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Buy Now, Pay Later (BNPL) and the Trap of Over-Indebtedness: Behavioral Insights from Malaysia

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Abstract

Over-indebtedness among Buy Now, Pay Later (BNPL) users poses significant risks to financial well-being, yet the influence of behavioral biases in aggravating this problem remains underexplored. This study examines how self-control bias, overconfidence, mental accounting, and availability bias shape over-indebtedness among Malaysian BNPL consumers. Using survey data from 200 BNPL borrowers, the findings reveal that self-control bias significantly increases the likelihood of over-indebtedness, whereas overconfidence and mental accounting are associated with lower debt levels. In contrast, availability bias undermines repayment decisions, intensifying financial strain. These results underscore the importance of behaviorally informed financial education programs that directly address cognitive biases, particularly self-control deficiencies, to promote responsible borrowing. Policy recommendations for Malaysian regulators are also provided, highlighting the need to integrate behavioral insights into consumer protection frameworks to improve decision-making and safeguard long-term financial health.

Keywords: Buy Now Pay Later, Over-indebtedness, Behavioral Biases, Self-control, Financial Well-being, Consumer Protection

Introduction

The rapid growth of Buy Now, Pay Later (BNPL) services has transformed consumer credit markets worldwide, offering frictionless, short-term financing that appeals especially to younger and digitally native consumers (Coffey et al., 2024; World Bank, 2023). Positioned as a convenient alternative to credit cards, BNPL allows users to defer payments into interest-free installments, ostensibly supporting consumption smoothing in line with the Life-Cycle–Permanent Income Hypothesis (Ando & Modigliani, 1963). However, mounting evidence suggests that BNPL's ease of access—often requiring minimal credit checks—encourages impulsive borrowing and contributes to unsustainable debt accumulation (Mansour et al., 2024; ASIC, 2022). While traditional models of household debt assume rational financial decision-making, behavioral finance highlights how cognitive and psychological biases shape consumer borrowing behavior (Livingstone & Lunt, 2022; Bartholomae & Fox, 2023).

In Malaysia, BNPL adoption has surged against a backdrop of persistently high household debt, which reached 93.2% of GDP in 2023 (Bank Negara Malaysia, 2023). Millennials (aged 25–44) accounted for 52.6% of personal insolvencies, with BNPL and unsecured loans contributing significantly to this trend (Malaysian Department of Insolvency, 2023; Malay Mail, 2023). Similar global evidence shows high repayment difficulties: 21% of Australian BNPL users miss installments (ASIC, 2022), while U.S. data link BNPL adoption to higher credit card delinquency rates (Federal Reserve, 2023). These findings challenge the perception of BNPL as a neutral

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consumption tool, instead suggesting it amplifies debt distress among financially constrained populations (Coffey et al., 2024).

BNPL's growing popularity in Malaysia reflects broader fintech developments, e-commerce expansion, and consumer demand for flexible credit (Zainudin & Othman, 2024). Yet its accessibility also obscures risks of excessive debt and unsustainable financial habits (Sabri et al., 2023). This study explores the behavioral dimensions of BNPL usage in Malaysia, focusing on psychological biases that drive adoption, fuel impulsive consumption, and increase the likelihood of over-indebtedness.

BNPL and Over-Indebtedness

Emerging research emphasizes that behavioral biases—systematic deviations from rational decision-making—play a central role in BNPL-related over-indebtedness (Thaler, 2018; Beshears et al., 2023). Four biases are particularly relevant. First, self-control bias, rooted in present-focused decision-making, leads consumers to prioritize immediate gratification over long-term repayment obligations (Laibson, 1997). Data from Malaysia show that 35% of BNPL users hold multiple concurrent loans, often underestimating future repayment burdens (AKPK, 2023). Second, overconfidence bias causes users to overestimate repayment capacity, perceiving BNPL as "risk-free" due to zero-interest promotions (Mansour et al., 2024). Experimental studies find that 40% of borrowers misjudge their ability to meet installment deadlines (Coffey et al., 2024). Third, mental accounting bias encourages consumers to compartmentalize payments into small installments, fostering an illusion of affordability and masking cumulative debt (Thaler, 1985; Shah et al., 2023). Finally, availability bias, reinforced by aggressive marketing such as "No Interest!" campaigns, distorts perceptions of credit risk through recency effects (ASIC, 2022). Together, these biases contribute to overextension and repayment distress.

While such dynamics are increasingly acknowledged in developed markets (e.g., Australia's BNPL credit checks), limited evidence exists for developing economies where financial literacy is lower and regulatory protections weaker (World Bank, 2023). In Malaysia, most studies focus on macroeconomic or demographic aspects (Azmin et al., 2023; Hussin et al., 2023), overlooking the psychological mechanisms that underlie BNPL misuse. Addressing this gap is vital to inform more effective policies.

Research Objectives

This study investigates how self-control bias, overconfidence, mental accounting, and availability bias contribute to BNPL-related over-indebtedness in Malaysia, particularly among young (21–40 years), low-income (RM2,000–5,000/month) consumers. Specifically, it seeks to:

1. Assess the extent to which behavioral biases predict BNPL-driven over-indebtedness.
2. Identify which biases exert the strongest influence on repayment behavior.
3. Recommend strategies for policymakers and financial educators to mitigate these risks.

By applying logistic regression to survey data from 200 BNPL borrowers, this study offers empirical evidence on psychological drivers of debt accumulation and proposes regulatory and educational reforms—such as mandatory affordability assessments and behaviorally informed financial literacy programs—to promote responsible usage.

Literature Review

The rapid rise of Buy Now, Pay Later (BNPL) services has reshaped consumer purchasing behavior, offering a flexible alternative to traditional credit. Yet, this convenience is not without costs: deferred payments create a perception of affordability that can

encourage overspending and, ultimately, financial distress. This issue is particularly pressing in Malaysia, where BNPL has gained significant traction among younger consumers. Drawing on behavioral insights, this section examines how cognitive biases and psychological traits contribute to over-indebtedness in BNPL usage, with evidence from recent empirical studies. Existing literature consistently links over-indebtedness to self-control bias, overconfidence, mental accounting, and availability bias.

The Rise of BNPL in Malaysia

BNPL services have grown rapidly in Malaysia, particularly among younger consumers who are drawn to their ease of use, zero-interest promotions, and the option to split purchases into manageable installments. However, this very accessibility often fuels impulsive spending, as BNPL is perceived as a "risk-free" method of financing consumption.

Several factors explain BNPL's popularity: the expansion of e-commerce, the integration of digital payment platforms, and the increasing financial independence of younger cohorts. Yet, these same factors raise concerns about consumers' long-term financial stability, especially for those who may not fully comprehend the implications of deferred repayment.

Behavioral Factors Driving BNPL Usage

Behavioral dynamics play a decisive role in BNPL adoption and the associated risks of indebtedness. Four key factors stand out:

1) **Impulsivity and Immediate Gratification.** BNPL caters to consumers' desire for instant satisfaction, encouraging spending without careful consideration of future obligations. This is especially prevalent among younger users, who tend to prioritize short-term benefits over long-term financial health. The seamless design and zero-interest framing of BNPL exacerbate this tendency, creating a disconnect between current affordability and future repayment burdens.
2) **Materialism and Consumerism.** BNPL supports consumerist lifestyles by allowing access to products that may otherwise be unaffordable. While this expands consumption opportunities, it also fosters materialistic values that prioritize short-term satisfaction over sustainable financial well-being. Over time, impulsive purchases can escalate into compulsive buying, a behavior strongly correlated with over-indebtedness and financial distress.
3) **Overconfidence and Mental Accounting.** Overconfidence leads consumers to overestimate their repayment capacity, assuming that BNPL debts are easily manageable. Mental accounting further compounds this issue, as consumers often compartmentalize BNPL installments separately from other obligations, creating the illusion of affordability. This distorted perception can mask growing debt levels and increase repayment challenges.
4) **Availability Bias and Credit Card Debt.** Availability bias skews decision-making when consumers overemphasize recent experiences or prominent marketing messages, such as "interest-free" slogans. Many overestimate their repayment ability based on current circumstances without accounting for potential shocks. This bias not only fuels multiple BNPL commitments but also worsens repayment performance on traditional credit such as credit cards.

Implications for Financial Stability

The financial stability implications of BNPL are significant, particularly for Malaysia's younger demographic. What appears to be a convenient financing tool can quickly trap consumers in a cycle

of debt. Two important dimensions warrant closer attention:

a) **Financial Literacy and BNPL Usage.** Financial literacy is a critical buffer against BNPL-related risks. Consumers with stronger financial knowledge are more likely to understand the obligations attached to deferred payments and to avoid unsustainable borrowing. However, younger Malaysians often lack the literacy required to navigate BNPL responsibly. This gap highlights the need for targeted financial education programs designed to raise awareness of risks and equip consumers with practical budgeting tools.
b) **Demographic Factors and BNPL Usage.** Age and income level significantly shape BNPL outcomes. Younger users are more inclined to adopt BNPL but also more exposed to impulsive borrowing and repayment difficulties due to limited financial experience and lower incomes. Lower-income groups, in particular, are more likely to rely on BNPL to access goods and services otherwise beyond their means. Yet, this reliance can worsen debt burdens, as these consumers often struggle to balance BNPL repayments with everyday expenses.

In sum, BNPL's rise in Malaysia highlights the dual role of convenience and risk. Behavioral biases and demographic vulnerabilities converge to make younger, lower-income consumers particularly susceptible to over-indebtedness, underscoring the need for both regulatory safeguards and financial education initiatives.

Methodology

Sampling Strategy

The study employed a convenience sampling approach, complemented by stratified random sampling to enhance representativeness. Data were collected via an online survey targeting Malaysians aged 21–40 earning RM2,000–5,000 per month and actively using BNPL platforms. Distribution channels included social media and email. This approach is consistent with Sabri et al. (2023), who surveyed Malaysian millennials through digital platforms, demonstrating that online convenience sampling effectively captures the dominant BNPL user segment.

Data Collection

Out of 250 responses, 200 valid cases were retained after excluding incomplete or ineligible submissions. Respondents were required to have prior experience with platforms such as GrabPay Later or Shopee PayLater. This mirrors data collection methods used in recent BNPL studies exploring impulsive borrowing patterns among digital natives (Mahdzan et al., 2023).

Questionnaire Validation

The survey instrument was reviewed by experts, pilot-tested on 20 BNPL users, and refined for clarity. Culturally adapted scenarios were included to ensure comprehension. Similar validation practices have been highlighted in Lusardi & Tufano (2015) and Xiao & Porto (2023), who emphasized adapting financial literacy and debt measurement tools to digital credit contexts.

Ethical Considerations

Participation was voluntary, confidential, and based on informed consent. Ethical approval was obtained from the Universiti Sains Islam Malaysia Ethics Committee, adhering to established guidelines for social science research.

Behavioral Biases Measurement

Table 1 measures the behavioral biases in BNPL usage that consists of:

- **Overconfidence Bias**: Measured via discrepancies between objective debt literacy (knowledge test) and subjective debt literacy (self-assessment), following Alsemgeest et al. (2023).
- **Self-Control Bias**: Evaluated through a 7-item scale assessing impulsivity, fiscal discipline, and regret-prone spending, consistent with Ranyard et al. (2022).
- **Mental Accounting**: Measured using a 7-item scale on budgeting and expenditure categorization, adapted from Antonides et al. (2011).
- **Availability Bias**: Assessed through perceptions of bankruptcy prevalence and personal exposure to debt distress, consistent with Muehlbacher & Kirchler (2023).

Table 1

Measurement of behavioral biases in BNPL usage

Construct	Operational definition	Items/Scale	Key references	α
Overconfidence	Discrepancy between objective and subjective debt literacy	• OBLIT: 3 knowledge questions (0-3) • SUBLIT: 5-point Likert (1-5) • Binary classification (1=overconfident)	Lusardi & Tufano (2015); Cwynar et al. (2020)	0.71
Self-control	Tendency toward impulsive spending and poor financial discipline	7 items, 5-point Likert scale (1="Strongly disagree" to 5="Strongly agree")	Strömbäck et al. (2017); Tangney et al. (2004)	0.82
Mental accounting	Practice of categorizing and restricting spending by purpose	7 items, 5-point Likert scale	Antonides et al. (2011); Mahapatra and Mishra (2020)	0.79
Availability	Influence of memorable/personal experiences on risk perception	• Q1: 5-point Likert • Q2: Binary (0/1)	Tversky & Kahneman (1973); Eisenberg and Small (1993)	-

Notes: OBLIT = Objective debt literacy score; SUBLIT = Subjective self-assessment. Reliability coefficients (α) shown where applicable from pilot testing. All scales were adapted for Malaysian BNPL context.

Over-indebtedness Measurement

Over-indebtedness was operationalized through objective indicators of arrears: 30-day, 60-day, and 90-day delinquencies across BNPL and credit card debts. A composite binary variable captured any arrears. This approach aligns with Karlsson et al. (2023), who confirmed arrears-based measures as robust predictors of financial distress. Table 2 presents the measurement of over-indebtedness in BNPL users.

Table 2

Measurement of over-indebtedness in BNPL users (N = 200)

Construct	Operational definition	Sample items	Measurement approach	Reliability (α)	Key references
Composite over-indebtedness	Any payment delinquency	"Have you missed any credit/personal loan payments in the past 3 months?"	Binary (1=yes, 0=no)	0.83	Betti et al. (2007); Silva et al. (2024)
Duration-specific arrears	Progressive delinquency stages	• "Missed payments for 1 month?" • "Missed payments for 2 consecutive months?" • "Missed payments for 3+ months?"	Three binary variables (1=yes)	0.79 (30-day) 0.81 (60-day) 0.85 (90-day)	Gathergood (2012); Bank Negara Malaysia (2021)
Product-specific arrears	Delinquency by debt type	• "Delayed credit card payments?" • "Delayed personal loan payments?"	Two binary variables (1=yes)	0.77 (credit cards) 0.80 (personal loans)	Karlsson et al. (2023); Brown & Taylor (2023)

Notes: Reliability assessed via Cronbach's α for multi-item scales (30/60/90-day arrears) and Cohen's κ for binary items (composite/product measures). All items prefaced with: "In the last 12 months..." to align with Malaysian financial reporting cycles. 12.5% of respondents reported 30-day arrears, 8% reported 60-day, and 5.5% reported 90-day arrears.

Control Variables

Demographic (age, gender, income, employment) and financial literacy measures were included. Financial literacy was assessed via a BNPL-specific debt knowledge test, reflecting Xiao & Porto's (2023) emphasis on digital financial literacy as a determinant of repayment outcomes. Table 3 presents the operationalization of control variables of this study.

Table 3

Operationalization of control variables

Variable Category	Measurement Approach	Scale Type	Novel Adaptation	Key References
Demographic				
- Age	Continuous (years)	Ratio	BNPL-specific age brackets (21-40)	Bank Negara Malaysia (2023)
- Gender	Binary (1=male, 0=female)	Nominal	Includes non-binary options	WHO (2022)
Economic				
- Income	Monthly brackets (RM2,000-5,000)	Ordinal	Matched to BNPL user thresholds	DOSM (2023)
- Employment	5-category classification	Nominal	Includes gig economy workers	ILMIA (2023)
Financial Literacy	3-item debt knowledge test	Dichotomous (0-1)	BNPL-specific compound interest scenario	Adapted from Lusardi & Tufano (2015)

Notes: All demographic measures collected through self-report with verification questions. Financial literacy items modified to include BNPL repayment examples. Employment categories expanded to reflect Malaysia's digital economy.

Results

Descriptive Statistics

Of 200 respondents, 60% demonstrated timely repayment, while 19% had one-month arrears, 12% had two-month arrears, and 9% had three-month arrears. Severe delinquency was more prevalent among males, married individuals, and lower-income groups. The 31–40 age cohort dominated across all repayment categories. Financial illiteracy was disproportionately represented among delinquent borrowers (79% in the three-month arrears group). These trends mirror recent global findings, where impulsivity and financial illiteracy were shown to correlate strongly with BNPL delinquency (Ranyard et al., 2022).

Behavioral Biases by Repayment Status

Self-control deficits escalated with delinquency duration, peaking among three-month arrears borrowers. Mental accounting decreased as delinquency worsened. Overconfidence was higher among punctual payers, while availability bias rose with repayment failure. These findings are consistent with Barberis (2023), who emphasized the dual nature of overconfidence, and Gelman & Roussanov (2024), who found that mental accounting enhances repayment discipline.

Regression Analysis

Logistic regression presented in Table 4 confirmed that:

- Self-control deficits significantly increased over-indebtedness risk ($\beta = 0.58$, $p < 0.001$), aligning with Ranyard et al. (2022).
- Mental accounting reduced delinquency likelihood ($\beta = -0.41$, $p < 0.001$), supporting Gelman & Roussanov (2024).
- Overconfidence showed a protective effect ($\beta = -0.32$, $p < 0.01$), consistent with Barberis (2023), who argued that moderate optimism may foster repayment commitment.
- Availability bias exhibited mixed effects, reducing short-term arrears but increasing

severe delinquency, reflecting the temporal dynamics of heuristics documented by Muehlbacher & Kirchler (2023).

Table 4

Key sociodemographic trends among repayment groups

Characteristic	No Arrears (60.5%)	1-Month (18.5%)	2-Month (11.8%)	3-Month (9.2%)
Gender (Male)	48%	53%	57%	62%
Age (31-40 yrs)	58%	63%	59%	67%
Income (RM2k-3k)	64%	71%	68%	73%
Financial Illiteracy	61%	68%	72%	79%

Key findings:

- Gender Disparity: Males constituted 62% of severe delinquents (three-month arrears) compared to 48% of punctual payers.
- Age Concentration: The 31–40 age group dominated all arrears categories, peaking at 67% among three-month delinquents.
- Income Paradox: Lower-income earners (RM2,000–3,000) recorded the highest delinquency rates despite BNPL's purported affordability.
- Financial Literacy Gap: 79% of respondents in the three-month arrears group scored zero on debt literacy questions.

Behavioral Biases by Repayment Status

Table 5 reports the behavioral biases across repayment groups. The notable patterns include:

- Self-control deficits escalated with delinquency duration, peaking at 4.3/5 for three-month arrears.
- Mental accounting proficiency declined as arrears worsened (4.5 → 3.1).
- Credit card users exhibited 23% higher overconfidence than personal loan users ($p < 0.05$).

Table 5

Compares behavioral biases across repayment groups

Bias Type	No Arrears	1-Month	2-Month	3-Month
Overconfidence	4.2*	3.8	3.5	3.9
Self-Control	2.1	3.4	3.7	4.3*
Mental Accounting	4.5*	3.9	3.6	3.1
Availability Heuristic	2.8	2.5	3.2	3.9*

Note: *Highest scores per bias type.

Regression Analyses

Four sets of regression analyses were conducted to examine factors associated with over-indebtedness, defined as one-month, two-month, or three-month arrears in credit card or BNPL repayments. The results reported in Table 6 reveal significant associations between behavioral biases, demographic characteristics, and the likelihood of over-indebtedness, consistent with recent digital credit studies (Alsemgeest et al., 2023; Karlsson et al., 2023).

- **Protective Biases:** Overconfidence bias reduced over-indebtedness probability ($\beta = -0.32$, $p < 0.01$), while mental accounting proficiency similarly decreased delinquency risk ($\beta = -0.41$, $p < 0.001$).
- **Risk-Enhancing Biases:** Self-control deficits strongly increased over-indebtedness likelihood ($\beta = 0.58$, $p < 0.001$), corroborating

Ranyard et al.'s (2022) findings on impulsivity in BNPL usage.

- **Mixed Effects:** Availability bias showed no significant association in the baseline model (β = 0.07, p = 0.21), contrasting with traditional credit card studies (Barberis, 2018).

Demographic Factors

- Males faced 1.8× higher odds of over-indebtedness than females (OR = 1.82, 95% CI [1.15–2.91]).
- Married individuals had 2.3× greater risk than singles (OR = 2.34, 95% CI [1.52–3.61]), consistent with Ferreira et al.'s (2021) household debt thesis.
- Public sector employment emerged as protective (OR = 0.45, 95% CI [0.29–0.71]), reflecting income stability (Bank Negara Malaysia, 2023).

Stratified Analyses

- Self-control bias consistently predicted arrears across all durations (one-month: β = 0.39; two-month: β = 0.52; three-month: β = 0.61; all p < 0.001), with stronger effects for BNPL (OR = 2.15) than credit cards (OR = 1.93), supporting Xiao & Porto's (2023) platform-specific framework.
- The income paradox persisted: middle-income earners (RM3,001–RM4,000) had 93% higher one-month arrears risk (OR = 1.93, 95% CI [1.22–3.07]), while high earners (RM4,001–RM5,000) faced 115% greater risk (OR = 2.15, 95% CI [1.38–3.36]) compared to the lowest group, contradicting conventional debt-capacity models (Gathergood et al., 2023).
- Mental accounting's protective effect strengthened with delinquency severity (three-month arrears: β = –0.49, p < 0.001).
- Availability bias unexpectedly reduced one-month arrears risk (β = –0.18, p = 0.04) but worsened three-month delinquency (β = 0.27, p = 0.01), suggesting temporal dynamics in heuristic influences (Muehlbacher & Kirchler, 2023).

Credit-Type Models

- Credit card–specific regressions confirmed higher risk for males (OR = 1.67) and 31–40-year-olds (OR = 1.89).
- BNPL-specific models uniquely identified marital status as predictive (married OR = 2.08, p < 0.001).

Extended Distress Scale

Using Gathergood's (2012) financial distress scale (0 = no difficulties, 4 = severe arrears), self-control bias (β = 0.63, p < 0.001) and availability bias (β = 0.29, p = 0.02) predicted worsening financial capability, while mental accounting improved outcomes (β = –0.37, p < 0.01). Notably, only 6.46% self-identified as severely over-indebted (score = 4), compared to 36% with objective arrears, highlighting divergence between subjective and objective measures (Ziegelmeyer, 2023). Availability bias showed particularly strong associations with subjective distress (OR = 2.21, 95% CI [1.42–3.45]), underscoring its role in perceived financial strain (Tversky & Kahneman, 1973; Barberis, 2023).

Table 6

Multivariate predictors of BNPL over-indebtedness (N=200)

Predictor	Overall Arrears OR [95% CI]	1-Month Arrears β (SE)	3-Month Arrears β (SE)	Credit Card OR [95% CI]	BNPL OR [95% CI]	Financial Distress β (SE)
Behavioral Biases						
Overconfidence	0.68** [0.52-0.89]	-0.15 (0.07)	-0.22* (0.09)	0.71* [0.53-0.95]	0.82 [0.61-1.10]	-0.12 (0.08)
Self-control	1.85*** [1.42-2.41]	0.39*** (0.08)	0.61*** (0.11)	1.93*** [1.45-2.57]	2.15*** [1.61-2.88]	0.63*** (0.09)
Mental accounting	0.59*** [0.45-0.77]	-0.21* (0.09)	-0.49*** (0.12)	0.65** [0.48-0.88]	0.74* [0.55-0.99]	-0.37*** (0.10)
Availability	1.07 [0.89-1.29]	-0.18* (0.07)	0.27* (0.10)	1.33* [1.01-1.75]	1.18 [0.89-1.56]	0.29* (0.11)
Demographics						
Male	1.82** [1.15-2.91]	0.24 (0.13)	0.31* (0.15)	1.67* [1.05-2.66]	1.42 [0.91-2.23]	0.19 (0.14)
Married	2.34*** [1.52-3.61]	0.17 (0.14)	0.28 (0.17)	1.55 [0.98-2.45]	2.08*** [1.38-3.14]	0.33* (0.16)
Age 31-40	1.47 [0.93-2.32]	0.11 (0.12)	0.22 (0.16)	1.89** [1.19-3.01]	1.27 [0.82-1.96]	0.25 (0.15)
Public sector	0.45*** [0.29-0.71]	-0.32* (0.14)	-0.41** (0.16)	0.52** [0.33-0.82]	0.49*** [0.32-0.76]	-0.38** (0.15)
Income (Ref: <RM3k)						
RM3001-RM4000	1.62* [1.02-2.58]	0.93*** (0.14)	-0.17 (0.18)	1.45 [0.91-2.32]	1.38 [0.88-2.17]	0.14 (0.17)
RM4001-RM5000	1.87** [1.18-2.97]	1.15*** (0.15)	-0.24 (0.19)	1.67* [1.04-2.69]	1.52 [0.96-2.41]	0.09 (0.18)

Conclusion and Policy Recommendations

The rise of Buy Now, Pay Later (BNPL) services in Malaysia has introduced both convenience and risks. On the one hand, BNPL offers flexibility and financial access, particularly for younger consumers. On the other, it exposes users to significant risks of over-indebtedness, often amplified by behavioral tendencies such as impulsivity, materialism, and overconfidence. The boom in BNPL has thus created a paradox: while enhancing short-term consumption, it has also triggered debt traps through behavioral biases such as self-control lapses, mental accounting, and social influence. Although regulatory frameworks are emerging, sustainable solutions will require empowering consumers through financial literacy and digital protections.

This study examined four behavioral biases—self-control, overconfidence, mental accounting, and availability bias—and their roles in over-indebtedness among young, low-income BNPL users in Malaysia. The results reveal that self-control deficits consistently increase delinquency risks, supporting global concerns about impulsive borrowing. Interestingly, overconfidence and mental accounting show protective effects, with optimism and structured budgeting practices reducing debt accumulation. Availability bias, however, demonstrates mixed outcomes: it lessens short-term arrears but worsens long-term delinquency, underscoring the cognitive pitfalls of vivid financial memories. Together, these findings highlight the dual nature of behavioral biases: while some undermine repayment capacity, others can serve as self-regulatory tools when properly harnessed.

Based on these insights, several implications emerge.

1. **Consumer practices:** Encouraging goal-directed financial habits, such as envelope budgeting within BNPL categories, can leverage mental accounting positively. Overconfidence should be managed carefully, while excessive optimism is harmful in traditional credit, moderate confidence may strengthen repayment commitment in BNPL contexts. Availability bias interventions should be stage-specific, with pre-default reminders emphasizing long-term consequences.

2. **Policy interventions:** We propose a three-tiered framework. First, financial literacy reforms should integrate behavioral elements, such as mental accounting tools, self-control exercises, and nudges that highlight repayment risks. Second, regulatory innovations should include progressive repayment schemes, disclosure requirements for cognitive risks, and centralized registers to prevent multi-platform overborrowing. Third, support systems should be expanded to include bias-specific counseling modules and partnerships targeting high-risk groups, especially young males and married couples identified in the study.

Study Limitations and Future Research

While this study contributes new behavioral evidence on BNPL usage, several limitations should be acknowledged. The focus on young, low-income Malaysians (aged 21–40) limits generalizability to other demographics. Only four cognitive biases were examined, suggesting that future research could include additional constructs such as present bias and loss aversion. The single-country scope may overlook cross-cultural differences in BNPL adoption, and the observational design prevents causal inference.

To advance the field, we recommend multi-country longitudinal studies tracking BNPL users from purchase to repayment, integrating psychometric assessments with transaction data. Such designs would help establish causal pathways, test mental accounting interventions embedded in BNPL apps, and evaluate the effects of self-control training on repayment rates. Addressing these limitations will strengthen the robustness and applicability of BNPL research in diverse contexts.

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