

Article

Psychological Mechanisms and Debt Risk in Buy Now, Pay Later Use: Evidence from University Students in Vietnam

Ninh Ngoc Anh^{1,*}, Nguyen Ha My², Giang Thi Huyen Trang³ and To Quynh Trang⁴

¹School of Advanced Education Programs, National Economics University, Hanoi, Vietnam. ORCID: 0009-0004-5936-1422. Email: 11230734@st.neu.edu.vn

²School of Advanced Education Programs, National Economics University, Hanoi, Vietnam. ORCID: 0009-0002-8707-694X. Email: 11230573@st.neu.edu.vn

³School of Advanced Education Programs, National Economics University, Hanoi, Vietnam. ORCID: 0009-0007-1812-3534. Email: 11240426@st.neu.edu.vn

⁴School of International Business Development, National Economics University, Hanoi, Vietnam. ORCID: 0009-0007-8422-1861. Email: 10230311@st.neu.edu.vn

*Corresponding author: 11230734@st.neu.edu.vn



Abstract

This study investigates the psychological and behavioral mechanisms underlying the use of Buy Now, Pay Later (BNPL) services among university students, a population increasingly exposed to digital credit options yet vulnerable to financial mismanagement. The research aims to examine how external BNPL-related stimuli—subjective norms, marketing campaigns, and perceived convenience—shape students' internal psychological states, including Fear of Missing Out (FoMO), attitudes toward BNPL, and spending control, and how these factors subsequently influence impulsive purchasing behavior and debt risk. A quantitative approach was employed, using an online survey administered to undergraduate students with prior BNPL experience. Data were analyzed through Partial Least Squares Structural Equation Modeling to assess both measurement validity and structural relationships within the proposed Stimulus–Organism–Response framework. The findings reveal that social influence, promotional activities, and convenience significantly affect students' FoMO and attitudes, while convenience negatively impacts spending control. FoMO and positive attitudes emerge as strong predictors of impulsive BNPL purchases, which, in turn, significantly elevate debt risk. Spending control plays a protective role by reducing the likelihood of financial overextension, whereas financial literacy moderates several key relationships, helping to weaken emotional and cognitive drivers of risky BNPL usage. Overall, the study highlights the complex interplay between digital marketing environments, psychological factors, and financial behaviors among young consumers. The results contribute to a deeper understanding of BNPL-induced vulnerabilities and offer practical implications for policymakers, financial educators, and BNPL providers in promoting responsible digital credit use.

Keywords: buy now; pay later; impulsive buying; fear of missing out; financial knowledge; debt risk

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1. Introduction

The rapid expansion of digital financial services has reshaped consumer payment behavior worldwide, with Buy Now, Pay Later (BNPL) emerging as one of the most transformative innovations within e-commerce ecosystems. BNPL allows consumers to defer payments through short-term, interest-free installments, offering

an alternative to traditional credit instruments. Industry reports project that global BNPL transactions will surpass USD 560 billion by 2025 and continue to expand at a double-digit annual rate, with worldwide adoption expected to exceed 900 million users by 2027 (Chargeflow, 2025). In emerging markets such as Vietnam, BNPL adoption has accelerated due to rapid digitalization, the ubiquity of mobile commerce, and limited access to formal credit among young consumers. As these services become embedded into everyday purchasing environments, understanding their psychological and financial implications becomes increasingly essential.

Existing literature highlights both the benefits and risks of BNPL usage. On one hand, BNPL is promoted as a convenient tool for liquidity management, allowing consumers to align spending with income cycles and access products more easily. On the other hand, scholars warn that the deferred payment structure reduces the "pain of paying," encourages impulsive purchasing, and may lead to the accumulation of fragmented, difficult-to-track debt (Prelec & Loewenstein, 1998; Thaler, 1999; Soman, 2001). These risks appear particularly salient for university students, who often experience volatile income, heightened social comparison pressures, and limited financial literacy. Psychological drivers—such as Fear of Missing Out (FoMO)—along with social influences and promotional stimuli, may further intensify BNPL usage patterns, potentially leading to overspending and repayment difficulties.

Despite these concerns, empirical research examining BNPL-related debt risk among students in emerging economies remains limited. Few studies simultaneously consider the interplay between external BNPL stimuli (e.g., social norms, marketing campaigns, convenience), internal psychological mechanisms (FoMO, attitudes, spending control), and behavioral outcomes such as impulsive buying and debt vulnerability. This gap underscores the need for a comprehensive model that captures both affective and cognitive antecedents of BNPL use and quantifies their downstream financial consequences.

To address this gap, the present study develops and tests a conceptual framework grounded in the Stimulus–Organism–Response (S–O–R) paradigm (Mehrabian & Russell, 1974). The study investigates how subjective norms, marketing campaigns, and perceived convenience shape students' FoMO, attitudes toward BNPL, and spending control, which in turn influence impulsive BNPL purchasing and debt risk. Additionally, the moderating effects of financial literacy are examined to determine whether knowledge can offset emotional or attitudinal drivers of risky BNPL behaviors.

This research contributes to theory by integrating psychological, behavioral, and financial constructs into a unified model that advances understanding of digital credit usage among youth. Practically, the findings offer insights for policymakers, educational institutions, and BNPL providers seeking to promote responsible consumer behavior and mitigate debt accumulation among young users.

2. Literature Review

BNPL's rapid adoption is strongly connected to its psychological architecture. Research shows that the "pain of paying"—the discomfort associated with spending money—is reduced when payment is delayed or partitioned (Zellermayer, 1996). Traditional payment methods like cash create a salient, immediate, and tangible loss, whereas credit mechanisms decouple the act of consumption from the act of payment (Prelec & Loewenstein, 1998), therefore weaken self-regulatory processes, enabling more spontaneous consumption. BNPL intensifies this effect: by breaking a purchase into small, delayed installments, it reframes expensive products as affordable and minimizes perceived financial loss (Kumar et al., 2024). Consumers focus disproportionately on the installment amount rather than the total cost, consistent with price partitioning and focalism effects (Ashby et al., 2025; Maesen & Ang, 2024). When the initial out-of-pocket payment is extremely small or close to zero, the zero-price effect further amplifies attraction beyond standard cost-benefit calculus (Shampanier et al., 2007). This cognitive reframing makes otherwise unaffordable items appear attainable, increasing conversion rates and basket sizes while obscuring the product's true price.

The psychological appeal of BNPL translates directly into tangible consequences for an individual's financial picture. Internationally, research highlights a significant duality in this impact. On one side, BNPL is positioned as a modern tool for financial management by aligning repayment schedules with income cycles and spreading large purchases into "manageable" payments (Alcazar & Bradford, 2021; Bian et al., 2023). However, this convenience can introduce fragmented liabilities that are hard to monitor. Consumers often keep mental accounts separately instead of aggregating obligations (Thaler, 1999), and they struggle to accurately track cumulative spending across multiple payment channels (Soman, 2001). This leads to "debt stacking":

many small BNPL installments accumulate in parallel, and total indebtedness grows faster than the consumer realizes.

These mechanisms align closely with existing theories of impulsive buying. Impulse purchases are typically sudden, emotionally charged, and weakly planned (Rook, 1987). By lowering upfront cost and temporal immediacy, BNPL provides an ideal mechanism for impulsive consumption. Students, in particular, are susceptible due to social pressures, identity formation, and limited income. Buying without initial planning, identified by Luo et al. (2021), also shows that factors such as social exclusion and low self-esteem can intensify their urge to buy in order to restore mood or social standing, thus highlighting the role of psychology and social pressures in consumption culture.

Digital environments amplify these pressures. Fear of missing out (FoMO) pushes a sense of urgency, thus encouraging one's attention on fulfilling one's demand (Przybylski et al., 2013). The pressure to keep up with peers' is the direct source of the fear of falling behind. Fear of missing out (FoMO) creates social pressure to own the same products that "everyone else already has," especially in peer groups where consumption is visible and tied to belonging. For many students, this pressure collides with limited financial resources: they feel the need to keep up, but they cannot afford to pay the full price immediately and do not have stable income or savings (Mappadang et al., 2025). BNPL then becomes the workaround. By letting them take the product now and delay most of the payment into small installments, BNPL lowers the immediate financial barrier and makes it possible to participate in that shared standard of consumption even when actual ability to pay is weak.

These dynamics help explain why BNPL users globally tend to be younger, more financially fragile, and more likely to experience late payments or delinquency (Cornelli et al., 2023). Students who rely on BNPL for discretionary consumption risk entering cycles of overextension when impulsive buying behaviors collide with limited financial resources. Reduced spending control at the point of purchase and impulsive acceptance of BNPL credit can later manifest as repayment difficulty, missed installments, late fees, and escalating financial strain.

The behavioral tendencies described above do not arise independently. BNPL ecosystems actively generate external stimuli—through social cues, marketing, and platform design—that shape consumers' internal psychological states. Subjective norms—social expectations from family, peers and influencers—play a decisive role in students' payment choices (Bearden & Etzel, 1982). When BNPL becomes popular among one's social group, its use is perceived as both appropriate and desirable, reinforcing conformity. Marketing campaigns play a central role in the rapid expansion of BNPL services. Providers in Vietnam employ multi-layered advertisements, merchant collaborations, and in-app promotions to capture attention and reduce deliberation time (Kotler & Armstrong, 2018). Offers such as "no interest" or "buy now, pay later" frame BNPL as a convenient tool for personal finance management rather than as a form of consumer credit. These campaigns align with theoretical constructs of payment deferral and transparency reduction (Raghubir & Srivastava, 2002; Shah et al., 2016), heightening spending tendencies. Convenience reduces both cognitive effort and transaction friction. Features such as instant approval, seamless integration with e-commerce platforms, and low administrative burden heighten satisfaction while diminishing natural spending restraints (Berry et al., 2002; Zellermayer, 1996). Though convenience enhances perceived usefulness, it can simultaneously weaken budgeting discipline.

Financial literacy can help by making people understand interest, fees, and how repayment actually works (Lusardi & Mitchell, 2014). But knowledge alone is often not enough, because present bias is strongest at the exact moment of action. Someone can know that debt is dangerous and still choose the easy option now. Because of that, many researchers argue for combining education with practical execution tools. Examples include: automatic payment scheduling, dashboards that show all outstanding installments in one place, and default repayment calendars. These supports reduce procrastination, help people keep track of what they owe, and lower the chance of late fees — while still letting them use BNPL for short-term liquidity when needed. This may matter especially for students, who often have unstable cash flow.

In emerging digital economies like Vietnam, where BNPL adoption is expanding rapidly among a young, tech-savvy demographic, this normalization effect poses a distinct challenge (Cornelli et al., 2023; Bian et al., 2023; Nguyen & Pham, 2024). The ease with which young consumers can adopt these credit forms, often without fully comprehending the associated risks, underscores the critical need to investigate the role of financial literacy as a moderating factor (Lusardi & Mitchell, 2014; Nguyen & Pham, 2024).

In sum, although market evidence points to rapid BNPL uptake in Vietnam, rigorous academic work quantifying its consequences for student indebtedness is limited. The literature rarely isolates the incremental

effect of BNPL — as a distinct, low-friction credit mechanism — on students' spending trajectories, debt stacking, and delinquency in emerging digital economies. Crucially, existing studies seldom examine how common psychological antecedents (e.g., FoMO) interact with financial literacy to shape BNPL's impacts. This study addresses these gaps by delivering context-specific, student-level evidence from Vietnam, employing a design that clarifies when BNPL functions as liquidity smoothing versus a pathway to over-indebtedness. By disentangling these mechanisms and testing the moderating roles of financial literacy, the study provides actionable implications for product design, financial education, and consumer protection.

2.1. Variable and Hypotheses

2.1.1. Effects of Subjective Norms on FoMO and Attitudes

Subjective Norms (SN), defined as “the perceived social pressure to perform or not perform a behavior” (Ajzen, 1991), are strongly expressed through reference groups (friends, influencers) concerning the possession of trendy products (Bearden & Etzel, 1982). When individuals observe their social network frequently using BNPL services as a means to keep up with new trends, an implicit standard of consumer behavior is formed. This standard motivates the individual to conform in order to gain recognition and maintain social connection. FoMO (Fear of Missing Out) is the “pervasive apprehension of missing out on rewarding experiences others are having” (Przybylski et al., 2013). This fear is often triggered by social factors. When students see peers posting about BNPL-purchased items, they may feel excluded or fear missing out on shared social conversations, as exposure to idealized lives on social media is a strong predictor of FoMO. Thus:

H1: Subjective norms positively affect students' FoMO.

Furthermore, subjective norms also influence Attitude, an individual's evaluation of performing a behavior (Ajzen, 1991). When trusted people use and speak well of BNPL, students tend to form a positive attitude toward the service, viewing it as a modern and socially acceptable payment method. Therefore:

H2: Subjective norms positively affect students' attitudes toward BNPL services.

2.1.2. The Effects of Marketing Campaign on Students' FoMO and Attitudes toward BNPL Services

Marketing campaigns are a powerful stimulus, designed to drive consumer action through highly persuasive messages (Kotler & Armstrong, 2018). In Vietnam's explosively growing BNPL market, with transactions projected to reach \$2.61 billion by 2025 (Research and Markets, 2025), providers use multi-layered strategies and deep ecosystem integration to capture market share. These campaigns, employing urgency tactics like “flash sales,” exploit users' Fear of Missing Out (FoMO), making students worry about missing out on consumer trends if they don't act immediately. This leads to the hypothesis:

H3: Marketing campaigns positively affect FoMO regarding BNPL services.

On the other hand, marketing campaigns also help build a favorable image for BNPL, thereby shaping user attitudes. The fact that these services are endorsed by large, reputable brands creates a spillover effect of trustworthiness. Advertising messages often emphasize intelligence, flexibility, and convenience, helping users perceive BNPL as a modern personal finance solution rather than a simple debt, leading to:

H4: Marketing campaigns positively affect students' attitudes toward BNPL services.

2.1.3. The Effects BNPL's Convenience on Students' Attitudes toward BNPL Services and Spending Control

Convenience, defined as saving time and effort during the payment process (Berry et al., 2002), is demonstrated in BNPL in two aspects: utility (helping to own products immediately, managing cash flow) and ease of use (quick registration, ready integration on platforms). This efficiency enhances user satisfaction, which

positively impacts the formation of a favorable attitude toward the service (Susanto et al., 2016). As a result, the following hypothesis is suggested:

H5: Convenience of BNPL has a positive impact on students' attitudes toward BNPL services.

However, the attributes that create convenience can also lead to adverse consequences for the user's ability to self-regulate their finances. Psychologically, convenience significantly reduces "transaction friction" and the "pain of payment"—"a psychological discomfort associated with spending money", which plays a role in helping people regulate their consumption behavior (Zellermayer, 1996). When this psychological barrier is weakened by an overly easy payment process, the cognitive effort dedicated to self-control and budget consideration also tends to decrease. Hence the hypothesis:

H6: Convenience of BNPL has a negative impact on students' spending control.

2.1.4. The Effects of Students' FoMO and Attitudes toward BNPL Services on their Impulsive Buying Behavior

Impulsive buying behavior is defined as an immediate, highly emotional consumer response with little consideration for long-term consequences (Rook, 1987). In this study's context, it is operationalized as unplanned, emotionally driven purchasing actions utilizing BNPL as the payment method, measured by action frequency and total expenditure. The Fear of Missing Out (FoMO) generates heightened emotional arousal and urgency, narrowing focus to immediate gratification. This state overrides rational reasoning, leading to a compulsion to act to restore social alignment. BNPL serves as the ideal instrument for instantaneously materializing this impulse. Therefore, we hypothesize the following:

H7: The FoMO mentality has a positive impact on students' impulsive buying behavior via BNPL.

Meanwhile, attitude toward BNPL functions as a cognitive enabling factor. A positive attitude, which views BNPL as a useful and legitimate tool, reduces the internal conflict that arises when a sudden purchasing desire emerges. Consequently, a favorable attitude facilitates a smoother path from a spontaneous impulse to the purchasing action, encountering less cognitive resistance. Thus, the following hypothesis is proposed:

H8: Attitudes toward BNPL have a positive impact on students' impulsive buying behavior via BNPL.

2.1.5. The Effects of Impulsive Buying Behavior and Spending Control on students' Debt Risk

In this study, debt risk is defined as the possibility of students encountering financial difficulties due to an inability to meet BNPL installment obligations on time, potentially leading to late fees, a negative credit history, and psychological stress. Impulsive buying behavior is a direct predictor of this risk. Impulsive transactions are unplanned expenditures financed by BNPL, creating unforeseen debt. Although individual debts may be small, their accumulation can quickly exceed the limited and unstable incomes of students (Gathergood, 2012), leading to financial pressure and the risk of default. Hence the hypothesis:

H9: Impulsive buying behavior has a positive impact on students' debt risk.

Conversely, Spending Control is a crucial protective factor, representing financial self-regulation that helps individuals resist temptations and adhere to long-term goals. Higher self-control is strongly linked to positive financial behaviors and fewer financial difficulties (Strömbäck et al., 2017). This capacity prevents the accumulation of unnecessary debts and mitigates financial risk. Consequently:

H10: Spending control negatively impacts on students' debt risk.

2.1.6. The Moderating Role of Financial Literacy

Psychological states like FoMO (emotional) and a positive attitude toward BNPL (cognitive) drive impulsive buying. However, an individual's financial literacy can modify this impact. Sound financial knowledge allows for rational evaluation of long-term consequences, supporting more calculated and deliberate financial behaviors (Fernandes et al., 2014). Thus, financial literacy helps students resist FoMO and attitude-driven urges, reducing impulsive buying. This leads to the hypotheses:

H11: Financial literacy plays a moderating role, reducing the impact of FoMO on students' impulsive buying behavior through BNPL.

H12: Financial literacy plays a moderating role, reducing the impact of attitudes toward BNPL on students' impulsive buying behavior through BNPL.

Financial literacy is also posited to moderate the link between impulsive buying and debt risk. Even after an impulsive transaction, better financial knowledge equips students to manage resulting debt effectively, by understanding repayment schedules and avoiding default (Disney & Gathergood, 2013). Consequently, the link between impulsive buying and debt risk will be weaker for individuals with higher financial literacy.

H13: Financial literacy plays a moderating role, reducing the impact of impulsive buying behavior through BNPL on students' debt risk.

2.2. Conceptual Framework

This study develops a conceptual framework based on the Stimulus–Organism–Response (S–O–R) paradigm to explain how BNPL usage can lead to debt risk among university students, and under what conditions this risk can be mitigated (Figure 1). The model links external pressures in the BNPL environment (Stimuli), internal psychological states and self-regulation (Organism), and observable financial behaviors and outcomes (Responses).

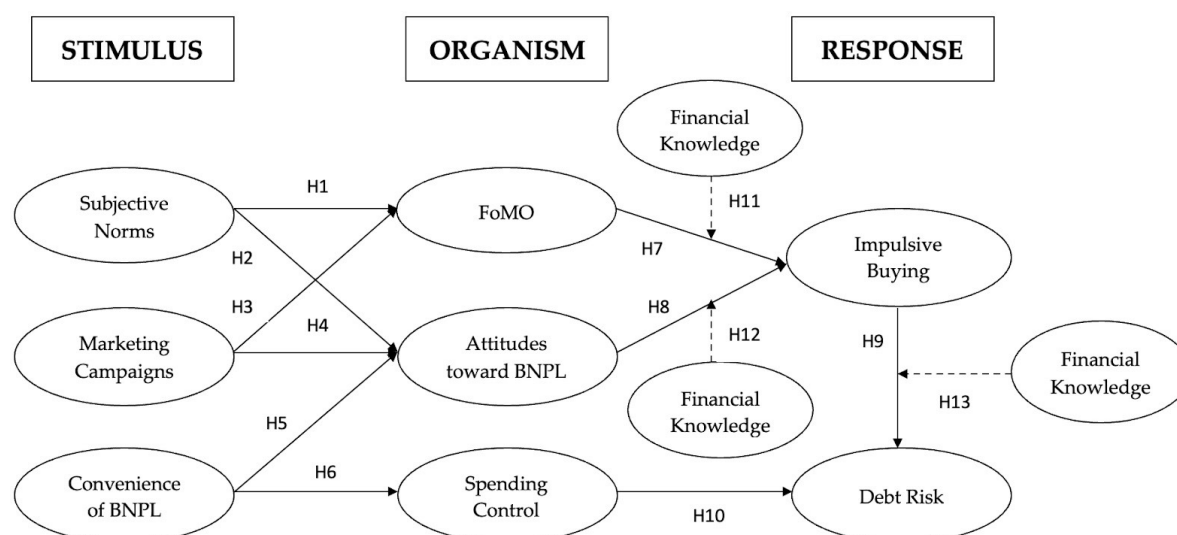


Figure 1. Review of conceptual framework.

In this study's S–O–R model, the forces that push students toward BNPL — Subjective Norms, Marketing Campaigns, and the Perceived Convenience of BNPL — are treated as the Stimulus (S). These are external pressures created or amplified by BNPL providers and by the social environment. These stimuli shape the Organism (O), which in our model includes students' internal psychological states: Fear of Missing Out (FoMO), positive Attitudes toward BNPL, and perceived Spending Control. These internal psychological states, in turn, drive the Response (R). Specifically, FoMO and a positive Attitude toward BNPL act as the primary antecedents to Impulsive Buying Behavior via BNPL. Consequently, Impulsive Buying Behavior, along with

the protective factor of Spending Control, determines the level of Debt Risk (financial strain, missed payments, fees) experienced by the student. Financial literacy is introduced as a moderating factor that can weaken several risky pathways.

3. Methodology

3.1. Sampling and Data Collection

This study focused on undergraduate students enrolled at universities in Vietnam, a population that has experienced rapid growth in the adoption of BNPL services in recent years. University students were considered an appropriate target group due to their high level of digital engagement and increasing exposure to consumer credit products. A non-probability convenience sampling approach was employed, which is commonly applied in behavioral and consumer finance research involving online users. Data were collected through an online questionnaire distributed via social media platforms and university networks. Participation was voluntary and anonymous, and respondents were required to confirm that they had used BNPL at least once. Data were collected in November 2025.

In total, 350 questionnaires were returned. After screening for incomplete responses and low-quality answers, 327 valid observations were retained for further analysis. The sample size met the minimum requirement for Partial Least Squares Structural Equation Modeling (PLS-SEM), exceeding the recommended 10-times rule and ensuring adequate statistical power for detecting complex relationships.

3.2. Measurement Instruments

All constructs were measured using multi-item scales adapted from prior validated studies and modified to fit the BNPL context. Subjective norms, marketing campaigns, convenience, FoMO, attitudes, impulsive buying, spending control, financial literacy, and debt risk were assessed on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Scale items were adapted from Ajzen (1991), Berry et al. (2002), Colwell et al. (2008), Przybylski et al. (2013), and other established sources. Before full deployment, the questionnaire underwent expert review and pilot testing with 76 students to ensure clarity, content validity, and reliability. Minor wording adjustments were made based on feedback.

3.3. Data Analysis

The collected data were analyzed using SmartPLS version 4.0. PLS-SEM was selected due to its suitability for predictive analysis and for models involving latent constructs with complex mediation and moderation structures. The analysis followed a two-step approach: (1) assessment of the measurement model, examining reliability, convergent validity, and discriminant validity; and (2) evaluation of the structural model, testing path coefficients, effect sizes, and significance levels through bootstrapping. Ethical standards were upheld throughout the research process, and no personally identifiable information was collected.

4. Results

This study presents the empirical findings derived from the descriptive analysis, measurement model evaluation, and structural model assessment using PLS-SEM. The findings draw upon the demographic statistics, reliability analyses, factor loadings, validity checks, and path coefficients generated from the SmartPLS procedures.

Table 1 presents all the demographic information from the respondents. A total of 327 valid responses were collected from university students, with females accounting for 55.4% and males 44.6% of the sample. Regarding the academic year, students were distributed across all levels: 17.7% were first-year, 26.9% second-year, 28.7% third-year, and 20.5% fourth-year, while 6.1% belonged to other categories. Students also represented a range of academic disciplines, with the largest proportions from Economics–Management (27.2%), Natural Sciences–Engineering (25.4%), and Social Sciences–Humanities (20.5%). In terms of income, 28.1% reported a monthly allowance below 3 million VND, 37.3% between 3 and 5 million, 20.8% between 5 and 7 million, and 13.8% above 7 million. Monthly online spending was also heterogeneous, with 22.9%

spending below 500,000 VND, 28.1% between 500,000 and 1 million, 38.8% between 1 and 3 million, and 10.1% exceeding 3 million. Regarding BNPL usage frequency in the past six months, the majority of respondents reported occasional (31.5%) or rare (29.1%) usage, with a combined 28.4% using the services frequently or very frequently.

Results for the frequency of BNPL platforms indicate that SPayLater (Shopee) was the most widely used service, accounting for 35.7% of all BNPL usage mentions, followed by Momo's pay-later feature (22.7%), ZaloPay (11.9%), LazPayLater (10.9%), and Home PayLater (10.7%). Among respondents who had discontinued BNPL usage, the primary reasons included no longer needing installment payments (35.9%), concerns related to repayment pressure (31.3%), and advice from family or friends (10.9%). These findings clarify the general context of BNPL adoption among students and provide a foundation for the psychological and behavioral analyses that follow.

Table 1. Demographic profiles of the respondents (n=327).

Variables		Frequency (n)	Percentage (%)
Gender	Male	146	44.6
	Female	181	55.4
Academic Year	First-year	58	17.7
	Second-year	88	26.9
	Third-year	94	28.7
	Fourth-year	67	20.5
	Others	20	6.1
Academic Disciplines	Economics–Management	89	27.2
	Natural Sciences–Technology	83	25.4
	Social Sciences–Humanities	67	20.5
	Medicine–Pharmacy	19	5.8
	Law	14	4.3
	Art–Design	18	5.5
	Pedagogy (Education)	20	6.1
	Others	17	5.2
Monthly Income (VND)	Below 3 million	92	28.1
	3 to under 5 million	122	37.3
	5 to under 7 million	68	20.8
	7 million and above	45	13.8
	Monthly Online Spending (VND)	75	22.9
BNPL Usage Frequency (Past 6 Months)	Below 500,000	92	28.1
	500,000 to under 1 million	127	38.8
	1 million to under 3 million	33	10.1
	Above 3 million	36	11.0
	Never used in the past 6 months	95	29.1
Most Used BNPL Platform	Rarely (Approx. 1-2 times in 6 months)	103	31.5
	Occasionally (Approx. 1-2 times per month)	68	20.8
	Frequently (Approx. 3-4 times per month)	25	7.6
	Very frequently (5+ times per month)	174	35.7% of responses
	SPayLater (Shopee)	111	22.7% of responses
Primary Reasons for Discontinuing BNPL Use (n=64)	Momo Pay-later	58	11.9% of responses
	ZaloPay Pay-later	53	10.9% of responses
	LazPayLater (Lazada)	52	10.7% of responses
	Home PayLater (Home Credit)	27	5.5% of responses
	PayNow (Viettel Money)	13	2.7% of responses
Primary Reasons for Discontinuing BNPL Use (n=64)	Others	35.9%	63.9% of cases
	No longer needed installment payments	31.3%	55.6% of cases
	Felt repayment pressure / fear of late fees	10.9%	19.4% of cases
	Advice from family/friends not to use it		

The evaluation of descriptive statistics for the latent variable indicators shows that all constructs demonstrated mean values ranging mostly between 3.8 and 4.1 on a five-point Likert scale. This suggests moderate to high agreement levels across all psychological and behavioral measures. Standard deviations ranged from approximately 0.80 to 1.14, suggesting acceptable variability. No extreme skewness was visually evident from the distribution patterns, supporting the suitability of the data for PLS-SEM analysis.

The measurement model assessment was conducted in two stages. In the first stage, indicators with outer loadings below the recommended threshold of 0.70 were removed (Hair, 2014). Two items—IB4 from Impulsive Buying and MC2 from Spending Control—did not meet this requirement and were therefore excluded from subsequent analyses. After removal, the second estimation run showed that all retained indicators exhibited

loadings above 0.70, ranging mainly from 0.80 to 0.95, confirming strong item reliability and ensuring each observed variable appropriately contributed to its latent construct.

Construct reliability was confirmed using Cronbach's Alpha and Composite Reliability (Hair, 2014). All constructs exceeded the threshold of 0.70 for both metrics, with Cronbach's Alpha values ranging from 0.840 to above 0.900 and Composite Reliability values between 0.900 and 0.931 for most constructs. These results are depicted in Table 2, demonstrating robust internal consistency for all measurement scales in the model.

The Average Variance Extracted (AVE) values, which evaluate convergent validity, also exceeded the 0.50 threshold for all constructs, confirming that the latent variables explained more than half of the variance in their respective indicators (Hair et al., 2019). In addition to AVE, the factor loading of each item reflects the statistical significance of each item to a certain construct by calculating the correlation between items and constructs in SmartPLS4.0.

Table 2. Reliability and validity.

Construct	Item	Outer Loading	Cronbach's alpha (CA)	Composite reliability (CR)	Average variance extracted (AVE)
SN (Subjective Norms)	SN1	0.896	0.871	0.921	0.795
	SN2	0.904			
	SN3	0.874			
MC (Marketing Campaigns)	MC1	0.845	0.840	0.904	0.758
	MC3	0.878			
	MC4	0.889			
CB (Convenience of BNPL)	CB1	0.868	0.907	0.931	0.729
	CB2	0.852			
	CB3	0.840			
	CB4	0.833			
	CB5	0.876			
ATT (Attitudes toward BNPL)	ATT1	0.908	0.877	0.924	0.802
	ATT2	0.888			
	ATT3	0.891			
FOMO (Fear of Missing Out)	FOMO1	0.827	0.854	0.901	0.695
	FOMO2	0.807			
	FOMO3	0.854			
	FOMO4	0.846			
SC (Spending Control)	SC1	0.804	0.857	0.901	0.694
	SC2	0.763			
	SC3	0.878			
	SC4	0.882			
IB (Impulsive Buying Behavior)	IB1	0.895	0.858	0.913	0.778
	IB2	0.892			
	IB3	0.859			
DR (Debt Risk)	DR1	0.898	0.901	0.931	0.771
	DR2	0.878			
	DR3	0.862			
	DR4	0.876			
FK (Financial Literacy)	FK1	0.799	0.854	0.900	0.752
	FK2	0.843			
	FK3	0.952			

Discriminant validity was evaluated using the Fornell–Larcker Criterion (Fornell & Larcker, 1981) and the Heterotrait–Monotrait Ratio (HTMT) (Henseler et al., 2015). According to the Fornell–Larcker results, the square root of the AVE for each construct was greater than its correlations with other constructs, confirming adequate discriminant validity. Likewise, all HTMT ratios were below the conservative threshold of 0.85, further supporting the distinctiveness of each latent variable. The combination of these two validity checks provides strong evidence that the constructs in the model measured unique underlying dimensions without substantial conceptual overlap.

Finally, the assessment of multicollinearity was performed using both indicator-level and inner VIF values. Since all VIF values remained below the threshold of 3, the model demonstrated no problematic collinearity among observed indicators or predictor constructs. This satisfies a critical assumption for the interpretation of path coefficients, ensuring that estimated effects were not inflated due to redundancy among independent variables.

Table 3. Hypothesis testing result.

Hypothesis	Paths	Beta	p values	Decision
H1	Subjective Norms → FoMO	0.358	0.000	Supported
H2	Subjective Norms → Attitudes toward BNPL	0.303	0.000	Supported
H3	Marketing Campaigns → FoMO	0.373	0.000	Supported
H4	Marketing Campaigns → Attitudes toward BNPL	0.319	0.000	Supported
H5	Convenience of BNPL → Attitudes toward BNPL	0.224	0.000	Supported
H6	Convenience of BNPL → Spending Control	-0.235	0.001	Supported
H7	FoMO → Impulsive Buying Behavior (BNPL)	0.370	0.000	Supported
H8	Attitudes toward BNPL → Impulsive Buying Behavior (BNPL)	0.187	0.002	Supported
H9	Impulsive Buying Behavior → Debt Risk	0.597	0.000	Supported
H10	Spending Control → Debt Risk	-0.224	0.000	Supported
H11	Financial Knowledge → FoMO → Impulsive Buying (Moderation)	-0.164	0.006	Supported
H12	Financial Knowledge → Attitudes → Impulsive Buying (Moderation)	0.054	0.335	Not Supported
H13	Financial Knowledge → Impulsive Buying → Debt Risk (Moderation)	-0.030	0.620	Not Supported

The structural model results were derived from the Bootstrap procedure, which provided estimates of path coefficients, standard errors, t-statistics, and p-values. These results reveal which hypothesized relationships in the model were statistically supported (Table 3).

The first set of findings directly examines the Stimulus to Organism linkages, revealing how external BNPL ecosystem factors shape students' internal psychological states. Subjective Norms exhibited positive and significant impacts on both FoMO ($\beta = 0.358$, $p < 0.001$) and Attitude ($\beta = 0.303$, $p < 0.001$), suggesting that peer use and social expectations influenced students' psychological responses.

Marketing Campaigns similarly had a substantial positive effect on FoMO ($\beta = 0.373$, $p < 0.001$) and a meaningful positive effect on Attitude toward BNPL ($\beta = 0.224$, $p < 0.001$), indicating that exposure to BNPL promotional activities heightened emotional and attitudinal receptiveness toward the service. Convenience of BNPL showed a positive effect on Attitude ($\beta = 0.319$, $p < 0.001$) and a negative effect on Spending Control ($\beta = -0.233$, $p = 0.001$), confirming that ease of access encouraged favorable perception but weakened budgetary discipline. These combined findings provide a clear statistical basis for the stimulus–organism linkages in the S–O–R structure.

With the internal states confirmed as outputs of the external stimuli, the subsequent analysis focused on their role as primary drivers of the behavioral response, Impulsive Buying. The model shows that Fear of Missing Out (FoMO) had a significant positive effect on Impulsive Buying ($\beta = 0.370$, $p < 0.001$), indicating that higher levels of FoMO corresponded with more frequent BNPL-driven impulsive purchases. Attitude toward BNPL also had a positive effect on Impulsive Buying ($\beta = 0.187$, $p = 0.002$), suggesting that more favorable attitudes were associated with a greater likelihood of making unplanned purchases using BNPL services. These findings support the model's assumptions regarding the roles of emotional and attitudinal antecedents.

The results also indicate that Impulsive Buying had a strong and significant positive effect on Debt Risk ($\beta = 0.597$, $p < 0.001$), identifying impulsive BNPL usage as a key behavioral driver of financial distress among students. Spending Control exhibited a significant negative effect on Debt Risk ($\beta = -0.224$, $p < 0.001$), confirming that higher self-regulation in spending behavior corresponded to lower debt vulnerability. These results validate the model's assumption that both financial impulsiveness and self-discipline are central determinants of student debt outcomes in BNPL contexts.

Moderation effects were also assessed through interaction terms. The interaction between Financial Literacy and FoMO on Impulsive Buying (FK*FoMO → IB) produced a significant negative effect ($\beta = -0.164$, $p = 0.006$), indicating that financial literacy weakened the influence of FoMO on impulsive purchasing. Other moderation paths involving Financial Literacy, including those between Attitude and Impulsive Buying (FK*ATT → IB) and between Impulsive Buying and Debt Risk (FK*IB → DR), did not reach statistical significance ($p > 0.05$). These results show partial support for Financial Literacy as a moderating variable in the model.

Finally, the model's explanatory power was assessed using R-squared values. The model demonstrated moderately strong explanatory power for the core psychological and behavioral constructs, explaining between 32.4% and 39.4% of the variance in Attitude, Debt Risk, FoMO, and Impulsive Buying, while accounting for 5.5% of the variance in Spending Control. Together, these results demonstrate that the structural model accounts for meaningful variance in the key outcomes of interest and effectively estimates the predictive relationships central to the research objectives.

5. Discussion

The results strongly support the proposed S-O-R model, providing important insights into how BNPL stimuli, psychological mechanisms, and individual competencies jointly shape student financial behaviors in Vietnam.

First, the study demonstrates that subjective norms and marketing campaigns significantly elevate both FoMO and positive attitudes toward BNPL. These findings confirm H1–H4 and align with previous research emphasizing the social and promotional amplification of youth consumption behavior (Bearden & Etzel, 1982; Coffey et al., 2024). The strong role of subjective norms in influencing FoMO and attitude suggests that BNPL adoption among students spreads through social diffusion mechanisms rather than isolated decision-making, emphasizing the influence of social circles. Marketing campaigns, likewise, were found to meaningfully shape psychological states. This supports earlier work suggesting that BNPL platforms strategically lower the cognitive resistance associated with credit-based decisions (Kumar et al., 2024). The significant positive pathways show that promotional stimuli successfully induce urgency, desirability, and trust, thereby embedding BNPL as a normalized consumption tool. These findings extend theoretical understanding by demonstrating that such marketing does not only influence rational evaluation but also triggers affective elements such as missing-out anxiety.

Second, the observed effects of BNPL convenience highlight a duality consistent with prior behavioral economics literature. Convenience increased favorable attitudes while simultaneously undermining spending control (H5–H6). These echoes established theories that lower transaction friction reduces the psychological "pain of paying" (Prelec & Loewenstein, 1998; Zellermayer, 1996). The negative impact on spending control suggests that divided, delayed, and low-effort payments weaken students' internal budgeting mechanisms. This finding is especially important in emerging markets such as Vietnam, where financial management habits among young consumers are still developing, making them more vulnerable to convenience-driven overspending. For students with limited and irregular income, this erosion of self-control can easily lead to excessive or poorly monitored installment obligations.

Third, the results highlight FoMO and attitude as strong psychological drivers of impulsive BNPL usage (H7–H8). The significant path from FoMO to impulsive buying reinforces FoMO as a prominent emotional state associated with impulsive consumption online. When combined with positive attitudes toward BNPL, which further lower cognitive hesitation, the findings indicate that impulsive BNPL-driven purchases arise from an interplay between emotional urgency and favorable evaluation. This supports and extends previous studies linking digital peer contexts, low-friction payment systems, and impulsive consumer tendencies.

Fourth, the findings confirm the critical role of impulsive buying and spending control in predicting debt risk (H9–H10). The strong effect of impulsive buying on debt risk aligns with global evidence showing BNPL users are more likely to experience missed payments and accumulating micro-debt (C+R Research, 2021; Cornelli et al., 2023). Meanwhile, the protective role of spending control echoes research on self-regulation and financial well-being (Strömbäck et al., 2017). Together, these findings illustrate that BNPL-related debt risks do not emerge solely from the credit product itself but from psychological predispositions and behavioral patterns that BNPL can exacerbate.

Finally, the moderating results highlight an important boundary condition. Financial knowledge significantly weakened the link between FoMO and impulsive buying (H11), suggesting that knowledge acts as a cognitive buffer against emotionally driven impulses. However, financial knowledge did not moderate the effects of attitude on impulsive buying nor the effect of impulsive buying on debt risk (H12–H13). This partial moderation implies that while literacy can help students recognize and resist emotional triggers, it may not override convenience-induced habits or impulsive tendencies once purchases have occurred. This aligns with studies noting that knowledge alone does not always translate into behavioral change when strong situational cues are present (Fernandes et al., 2014).

Beyond theoretical contributions, the study's strengths include its integration of psychological and financial constructs into a unified model, adequate sample size, and the confirmed robustness of reliability and validity metrics. Furthermore, focusing on Vietnam's rapidly growing BNPL market provides timely insights.

Nevertheless, limitations must be acknowledged. The non-probability sample reduces the generalizability of results beyond student populations. The cross-sectional design restricts causal inference, as psychological states and behaviors may evolve over time. Self-reported data may introduce bias, particularly regarding

sensitive topics such as late payments. Furthermore, the study measured perceived rather than objective financial literacy, which may partly explain the limited moderating effects observed.

Overall, the findings underscore that BNPL's risks among students stem from an interplay of external stimuli, internal psychological shifts, and behavioral vulnerabilities. While financial literacy offers some protection, more holistic interventions are needed to meaningfully mitigate debt risk in high-growth BNPL environments.

6. Conclusion

This study examined the role of psychological and behavioral factors in shaping university students' adoption of BNPL services, with particular attention to their effects on impulsive buying and debt risk. The results support the conceptual model and help clarify the behavioral mechanisms driving BNPL use among young consumers. The findings indicate that social influence, marketing stimuli, and convenience play a significant role in shaping students' FoMO and attitudes, demonstrating the powerful effect of digital environments and peer norms on financial decision-making. Convenience was also shown to weaken spending control, highlighting how frictionless payment systems can undermine students' budgeting discipline. FoMO and positive attitudes emerged as strong predictors of impulsive BNPL purchases, and impulsive buying, in turn, was identified as a key driver of debt risk. Spending control acted as a protective factor, while financial literacy moderated several relationships, illustrating its important role in reducing vulnerability to poor financial outcomes. Collectively, these findings contribute to a deeper understanding of BNPL-induced financial risks and extend existing literature on digital credit behavior by integrating emotional, cognitive, and social determinants within a unified model. Practically, the study underscores the need for targeted financial education initiatives, responsible marketing practices, and clearer BNPL disclosures to help students make informed choices. Future research could explore longitudinal changes in BNPL behavior, examine cross-cultural differences, or incorporate qualitative methods to capture deeper psychological nuances. Overall, this study provides valuable evidence on the growing impact of BNPL services and highlights the importance of safeguarding young consumers in rapidly evolving digital financial ecosystems.

Author Contributions:

Conceptualization: Ninh Ngoc Anh, Nguyen Ha My.

Data curation: Giang Thi Huyen Trang, To Quynh Trang.

Formal analysis: Ninh Ngoc Anh, To Quynh Trang.

Funding acquisition: Ninh Ngoc Anh, Nguyen Ha My.

Investigation: Nguyen Ha My, Giang Thi Huyen Trang.

Methodology: Giang Thi Huyen Trang.

Project administration: Nguyen Ha My, Giang Thi Huyen Trang.

Resources: Giang Thi Huyen Trang, To Quynh Trang.

Software: Ninh Ngoc Anh, Nguyen Ha My.

Validation: Giang Thi Huyen Trang, To Quynh Trang.

Visualization: Ninh Ngoc Anh, Giang Thi Huyen Trang.

Writing –original draft: Nguyen Ha My, To Quynh Trang.

Writing –review & editing: Ninh Ngoc Anh, Giang Thi Huyen Trang.

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