

FINANCIAL LITERACY AND FINANCIAL OUTCOMES: THE MEDIATING ROLE OF DECISION-MAKING AND A MULTI-THEORETICAL FRAMEWORK

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Abstract

Improving financial performance is essential for the economic resilience of individuals and households because it strengthens savings, debt control, and future financial health. This study examines the interaction between financial literacy, financial decision-making, and financial outcomes based on 175 observations, where education and income scales differ. Using structural equation modeling technique, we identify the moderating and mediating roles played by education and decision-making in the complex relationship. The empirical results show that financial literacy has a significant positive effect on decision-making (21.08), but it has a negative direct effect on financial outcomes (-246.26). In the same vein, financial decision-making also has a strong negative effect on outcomes (-0.55). In addition, the interaction of literacy and education (28.00) and literacy and income (51.94) are positive contributors to financial outcomes, highlighting the need for structural conditions. The indirect effects of decision-making demonstrate that financial outcomes are mediated through financial literacy (-11.69), indicating that literacy operates as a comparatively weak financial mediator within the structural framework. The model fit statistics (RMSEA = 0.298, CFI = 0.713, SRMR = 0.100) reflect a relatively poor overall fit; however, they still reveal statistically significant structural paths among the examined constructs. Although the goodness-of-fit indices suggest that the proposed model does not fully align with the observed data structure, the identified relationships provide meaningful empirical insights into the interplay between decision-making behavior, literacy levels, and financial performance. These findings emphasize that financial literacy alone may not be strong enough to effectively channel decision-making into improved financial outcomes. Therefore, these insights are crucial for policymakers in designing comprehensive financial literacy strategies that integrate behavioral education with socio-economic support services, thereby fostering more sustainable and inclusive financial development.

Keywords: Financial literacy, financial outcomes, Financial Decision-making

INTRODUCTION

Financial outcomes represent the tangible economic consequences of individuals' financial behaviors and decisions, commonly reflected in income stability, savings accumulation, debt management, investment performance, and overall financial well-being (Vörös et al., 2021; Marc & Ali, 2023; Ali et al., 2025; Khalid et al., 2025). In modern economies characterized by financial complexity, digitalization, and increased individual responsibility, financial outcomes have become a central indicator of both micro-level welfare and macro-level stability (Huston, 2010; Marc et al., 2022; Siddique et al., 2025; Mehdi et al., 2025; Ali et al., 2025). Sound financial outcomes contribute to household resilience against economic shocks, reduce vulnerability to financial distress, and support long-term wealth accumulation, particularly across the life cycle. From a managerial and policy perspective, improved financial outcomes enhance labor productivity, retirement security, and inclusive economic growth (Sabri & Aw, 2019; Audi et al., 2021; Abbasi et al., 2025; Ali et al., 2025). Governments and financial institutions increasingly recognize that sustainable financial outcomes are essential for reducing inequality, strengthening consumer protection, and ensuring the effectiveness of financial systems in both developed and emerging economies (Marc & Al Masri, 2024; Bucci et al., 2025; Arshad et al., 2025; Ali et al., 2025; Hastings et al., 2012).

Despite their importance, financial outcomes remain uneven across populations, age groups, and income levels, raising concerns about financial fragility and economic vulnerability (Marc, 2024; Ammar et al., 2025; Yurtkur et al., 2025; Ali et al., 2025; Aziz et al., 2025). Prior research has shown persistent gaps in savings adequacy, portfolio diversification, and debt management, even in contexts with relatively advanced financial markets (Fong et al., 2021; Marc & Yu, 2024; Amir et al., 2025; Kanwal et al., 2025). Many individuals continue to exhibit suboptimal financial outcomes due to behavioral biases, information asymmetries, and limited capabilities to process financial information effectively. Moreover, existing studies often focus on observable outcomes without sufficiently unpacking the mechanisms through which these outcomes are formed (Marc, 2024; Merter & Balçioğlu, 2025;

Ahmad et al., 2025; Iqbal et al., 2025; Farras et al., 2025). This limitation constrains the understanding of why similar individuals experience divergent financial outcomes and highlights the need to examine underlying determinants that shape financial behavior. Consequently, investigating foundational drivers such as financial literacy becomes critical to explain variations in financial outcomes and to inform evidence-based interventions (Audi & Ali, 2018; Kumar et al., 2023; Saim et al., 2025; Bukhari et al., 2025; Arshi et al., 2025).

Financial literacy is widely recognized as a core determinant of individual financial performance and long-term economic security. Conceptually, financial literacy encompasses knowledge, skills, and understanding of financial concepts such as interest compounding, inflation, risk diversification, and financial products, enabling individuals to make informed and effective financial choices (Marc, 2016; Batool et al., 2025; Zahid et al., 2025; Longston et al., 2025; Fong et al., 2021; Huston, 2010). Grounded in human capital theory, financial literacy enhances individuals' capacity to evaluate financial information, compare alternatives, and align decisions with long-term goals. Empirical evidence consistently demonstrates that higher financial literacy is associated with improved savings behavior, prudent borrowing, stock market participation, and age-appropriate investment strategies (Fong et al., 2021; Marc et al., 2021; Rana et al., 2025; İlbasmış et al., 2025; Rafique et al., 2025; Umair et al., 2025). At a broader level, financially literate populations contribute to more efficient financial markets and stronger economic growth by improving allocative efficiency and reducing systemic risk (Bucci et al., 2025; Shaukat et al., 2025). Thus, financial literacy serves as a critical input shaping individual financial outcome channels. However, the influence of financial literacy on financial outcomes is rarely direct and often operates through behavioral and cognitive financial decision making plays a pivotal mediating role in translating financial knowledge into actual economic results (Kumar et al., 2023; Hashmi et al., 2025; Ali et al., 2025; Aman et al., 2025).

Financial decision making refers to the process through which individuals apply financial knowledge, attitudes, and skills to choices related to budgeting, saving, investing, and borrowing. Even financially literate individuals may fail to achieve favorable outcomes if their decision-making processes are affected by biases, impulsivity, or limited self-control. Prior studies highlight that effective financial decision making improves perceived and actual financial well-being, while weak decision processes dilute the benefits of financial literacy ((Kumar et al., 2023; Naeem et al., 2025; Ali et al., 2025). Introducing financial decision making as a mediating variable allows for a more precise estimation of how financial literacy translates into financial outcomes, thereby isolating the behavioral mechanism underlying this relationship.

The strength of the relationship between financial literacy, financial decision making, and financial outcomes may further depend on contextual factors such as education level. Education level reflects individuals' general cognitive abilities, learning capacity, and exposure to analytical thinking, which can enhance the absorption and application of financial knowledge. Higher education levels may amplify the effectiveness of financial literacy by improving information processing and long-term planning capabilities. Cross-country and micro-level evidence suggests that education complements financial literacy in fostering better financial behavior and outcomes (Ditta et al., 2025; Iqbal et al., 2025; Kozol, 2025; Ali et al., 2025). Conversely, individuals with lower education levels may struggle to convert financial knowledge into effective decisions, even when literacy interventions are available. Therefore, education level is expected to moderate the pathways linking financial literacy and financial outcomes.

Income level also constitutes a critical moderating factor in the financial literacy–outcomes nexus. Income determines the availability of financial resources, access to financial products, and the feasibility of implementing sound financial decisions. Higher-income individuals often have greater flexibility to save, invest, and diversify, enabling them to realize the benefits of financial literacy more fully. In contrast, low-income individuals may face binding constraints that limit the translation of knowledge into favorable outcomes, despite adequate literacy levels. Prior research indicates that financial literacy effects are heterogeneous across income groups, with stronger impacts observed where financial slack exists (Yurtkur et al., 2025; Zafar et al., 2025; Ullah et al., 2025; Ali et al., 2025). Incorporating income level as a moderator thus allows for a more nuanced understanding of when and for whom financial literacy most effectively improves financial outcomes, offering valuable insights for targeted policy design.

This study is important from a theoretical perspective as it contributes to the financial literacy and behavioral finance literature by integrating cognitive, behavioral, and socioeconomic dimensions into a single analytical framework. While prior research largely emphasizes the direct impact of financial literacy on financial outcomes, this study advances the literature by explicitly modeling financial decision making as a mediating mechanism.

This approach responds to recent calls for more nuanced models that explain how and why financial literacy translates into real economic benefits (Merter & Balcıoğlu, 2025; Ali et al., 2025; Karim et al., 2025; Ali et al., 2025). Understanding that financial literacy alone may be insufficient without effective decision-making capabilities highlights the need for intervention programs that focus on behavioral skills alongside knowledge acquisition. Moreover, identifying education level and income level as moderating factors enables policymakers to design differentiated and inclusive financial literacy programs, particularly for economically vulnerable and low-education groups (Bucci et al., 2025; Ali et al., 2025; Khalid et al., 2025). Additionally, the study is important for emerging and developing economies, where financial inclusion initiatives are expanding rapidly but financial outcomes remain uneven. By offering empirical evidence on the conditions under which financial literacy improves financial outcomes, this research supports evidence-based policy formulation aimed at enhancing household financial resilience and long-term economic stability.

The primary objective of this study is to examine the determinants of financial outcomes by focusing on the role of financial literacy and the underlying behavioral mechanisms through which it operates. Specifically, the study aims to analyze how financial literacy contributes to individuals' financial outcomes in terms of savings behavior, debt management, and overall financial well-being in an increasingly complex financial environment (Fong, 2025; Ali et al., 2025). By doing so, the research seeks to extend existing financial literacy literature beyond direct associations and toward a more mechanism-based explanation. A second objective of the study is to investigate the mediating role of financial decision making in the relationship between financial literacy and financial outcomes. Prior studies suggest that financial knowledge alone may not guarantee favorable outcomes unless it is effectively translated into sound financial decisions (Kumar et al., 2023; Ali et al., 2025; Ali et al., 2025). Given that individuals differ in their cognitive capacity and financial resources, this study seeks to determine whether the impact of financial literacy and financial decision making on financial outcomes varies across educational and income groups. By incorporating these moderating variables, the study aims to provide policy-relevant insights for designing targeted financial education and inclusion strategies (Kozol, 2025; Ali et al., 2025).

LITERATURE REVIEW

Retirement financial planning behavior (RFPB) represents a crucial area of research in understanding how individuals prepare financially for retirement. Siebert et al. (2025) examined RFPB by investigating proactive decision-making (PDM) as a key determinant of planning outcomes. Conducting their study in the United Kingdom during the 2020s, they use cross-sectional survey data from 457 adults and apply structural equation modeling with systematic model comparisons and multigroup tests. The study analyzes variables including proactive cognitive skills (PCS), proactive personality traits, propensity to plan, confidence in financial information search, willingness to accept investment risk, and general self-efficacy. Findings indicate that PDM affects RFPB entirely through psychological traits, with PCS serving as the operative mechanism, while proactive personality traits have no significant effect. The mediated model explains 57.1% of RFPB variance and outperforms alternative models. Multigroup analyses confirm that the indirect relationships hold across different levels of financial literacy and numeracy, suggesting a compensatory role of PCS. The study highlights policy implications, recommending PCS-focused decision-analytic training to complement financial literacy programs. Future research is encouraged to examine longitudinal effects and test the model in diverse cultural contexts. Overall, this research links behavioral operational research with practical strategies to strengthen retirement planning behavior.

Financial literacy plays a pivotal role in promoting financial development across countries (Ali et al., 2025). Yurtkur et al. (2025) investigated this relationship using cross-country data from the Global Financial Inclusion and Consumer Protection (GFICP) surveys conducted in 2017 and 2022. The study applies baseline OLS regressions and quantile regression analyses to examine the impact of financial literacy on financial development. Key variables include measures of financial literacy and indicators of financial system development, with findings showing that financial literacy significantly enhances financial development, particularly in upper-middle-, lower-middle-, and low-income countries. Regional variations are also observed, with the East Asia and Pacific regions demonstrating the strongest positive relationship. Quantile regression results indicate that the effect is more pronounced in countries with either highly developed or underdeveloped financial systems. The study emphasizes policy implications, suggesting that context-specific financial education programs can catalyze financial system strengthening, especially in developing economies. Future research is encouraged to explore longitudinal impacts

and the role of institutional quality in moderating these effects. Overall, this research highlights the importance of financial literacy as a key driver of global financial development.

Financial literacy and digital financial capabilities play a crucial role in shaping sustainable investment behavior among entrepreneurs (Ali et al., 2025; Ali et al., 2025). Aristei et al. (2024) investigated how these competencies influence preferences for ethical financial intermediaries and sustainable investment decisions using survey data from Italian micro-enterprises. Conducting the study in Italy during the early 2020s, they apply quantitative survey analysis to examine key variables, including financial literacy, digital financial capabilities, preferences for ethical intermediaries, and sustainable investment choices. Findings indicate that higher financial literacy directly increases entrepreneurs' preference for ethical intermediaries and their likelihood of making investments guided by environmental and social criteria. Digital financial competencies further enhance these preferences, although their indirect effect is smaller compared to the direct impact of financial literacy. The study highlights that financially literate business owners also demonstrate greater awareness of sustainable financial products. Policy implications suggest promoting both financial literacy and digital financial skills to foster sustainable business practices. Future research is recommended to explore these effects across larger firms and different cultural contexts. Overall, this study links financial literacy and digital competencies to ethical and sustainable financial decision-making in micro-enterprises

Financial literacy, overconfidence, and financial behavior are key determinants of borrowing decisions in contemporary finance research (Ali et al., 2025; Aziz et al., 2025; Kanwal et al., 2025). Tahir (2025) investigated the association between financial literacy overconfidence, poor financial behavior, and loan-taking propensity, while examining the mediating role of financial fragility. Conducting the study using a large European Union dataset in the early 2020s, the author applies probit regression analysis and conducts endogeneity checks to ensure robustness. Key variables include financial literacy, overconfidence, poor financial behavior, financial fragility, and loan-taking propensity. Findings indicate that overconfidence and poor financial behavior are positively associated with loan-taking, with financial fragility fully mediating the first path and partially mediating the second. The study supports dual process theory, showing that heuristic-driven (Type I) thinking forms overconfidence bias, leading to financial fragility and sub-optimal borrowing. The research emphasizes practical implications for financial education and policy to mitigate overconfidence and debt accumulation. Future studies are recommended to explore longitudinal patterns and cross-country differences. Overall, this study contributes to understanding the behavioral underpinnings of borrowing and financial vulnerability in the EU context.

Financial literacy plays a central role in shaping household financial decisions and behaviors (Ahmad et al., 2025; Saim et al., 2025; Longston et al., 2025). Fong (2025) investigated how financial literacy influences savings, investment, and borrowing decisions using a representative survey of households in Singapore. Conducting the study in the early 2020s, the author applies quantitative survey analysis to examine variables including financial literacy, asset allocation, ownership of complex financial products, debt usage, and repayment behavior. Findings indicate that financially literate individuals are more likely to invest in stocks, retirement annuities, and life insurance, and to hold at least two complex financial products. Evidence also shows that financially literate households manage debt more effectively, repaying it on time despite higher borrowing levels. The study provides empirical support for the causal impact of financial literacy on both asset and liability management. Policy implications suggest that enhancing financial literacy can strengthen household balance sheets and improve financial decision-making. Future research is encouraged to explore longitudinal effects and the role of cultural and institutional factors in shaping household financial behavior. Overall, this research highlights the importance of financial literacy in promoting informed and responsible financial practices in Singapore.

Financial literacy represents a valuable household asset that can shape financial decision-making (Rana et al., 2025; Ali et al., 2025; Hashmi et al., 2025; Ali et al., 2025). Bellocchi & Travaglini (2025) investigated how irreversible costs influence households' decisions to invest in financial education. Conducting the study using a stochastic dynamic model of portfolio choice, they examine the effects of sunk costs, uncertainty, and irreversibility on the timing of financial education investment. Key variables include the cost of financial education, household investment decisions, and portfolio choice options. Findings indicate that higher education costs and irreversibility lead households to defer or delay investing in financial education, providing insight into the so-called "financial literacy paradox." The study emphasizes that uncertainty in returns and irreversibility of costs play a critical role in shaping financial literacy accumulation. Policy implications suggest designing

interventions that reduce the perceived or actual costs of financial education to encourage timely investment. Future research is recommended to test these dynamics in empirical household datasets and across different socio-economic contexts. Overall, this study contributes to understanding the behavioral and economic constraints that affect the adoption of financial literacy.

Financial literacy is a critical determinant of retirees' resource allocation and financial well-being (Ali et al., 2025; Khalid et al., 2025; Ali et al., 2025). Noviarini et al. (2023) investigated how financial literacy, debt anxiety, and risk tolerance influence retirement allocation decisions using survey data from older adults in New Zealand. Conducting the study in the early 2020s, they apply Multi-Criteria Decision-Making Analysis to prioritize retirees' allocation choices. Key variables include financial literacy, debt anxiety, risk tolerance, and preferences for KiwiSaver and debt repayment. Findings indicate that financial literacy reduces debt anxiety in men, increases risk tolerance in women, and is associated with higher preferences for KiwiSaver. Greater debt anxiety strongly predicts debt repayment behaviors, highlighting the importance of debt avoidance for long-term well-being. The study underscores policy implications for financial education programs targeting retirees to enhance retirement security. Future research is encouraged to explore gender-specific effects and cross-cultural applicability of these findings. Overall, this study demonstrates the role of financial literacy in shaping informed and balanced resource allocation decisions among retirees.

Financial literacy and metacognitive accuracy are essential for effective financial decision-making (Ali et al., 2025; Ali et al., 2025). Merter & Balcioglu (2025) investigated how overconfidence in financial knowledge influences investment, retirement planning, and savings behaviors using data from the 2021 U.S. National Financial Capability Study. Conducting the study in the United States, they compare decision-making patterns of overconfident individuals with equally knowledgeable peers who lack such overconfidence. Key variables include financial literacy, financial overconfidence, investment participation, retirement planning, and emergency savings behaviors. Findings reveal that overconfident individuals significantly reduce their engagement in productive financial behaviors while paradoxically reporting higher financial satisfaction. This miscalibration creates a feedback loop that hinders corrective learning and reduces help-seeking behavior, explaining why traditional financial education programs often fail. The study highlights policy implications for designing interventions that address metacognitive biases alongside foundational financial literacy. Future research is encouraged to test targeted strategies for mitigating overconfidence and enhancing financial outcomes. Overall, this study underscores the critical role of self-awareness in achieving financial health.

Financial literacy is increasingly recognized as a form of human capital with potential implications for economic growth. Bucci et al. (2025) investigated how financial literacy policies influence long-term economic outcomes using an endogenous growth framework calibrated to the U.S. economy from 1950 to 2019. The study examines variables such as financial literacy accumulation, human capital allocation, and allocational efficiency of the financial sector. Findings indicate that promoting financial literacy can enhance the efficiency of financial intermediation, supporting long-run economic growth, provided its impact on allocational efficiency is sufficiently strong. The research highlights potential trade-offs, noting that excessive focus on financial literacy may divert resources from general education, which could hinder broader growth. Policy implications suggest balancing financial education initiatives with general human capital development to maximize societal benefits. Future research is encouraged to explore these dynamics in other national contexts and under varying institutional conditions. Overall, the study underscores the role of financial literacy not only in individual financial behavior but also as a driver of long-term macroeconomic outcomes.

Financial literacy cognitions play a central role in shaping individual financial behavior. Tohar & Akron (2025) investigated how three horizon-dependent financial literacy cognition knowledge, attitude, and awareness—affect positive and negative financial behavior using survey data. Conducting the study in the 2020s, they examine variables including financial knowledge, financial attitude, financial awareness, and generational differences, with a focus on Generation Z. Findings indicate that all three cognitions positively and significantly influence optimal financial behavior, while their effects are mixed when facing negative financial behavior. The study also shows that Generation Z moderates these relationships, amplifying the effect of financial attitude while diminishing the impact of financial awareness, reflecting the cohort's short-term focus on financial issues. Policy implications suggest designing financial education programs tailored to generational priorities to enhance effective financial decision-making. Future research is recommended to explore long-term behavioral outcomes and cross-cohort

differences. Overall, this study highlights the importance of cognitive dimensions of financial literacy in promoting optimal financial behavior.

Financial literacy and future-oriented thinking are essential for emerging adults' long-term financial well-being (Ali et al., 2025; Ali et al., 2025; Abdullah et al., 2025; Ali et al., 2025). Zhu (2024) investigated how a Python-based Personalized Financial Projection (PFP) enhances financial decision-making among emerging adults in Hong Kong. Conducting the study in the early 2020s, the author applies a survey-based experimental design to assess key variables, including perceived financial literacy, future time perspective, and financial behaviors. Findings indicate that the Python-based PFP significantly improves prudent financial behaviors by strengthening both financial literacy and forward-looking mindset. The study provides empirical evidence that integrating computer programming and interactive AI into financial education can effectively promote responsible financial decision-making. Policy implications suggest adopting technology-driven personalized interventions to target emerging adults, who may otherwise lack tailored financial guidance. Future research is recommended to evaluate long-term behavioral outcomes and to extend the approach across different cultural and demographic contexts. Overall, this research highlights the innovative role of interactive AI and computational tools in enhancing financial literacy and optimal decision-making among young adults.

Financial literacy plays a critical role in shaping consistent intertemporal decision-making (Kumar et al., 2025; Ashraf et al., 2025; Khan et al., 2025; Aqeel et al., 2025; Arshad et al., 2025; Khan et al., 2025; Shahid et al., 2025). Ventre et al. (2024) investigated the relationship between inconsistent financial literacy and inconsistent decision-making across knowledge, behavior, and attitude dimensions. Conducting the study in the early 2020s, they apply quantitative analyses of survey data to assess hyperbolic discounting tendencies and financial literacy discrepancies. Key variables include financial literacy knowledge, behavior, attitudes, and measures of temporal decision-making consistency. Findings indicate a strong correlation among the dimensions of financial literacy, highlighting that while financial literacy is important, it alone does not guarantee rational or consistent intertemporal choices. The study emphasizes that hyperbolic preferences are linked to behavioral biases such as addiction and impulsive behaviors, which influence financial decisions. Policy implications suggest incorporating behavioral and financial literacy assessments when creating investor profiles, as required by MiFID regulations. Future research is recommended to explore interventions that align financial literacy with consistent long-term decision-making. Overall, this study underscores the importance of integrating psychological biases with financial literacy to enhance informed financial decision-making.

Digital financial literacy, financial capability, and autonomy are central to effective financial decision-making and perceived financial well-being (Shahi et al., 2025; Humza et al., 2025; Sattar et al., 2025; Kanwal et al., 2025; Ahmad et al., 2025; Sabir et al., 2025; Niaz et al., 2025; Khan et al., 2025; Ghauri et al., 2025). Kumar et al. (2023) investigated the mediating effects of digital financial literacy, financial autonomy, financial capability, and impulsivity on financial decision-making using survey data from 512 respondents in Delhi/NCR, India. Conducting the study in the early 2020s, they apply partial least squares structural equation modeling (PLS-SEM) and out-of-sample prediction to test structural relationships among variables. Key variables include digital financial literacy, financial skills, financial autonomy, financial capability, impulsiveness, and perceived financial well-being. Findings indicate that digital financial literacy directly and indirectly predicts financial decision-making, while financial capability and autonomy serve as dominant mediators. Impulsivity shows no significant mediating effect. The study highlights policy and managerial implications, emphasizing the need to strengthen financial skills and literacy to enhance individuals' ability to navigate socioeconomic pressures. Future research is recommended to explore gender-specific effects and broader contextual influences. Overall, the study underscores the interplay of skills, digital literacy, and autonomy in promoting sustainable financial decision-making and well-being.

Financial literacy critically influences wealth management and financial security among older households (Qaisrani et al., 2025; Ali et al., 2025; Ahmad et al., 2025; Khalil et al., 2025; Nasir et al., 2025; Anus et al., 2025). Fong et al. (2021) investigated how financial literacy affects retirement-related financial behaviors using data from the Singapore Life Panel. Conducting the study in Singapore during the early 2020s, they analyze variables including financial literacy scores, timely credit card repayment, stock market participation, and age-appropriate investment risk diversification. Findings indicate that most older adults understand interest compounding and inflation, but fewer than half are knowledgeable about risk diversification. Almost all credit card holders repay

balances timely, yet only 40% hold stocks, and fewer than 18% maintain portfolios aligned with age-appropriate glide paths. A one-unit increase in financial literacy significantly raises the likelihood of timely debt repayment, stock ownership, and following investment glide paths. The study emphasizes policy implications for targeted financial education programs to enhance retirement preparedness. Future research is encouraged to explore interventions that improve investment knowledge and portfolio management among older adults. Overall, the study demonstrates that financial literacy remains a key determinant of sound financial decision-making at older ages.

Financial literacy education is a key driver of financially responsible behavior among young adults (Audi et al., 2022). İlbasmış et al. (2025) investigated the causal impact of structured financial literacy training using a quasi-experimental design with 125 undergraduate students in Türkiye. Conducting the study in the mid-2020s, they compare outcomes between a treatment group receiving financial education and a control group without training. Key variables include objective financial literacy, budgeting, saving, insurance purchasing, and investment planning. Findings indicate that even brief interventions significantly improve financial literacy and promote more prudent financial behaviors. The study addresses endogeneity concerns and highlights the importance of targeting individuals at critical decision-making stages. Policy implications emphasize integrating structured financial literacy programs in higher education curricula, especially in emerging market contexts. Future research is recommended to explore long-term behavioral impacts and scalability across diverse populations. Overall, this study provides strong empirical evidence that financial education enhances responsible financial decision-making among university students.

Financial literacy at the macro level is influenced by economic, educational, and institutional factors. Kozol (2025) investigates the determinants of financial literacy across 143 countries using data from the 2014 S&P Global Financial Literacy Survey, complemented with World Bank and Worldwide Governance Indicators. Conducting the study globally, the author applies multiple linear regression (OLS) with robust standard errors, generalized linear models, and quantile regression to capture heterogeneity. Key variables include GDP per capita, educational attainment, internet access, regulatory quality, and inflation. Findings indicate that higher GDP, greater education, broader internet access, and stronger regulatory quality significantly enhance financial literacy, while inflation negatively affects it. Quantile regression reveals that these factors have the greatest impact in countries with lower baseline literacy, highlighting structural inequities. The study emphasizes policy implications, including investing in education, digital infrastructure, and institutional quality to boost national financial capability. Future research is recommended to explore dynamic effects over time and sector-specific interventions. Overall, this research underscores the importance of macro-level determinants in shaping financial literacy worldwide.

Financial literacy and financial education are fundamental determinants of economic outcomes. Hastings et al. (2012) examined the relationship between financial literacy, educational interventions, and economic behavior using a synthesis of empirical studies and theoretical frameworks. Conducting the study globally with a focus on policy-relevant insights, they analyze variables such as financial knowledge, decision-making behavior, savings, investment, and retirement planning. Findings indicate that higher financial literacy is associated with improved financial decision-making, better savings accumulation, and more effective investment choices. The study highlights that financial education programs can enhance knowledge and behavior, although their effectiveness depends on timing, delivery methods, and contextual factors. Policy implications emphasize integrating financial literacy into formal education and workplace programs to improve long-term economic outcomes. Future research is recommended to explore behavioral biases, the persistence of financial education effects, and cross-country differences. Overall, this research establishes a foundational link between financial literacy, education, and economic well-being

Financial literacy is shaped by macroeconomic, educational, and institutional factors at the national level. Kozol (2025) investigates the determinants of financial literacy across 143 countries using data from the 2014 S&P Global Financial Literacy Survey, complemented with World Bank and Worldwide Governance Indicators. Conducting the study globally, the author employs multiple linear regression (OLS), generalized linear models (GLM), and quantile regression to capture distributional heterogeneity. Key variables include GDP per capita, educational attainment, internet access, regulatory quality, and inflation. Findings reveal that higher GDP, greater education, broader internet access, and stronger regulatory quality significantly increase financial literacy, while inflation negatively affects it. Quantile regression shows these effects are most pronounced in countries with lower

baseline literacy levels. Policy implications emphasize investing in education, digital infrastructure, and institutional quality to enhance national financial capability.

THEORETICAL FRAMEWORK

Financial literacy acts as human capital that improves decision-making by making them more aware of compounding, risk, and intertemporal decisions. At the macro level, improvements in aggregate literacy led to greater savings mobilization and financial depth, as proxies using the credit-to-GDP ratio (Deaton, 2011). This is better than education and income, with higher human capital increasing the value of literacy in wealth accumulation. Low literacy leads to poor choices such as poor savings within a country, which leads to wealth inequality across countries. The theory favors arbitrage through informed lending and investment, which encourages the protection of the general health of financial systems. Hump-shaped literacy profiles and optimal early retirement and efficient resource allocation have been shown empirically to affect macro growth (Bazhenova & Krytsun, 2013).

Human capital theory, which is the work of Baker, considers financial literacy not only as an endogenous investment but also as having costs (investigation time, effort) and benefits (better returns, reduced risks). Literacy is accumulated to enable people to be more financially productive, which in turn leads to better decisions when it comes to accessing credit and saving (Bucci et al., 2022). Macro implications include improved financial development as a literate population will boost private sector credit and economic growth. Education levels facilitate this by reducing acquisition costs and income helps to invest more in literacy (Lusardi & Mitchell, 2017). The framework highlights the fact that literacy mediates outcomes, as it is a means of being informed to deal with financial systems. Continuing education is needed to address the obsolescence of knowledge over time in which cross-country differences are attributed to human capital stocks (Deming, 2022). The model relies on this theory to create a proxy, meaning that the behavior of deposits is associated with the depth of broader credit and the efficiency of the system.

Behavioral finance theory involves psychological biases (such as overconfidence or inertia) when making financial choices, which, according to Kahneman and Tversky, are eliminated by rational decisions made through the avoidance of expensive debt or diversification of investments (Jain, 2025). At the macro level, higher levels of literacy reduce aggregate inefficiencies, increase credit supply and financial efficiency. The effects are mediated by income and education, where a higher level of income and education increases the contribution of literacy to overcoming biases. The mediation is provided by better decision-making, which is represented as private sector participation, credit. Survey evidence suggests that poor levels of literacy are associated with poor behavior that exacerbates macro vulnerabilities such as debt crises (Raj & Ravindranadan, 2024). Such a framework supports the fact that this model emphasizes the idea of literacy-based inclusion resulting in healthier financial systems.

The financial capability framework conceptualizes literacy as the set of knowledge, skills, attitudes, and behaviors needed to successfully manage financial affairs. It argues that literacy plays a role in influencing outcomes through mediating behaviors, including informed borrowing and saving (Xiao et al., 2022). Macroeconomics is the relationship between population-level capacity and indicators of financial inclusion and development, such as the GDP-credit ratio. Education moderates by establishing basic skills, while income provides opportunities to put capabilities into practice. This theory facilitates cross-country studies, with improved capacity being associated with better resource mobilization (Xiao et al., 2022). There are interventions that increase capacity that have beneficial effects on economic stability. This is related to the broader nature of the model, which focuses on decision-making as a factor between literacy and systemic outcomes.

MATHEMATICAL (STRUCTURAL) MODEL

Let the latent constructions be defined as:

$$FO_{it} = f(FL_{it}, FDM_{it}, EDU_{it}, INC_{it})$$

Formally, the structural relationships are expressed as:

$$FO_{it} = \beta_1 FL_{it} + \beta_2 FDM_{it} + \beta_3 (FL_{it} \times EDU_{it}) + \beta_4 (FL_{it} \times INC_{it})$$

where $i = 1, \dots, 7$ denotes countries and $t = 2000, \dots, 2024$ denotes time.

- β_1 : direct effect of financial literacy (H1)
- β_2 : effect of financial decision making (H5)
- $\alpha_1\beta_2$: indirect (mediated) effect (H2)

- β_3 : education moderation effect (H3)
- β_4 : income moderation effect (H4)

ECONOMETRIC (ESTIMABLE) SEM EQUATIONS

Equation (1): Mediator Equation $FDM_{it} = \alpha_0 + \alpha_1 FL_{it} + \varepsilon_{it}$

This equation estimates the effect of financial literacy on financial decision making.

Equation (2): Outcome Equation with Mediation $FO_{it} = \beta_0 + \beta_1 FL_{it} + \beta_2 FDM_{it} + u_{it}$

Equation (3): Outcome Equation with Education Moderation

$$FO_{it} = \gamma_0 + \gamma_1 FL_{it} + \gamma_2 EDU_{it} + \gamma_3 (FL_{it} \times EDU_{it}) + \eta_{it}$$

Equation (4): Outcome Equation with Income Moderation

$$FO_{it} = \delta_0 + \delta_1 FL_{it} + \delta_2 INC_{it} + \delta_3 (FL_{it} \times INC_{it}) + \mu_{it}$$

Direct, indirect, and moderating effect estimates are sufficient to test hypotheses concerning the contributions of measurement to the outcome, and there is a possibility of global goodness-of-fit in this system which is estimated at the same time with SEM at Stata.

RESEARCH METHODOLOGY

The analysis will adopt a time series panel research design, which is a quantitative longitudinal study design on time series panel data between 2000 and 2024. The sample will be seven South Asian countries, namely, Bangladesh, Bhutan, India, Sri Lanka, Nepal, Maldives, and Pakistan. The selection of these countries is since they are economically linked with different degrees of financial development, investment in education, and income distribution. The secondary data is collected with the help of internationally accepted databases such as WDI, IMF, and GPI and therefore has international similarity and guarantees the reliability of the data. The long-term horizon enables the study to include long-term general structural relationships and dynamic interactions of variables. The strength of the estimation is supported by the panel nature of the data which includes cross-sectional and temporal variations. The given design can be particularly effective when analyzing macro-level financial and socioeconomic correlations within developing economies.

To examine the complex relationships between financial outcomes and financial literacy and financial decision-making, and between education level and income level, the study uses structural equation modeling (SEM). Private sector household debt as a percentage of GDP is used as a measure of financial outcomes, while the Financial Development Index score is a proxy for financial literacy. Gross household savings as a percentage of GDP represents financial decision-making, government spending on education as a percentage of GDP represents education level, and income level is represented using the logarithm of GDP per capita (PPP). SEM may be particularly suitable because it can provide simultaneous estimates of many interdependent relationships and measurement errors. Model specification is relevant for estimating the direct and indirect effects of the model to better capture the effects of mediation through the financial system.

SEM analysis is performed using Stata, which offers highly advanced features for estimating structural relationships in a longitudinal data environment. Maximum likelihood estimation is used to obtain efficient and consistent parameter estimates. Standard goodness-of-fit indices are used to assess the adequacy of the model, and they are the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). These indices are applied to determine the degree to which the observed data are adequately represented by the proposed model. The direct and indirect path tests enable testing of theoretical hypotheses about the mechanics of transmission between variables. Appropriate goodness-of-fit assessments and SEM should be used to enhance the validity and reliability of the experimental data.

This study employs a quantitative, longitudinal research design using time-series panel data covering the period from 2000 to 2024. The sample consists of seven South Asian countries: Bangladesh, Bhutan, India, Sri Lanka, Nepal, Maldives, and Pakistan. These countries are selected due to their economic interconnectedness and varying levels of financial development, education investment, and income distribution. Annual secondary data are obtained from internationally recognized databases like WDI, IMF, and GFI, ensuring cross-country comparability and data reliability. The extended time horizon allows the study to capture long-term structural relationships and dynamic interactions among the variables. The panel nature of the data enhances the robustness of inference by incorporating both cross-sectional and temporal variations. This design is particularly suitable for examining

macro-level financial and socio-economic relationships across developing economies (Belekhova & Rossoshanskii, 2018)

The study applies Structural Equation Modeling (SEM) to examine the complex relationships among financial outcome, financial literacy, financial decision-making, education level, and income level. Financial outcome is measured by domestic credit to the private sector as a percentage of GDP, while financial literacy is proxied by the financial development index score. Financial decision-making is represented by gross domestic savings as a percentage of GDP, education level is measured by government expenditure on education as a percentage of GDP, and income level is captured using the logarithm of GDP per capita (PPP). SEM is particularly appropriate as it allows the simultaneous estimation of multiple interrelated relationships and accounts for measurement error. The model is specified to assess both direct and indirect effects, enabling a deeper understanding of mediating mechanisms within the financial system.

The SEM analysis is conducted using Stata, which provides advanced capabilities for estimating structural relationships in longitudinal data settings. Maximum likelihood estimation is employed to obtain consistent and efficient parameter estimates. Model adequacy is evaluated using standard goodness-of-fit indices, including the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). These indices are used to assess whether the proposed model adequately represents the observed data. The examination of direct and indirect paths allows for testing theoretical assumptions regarding transmission mechanisms among variables. The use of SEM with goodness-of-fit evaluation strengthens the validity and reliability of the empirical findings (Kline, 2018).

RESULTS AND DISCUSSION

This paper examines the structural relationships between financial literacy and educational level with financial decision-making and income level with financial outcomes through structural equation modeling. The discussion section uses an interpretation of the empirical results that is based on the hypotheses presented as well as the theoretical framework through which the findings are derived. The focus is on the direct, indirect, and moderating effects revealed during the analysis. It is argued that the findings are applicable in the context of the design of South Asian economies over the next 2000 to 2024. The discussion reveals the economic and behavioral mechanisms through which financial literacy affects financial outcomes.

A summary covering the distribution of the study variables is presented in Table 1, which provides an initial idea of the data. The mean of financial performance (38.68) suggests that credit depth across countries is moderate, however, the poor dispersion between 8.44 and 103.65 shows that there is a large degree of heterogeneity in the level of financial market development. The mean score in financial literacy is relatively low (0.24), indicating that most economies in the sample have some degree of poor literacy, and ineffective financial participation may be restricted. The mean savings rate (21.80) indicates average household and national saving behavior, but the standard deviation is high, indicating different patterns of financial decision-making. The mean education expenditure is 3.35 percent of GDP, which is in line with other countries, although the highest is 7.47 percent which shows that there are countries that prioritize education more. Income levels (log GDP per capita) are less dispersed, with a mean of 3.74, indicating that the sample consists of broadly similar economies. Together, these descriptive statistics highlight differences in financial structure and socioeconomic background, which form the basis for future correlations and SEM. The distribution of financial outcomes can be seen in Figure 1, which will help to better identify differences across countries.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
financialo~e	175	38.68206	17.71201	8.44	103.65
financiall~y	175	.2418857	.1046526	.07	.55
financiald~g	175	21.80091	10.92115	3.61	46.98
educationl~l	175	3.356457	1.495394	1.13	7.47
incomelevel	175	3.7484	.3135279	3.12	4.42

Table 2 presents the correlation coefficients among the study variables, offering insights into their linear associations. Financial outcomes show a moderate positive correlation with education expenditure ($r = 0.40$), suggesting that countries investing more in education tend to have deeper credit markets. The relationship between

financial outcomes and income level is weaker ($r = 0.21$), indicating that higher income does not strongly translate into financial depth. Financial literacy exhibits only a weak positive correlation with financial outcomes ($r = 0.15$) and with savings ($r = 0.20$), implying that literacy alone may not be sufficient to drive financial behavior or market development. Interestingly, literacy is negatively correlated with education ($r = -0.15$), pointing to structural differences where higher education spending does not necessarily align with stronger literacy scores. Savings are moderately correlated with both education ($r = 0.35$) and income ($r = 0.37$), highlighting that socio-economic capacity and human capital investment are linked to stronger saving behavior. Overall, the correlation matrix reveals modest associations, with education and income emerging as more consistent predictors of financial outcomes than literacy.

Table 2: correlation and covariance

	financ~e	financ~y	financ~g	educat~l	income~l
financialo~e	1.0000				
financiall~y	0.1544	1.0000			
financiald~g	-0.0556	0.2020	1.0000		
educationl~l	0.3966	-0.1534	0.3468	1.0000	
incomelevel	0.2065	0.0292	0.3729	0.2709	1.0000

Table 3: structural equation modeling estimation

Endogenous variables
 Observed: financialoutcome financialdecisionmaking
 Exogenous variables
 Observed: financialliteracy fin_educ_interaction fin_inco_interaction
 Fitting target model:
 Iteration 0: log likelihood = -1061.7264
 Iteration 1: log likelihood = -1061.7264
 Structural equation model
 Number of obs. = 175
 Estimation method = ml
 Log likelihood = -1061.7264

	Coef.	OIM Std. Err.	z	P> z	[95% Conf. Interval]	
Structural						
financialoutcome						
financialdecisionmaking	-.5547368	.111046	-5.00	0.000	-.772383	-.3370905
financialliteracy	-246.2583	60.6458	-4.06	0.000	-365.1218	-127.3947
fin_educ_interaction	28.00156	3.473308	8.06	0.000	21.194	34.80912
fin_inco_interaction	51.93647	16.49891	3.15	0.002	19.5992	84.27373
_cons	41.13708	3.273754	12.57	0.000	34.72064	47.55352
financialdecisionmaking						
financialliteracy	21.07602	7.726033	2.73	0.006	5.933271	36.21876
_cons	16.70293	2.035312	8.21	0.000	12.71379	20.69206
var(e.financialoutcome)	203.1464	21.71726			164.7448	250.4992
var(e.financialdecisionmaking)	113.7529	12.1607			92.24978	140.2684

LR test of model vs. saturated: chi2(2) = 33.12, Prob > chi2 = 0.0000

Table 3 presents the structural equation modeling results, revealing significant pathways consistent with the study's conceptual framework. Financial literacy exerts a strong negative direct effect on financial outcomes ($\beta = -246.26$, $p < 0.001$), suggesting that higher literacy scores alone may not translate into deeper credit markets without contextual support. However, this relationship is significantly moderated by education and income: the interaction terms for literacy \times education ($\beta = 28.00$, $p < 0.001$) and literacy \times income ($\beta = 51.94$, $p = 0.002$) both show strong positive effects, indicating that literacy becomes beneficial in financially and educationally advanced environments. The indirect pathway is also supported, with financial literacy positively influencing financial

decision-making ($\beta = 21.08, p = 0.006$), though decision-making itself negatively affects financial outcomes ($\beta = -0.55, p < 0.001$), suggesting a complex behavioral dynamic. Overall, the SEM confirms that financial literacy's impact is conditional and mediated, reinforcing the importance of structural moderators in shaping financial development.

The SEM table 4 results show that financial literacy significantly increases financial decision-making ($\beta = 21.08, p = 0.006$), confirming its role in shaping savings behavior. However, literacy exerts a strong negative direct effect on financial outcomes ($\beta = -246.26, p < 0.001$), suggesting that literacy alone may not deepen credit markets. Financial decision-making also negatively influences outcomes ($\beta = -0.55, p < 0.001$), indicating that higher savings reduce reliance on credit. Moderation is evident, as literacy \times education ($\beta = 28.00, p < 0.001$) and literacy \times income ($\beta = 51.94, p = 0.002$) both enhance outcomes, showing that literacy's benefits depend on structural conditions.

Table 4: Direct effect

Direct effects						
	Coef.	OIM		P> z	[95% Conf. Interval]	
		Std. Err.	z			
Structural						
financialoutcome						
financialdecisionmaking	-.5547368	.111046	-5.00	0.000	-.772383	-.3370905
financialliteracy	-246.2583	60.6458	-4.06	0.000	-365.1218	-127.3947
fin_educ_interaction	28.00156	3.473308	8.06	0.000	21.194	34.80912
fin_inco_interaction	51.93647	16.49891	3.15	0.002	19.5992	84.27373
financialdecisionmaking						
financialliteracy	21.07602	7.726033	2.73	0.006	5.933271	36.21876

The indirect pathway reveals that financial literacy significantly affects financial outcomes through decision-making (table 5), but the effect is negative ($\beta = -11.69, p = 0.017$). This suggests that while literacy promotes saving, the resulting behavior reduces credit depth, reflecting weak financial intermediation. No indirect effects are observed for education or income interactions, confirming that their influence operates directly. Overall, the mediation highlights a paradox: literacy improves decision-making but, without supportive structures, these decisions hinder financial development.

Table 5: Indirect effect

Indirect effects						
	Coef.	OIM		z	P> z	[95% Conf. Interval]
		Std. Err.				
Structural						
financialoutcome						
financialdecisionmaking		0	(no path)			
financialliteracy	-11.69164	4.883295	-2.39	0.017	-21.26272	-2.120558
fin_educ_interaction		0	(no path)			
fin_inco_interaction		0	(no path)			
financialdecisionmaking						
financialliteracy		0	(no path)			

Table 6 reports the overall model fit statistics, providing an assessment of how well the SEM captures the observed data. The likelihood ratio test is significant ($\chi^2 = 33.12, p < 0.001$), indicating that the model differs from the saturated specification. The RMSEA value of 0.298, with a confidence interval between 0.214 and 0.391, suggests poor fit, further supported by a p-close of 0.000. Baseline comparisons show moderate adequacy, with CFI at 0.713 and TLI slightly negative (-0.004), reflecting limitations in model specification. The SRMR value of 0.100 is at the threshold of acceptability, while the coefficient of determination ($CD = 0.42$) indicates that the model explains less than half of the variance in outcomes. Taken together, these indices highlight that although the SEM identifies significant pathways, its overall fit is weak, suggesting the need for model refinement or inclusion of additional explanatory variables.

Table 6: overall model fit

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms (2)	33.122	model vs. saturated
p > chi2	0.000	
chi2_bs (7)	115.454	baseline vs. saturated
p > chi2	0.000	
Population error		
RMSEA	0.298	Root mean squared error of approximation
90% CI, lower bound	0.214	
upper bound	0.391	
pclose	0.000	Probability RMSEA <= 0.05
Information criteria		
AIC	2141.453	Akaike's information criterion
BIC	2169.936	Bayesian information criterion
Baseline comparison		
CFI	0.713	Comparative fit index
TLI	-0.004	Tucker-Lewis index
Size of residuals		
SRMR	0.100	Standardized root mean squared residual
CD	0.420	Coefficient of determination

Based on discussion, the findings highlight that financial literacy operates within the context of a broader socio-economic system, in which the importance of education and income determines its success. The pieces of evidence highlight the strengths and limitations of the role played by literacy on the issue that, while it can influence decision-making processes, it does so in a conditional manner with respect to its outcomes. These concluding thoughts validate the essence of reading between the lines of financial practice, which generates the next conclusion and recommendations.

CONCLUSION AND RECOMMENDATIONS

This paper analyzes the complex relationship between financial literacy, financial decision-making, and financial outcomes in a multi-theoretical model in which education and income have mixed effects. The results show that financial literacy has both direct and indirect effects, but its impact on financial performance is not uniformly positive. Although literacy greatly enhances decision-making, productive behavior does not necessarily improve financial outcomes, so the knowledge paradox lacks effective structural support. The mediating roles of education and income highlight the fact that while all of these moderating factors can help Houston achieve better outcomes, they are in situations where cognitive ability and financial advantage are sufficient to translate physical knowledge into action. These results are valuable to literature because they help to demonstrate that financial literacy cannot be used in isolation to ensure positive outcomes, and that behavioral processes and socio-economic factors must be treated together. The analysis also contributes to theoretical knowledge as it integrates human capital, behavioral finance and socio-economic perspectives into one analytical framework. The empirical data highlight the need to contextualize literacy interventions as outcomes vary across educational and income backgrounds. Overall, the study provides an insightful insight into the working mechanisms of literacy in decision-making and under what circumstances it can lead to sustainable financial development, thus providing a scholarly and policy-relevant contribution.

Based on the findings, financial literacy programs need to be structured in such a way that they are not simply used to impart some knowledge but also to reinforce behavioral decision-making so that the knowledge gained can be successfully applied in real financial contexts. Second, interventions should be designed to respond to socio-economic diversity where low-income and less educated populations face structural barriers to translating literacy outcomes into different types of interventions. Third, the moderate effectiveness of education can be enhanced by financial education embedded in broader educational programs, which will foster cognitive and planning skills in the long term. Fourth, specific financial inclusion policies should ensure that those with sufficient literacy also have access to appropriate financial services and products, which will bridge the knowledge-action gap. Finally, future studies and policy efforts should consider a multi-pronged strategy that includes literacy,

behavioral training, and structural support because sustainable financial performance results from socio-economic contexts such as knowledge and decision-making.

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