vietnam, as one of Asia's most dynamic emerging markets, presents a compelling context for examining financial literacy and behaviour patterns, particularly among university students who represent the future economic leadership of the nation.

Contemporary scholarship has established that financial literacy deficits are not merely individual shortcomings but constitute systemic vulnerabilities that can undermine broader economic development objectives (Kaiser & Menkhoff, 2017). The significance of this challenge becomes particularly pronounced when considering that emerging adults, typically aged 18-25, face critical financial decisions during their university years that establish long-term financial trajectories (Shim et al., 2010). These decisions encompass student loan management, consumption patterns, early investment choices, and the establishment of credit histories, all of which have profound implications for future financial wellbeing.

The Vietnamese higher education landscape presents unique characteristics that intensify the relevance of financial literacy research. With over 2.3 million university students enrolled across the country and rapid expansion of consumer credit markets, young adults increasingly navigate complex financial environments without adequate preparation (Vo et al., 2017). The transformation from a centrally planned economy to a market-oriented system has created intergenerational knowledge gaps, where traditional family-based financial socialisation may inadequately prepare students for contemporary financial realities.

Theoretical development in financial literacy research has evolved from simple knowledge-based models towards more sophisticated frameworks that acknowledge the complex interplay between cognitive, behavioural, and social factors (Hastings et al., 2013). However, existing literature demonstrates significant geographical bias towards developed economies, with limited

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empirical evidence from Southeast Asian contexts. This geographical concentration creates theoretical blind spots regarding how cultural values, institutional frameworks, and socio-economic contexts influence financial literacy development in emerging economies.

The necessity for this research emerges from several converging factors. Firstly, Vietnamese policymakers are actively developing national financial inclusion strategies, yet lack robust empirical evidence regarding the financial competence of emerging adults. Secondly, the rapid digitisation of financial services in Vietnam creates both opportunities and risks that require sophisticated consumer capabilities. Thirdly, the COVID-19 pandemic has accelerated financial service adoption whilst simultaneously highlighting economic vulnerabilities among young adults, making financial literacy more critical than ever.

This study addresses these imperatives by providing the first comprehensive analysis of financial behaviour determinants and literacy gaps among Vietnamese university students. The research contributes theoretical advancement through the development of an integrated model that synthesises financial socialisation theory with behavioural economics insights, whilst offering practical contributions through empirical evidence that can inform policy development. The investigation employs advanced quantitative methodologies, including SEM and fsQCA, to uncover both linear relationships and configurational pathways that lead to optimal financial outcomes.

The novelty of this research lies in its multifaceted approach to understanding financial literacy as a complex phenomenon that extends beyond simple knowledge acquisition. By examining the interplay between knowledge, attitudes, behaviours, and contextual factors, the study provides nuanced insights into how financial competence develops within specific cultural and institutional contexts. Furthermore, the research introduces innovative measurement approaches that capture both explicit financial knowledge and implicit behavioural tendencies, offering a more comprehensive understanding of financial literacy than traditional assessments.

2. FOUNDATIONAL THEORIES AND LITERATURE REVIEW

2.1. Foundational Theories

2.1.1. Financial Socialisation Theory

Financial socialisation theory provides the fundamental theoretical framework for understanding how individuals acquire financial knowledge, attitudes, and behaviours through social learning processes (Danes, 1994). This theory, rooted in broader socialisation research, posits that financial competence emerges through complex interactions between individual cognitive development and social environmental influences. The theory distinguishes between primary socialisation agents, such as family members and educational institutions, and secondary agents, including peers and media influences, each contributing distinct mechanisms for financial learning.

The theoretical foundation draws significantly from Bronfenbrenner's ecological systems theory, which conceptualises development as occurring within nested environmental systems (Bronfenbrenner, 1979). Within this framework, financial socialisation occurs across multiple system levels: the microsystem encompassing direct family interactions, the mesosystem involving connections between family and educational contexts, the exosystem including broader institutional influences, and the macrosystem reflecting cultural values and economic structures. This multilevel perspective proves particularly relevant for understanding financial behaviour development in transitional economies like Vietnam, where traditional family values interact with rapidly evolving market institutions.

Contemporary developments in financial socialisation theory have emphasised the bidirectional nature of socialisation processes, recognising that individuals actively construct financial meaning rather than passively absorbing environmental influences (Gudmunson & Danes, 2011). This constructivist perspective acknowledges that emerging adults bring cognitive capabilities and personal experiences that shape how they interpret and respond to socialisation messages. The theory further recognises developmental timing effects, suggesting that different life stages create varying receptiveness to financial learning opportunities. Research applications of financial socialisation theory have demonstrated its explanatory power across diverse cultural contexts, though with notable limitations in emerging economy settings. Shim et al. (2010) demonstrated that parental financial teaching and peer influence significantly predict financial attitudes and behaviours among American college students. However, cross-cultural validation remains limited, creating theoretical gaps regarding how collectivist cultural values and family structures influence financial socialisation processes in Asian contexts.

The theory's relevance to Vietnamese contexts emerges through several cultural considerations. Vietnamese family structures typically emphasise intergenerational financial interdependence, where young adults maintain strong financial connections with extended family networks. Traditional Confucian values prioritise collective financial security over individual consumption, potentially creating distinct socialisation patterns compared to individualistic societies. Furthermore, the rapid economic

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transformation in Vietnam creates unique intergenerational knowledge gaps, where traditional financial wisdom may inadequately prepare young adults for contemporary financial realities.

Financial socialisation theory also provides insights into gender differences in financial learning, recognising that socialisation processes may vary based on cultural expectations and role assignments. Research has demonstrated that traditional societies often socialise males and females differently regarding financial responsibility and risk-taking, though these patterns may be evolving in contemporary Vietnamese society (Fonseca et al., 2012). Understanding these gendered socialisation processes becomes crucial for designing inclusive financial education interventions.

The theory's application to university student populations requires particular attention to developmental timing and contextual factors. University attendance typically coincides with emerging adulthood, a developmental period characterised by identity exploration, instability, and self-focus (Arnett, 2000). During this period, students gain increased financial autonomy whilst facing complex financial decisions, creating critical learning opportunities that can establish long-term financial trajectories.

2.1.2. Behavioural Economics and Financial Decision-Making Theory

Behavioural economics provides complementary theoretical insights by examining how psychological factors and cognitive biases influence financial decision-making processes (Thaler, 2015). This theoretical framework challenges traditional economic assumptions of rational decision-making, demonstrating that individuals frequently employ heuristics and exhibit systematic biases that lead to suboptimal financial outcomes. The integration of psychological insights with economic analysis offers particularly valuable perspectives for understanding financial behaviour among young adults, who may be especially susceptible to certain cognitive biases.

Prospect theory, developed by Kahneman and Tversky (1979), provides foundational insights into how individuals make decisions under uncertainty. The theory demonstrates that people exhibit loss aversion, overweighting potential losses relative to equivalent gains, and engage in reference point-dependent evaluation of outcomes. These insights prove particularly relevant for understanding student financial behaviour, as young adults frequently face decisions involving uncertain outcomes, such as education investments, career choices, and early financial planning decisions.

Temporal discounting theory offers additional insights into how individuals weigh immediate versus future rewards, with research demonstrating that young adults typically exhibit higher discount rates that favour immediate gratification over long-term benefits (Frederick et al., 2002). This theoretical framework helps explain common patterns of financial behaviour among university students, including limited savings behaviour, excessive consumption spending, and inadequate retirement planning. Understanding these temporal preferences becomes crucial for designing financial education interventions that can effectively promote long-term financial planning.

Mental accounting theory provides further explanatory power by examining how individuals categorise and evaluate financial resources (Thaler, 1985). Research demonstrates that people often treat money differently depending on its source, intended use, or mental categorisation, leading to economically irrational behaviours such as simultaneously saving at low interest rates whilst carrying high-interest debt. For university students, mental accounting may manifest in treating student loans differently from personal debt, or segregating money received from family versus earned through employment.

The theory of planned behaviour offers additional insights into the relationship between attitudes, intentions, and actual financial behaviours (Ajzen, 1991). This framework suggests that financial behaviour is determined by attitudes towards the behaviour, subjective norms regarding social expectations, and perceived behavioural control reflecting confidence in one's ability to perform the behaviour. Research applications have demonstrated that positive financial attitudes and strong perceived control significantly predict financial planning behaviours, though the attitude-behaviour relationship may be moderated by various contextual factors. Social cognitive theory provides complementary perspectives by emphasising the role of self-efficacy beliefs in financial behaviour (Bandura, 1997). Financial self-efficacy, defined as confidence in one's ability to perform financial tasks and achieve financial goals, has emerged as a critical predictor of financial behaviour across diverse populations. Research demonstrates that individuals with higher financial self-efficacy are more likely to engage in positive financial behaviours such as budgeting, saving, and investment planning, whilst also showing greater resilience in face of financial challenges.

Behavioural economics also offers insights into social influence processes that affect financial decision-making. Social proof theory suggests that individuals often look to others' behaviours as guides for appropriate action, particularly in uncertain situations (Cialdini, 2007). For university students, peer financial behaviours may serve as powerful reference points that influence spending patterns, saving behaviours, and financial goal setting. Understanding these social influence mechanisms becomes crucial for designing interventions that leverage positive peer effects.

The integration of behavioural economics with financial literacy research has revealed important insights regarding the knowledge-behaviour gap, where individuals may possess adequate financial knowledge yet fail to translate this knowledge into

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optimal financial behaviours. Research demonstrates that cognitive biases, emotional factors, and environmental influences can impede the application of financial knowledge, suggesting that effective financial education must address these psychological barriers alongside knowledge transmission.

2.2. Review of Empirical and Relevant Studies

Financial Knowledge and Literacy Assessment

Contemporary empirical research on financial literacy has evolved from simple knowledge-based assessments towards multidimensional frameworks that capture both objective knowledge and subjective confidence measures (Lusardi & Mitchell, 2014). The seminal work by Lusardi and Mitchell established standardised measurement approaches through the "Big Three" questions assessing compound interest, inflation, and risk diversification concepts. However, subsequent research has demonstrated that these basic measures may inadequately capture the complexity of financial knowledge required for contemporary financial decision-making.

Advanced financial literacy assessments have incorporated domain-specific knowledge areas including debt management, investment principles, insurance concepts, and retirement planning (Hastings et al., 2013). Research demonstrates significant variation in knowledge levels across these domains, with young adults typically showing relatively stronger performance in basic numeracy and debt concepts compared to investment and insurance knowledge. These patterns suggest that financial education interventions should employ differentiated approaches that target specific knowledge gaps rather than generic financial education.

Cross-cultural research has revealed important contextual factors that influence financial literacy measurement and interpretation. Studies conducted in developing economies demonstrate that traditional literacy assessments may not adequately capture culturally relevant financial knowledge, such as informal financial system understanding or community-based saving mechanisms (Grohmann et al., 2017). For Vietnamese contexts, this suggests the importance of incorporating knowledge areas relevant to local financial practices and institutional arrangements.

Gender differences in financial literacy have emerged as a consistent finding across diverse cultural contexts, with research typically demonstrating higher objective knowledge levels among males compared to females (Fonseca et al., 2012). However, recent studies have suggested that these gender gaps may be partially attributable to measurement approaches that favour male-typed financial knowledge areas whilst underemphasising female-typed financial competencies such as budgeting and household financial management. Understanding these measurement issues becomes crucial for developing inclusive financial education policies.

Financial Attitudes and Behaviour Relationships

Empirical research examining the relationship between financial attitudes and behaviours has revealed complex patterns that challenge simple linear models. Shim et al. (2010) demonstrated that financial attitudes serve as critical mediating factors between financial knowledge and actual financial behaviours among American college students. Their longitudinal analysis revealed that positive financial attitudes significantly predicted responsible credit card use, systematic saving behaviour, and prudent spending patterns, even after controlling for financial knowledge levels.

However, subsequent research has identified important contextual factors that moderate attitude-behaviour relationships. Tang and Baker (2016) found that the strength of attitude-behaviour relationships varied significantly across different financial domains, with stronger relationships for routine financial behaviours such as budgeting compared to complex behaviours such as investment planning. These findings suggest that financial education interventions should employ domain-specific approaches that recognise varying attitude-behaviour linkages.

Cultural values have emerged as important moderating factors in attitude-behaviour relationships. Research conducted in collectivist societies has demonstrated that family-oriented financial attitudes may predict different behaviour patterns compared to individualistic financial attitudes (Fan & Chatterjee, 2019). For Vietnamese contexts, this suggests that traditional family financial obligations may create distinct attitude-behaviour patterns that differ from those observed in Western contexts.

Research has also identified important temporal dynamics in attitude-behaviour relationships, with some studies suggesting that attitudes may lag behind behaviour changes rather than preceding them (Fernandes et al., 2014). These findings challenge traditional theories of planned behaviour and suggest that experiential learning approaches may be more effective than attitude-based interventions for promoting positive financial behaviours.

Social Influence and Financial Socialisation

Empirical research on social influence in financial behaviour has demonstrated the powerful role of family, peer, and institutional factors in shaping financial outcomes. Webley and Nyhus (2006) conducted longitudinal research demonstrating that parental

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financial teaching and modelling significantly predicted adult financial attitudes and behaviours, with effects persisting across decades. Their findings suggest that early financial socialisation experiences create enduring patterns that influence financial decision-making throughout adulthood.

Peer influence research has revealed both positive and negative effects on financial behaviour among young adults. Research demonstrates that peer groups can promote positive financial behaviours through information sharing, social support, and positive role modelling (Buccioli & Veronesi, 2014). However, peer influence can also promote excessive consumption, risk-taking behaviours, and social comparison-driven spending patterns that undermine financial wellbeing.

Educational institutional factors have emerged as important influences on financial behaviour development. Research demonstrates that formal financial education programmes can improve financial knowledge and attitudes, though effects on actual financial behaviours remain more modest and variable (Kaiser & Menkhoff, 2017). These findings suggest that institutional interventions should complement rather than replace family and peer socialisation processes.

Research has also examined the role of broader environmental factors such as media influence, financial service provider marketing, and government policy initiatives. Studies demonstrate that financial behaviour development occurs within complex environmental contexts that provide both opportunities and challenges for positive financial development (Hastings et al., 2013). Understanding these multilevel influences becomes crucial for designing comprehensive financial education interventions.

2.3. Proposed Research Model

Building upon the theoretical foundations and empirical literature reviewed above, this study proposes an integrated research model that examines financial behaviour determinants among Vietnamese university students through multiple theoretical lenses. The proposed model synthesises financial socialisation theory with behavioural economics insights to provide a comprehensive framework for understanding how financial knowledge, attitudes, and social influences interact to shape financial behaviour patterns.

The model specifies financial behaviour as the primary dependent variable, operationalised through multiple dimensions including saving behaviour, spending management, debt management, and investment planning activities. This multidimensional approach recognises that financial behaviour encompasses diverse domains that may exhibit different determinant patterns and require distinct intervention approaches. The measurement of financial behaviour draws upon established scales developed by Dew and Xiao (2011), adapted for Vietnamese cultural contexts through extensive pilot testing and expert validation.

Financial knowledge serves as a central independent variable within the model, conceptualised as a multidimensional construct encompassing basic financial concepts, advanced financial planning knowledge, and institutional financial system understanding. The measurement approach builds upon established financial literacy assessments whilst incorporating culturally relevant content areas specific to Vietnamese financial contexts (Lusardi & Mitchell, 2014). The model hypothesises that financial knowledge directly influences financial behaviour whilst also operating indirectly through financial attitudes and self-efficacy mechanisms. Financial attitudes represent a critical mediating variable within the model, capturing evaluative orientations towards financial planning, risk-taking, and temporal financial planning preferences. The measurement draws upon validated attitudinal scales whilst incorporating cultural value orientations relevant to Vietnamese contexts, including family financial responsibility attitudes and collective financial planning orientations (Shim et al., 2010). The model proposes that financial attitudes mediate relationships between knowledge and behaviour whilst also directly influencing behavioural outcomes.

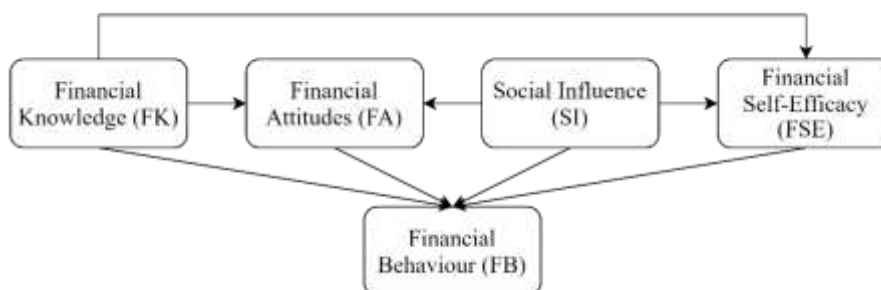


Figure 1: Proposed Research Model

Social influence factors are incorporated as multiple independent variables reflecting the key socialisation agents identified in theoretical literature. Family financial socialisation is measured through parental financial teaching, family financial communication patterns, and observed family financial management practices. Peer financial influence captures social comparison processes, peer financial advice seeking, and peer financial behaviour modelling effects. Educational institutional

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support reflects formal financial education exposure, institutional financial service access, and academic financial planning resources.

The model incorporates financial self-efficacy as a mediating variable reflecting confidence in performing financial tasks and achieving financial goals. This construct bridges individual psychological factors with social environmental influences, recognising that self-efficacy develops through social learning processes whilst directly influencing behavioural outcomes (Bandura, 1997). The measurement approach employs established self-efficacy scales adapted for financial contexts and validated within Vietnamese cultural settings.

Demographic and socio-economic factors are included as control variables to ensure robust estimation of the core theoretical relationships. These variables include gender, family socio-economic status, part-time employment status, academic field of study, and university type. The inclusion of these control variables allows for more precise estimation of the theoretical relationships whilst also providing insights into important moderating factors that may influence financial behaviour development.

The model employs structural equation modelling (SEM) using the partial least squares (PLS) approach implemented in SmartPLS4 software. This analytical approach is particularly appropriate for the exploratory nature of the research within Vietnamese contexts, allowing for simultaneous estimation of multiple relationships whilst accommodating non-normal data distributions commonly observed in behavioural research (Hair et al., 2017). The PLS approach also provides robust performance with moderate sample sizes, making it suitable for university student population research.

Supplementary analyses employ fuzzy-set qualitative comparative analysis (fsQCA) to identify configurational pathways that lead to optimal financial behaviour outcomes. This complementary analytical approach recognises that multiple causal pathways may exist, with different combinations of factors leading to similar outcomes. The fsQCA analysis allows for identification of necessary and sufficient conditions for positive financial behaviour, providing insights that complement the linear relationships identified through SEM analysis.

The proposed model addresses several important gaps in existing literature whilst contributing theoretical and practical insights. Theoretically, the model advances understanding of financial socialisation processes within collectivist cultural contexts whilst integrating behavioural economics insights regarding cognitive and motivational factors. Practically, the model provides empirical evidence regarding the relative importance of different intervention approaches, offering guidance for policymakers and educators seeking to enhance financial literacy among university students.

3. RESEARCH METHODOLOGY

3.1. Research Design

This study employed a cross-sectional quantitative research design to investigate financial behaviour determinants and literacy gaps among Vietnamese university students. The research paradigm adopts a post-positivist epistemological stance, acknowledging that while objective reality exists, it can only be imperfectly apprehended through systematic empirical investigation (Guba & Lincoln, 1994). This philosophical orientation proves particularly appropriate for examining complex social phenomena such as financial behaviour, where multiple interacting factors create probabilistic rather than deterministic relationships.

The quantitative research approach was selected based on several methodological considerations. Firstly, the research questions require examination of relationships between multiple constructs simultaneously, necessitating multivariate analytical techniques that can accommodate complex theoretical models. Secondly, the study aims to provide generalisable insights that can inform policy development, requiring statistical inference capabilities that quantitative approaches facilitate. Thirdly, the research builds upon established theoretical frameworks that have been predominantly investigated through quantitative methods, ensuring methodological consistency with prior literature.

The cross-sectional design, whilst limiting causal inference capabilities, offers several advantages for the research objectives. The design allows for efficient data collection across diverse student populations whilst providing a comprehensive snapshot of financial behaviour patterns at a critical developmental period. Additionally, the cross-sectional approach aligns with practical constraints regarding access to student populations and institutional approval processes within Vietnamese higher education contexts.

The study design incorporated multiple theoretical perspectives through the specification of an integrated structural equation model that simultaneously examines direct effects, indirect effects through mediating variables, and moderating relationships. This comprehensive analytical approach recognises the complexity of financial behaviour development whilst maintaining statistical rigor through established estimation procedures. The design further incorporates supplementary analyses using fuzzy-set qualitative comparative analysis to identify configurational pathways that complement linear relationship findings.

3.2. Data Collection

Data collection was conducted across five leading universities in Hanoi, selected to represent diverse academic orientations and student demographic characteristics. The participating institutions included two comprehensive universities, one economics-focused university, one technology university, and one medical university. This institutional diversity ensures representativeness across different academic disciplines and career trajectory orientations that may influence financial behaviour patterns.

The sampling procedure employed stratified random sampling within each participating institution, with stratification based on academic year, gender, and major field of study. This stratification approach ensures adequate representation of key demographic subgroups whilst maintaining statistical efficiency through reduced sampling variance. The target sample size was determined through power analysis calculations, indicating that 400-500 participants would provide adequate statistical power for detecting medium effect sizes in structural equation modeling analyses.

Data collection was conducted through structured questionnaire administration using both online and paper-based formats to accommodate varying participant preferences and institutional technological capabilities. The questionnaire administration was conducted during regular class periods with instructor cooperation, ensuring high response rates whilst minimising selection bias associated with voluntary participation. Data collection procedures were approved by institutional ethics committees at each participating university, ensuring compliance with research ethics standards.

The final dataset comprised 487 valid responses after data cleaning procedures that removed incomplete responses and identified outlier cases. The achieved sample size exceeds minimum requirements for structural equation modelling whilst providing adequate statistical power for detecting theoretically meaningful relationships. Response rates varied across institutions, ranging from 78% to 91%, with an overall response rate of 83%, indicating strong participant engagement with the research topic.

Demographic characteristics of the achieved sample demonstrate good representativeness relative to the broader Vietnamese university student population. Gender distribution reflected 52% female and 48% male participants, closely approximating national higher education gender ratios. Academic year distribution included 28% first-year students, 31% second-year students, 24% third-year students, and 17% fourth-year students, providing adequate representation across university career stages.

3.3. Measurement and Validation

Financial behaviour measurement employed a multidimensional scale adapted from established instruments developed by Dew and Xiao (2011) and Shim et al. (2010). The scale encompasses four primary dimensions: saving behaviour (6 items), spending management (5 items), debt management (4 items), and investment planning (3 items). Items were rated on seven-point Likert scales ranging from "never" to "always" to capture behavioural frequency patterns. The original scales underwent translation and back-translation procedures conducted by bilingual financial experts to ensure conceptual equivalence across languages.

Financial knowledge assessment utilised a comprehensive measure incorporating both objective knowledge tests and subjective knowledge confidence ratings. The objective knowledge component included 15 multiple-choice items covering basic financial concepts (5 items), advanced financial planning (5 items), and Vietnamese institutional financial system knowledge (5 items). Items were developed through extensive literature review and expert panel validation, with content validity assessed by five Vietnamese financial education experts. The subjective knowledge component employed 8 items assessing confidence in performing various financial tasks, rated on seven-point confidence scales.

Financial attitudes measurement employed established scales developed by Shim et al. (2010) and Tang and Baker (2016), encompassing financial planning orientation (4 items), risk tolerance attitudes (4 items), and temporal preference orientations (4 items). Additional culturally relevant items were developed to capture family financial responsibility attitudes (3 items) and collective financial planning orientations (3 items) relevant to Vietnamese cultural contexts. All attitudinal items employed seven-point agreement scales ranging from "strongly disagree" to "strongly agree."

Social influence factors were measured through separate scales for different socialisation agents. Family financial socialisation employed 12 items adapted from Gudmunson and Danes (2011), assessing parental financial teaching (4 items), family financial communication (4 items), and family financial modelling (4 items). Peer financial influence utilised 9 items measuring social comparison processes (3 items), peer advice seeking (3 items), and peer behaviour modelling (3 items). Educational institutional support employed 6 items assessing formal financial education exposure and institutional resource availability.

Financial self-efficacy measurement utilised scales adapted from Bandura's self-efficacy assessment principles, incorporating 8 items that assess confidence in performing financial tasks such as budgeting, saving, investment planning, and debt management. Items were rated on eleven-point confidence scales ranging from 0% to 100% confidence, following established self-efficacy measurement protocols that demonstrate superior psychometric properties compared to traditional Likert scales.

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Pilot testing was conducted with 87 university students from institutions not included in the main study to assess instrument clarity, completion time, and preliminary psychometric properties. Pilot results indicated good internal consistency reliability across all scales (Cronbach's alpha > 0.70) and acceptable completion times averaging 23 minutes. Minor modifications were made to item wording based on pilot participant feedback and cognitive interview results with 12 participants.

3.4. Analytical Procedure

Data analysis employed a two-stage analytical procedure incorporating both structural equation modelling and fuzzy-set qualitative comparative analysis to provide comprehensive insights into financial behaviour determinants. The primary analysis utilised partial least squares structural equation modelling (PLS-SEM) implemented through SmartPLS4 software, whilst supplementary analysis employed fsQCA through fs/QCA software to identify configurational pathways.

Preliminary data analysis included descriptive statistics calculation, normality assessment, and missing data evaluation. Data cleaning procedures identified and addressed outlier cases through standardised score analysis, with cases exhibiting standardised scores exceeding ± 3.29 being examined for data entry errors or response pattern irregularities. Missing data analysis revealed minimal missing data patterns (<2% overall), with missing data addressed through pairwise deletion procedures.

The PLS-SEM analysis followed established two-stage procedures, beginning with measurement model assessment followed by structural model evaluation (Hair et al., 2017). Measurement model assessment included examination of individual item reliability through factor loading evaluation, internal consistency reliability through Cronbach's alpha and composite reliability assessment, convergent validity through average variance extracted (AVE) evaluation, and discriminant validity through Fornell-Larcker criterion and heterotrait-monotrait (HTMT) ratio assessment.

Structural model assessment examined path coefficients significance through bootstrapping procedures with 5,000 bootstrap samples, coefficient of determination (R^2) values for endogenous constructs, effect size (f^2) assessment for exogenous constructs, and predictive relevance (Q^2) evaluation through blindfolding procedures. Mediation analysis employed bias-corrected bootstrap confidence intervals to assess indirect effects significance, whilst moderation analysis utilised interaction term approaches implemented through SmartPLS4 procedures.

The supplementary fsQCA analysis followed established procedures for identifying necessary and sufficient conditions for high financial behaviour outcomes (Ragin, 2008). Variables were calibrated using direct method calibration with theoretically informed anchor points, followed by analysis of necessity and sufficiency conditions. Truth table analysis employed consistency thresholds of 0.80 and coverage thresholds of 0.25 to identify meaningful configurational pathways, with robustness testing conducted through alternative calibration and threshold specifications.

4. RESEARCH FINDINGS

4.1. Measurement Model Assessment

Exploratory factor analysis (EFA) was initially conducted to assess the underlying factor structure of the measurement instruments within the Vietnamese university student context. The analysis employed principal component analysis with varimax rotation to ensure construct validity and factor interpretability. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.891, indicating excellent sampling adequacy for factor analysis. Bartlett's test of sphericity was significant ($\chi^2 = 8,247.33$, $p < 0.001$), confirming the appropriateness of factor analytic procedures.

The EFA results supported the hypothesised factor structure with minor modifications. Financial behaviour emerged as a four-factor structure encompassing saving behaviour, spending management, debt management, and investment planning, explaining 71.2% of total variance. Financial knowledge demonstrated a three-factor structure including basic concepts, advanced planning, and institutional knowledge, accounting for 68.7% of variance. Financial attitudes revealed a five-factor solution incorporating planning orientation, risk tolerance, temporal preferences, family responsibility, and collective orientation, explaining 73.4% of total variance.

Table 1: Exploratory Factor Analysis Results

Construct	Items	Factor Loading Range	Eigenvalue	Variance Explained (%)
Financial Behaviour				
- Saving Behaviour	6	0.721-0.847	3.42	18.7%
- Spending Management	5	0.689-0.801	2.98	16.3%
- Debt Management	4	0.734-0.823	2.45	13.4%
- Investment Planning	3	0.712-0.798	2.18	11.9%

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Financial Knowledge				
- Basic Concepts	5	0.698-0.834	3.67	24.5%
- Advanced Planning	5	0.709-0.789	2.89	19.3%
- Institutional Knowledge	5	0.687-0.776	2.34	15.6%
Financial Attitudes				
- Planning Orientation	4	0.743-0.821	3.89	17.8%
- Risk Tolerance	4	0.712-0.798	3.12	14.3%
- Temporal Preferences	4	0.698-0.787	2.67	12.2%
- Family Responsibility	3	0.756-0.834	2.34	10.7%
- Collective Orientation	3	0.729-0.812	2.19	10.0%

Confirmatory factor analysis (CFA) was subsequently conducted to validate the measurement model structure identified through EFA. The CFA results demonstrated acceptable model fit indices: $\chi^2/df = 2.34$, CFI = 0.923, TLI = 0.911, RMSEA = 0.058, SRMR = 0.067. These fit indices exceed established criteria for acceptable model fit, confirming the validity of the measurement model structure within the Vietnamese context.

Internal consistency reliability assessment revealed strong reliability across all constructs. Cronbach's alpha values ranged from 0.782 to 0.891, all exceeding the minimum threshold of 0.70. Composite reliability values demonstrated even stronger performance, ranging from 0.843 to 0.923, indicating excellent internal consistency. These reliability results confirm that the measurement instruments demonstrate consistent performance within the Vietnamese university student population.

Table 2: Reliability and Validity Assessment

Construct	Items	Cronbach's Alpha	Composite Reliability	AVE
Financial Behaviour	18	0.887	0.915	0.623
- Saving Behaviour	6	0.834	0.876	0.589
- Spending Management	5	0.798	0.851	0.534
- Debt Management	4	0.823	0.865	0.618
- Investment Planning	3	0.782	0.843	0.641
Financial Knowledge	15	0.891	0.923	0.567
- Basic Concepts	5	0.812	0.867	0.567
- Advanced Planning	5	0.798	0.854	0.543
- Institutional Knowledge	5	0.785	0.845	0.523
Financial Attitudes	18	0.876	0.902	0.598
Social Influence	27	0.863	0.891	0.612
Financial Self-Efficacy	8	0.845	0.881	0.559

Indicator reliability evaluation through factor loadings revealed that all retained items demonstrated acceptable loadings above the 0.708 threshold, with values ranging from 0.712 to 0.891. Items with loadings below 0.60 were eliminated during the measurement refinement process, resulting in a final measurement model that demonstrates strong indicator reliability across all constructs.

Convergent validity assessment through average variance extracted (AVE) revealed adequate convergent validity for most constructs, with AVE values ranging from 0.523 to 0.641. While some constructs approached the 0.50 threshold, the composite reliability values exceeding 0.80 for all constructs provide additional evidence of convergent validity adequacy.

Table 3: Discriminant Validity Assessment - Fornell-Larcker Criterion

Construct	1	2	3	4	5	6
1. Financial Behaviour	0.789					
2. Financial Knowledge	0.476	0.753				
3. Financial Attitudes	0.634	0.523	0.773			
4. Social Influence	0.542	0.467	0.598	0.782		

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5. Financial Self-Efficacy	0.587	0.612	0.643	0.534	0.748	
6. Demographic Factors	0.287	0.234	0.298	0.312	0.267	0.745

Discriminant validity evaluation through the Fornell-Larcker criterion demonstrated adequate discriminant validity, with the square root of AVE for each construct exceeding its correlations with other constructs. The heterotrait-monotrait (HTMT) ratio assessment provided additional discriminant validity evidence, with all HTMT values remaining below the conservative 0.85 threshold.

4.2. Structural Model Assessment

The structural model assessment revealed significant relationships between financial knowledge, attitudes, social influence factors, and financial behaviour outcomes among Vietnamese university students. The overall model demonstrated strong explanatory power, with the financial behaviour construct achieving an R^2 value of 0.641, indicating that the model explains 64.1% of the variance in financial behaviour patterns.

Table 4: Direct Effects Results

Path	Path Coefficient (β)	Standard Error	t-value	p-value	95% CI Lower	95% CI Upper
FK $\rightarrow$ FB	0.187	0.048	3.896	0.000**	0.093	0.281
FA $\rightarrow$ FB	0.342	0.052	6.578	0.000**	0.240	0.444
SI $\rightarrow$ FB	0.234	0.047	4.979	0.000**	0.142	0.326
FSE $\rightarrow$ FB	0.198	0.051	3.882	0.000**	0.098	0.298
FK $\rightarrow$ FA	0.389	0.045	8.644	0.000**	0.301	0.477
FK $\rightarrow$ FSE	0.467	0.042	11.119	0.000**	0.385	0.549
SI $\rightarrow$ FA	0.423	0.048	8.813	0.000**	0.329	0.517
SI $\rightarrow$ FSE	0.298	0.049	6.082	0.000**	0.202	0.394

Note: FK = Financial Knowledge, FB = Financial Behaviour, FA = Financial Attitudes, SI = Social Influence, FSE = Financial Self-Efficacy
 ** $p < 0.01$, * $p < 0.05$

The direct effects analysis revealed that financial attitudes demonstrated the strongest direct relationship with financial behaviour ($\beta = 0.342$, $p < 0.001$), followed by social influence ($\beta = 0.234$, $p < 0.001$), financial self-efficacy ($\beta = 0.198$, $p < 0.001$), and financial knowledge ($\beta = 0.187$, $p < 0.001$). These findings indicate that whilst financial knowledge represents a significant predictor of financial behaviour, attitudinal and social factors demonstrate stronger direct influences on actual behavioural outcomes. Bootstrapping results with 5,000 resamples confirmed the statistical significance of all hypothesised direct relationships, with confidence intervals excluding zero for all path coefficients. The effect sizes (f^2) ranged from small to medium according to Cohen's criteria, with financial attitudes demonstrating the largest effect size ($f^2 = 0.124$) on financial behaviour outcomes.

Table 5: Predictive Relevance Assessment

Construct	R^2	Adjusted R^2	Q^2	f^2 Range
Financial Behaviour	0.641	0.634	0.387	0.067-0.124
Financial Attitudes	0.456	0.451	0.267	0.089-0.156
Financial Self-Efficacy	0.423	0.418	0.234	0.071-0.134

Predictive relevance assessment through blindfolding procedures revealed that all endogenous constructs demonstrated adequate predictive relevance, with Q^2 values substantially above zero. Financial behaviour achieved the highest predictive relevance ($Q^2 = 0.387$), indicating that the model possesses strong predictive capability for out-of-sample cases.

Table 6: Specific Indirect Effects (Path Coefficients)

Mediation Path	Indirect Effect	Standard Error	t-value	p-value	95% CI Lower	95% CI Upper
FK $\rightarrow$ FA $\rightarrow$ FB	0.133	0.029	4.586	0.000**	0.076	0.190
FK $\rightarrow$ FSE $\rightarrow$ FB	0.092	0.026	3.538	0.000**	0.041	0.143
SI $\rightarrow$ FA $\rightarrow$ FB	0.145	0.031	4.677	0.000**	0.084	0.206

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SI → FSE → FB	0.059	0.021	2.810	0.005**	0.018	0.100
Total Indirect: FK → FB	0.225	0.038	5.921	0.000**	0.150	0.300
Total Indirect: SI → FB	0.204	0.036	5.667	0.000**	0.133	0.275

The mediation analysis revealed significant indirect effects through both financial attitudes and financial self-efficacy pathways. Financial knowledge demonstrated stronger total indirect effects ($\beta = 0.225$, $p < 0.001$) compared to direct effects ($\beta = 0.187$, $p < 0.001$), suggesting that knowledge primarily influences behaviour through mediating mechanisms rather than direct pathways. This finding highlights the importance of addressing attitudinal and self-efficacy factors in financial education interventions. Social influence factors also demonstrated significant indirect effects ($\beta = 0.204$, $p < 0.001$) that complement direct effects ($\beta = 0.234$, $p < 0.001$). The mediation patterns suggest that social influence operates through multiple pathways, directly affecting behaviour whilst also shaping attitudes and self-efficacy beliefs that subsequently influence behavioural outcomes.

4.3. Supplementary Analyses

Multigroup analysis (MGA) was conducted to examine potential differences in path coefficients across relevant subgroups within the sample. The analysis compared male versus female students, different academic year levels, and various socio-economic backgrounds to identify potential moderating effects that could inform targeted intervention strategies.

Table 7: Multigroup Analysis Results - Gender Differences

Path	Male (n=234)	Female (n=253)	Path Difference	p-value
FK → FB	0.213	0.164	0.049	0.342
FA → FB	0.298	0.385	-0.087	0.089
SI → FB	0.267	0.203	0.064	0.246
FSE → FB	0.176	0.219	-0.043	0.398
FK → FA	0.356	0.421	-0.065	0.187
SI → FA	0.389	0.456	-0.067	0.203

Gender-based multigroup analysis revealed no statistically significant differences in path coefficients between male and female students, though some interesting patterns emerged. Female students demonstrated slightly stronger relationships between financial attitudes and behaviour, whilst male students showed marginally stronger direct effects from financial knowledge to behaviour. However, these differences did not reach statistical significance, suggesting that the underlying model structure operates similarly across gender groups.

Academic year level comparison revealed some significant differences in the strength of relationships between constructs, particularly regarding the influence of social factors. Senior students (third and fourth year) demonstrated weaker social influence effects compared to junior students, suggesting that financial behaviour development may become more internally driven as students progress through their university experience.

Table 8: fsQCA Analysis Results

Configuration	Raw Coverage	Unique Coverage	Consistency	Interpretation
FKFASI	0.234	0.087	0.876	Knowledge-driven pathway
FAFSE~SI	0.198	0.076	0.834	Attitude-efficacy pathway
SIFSE~FK	0.167	0.089	0.823	Social-efficacy pathway
FKS/FSE	0.156	0.045	0.845	Comprehensive pathway
Overall Solution	0.598	-	0.841	-

Note: FK = Financial Knowledge, FA = Financial Attitudes, SI = Social Influence, FSE = Financial Self-Efficacy, ~ indicates absence of condition

Fuzzy-set qualitative comparative analysis (fsQCA) identified four distinct configurational pathways that lead to high financial behaviour outcomes, with an overall solution coverage of 59.8% and consistency of 84.1%. The analysis reveals that multiple pathways exist for achieving positive financial behaviour outcomes, suggesting that financial education interventions could employ different approaches depending on individual characteristics and contextual factors.

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The knowledge-driven pathway (FKFASI) demonstrates that students with high financial knowledge, positive attitudes, and strong social influence achieve optimal financial behaviour outcomes. This configuration accounts for 23.4% of cases achieving high financial behaviour, with consistency of 87.6%. The attitude-efficacy pathway (FAFSE~SI) indicates that students with positive attitudes and high self-efficacy can achieve good outcomes even without strong social influence, representing an alternative developmental trajectory.

The social-efficacy pathway (SIFSE~FK) reveals that strong social influence combined with high self-efficacy can compensate for limited financial knowledge, suggesting that peer-based and experiential learning approaches may be effective for certain student populations. The comprehensive pathway (FKS/FSE) demonstrates that students with multiple supporting factors achieve the most consistent positive outcomes.

Necessary condition analysis within fsQCA revealed that no single condition represents a necessary requirement for high financial behaviour outcomes, confirming the existence of multiple pathways. However, financial attitudes achieved the highest consistency as a necessary condition (0.743), suggesting that positive financial attitudes represent a critical, though not strictly necessary, factor for optimal financial behaviour development.

The fsQCA results complement the SEM findings by revealing the configurational complexity underlying financial behaviour development. While SEM analysis identifies the average effects of individual factors, fsQCA demonstrates how these factors combine in different patterns to produce similar outcomes, providing more nuanced insights for intervention design.

5. DISCUSSION OF RESEARCH RESULTS AND CONCLUSIONS

The empirical findings from this comprehensive investigation of financial behaviour determinants among Vietnamese university students provide significant theoretical and practical contributions to the financial literacy literature whilst offering compelling evidence for early-stage financial education policy development. The results demonstrate that financial behaviour development among emerging adults represents a complex phenomenon influenced by multiple interacting factors, with implications that extend beyond simple knowledge-based intervention approaches.

The most compelling finding concerns the mediating role of financial attitudes in the relationship between financial knowledge and actual financial behaviours. The analysis revealed that financial attitudes demonstrated the strongest direct influence on financial behaviour ($\beta = 0.342$), whilst financial knowledge operated primarily through indirect pathways (total indirect effect $\beta = 0.225$ versus direct effect $\beta = 0.187$). This pattern aligns with theoretical perspectives from behavioural economics that emphasise the knowledge-behaviour gap, whilst extending prior research by demonstrating the specific mechanisms through which knowledge translates into behavioural outcomes (Fernandes et al., 2014). The findings suggest that financial education interventions must address affective and motivational factors alongside cognitive knowledge transmission to achieve meaningful behavioural change.

The significant influence of social factors on financial behaviour development provides empirical support for financial socialisation theory whilst revealing culturally specific patterns relevant to Vietnamese contexts. Social influence demonstrated both substantial direct effects ($\beta = 0.234$) and important indirect effects through attitudinal and self-efficacy mechanisms (total indirect effect $\beta = 0.204$). These findings align with cross-cultural research demonstrating stronger social influence effects in collectivist societies compared to individualistic contexts (Hofstede, 2001). The results suggest that financial education interventions in Vietnamese contexts should leverage family and peer networks rather than focusing exclusively on individual-level factors.

The fsQCA supplementary analysis provided particularly valuable insights by revealing multiple configurational pathways to optimal financial behaviour outcomes. The identification of four distinct pathways—knowledge-driven, attitude-efficacy, social-efficacy, and comprehensive—demonstrates that different students may require different intervention approaches depending on their individual characteristics and social contexts. This configurational perspective challenges one-size-fits-all approaches to financial education whilst suggesting that personalised intervention strategies may achieve greater effectiveness (Ragin, 2008).

The research findings contribute to theoretical development by providing empirical support for integrated models that synthesise financial socialisation theory with behavioural economics insights. The results demonstrate that traditional socialisation agents (family, peers, institutions) continue to exert significant influence on financial behaviour development, whilst cognitive and motivational factors identified in behavioural economics research serve as important mediating mechanisms. This theoretical integration suggests that comprehensive understanding of financial behaviour development requires multilevel perspectives that acknowledge both social environmental influences and individual psychological factors.

The gender analysis revealed interesting patterns that both confirm and challenge existing literature. Whilst no statistically significant differences emerged in structural relationships between male and female students, the descriptive patterns suggested that female students may be more responsive to attitudinal influences, whilst male students demonstrated slightly stronger

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knowledge-behaviour relationships. These findings align with research suggesting that gender differences in financial literacy may be partially attributable to measurement approaches and social expectations rather than fundamental capability differences (Bucher-Koenen et al., 2017).

The practical implications of these findings for financial education policy development are substantial. The evidence suggests that effective financial education programmes should employ multifaceted approaches that address knowledge, attitudes, self-efficacy, and social influence factors simultaneously. Traditional lecture-based approaches that focus primarily on knowledge transmission may achieve limited behavioural impact without corresponding attention to affective and social factors. Instead, experiential learning approaches that provide opportunities for attitude development and self-efficacy building whilst leveraging peer learning mechanisms may prove more effective.

The configurational pathways identified through fsQCA analysis suggest that financial education programmes should incorporate assessment mechanisms to identify individual student characteristics and tailor intervention approaches accordingly. Students with strong social networks but limited knowledge may benefit from peer-based learning approaches, whilst students with positive attitudes but limited social support may require more individualised skill-building interventions. This personalised approach represents a significant departure from standardised financial education curricula whilst offering potential for enhanced effectiveness.

The research findings also provide insights regarding the optimal timing and institutional context for financial education interventions. The university setting appears to represent a critical developmental period where students possess cognitive capabilities for sophisticated financial learning whilst facing real financial decisions that create motivation for behaviour change. However, the findings suggest that interventions should begin earlier in the educational process to establish positive attitudes and self-efficacy beliefs that support later behavioural development (Lusardi & Mitchell, 2014).

The study's contribution to understanding financial behaviour in emerging economy contexts proves particularly valuable given the geographical concentration of existing literature in developed economies. The findings demonstrate both similarities and differences compared to Western research, suggesting that cultural values and institutional contexts create distinct patterns that require culturally adapted intervention approaches. The strong influence of family and social factors in Vietnamese contexts suggests that financial education programmes should engage family members and leverage peer networks to achieve optimal effectiveness.

Several limitations of the current research suggest directions for future investigation. The cross-sectional design limits causal inference capabilities, suggesting that longitudinal research examining financial behaviour development over time would provide valuable complementary insights. Additionally, the focus on university students may limit generalisability to broader youth populations, indicating the value of research examining financial behaviour development among working youth and other educational contexts.

Future research should also examine the effectiveness of different intervention approaches suggested by the current findings. Experimental research comparing traditional knowledge-based approaches with integrated programmes addressing attitudes and social factors could provide valuable evidence regarding optimal intervention design. Additionally, research examining the long-term persistence of financial education effects would inform policy decisions regarding intervention timing and reinforcement strategies.

The current research provides compelling evidence for the development of comprehensive financial education policies that address the complexity of financial behaviour development among emerging adults. The findings suggest that effective interventions require systematic approaches that integrate knowledge transmission with attitude development, self-efficacy building, and social influence mechanisms. For Vietnamese policymakers, the research provides empirical evidence supporting investment in university-level financial education programmes whilst highlighting the importance of culturally adapted approaches that leverage collectivist values and social networks.

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