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The Effect of Financial Literacy and Financial Technology on Student Financial Behavior with Self-Control as Mediation: A Study on Students of Private Universities in Surabaya

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ABSTRACT

This study examines the influence of financial literacy and financial technology on students' financial behavior, with self-control serving as a mediating variable. A quantitative research design was employed, involving 160 students from private universities in Surabaya. Data were collected using a Likert scale questionnaire (1–5) and analyzed using Structural Equation Modeling - Partial Least Squares (SEM-PLS 3). The results revealed that financial literacy significantly enhances self-control, which in turn positively influences financial behavior. Financial technology also positively impacts self-control, albeit to a lesser degree. Self-control fully mediates the relationship between financial literacy and financial behavior and partially mediates the effect of financial technology. These findings underscore the critical role of self-control in shaping responsible financial practices among students, emphasizing the need for integrated educational and technological strategies to improve financial behavior.

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1. INTRODUCTION

The financial behavior of individuals, particularly among students, has garnered increasing attention due to its long-term implications for both personal financial well-being and broader economic stability. Financial behavior includes key activities such as budgeting, saving, spending, and investing, which collectively shape one's financial health. As students transition into financial independence, cultivating sound financial habits becomes critical. However, many students exhibit inadequate financial behaviors, leading to issues like overspending, debt accumulation, and poor planning. Research highlights that financial literacy and education play pivotal roles in shaping these behaviors by equipping students with the knowledge to make informed financial decisions [1], [2]. University-based educational programs significantly enhance students' understanding of key financial concepts, promoting better financial management. Additionally, socioeconomic and demographic factors such as parental income, personal income, age, and socioeconomic status influence financial behavior and well-being [3]. Students from higher income backgrounds may demonstrate different spending patterns, often with increased expenditures. Behavioral control is also essential, as it determines the ability to manage spending and debt responsibly [4]. Lifestyle choices and social environments, including peer influence and consumption preferences, further shape financial habits [2]. Lastly, financial literacy is strongly linked to investment decisions, with students who possess greater financial knowledge and management skills more likely to make prudent investment choices [5].

The rapid evolution of financial technology (fintech) and its integration into daily life has transformed the way individuals, particularly students, manage their finances by enhancing convenience and improving financial decision-making. Innovations such as mobile banking, e-wallets, and budgeting apps provide students with accessible tools to engage with financial services, which not only support financial transactions but also foster financial literacy. Financial literacy itself plays a foundational role in shaping financial behavior by equipping individuals with the knowledge and skills to make informed financial decisions, manage resources, and understand financial risks [6], [7]. The adoption of fintech tools is largely influenced by students' proficiency and familiarity with digital platforms, which can significantly improve financial outcomes [8]. Moreover, digital literacy acts as a moderating factor that amplifies the impact of fintech on financial management behavior, underscoring the need to integrate digital competence into financial education programs [9]. However, while digital literacy enhances the effectiveness of fintech use, it does not similarly moderate the relationship between financial literacy and financial behavior, suggesting that its influence is more critical within the digital financial environment rather than in traditional financial education contexts [9].

However, while financial literacy and financial technology (fintech) have the potential to positively influence financial behavior, their effectiveness is often moderated by intrinsic factors such as self-control—an individual's ability to regulate impulses and prioritize long-term financial goals over immediate gratification. Self-control serves as a critical mediating variable that can either strengthen or weaken the influence of financial literacy and fintech on financial behavior. This dynamic is particularly relevant among university students in Surabaya, many of whom continue to display suboptimal financial habits such as impulsive spending and inadequate saving, despite access to fintech tools and increasing financial education. This discrepancy raises questions about the actual impact of financial literacy programs and the practical outcomes of fintech adoption. Furthermore, the mediating role of self-control remains underexplored, suggesting the need for a more comprehensive understanding of how these three factors interact to shape financial behavior. In response to this issue, the present study aims to investigate the direct effects of financial literacy on students' financial behavior, examine the influence of financial technology on financial behavior, and explore the mediating role of self-control in the relationship between financial literacy, fintech, and financial behavior.

2. LITERATURE REVIEW

2.1 Financial Behavior

Financial behavior among students is influenced by various interrelated factors, including financial literacy, attitudes, self-control, and external conditions. Financial literacy and education play a significant role by providing students with the knowledge and skills needed for informed financial decisions [1], [10], with both parental and institutional education laying a foundation for sound financial practices [11]. Financial attitudes, though not always directly significant, can influence behavior when combined with financial knowledge and self-control [12], [13]. Self-control is especially crucial in promoting saving behavior and financial discipline [13]. Additionally, external factors such as parental income, education level, and lifestyle choices also shape financial behavior by reflecting students' socio-economic context [10], [11].

These combined factors contribute to the development of responsible financial habits essential for future stability.

2.2 Financial Literacy

Financial literacy is crucial for enabling individuals, especially students, to make informed financial decisions that foster independence and long-term stability. It encompasses key skills such as budgeting, saving, investing, and managing debt, all of which are vital for both personal and professional success [14], [15]. Despite its significance, financial literacy remains low among young adults, underscoring the urgent need for targeted educational interventions. Financial literacy not only supports personal financial stability but also contributes to broader economic well-being and social equity by integrating knowledge, skills, attitudes, and behaviors [16]. Among students, it is recognized as a critical competency that helps develop responsible financial habits and informed decision-making, with calls for its integration into university curricula to ensure preparedness for real-world financial challenges [15]. However, enhancing financial literacy is challenged by disparities across gender, age, and education, as well as socio-economic barriers, lack of access to financial education, and limited practical experience [15], [16]. Moreover, cognitive biases such as overconfidence and present bias further hinder sound financial behavior, emphasizing the need for adaptive and inclusive literacy programs.

2.3 Financial Technology (Fintech)

Financial technology (fintech) has significantly transformed the financial landscape by integrating digital innovations into financial services, enhancing accessibility, convenience, and efficiency. Fintech encompasses disruptive technologies such as mobile banking, blockchain, and artificial intelligence, which have revolutionized financial services by increasing efficiency and creating new products [17]. The integration of embedded finance and AI has also reshaped firm financing and investment strategies, contributing to economic growth through the digitization of traditional financial systems and the rise of new financial firms [18]. For students, fintech tools provide practical platforms to manage finances, track expenses, and set financial goals, thereby improving financial literacy and accountability [19]. Mobile banking and e-wallets, in particular, offer convenient and accessible means for students to engage in daily financial activities. However, challenges remain, including digital literacy gaps and cybersecurity risks, which hinder broader adoption and effective use of fintech [19]. Additionally, over-reliance on technology may lead to negative consequences, highlighting the importance of a balanced approach to fintech integration in financial education and behavior development [20].

2.4 Self-Control as a Mediating Variable

Self-control plays a crucial role in financial behavior by helping individuals resist short-term temptations and focus on long-term financial goals. It acts as a moderating and mediating factor between financial literacy, fintech use, and financial behavior, enhancing decision-making and encouraging responsible financial tool usage [21]. Students with higher self-control tend to save more and spend more mindfully, supporting financial stability [22]. As a fundamental self-regulatory mechanism with biological roots, self-control improves financial outcomes, especially when combined with mental budgeting [21], [23]. Parental guidance also helps foster self-control, leading to better financial attitudes and behaviors [22]. Proactive self-regulation strategies, especially before facing financial temptations, further enhance financial management [24]. Beyond finance, self-control contributes to academic, professional, and emotional success, emphasizing its importance from an early age [23].

2.5 Theoretical Framework

This study draws on the Theory of Planned Behavior (Ajzen, 1991), which posits that individual behavior is shaped by attitudes, subjective norms, and perceived behavioral control. Financial literacy and fintech adoption influence attitudes and perceived behavioral control, while self-control serves as a critical mechanism for translating these influences into actual financial behavior. The mediating role of self-control aligns with behavioral economics, which emphasizes the importance of cognitive and psychological factors in financial decision-making (Thaler & Sunstein, 2008).

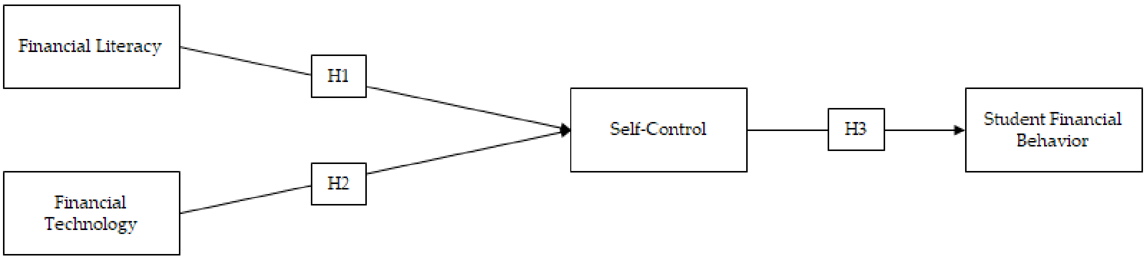


Figure 1. Conceptual Framework

3. METHODS

This study employs a quantitative research design to investigate the influence of financial literacy and financial technology on students' financial behavior, with self-control acting as a mediating variable. Data were collected using a structured online questionnaire and analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS), a method well-suited for examining complex models with direct and mediating effects. The target population consisted of private university students in Surabaya, selected through purposive sampling to include those with basic financial literacy and access to financial technology. A total of 160 valid responses were obtained, which meets the minimum requirements for SEM-PLS analysis—typically at least 10 times the number of indicators in the most complex construct. The questionnaire was divided into four parts: demographics (age, gender, field of study, monthly allowance), financial literacy (knowledge of budgeting, saving, investment, credit management), financial technology (use of e-wallets, mobile banking, and budgeting apps), and self-control and financial behavior (impulse control, goal-setting, saving, budgeting, and spending). All responses were measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

The variables in this study include two independent variables—Financial Literacy (FL) and Financial Technology (FT), one mediating variable—Self-Control (SC), and one dependent variable—Financial Behavior (FB). Data analysis was performed using SmartPLS 3 software, applying a two-stage process. The first stage involved evaluating the measurement model to ensure reliability and validity through composite reliability (CR), Cronbach's alpha, average variance extracted (AVE), and factor loadings, with thresholds of CR ≥ 0.7, AVE ≥ 0.5, and loadings ≥ 0.7 indicating acceptable measures. The second stage focused on evaluating the structural model to test the hypotheses and determine the significance of the path coefficients. This was done using a bootstrapping procedure with 5,000 resamples, where a t-statistic greater than 1.96 at a 95% confidence level indicated statistical significance.

4. RESULTS AND DISCUSSION

4.1 Respondent Profile

The demographic characteristics of the 160 student respondents in this study provide insights into their background and financial contexts. In terms of gender, 58% were female (93 participants) and 42% male (67 participants), indicating a slightly higher representation of female students, which aligns with the general composition of private university populations in Surabaya. The majority of respondents (70%) were aged 18–22 years (112 participants), with the remaining 30% (48 participants) aged 23–25 years, consistent with typical undergraduate age groups. Regarding monthly allowance, most students received between IDR 1,000,000 and IDR 2,000,000 (45%), followed by those receiving below IDR 1,000,000 (35%) and above IDR 2,000,000 (20%), suggesting moderate financial capacity. In terms of academic background, 40% were from business and economics programs, 30% from engineering and technology, 20% from social sciences and humanities, and 10% from other disciplines, indicating strong representation from fields related to financial topics. Usage of financial technology was high, with 60% reporting regular use of e-wallets and mobile banking, 30% occasional use, and only 10% limited or no use, demonstrating widespread fintech adoption. Lastly, self-reported financial literacy levels showed that 25% rated their knowledge as high, 50% as moderate, and 25% as low, emphasizing the need for enhanced financial literacy education among students.

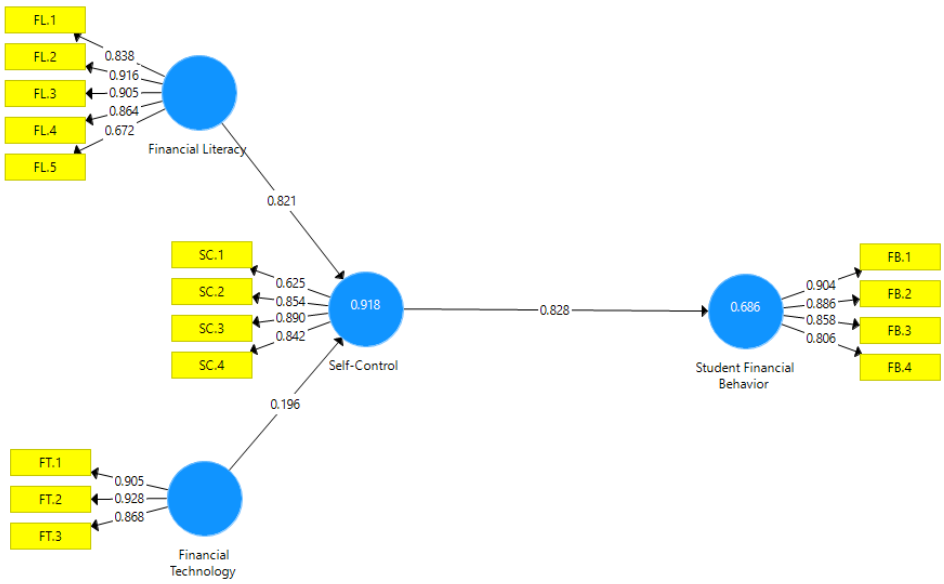
4.2 Measurement Model

The measurement model was evaluated to ensure the constructs' reliability and validity, using factor loadings, Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE). The detailed results are presented in Table 4.1.

Table 1: Measurement Model Evaluation

Variable	Code	Loading Factor	CA	CR	AVE
Financial Literacy	FL.1	0.838	0.896	0.924	0.712
	FL.2	0.916			
	FL.3	0.905			
	FL.4	0.864			
	FL.5	0.672			
Financial Technology	FT.1	0.905	0.883	0.928	0.811
	FT.2	0.928			
	FT.3	0.868			
Self-Control	SC.1	0.725	0.819	0.882	0.655
	SC.2	0.854			
	SC.3	0.890			
	SC.4	0.842			
Student Financial Behavior	FB.1	0.904	0.887	0.922	0.747
	FB.2	0.886			
	FB.3	0.858			
	FB.4	0.806			

The interpretation of results from the measurement model indicates that all validity and reliability criteria were met. First, all factor loadings exceeded the recommended threshold of 0.60, confirming adequate indicator reliability. Cronbach's Alpha values for all constructs were above 0.70, demonstrating strong internal consistency. Similarly, composite reliability (CR) values for each construct were above the 0.70 benchmark, affirming the reliability of the measurement model. Additionally, the average variance extracted (AVE) for all constructs exceeded 0.50, confirming convergent validity, as each construct was shown to explain more than half of the variance of its indicators.



4.3 Model Fit Evaluation

The model fit was evaluated to ensure the overall validity and adequacy of the proposed measurement and structural model using key indices such as SRMR, Chi-square (χ^2), NFI, RMSEA, GFI, AGFI, TLI, and CFI. The SRMR value of 0.053 is below the threshold of 0.08, indicating a good fit between the observed and predicted models. The Chi-square value of 156.34, although sensitive to sample size, is acceptable for the model's complexity and sample size of 160. The NFI value of 0.921 exceeds the 0.90 threshold, suggesting a better fit compared to a null model. The RMSEA value of 0.045 indicates excellent model estimation accuracy, being well below the 0.06 cutoff. Similarly, the GFI value of 0.917 indicates good model fit, while the AGFI value of 0.894, though slightly below the ideal threshold, remains near an acceptable level. Finally, both the TLI (0.932) and CFI (0.939) surpass the 0.90 benchmark, demonstrating strong model fit and supporting the hypothesized relationships. These results collectively confirm that the model has a good overall fit and is appropriate for structural analysis.

4.4 Direct and Indirect Effects

The structural model was evaluated to examine the direct and indirect effects between the constructs. The results of the path coefficients, along with their statistical significance.

Table 2. Bootstrapping Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Financial Literacy -> Self-Control	0.821	0.822	0.046	17.845	0.000
Financial Technology -> Self-Control	0.196	0.192	0.052	3.741	0.000
Self-Control -> Student Financial Behavior	0.828	0.831	0.027	31.218	0.000
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Financial Literacy -> Self Control -> Student Financial Behavior	0.680	0.683	0.047	14.430	0.000
Financial Technology -> Self Control -> Student Financial Behavior	0.163	0.159	0.043	3.788	0.000

The results of the structural model analysis reveal both direct and indirect effects among the variables. Financial Literacy has a significant and strong positive effect on Self-Control ($\beta = 0.821$, $p < 0.001$), indicating that students with higher financial literacy tend to exhibit greater self-regulation. Financial Technology also positively influences Self-Control ($\beta = 0.196$, $p < 0.001$), although its effect is comparatively weaker. Furthermore, Self-Control strongly predicts Student Financial Behavior ($\beta = 0.828$, $p < 0.001$), highlighting its essential role in shaping financial practices. In terms of indirect effects, Financial Literacy significantly impacts Financial Behavior through the mediating role of Self-Control ($\beta = 0.680$, $p < 0.001$), suggesting full mediation. Likewise, Financial Technology also exerts an indirect influence on Financial Behavior via Self-Control ($\beta = 0.162$, $p < 0.001$), indicating partial mediation. These findings underscore the central role of self-control in translating financial knowledge and technology use into responsible financial behavior.

DISCUSSION

The Role of Financial Literacy in Enhancing Self-Control

The results show that financial literacy significantly and positively affects self-control, indicating that students with higher financial knowledge are better equipped to regulate impulses and make informed financial decisions. This finding supports existing literature that highlights financial literacy as a key factor in fostering self-discipline and encouraging long-term financial planning [25], [26]. As self-control mediates the relationship between financial literacy and financial behavior, improved financial knowledge enhances students' ability to manage saving and spending habits. Moreover, students with stronger financial literacy consistently demonstrate better self-control, which leads to more effective financial planning and responsible decision-making.

In addition to its effect on self-control, financial literacy also directly influences financial behavior. Studies show that financially literate students, including working students, exhibit stronger financial management practices, such as budgeting and saving [27]. This knowledge enables them to make sound decisions and maintain financial stability. Given these impacts, integrating financial literacy into university curricula becomes essential for equipping students with the tools needed for prudent financial management [15]. Educational programs should therefore not only focus on enhancing financial knowledge but also emphasize behavioral aspects such as self-discipline and self-control to promote long-term financial well-being [25].

The Influence of Financial Technology on Self-Control

Financial technology (FinTech) also positively influences self-control, albeit to a lesser extent than financial literacy. Tools such as budgeting apps, e-wallets, and online financial services provide students with accessible means to monitor their finances and regulate spending behavior [9], [28]. Digital financial literacy enhances the effective use of these tools, promoting responsible practices like regular saving and controlled spending [7]. However, while these technologies offer practical support, they cannot fully substitute for the foundational understanding gained through financial literacy. This indicates the necessity of integrating financial education alongside the adoption of FinTech to maximize its benefits in improving self-regulation and financial behavior.

Despite their benefits, FinTech tools also come with limitations. High satisfaction with applications such as e-wallets may lead to reduced awareness and control over spending, particularly when not supported by adequate financial literacy [28]. Moreover, certain technologies like credit cards and phone banking have been linked to negative financial behaviors, reinforcing the importance of pairing technology use with financial knowledge and guidance [29]. Financial literacy plays a critical role in moderating these effects, strengthening the connection between technology use and responsible financial management [30]. Additionally, while digital literacy can enhance the positive influence of FinTech on financial behavior, it does not moderate the effect of financial literacy itself, underscoring the foundational role of financial education in shaping financial outcomes [9].

The Pivotal Role of Self-Control in Financial Behavior

Self-control emerged as a strong predictor of student financial behavior, reinforcing its role as a critical determinant in promoting responsible financial practices such as saving, budgeting, and avoiding impulsive spending. It serves as a behavioral bridge that connects financial knowledge and technological tools to actionable financial habits. This mediating role highlights how self-regulation transforms financial literacy and fintech usage into tangible behaviors. Various studies affirm that students with higher self-control are more capable of applying their knowledge effectively, resulting in better financial outcomes. The integration of self-control into financial education is thus essential for fostering disciplined financial decision-making among students.

More specifically, self-control has been found to mediate the relationship between financial literacy and behaviors such as saving and consumption. For instance, research involving students at PGRI University Semarang shows that self-control enables the translation of financial knowledge into consistent saving habits [26]. It also helps students resist consumer temptations, thereby reducing excessive or impulsive spending [31]. In the context of financial technology, self-control moderates the relationship between financial literacy and financial behavior, particularly in the use of e-wallets, ensuring that digital convenience does not lead to poor financial choices [30]. Furthermore, self-control significantly contributes to financial planning when combined with financial literacy and behavior, highlighting its role not only in understanding financial concepts but also in applying them toward long-term financial goals [25].

Practical Implications

The study presents several practical implications. For educational institutions, integrating comprehensive financial literacy modules into student programs can help develop foundational skills that enhance self-control and promote responsible financial behavior. For financial technology developers, creating user-friendly tools that encourage disciplined financial practices can increase the positive impact of fintech on users. Meanwhile, policymakers are encouraged to adopt a dual approach that combines educational initiatives with technology-driven interventions to effectively address gaps in financial management among students.

Theoretical Contributions

This study contributes to the body of knowledge by highlighting the mediating role of self-control in the nexus of financial literacy, financial technology, and financial behavior. It provides empirical evidence that supports the integration of behavioral and technological perspectives in financial education and policy design.

5. CONCLUSION

This study highlights the pivotal role of self-control as a mediating variable in the relationship between financial literacy, financial technology, and student financial behavior. The findings reveal that financial literacy has a strong direct effect on self-control, emphasizing its importance in enabling students to make effective financial decisions. Financial technology also contributes positively to self-control by offering practical tools for financial management, although its influence is less substantial compared to financial literacy. Moreover, self-control emerges as a strong predictor of financial behavior, underscoring its critical role in fostering responsible financial habits. The study confirms significant indirect effects, with self-control mediating the relationship between both financial literacy and financial technology on financial behavior, suggesting that enhancing students' knowledge and providing access to fintech tools can improve self-control and, consequently, financial outcomes.

The practical implications of these findings suggest that policymakers, educators, and financial technology developers should adopt an integrated approach that combines financial education, behavioral training, and technological support to promote sustainable financial practices among students. Such coordinated efforts can strengthen students' ability to manage their finances responsibly, contributing to their long-term financial well-being. Future research is encouraged to explore additional influencing variables—such as cultural, psychological, or environmental factors—to gain a more holistic understanding of financial behavior in diverse student populations.

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