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# The Influence of Financial Literacy and Digital Financial Competency on Advanced consumption of Student Behavior: The Mediating Role of Self-Control in Wuhan University of Technology in China

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*Balanced Scorecard; Employee engagement; Goal-setting theory; Hotel industry; Performance management; Self-determination theory; Service organizations; Strategic alignment.*

***Abstract***
*The rapid expansion of the digital economy and fintech infrastructure has fundamentally restructured the consumption patterns of university students, leading to a rise in credit-enabled advanced consumption. This research aims to investigate the determinants of advanced consumption behavior by integrating cognitive financial assets and psychological self-regulation mechanisms. Specifically, the study examines the influence of financial literacy and digital financial competency on advanced consumption, with self-control serving as a potential mediating variable. A quantitative research design was employed, utilizing Structural Equation Modeling (SEM) to analyze data collected from university students. The empirical results demonstrate that both financial literacy and digital financial competency exert a significant negative influence on advanced consumption behavior. Notably, digital financial competency emerged as a more potent predictor, suggesting that in a platform-mediated economy, the ability to navigate digital choice architecture is a critical deterrent to excessive spending. Furthermore, the analysis reveals that self-control significantly mediates the relationship between these financial capabilities and consumption outcomes. Approximately 39% of the impact of financial knowledge on reducing debt-funded consumption is transmitted through the strengthening of internal regulatory mechanisms.These findings underscore the necessity of a holistic approach to financial education. Beyond traditional numeracy, academic and policy interventions should prioritize critical digital literacy and the development of psychological resilience. Strengthening the "cognitive shield" of digital competency and the "behavioral filter" of self-control is essential to safeguard students from the systemic risks of a frictionless credit environment and to ensure long-term financial well-being in the digital era.*

## INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed economic activities and individual financial behavior across the globe. In China, the integration of digital platforms, mobile payment systems, and financial technology (fintech) services has created a highly digitized consumption ecosystem that reshapes how people earn, spend, and manage money. This transformation is particularly evident among Generation Z, a cohort commonly referred to as "digital natives," who have grown up alongside the internet, smartphones, and algorithm-driven platforms. As a result, their consumption patterns, financial decision-making processes, and attitudes toward credit differ significantly from those of previous generations.

One of the most prominent features of China's digital economy is the widespread availability of internet-based consumer credit platforms such as Huabei and Baitiao. These platforms utilize big data analytics and algorithmic credit scoring to provide instant access to short-term loans, often embedded seamlessly within e-commerce and payment applications.

While such systems enhance financial inclusion and consumption convenience, empirical evidence indicates that they also contribute to rising levels of debt among young consumers. Industry reports show an increasing trend of credit delinquency among individuals aged 18–29, suggesting that easy access to digital credit may outpace users' financial capability and self-regulation.

This phenomenon is not solely driven by technological factors but is deeply intertwined with psychological and sociocultural dynamics. Traditional values of frugality have gradually been replaced by consumerist norms reinforced by social media, where identity construction, peer comparison, and symbolic consumption play a central role. Social comparison anxiety encourages individuals to maintain lifestyles that exceed their actual financial capacity, often financed through debt. In such an environment, consumption decisions are increasingly impulsive and present-oriented, rather than the result of careful financial planning.

The issue is further intensified by macroeconomic uncertainty, particularly in the labor market faced by university students. Despite high educational attainment, many students experience income instability and uncertain employment prospects upon graduation. Paradoxically, this uncertainty often leads to present-biased consumption behavior, where individuals prioritize immediate gratification over long-term financial well-being. Without adequate practical financial literacy, advanced consumption gradually shifts from a conscious decision into a habitual behavior, increasing the risk of persistent indebtedness.

Wuhan serves as a highly relevant context for examining this phenomenon. As a "new first-tier city" and a major hub within the Yangtze River Economic Belt, Wuhan reflects China's broader urban economic structure more accurately than megacities such as Beijing or Shanghai. With a student population exceeding 1.2 million and high penetration of mobile payment and digital credit platforms, Wuhan represents an ideal setting for studying university students' financial behavior in a digitally mediated environment. Within this context, Wuhan University of Technology (WUT), a nationally recognized "Double First-Class" university, provides a representative and diverse research population. Its students come from various academic disciplines and socioeconomic backgrounds, enabling comprehensive analysis of differences in financial literacy, self-control, and consumption behavior.

From a theoretical perspective, financial literacy is widely recognized as a key determinant of individual financial well-being. According to Lusardi and Mitchell, financial literacy encompasses knowledge of fundamental financial concepts, financial behavior such as budgeting and saving, and attitudes toward long-term planning. Individuals with higher financial literacy tend to demonstrate better debt management and lower vulnerability to financial risk. However, recent studies argue that traditional financial literacy alone is insufficient in the digital economy. The emergence of algorithm-driven platforms requires a new dimension of competency, namely digital financial competency, which includes awareness of algorithmic pricing, platform design, and data-driven persuasion mechanisms.

To further explain behavioral outcomes, this study adopts the choice architecture framework, which conceptualizes digital credit platforms as environments intentionally designed to influence user decisions. Through default options, seamless payment interfaces, and psychologically framed promotions, platforms may encourage borrowing behaviors that conflict with users' long-term interests, a phenomenon often described as "reverse nudging." In this context, financial literacy and digital financial competency function as protective factors, while psychological traits such as self-control play a mediating role in determining whether knowledge

translates into behavior.

Despite growing scholarly attention, existing literature presents several limitations. Many studies rely on cross-sectional designs that emphasize correlation rather than causation, neglect psychological mediating mechanisms, and overlook the specific role of platform algorithms in shaping behavior. Furthermore, research focusing on university students in emerging digital economies remains limited, despite this group's heightened vulnerability to debt-related risks.

Therefore, this study seeks to address these gaps by examining the causal relationships between financial literacy, digital financial competency, self-control, and advanced consumption behavior among undergraduate students at Wuhan University of Technology. By employing Structural Equation Modeling (SEM), the research aims to identify both direct and indirect pathways influencing consumption behavior in the digital economy. The findings are expected to contribute theoretically by expanding the concept of financial literacy, and practically by informing financial education strategies and regulatory policies aimed at protecting young consumers. Ultimately, understanding student financial behavior during this formative period is crucial, as early habits of debt and consumption may have long-term implications for individual financial stability and broader socioeconomic sustainability.

**Perceived Value**

Perceived value refers to consumers' overall evaluation of a product or service based on the comparison between perceived benefits and perceived sacrifices. Unlike objective value, perceived value is subjective and influenced by individual expectations, experiences, emotions, and personal preferences. In consumer behavior literature, perceived value is widely recognized as a key determinant of satisfaction and post-purchase behavior. In the context of new tea beverage brands, perceived value is not limited to product taste or quality but also encompasses brand image, store atmosphere, innovation, and social symbolism. Higher perceived value leads consumers to form more favorable evaluations, thereby increasing satisfaction and loyalty intentions.

**Financial Literacy and Student Financial Behavior**

Financial literacy is widely recognized as a key determinant of individual financial behavior and well-being. Lusardi and Mitchell (2014) define financial literacy as the combination of financial knowledge, behavior, and attitudes that enable individuals to make effective financial decisions. Empirical studies consistently show that individuals with higher financial literacy tend to manage debt more responsibly, engage in long-term financial planning, and exhibit lower vulnerability to financial distress.

However, recent research highlights that traditional financial literacy frameworks are increasingly insufficient in digital consumption environments. University students, despite being digitally skilled, often lack the financial competence needed to evaluate complex credit products, leading to risky consumption patterns such as debt-funded spending and delayed repayment.

**Digital Financial Competency in the Platform Economy**

The rapid expansion of fintech and internet-based consumer credit platforms has transformed financial decision-making processes. Digital Financial Competency refers to the ability to understand platform mechanisms, algorithm-based pricing, hidden fees, and data-driven credit assessment systems (Morgan & Trinh, 2020).

In China, platforms such as Huabei and Baitiao integrate credit access seamlessly into consumption interfaces, reducing perceived borrowing costs and encouraging impulsive spending. Studies indicate that low algorithm awareness among students increases their exposure to excessive debt, as quoted daily interest rates often obscure high effective annual costs.

Therefore, digital financial competency has emerged as a critical extension of traditional financial literacy in the platform economy.

**Advanced Consumption Behavior among University Students**

Advanced consumption behavior refers to spending future income in the present through credit-based consumption. Among Generation Z, this behavior is increasingly normalized and reinforced by social media, consumer culture, and peer comparison. Research identifies phenomena such as "refined poverty," where individuals maintain consumption lifestyles inconsistent with their actual income levels.

In the university context, advanced consumption is often associated with financial stress, repayment difficulties, and multi-platform borrowing. These behaviors are particularly prevalent in environments characterized by high fintech penetration and weak financial education, making university students a vulnerable population.

**Psychological Mediators: The Role of Self-Control**

Behavioral economics emphasizes that financial decisions are not purely rational but are influenced by cognitive biases and psychological factors. Self-control plays a central role in regulating consumption behavior, especially in digital environments designed to encourage immediate gratification.

Thaler and Sunstein's (2008) Choice Architecture framework explains how platform design exploits present bias and hyperbolic discounting. Empirical evidence suggests that financial literacy alone does not automatically translate into prudent behavior unless supported by adequate self-control. Thus, self-control functions as a key mediating variable between financial knowledge and actual consumption outcomes.

**Financial Literacy, Choice Architecture, and Causal Mechanisms**

While prior studies confirm a negative relationship between financial literacy and excessive debt, most rely on cross-sectional correlations and fail to explain underlying causal pathways. Recent scholarship calls for integrating financial literacy theory with behavioral frameworks to capture how knowledge interacts with psychological regulation in digital contexts.

Internet consumer credit platforms can be conceptualized as "reverse nudging" systems that subtly guide users toward borrowing behaviors that maximize platform revenue rather than user welfare. Within this context, financial literacy and digital financial competency act as protective factors, enhancing individuals' ability to recognize and resist manipulative choice architectures.

## METHODS

This study adopts a quantitative cross-sectional survey design to examine the causal relationships between Financial Literacy, Digital Financial Competency, self-control, and advanced consumption behavior among undergraduate students. The research was conducted at Wuhan University of Technology (WUT), China, chosen for its representativeness as a "Double First-Class" university in a new first-tier city with high fintech penetration. The population comprises all full-time undergraduate students ($N \approx 36{,}420$), from which a minimum sample of 396 respondents was determined using the Slovin formula and selected through proportionate stratified random sampling based on academic discipline and year level. Data were collected during the 2024–2025 academic year using a structured online questionnaire consisting of validated scales measuring financial literacy, digital financial competency, self-control, and advanced consumption behavior. Following a pilot test, the final dataset was analyzed using a two-step Structural Equation Modeling (SEM) approach, involving measurement model assessment (validity and reliability) and

structural model testing for direct and mediated effects. Statistical analyses were conducted using SPSS and SmartPLS/AMOS, including data screening, descriptive statistics, confirmatory factor analysis, mediation analysis with bootstrapping, and common method bias checks, ensuring robustness and rigor in hypothesis testing.

## RESULTS AND DISCUSSION

### Respondent Characteristics

The study collected valid responses from 396 undergraduate students, ensuring a balanced and representative sample. The demographic distribution is presented in Table.

**Table Demographic and Socioeconomic Characteristics**

| Demographic Factor | Classification | Frequency (f) | Percentage (%) |
|---|---|---|---|
| **Gender** | Male | 194 | 49.0 |
| | Female | 202 | 51.0 |
| **Year Level** | Freshman | 103 | 26.1 |
| | Sophomore | 100 | 25.2 |
| | Junior | 97 | 24.4 |
| | Senior | 96 | 24.2 |
| **Discipline** | Engineering | 201 | 50.8 |
| | Non-Engineering | 195 | 49.2 |
| **Monthly Allowance** | < 1,500 RMB | 119 | 30.1 |
| | 1,500–2,500 RMB | 158 | 39.9 |
| | > 2,500 RMB | 119 | 30.0 |

The data indicate a well-balanced distribution across gender, academic year, and discipline. Importantly, approximately 70% of respondents receive a monthly allowance of 2,500 RMB or less, which, given Wuhan's cost of living, suggests a moderate level of financial constraint. This condition potentially increases students' reliance on fintech credit facilities to manage short-term liquidity needs.

### Descriptive Statistics of Research Variables

### Financial Literacy

Financial literacy was assessed using objective measures covering compound interest, inflation, and risk diversification. The results are summarized in Table

**Table Performance in Financial Literacy Components**

| **Item** | **Knowledge Domain** | **Accuracy (%)** |
|---|---|---|
| FL1 | Compound Interest | 63.0 |
| FL2 | Inflation | 54.0 |
| FL3 | Risk Diversification | 57.0 |
| **Average** | | **58.0** |

The average score of 58% reflects a moderate-to-low level of financial literacy. While students demonstrate basic understanding of investment growth, limited comprehension of

inflation indicates a vulnerability in evaluating the real cost of borrowing, particularly in fintech environments where interest costs are often obscured.

**Digital Financial Competency**

Digital financial competency reflects students' ability to navigate, evaluate, and manage fintech tools. Results are presented in Table

Table Item-Level Analysis of Digital Financial Competency

| Code | Indicator | Mean | SD | Level |
|---|---|---|---|---|
| FC1 | Digital payment proficiency | 3.99 | 0.91 | High |
| FC2 | Digital budgeting ability | 3.60 | 1.07 | Moderate–High |
| FC3 | Risk assessment of digital products | 3.64 | 1.02 | Moderate–High |
| FC4 | Interface navigation fluency | 4.22 | 0.82 | Very High |
| **Average** | | **3.86** | 0.96 | High |

The exceptionally high score on interface navigation (FC4) highlights strong user experience fluency, which reduces cognitive friction and may unintentionally facilitate impulsive financial decisions.

**Self-Control**

Self-control was measured as the capacity to resist impulsive spending and adhere to financial plans. Results are shown in Table

| Code | Indicator | Mean | SD | Level |
|---|---|---|---|---|
| SC1 | Resistance to impulsive purchases | 3.00 | 1.14 | Moderate |
| SC2 | Delayed gratification | 3.10 | 1.10 | Moderate |
| SC3 | Budget adherence | 2.76 | 1.14 | Low |
| SC4 | Resistance to peer pressure | 3.36 | 1.08 | Moderate |
| **Average** | | **3.06** | 1.12 | Moderate |

The lowest score on budget adherence (SC3) identifies self-regulation failure as a critical behavioral weakness among student.

**Advanced Consumption Behavior**

Advanced consumption behavior reflects the use of future income through credit. Results

are summarized in Table.

**Table Item-Level Analysis of Advanced Consumption Behavior**

| Code | Indicator | Mean | SD | Level |
|---|---|---|---|---|
| ACB1 | BNPL usage frequency | 2.95 | 1.20 | Moderate |
| ACB2 | Preference for installments | 2.66 | 1.20 | Moderate–Low |
| ACB3 | Borrowing for luxury items | 2.38 | 1.14 | Low |
| ACB4 | Borrowing for social status | 2.62 | 1.13 | Moderate–Low |
| **Average** | | **2.65** | 1.17 | Moderate–Low |

The findings suggest that fintech credit is primarily used for routine consumption rather than luxury spending, indicating a normalization of debt among Generation Z students.

**Measurement Model Assesment**

**Convergent Validity**

Convergent validity was evaluated to ensure that the indicators of each latent construct consistently represent the same underlying concept. This assessment employed three commonly accepted criteria in Structural Equation Modeling (SEM), namely standardized factor loadings, Average Variance Extracted (AVE), and Composite Reliability (CR). The detailed results are presented in Table.As shown in Table, all observed indicators demonstrate standardized factor loadings exceeding the minimum recommended threshold of 0.70, indicating strong correlations between indicators and their respective latent constructs (Hair et al., 2019). Furthermore, the AVE values for all constructs are greater than 0.50, signifying that more than half of the variance in the indicators is explained by the latent variables rather than by measurement error. In addition, Composite Reliability (CR) values exceed 0.70 for all constructs, confirming satisfactory internal consistency.Taken together, these results provide strong empirical evidence that the measurement model meets the criteria for convergent validity, indicating that the constructs of financial literacy, digital financial competency, self-control, and advanced consumption behavior are measured accurately and consistently.

**Discriminant Validity**

Discriminant validity was examined to confirm that each latent construct is empirically distinct and captures phenomena not represented by other constructs in the model. Two complementary approaches were applied: the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio, with results reported in Table respectively.Based on the Fornell–Larcker criterion (Table 4.7), the square root of the AVE for each construct is greater than its correlations with other constructs, indicating adequate discriminant validity. This finding suggests that each construct shares more variance with its own indicators than with other constructs in the model. In addition, the HTMT ratios presented in Table 4.8 are all below the conservative threshold of 0.85, further confirming that multicollinearity and construct overlap are not problematic. The convergence of results from both methods strengthens confidence in the discriminant validity of

the measurement model and supports the conceptual distinctiveness of the study variables.

**Indicator Reliability**

Indicator reliability assesses the extent to which each observed variable reliably measures its corresponding latent construct. This was evaluated by examining the squared standardized factor loadings, with results summarized in Table.The findings indicate that all indicators exhibit squared loadings greater than 0.50, meaning that at least 50% of the variance in each indicator is explained by its latent construct. This level of reliability is considered acceptable for behavioral and social science research and suggests that individual items contribute meaningfully to the measurement of their respective constructs. Accordingly, the indicator reliability results confirm that all measurement items used in this study are statistically robust and suitable for inclusion in subsequent structural model analysis.

**Common Method Bias**

Given that the data were collected using a self-administered questionnaire at a single point in time, potential common method bias (CMB) was assessed to ensure that the results were not unduly influenced by the measurement method. Two diagnostic procedures were employed. First, Harman's single-factor test revealed that the largest factor accounted for only 34.7% of the total variance, which is below the critical threshold of 50%. This suggests that no single factor dominated the variance structure of the data. Second, collinearity diagnostics showed that all Variance Inflation Factor (VIF) values were below 3.3, indicating the absence of severe multicollinearity and further reducing concerns regarding CMB. Overall these results suggest that common method bias does not pose a significant threat to the validity of the study's findings.

**Structural Model and Hypothesis Testing**

**Model Fit and Predictive Power**

The structural model was evaluated to assess overall model fit and explanatory power. The goodness-of-fit indices are reported in Table The results indicate an acceptable to good model fit, with SRMR = 0.061, CFI = 0.921, and RMSEA = 0.068, all of which fall within recommended thresholds for SEM analysis.In terms of predictive power, the coefficient of determination ($R^2$) values presented in Table show that the model explains 42.8% of the variance in self-control and 54.7% of the variance in advanced consumption behavior. These values indicate moderate to substantial explanatory power, suggesting that financial literacy, digital financial competency, and self-control jointly play a meaningful role in explaining students' consumption behavior in the digital economy.

**Hypothesis Testing**

The results of hypothesis testing are summarized in Table. The analysis reveals several important findings. First, financial literacy and digital financial competency both have a significant negative effect on advanced consumption behavior, indicating that higher levels of financial capability are associated with lower reliance on credit-based and impulsive consumption.Second, both financial literacy and digital financial competency exert a significant positive influence on self-control. This suggests that students who possess stronger financial knowledge and better understanding of digital financial platforms tend to exhibit greater behavioral regulation. Third, self-control shows the strongest negative effect on advanced consumption behavior, highlighting its central role as a behavioral determinant in fintech-enabled consumption contexts.

**Mediation Role of Self-Control**

To further explore the underlying mechanisms, mediation analysis was conducted using a bootstrapping approach. The results, presented in Table, demonstrate that self-control partially mediates the relationships between financial literacy and advanced consumption behavior, as well as between digital financial competency and advanced consumption behavior.Specifically, the indirect effects through self-control account for approximately 39% of the total effect, indicating that while financial capability has a direct influence on consumption behavior, a substantial portion of its impact operates through enhanced self-regulatory capacity. This finding underscores the importance of psychological mechanisms in translating financial knowledge into actual behavioral outcomes.

**Summary of Chapter**

This chapter provides empirical evidence that Generation Z university students exhibit high levels of digital financial competency but only moderate financial literacy and relatively weak self-control. This imbalance creates a structural vulnerability to fintech-enabled advanced consumption behavior. The measurement and structural model assessments confirm the robustness of the research framework, while the mediation analysis highlights self-control as a critical behavioral mechanism linking financial capability to consumption outcomes. Overall, the findings support an integrated cognitive–behavioral framework for understanding student financial behavior in digitally mediated economic environments

## CONCLUSION

This study concludes that financial literacy and digital financial competency play significant roles in shaping sustainable consumption behavior among university students, both directly and indirectly through self-control. Higher levels of financial literacy and digital financial competency significantly reduce unsustainable, debt-driven consumption by strengthening students' capacity for self-regulation, with self-control emerging as the strongest and most critical predictor of sustainable consumption behavior. The mediation analysis further confirms that financial knowledge and digital competency are most effective when translated into behavior through enhanced psychological regulation, indicating that cognitive capability alone is insufficient without behavioral control. These findings contribute theoretically by extending traditional financial literacy frameworks to include algorithm awareness and platform navigation competency, while empirically positioning self-control as a central behavioral mechanism in digital consumption contexts. Practically, the results underscore the need for universities to integrate critical digital financial literacy and behavioral training into curricula, for policymakers to design protective digital guardrails and positive nudges within fintech platforms, and for students to adopt proactive choice architectures to safeguard their financial well-being. Despite limitations related to sample scope, self-reported data, and cross-sectional design, this study provides a robust foundation for future longitudinal and mixed-method research to further explore psychological, social, and technological drivers of financial behavior in the digital economy.

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