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Repeated use of buy-now-pay-later (BNPL) services: A reciprocal relationship of technological and behavioral attributes

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Research paper
Marketing Management: Consumer behavior

Abstract

This study examines the reciprocal relationship between BNPL usage and consumer attitudes—specifically, perceived security, ease of use, pain of payment, and impulse-buying tendency—and how these attitudes influence subsequent BNPL usage. A time-lagged survey design was implemented with two waves of data collection (Time 1 and Time 2) over a six-month period, involving 357 Indonesian Gen Z consumers. Hypotheses were tested using structural equation modeling (SEM). BNPL usage at Time 1 is positively related to perceived security, ease of use, payment pain, and impulse-buying tendency. Perceived security, ease of use, and impulse-buying tendency, in turn, positively influence BNPL usage at Time 2, whereas payment pain negatively affects future usage. This research contributes to the literature by empirically validating a reciprocal model of BNPL usage that integrates technological and psychological determinants and highlighting the differential role of payment pain in a non-Western, Gen Z context.

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Abstrak

Studi ini meneliti pengaruh literasi keuangan terhadap kinerja keuangan usaha mikro, kecil, dan menengah (UMKM) pangan di Kota Cirebon, dengan kemampuan digital sebagai variabel mediasi. Pendekatan kuantitatif digunakan, dengan memanfaatkan data primer yang dikumpulkan dari 100 pemilik UMKM pangan melalui pengambilan sampel bertujuan dan kuesioner skala Likert tertutup. Literasi keuangan dioperasionalkan dalam tiga dimensi: pemahaman keuangan, keterampilan keuangan, dan pengetahuan keuangan. Data dianalisis menggunakan Partial Least Squares Structural Equation Modeling (PLS-SEM). Hasil penelitian menunjukkan bahwa ketiga dimensi literasi keuangan memiliki dampak positif dan signifikan terhadap kinerja keuangan. Lebih lanjut, literasi keuangan secara positif dan signifikan memengaruhi kemampuan digital, yang pada gilirannya secara positif memengaruhi kinerja keuangan. Kemampuan digital sebagian memediasi hubungan antara literasi keuangan dan kinerja keuangan. Dengan memisahkan literasi keuangan menjadi tiga konstruk yang diukur secara independen dan menempatkan kemampuan digital sebagai mekanisme mediasi, studi ini menawarkan wawasan empiris baru, khususnya dalam konteks UMKM pangan skala kecil di Kota Cirebon yang masih kurang dieksplorasi.

Kata kunci: Literasi keuangan, kemampuan digital, kinerja keuangan, UMKM pangan, PLS-SEM

Introduction

The global payment landscape is being reshaped by financial technology, with Buy-Now-Pay-Later (BNPL) schemes standing out as a particularly transformative development. By allowing consumers to defer the cost of purchases, BNPL offers a level of perceived convenience that challenges traditional credit models (Relja et al., 2023). Its rapid adoption, especially among younger digital natives (Aisjah, 2024), has been accompanied by growing scrutiny. Because BNPL often operates outside standard credit regulations and may not include rigorous affordability checks, researchers and policymakers are increasingly concerned about its potential to exacerbate consumer debt and undermine financial well-being (Aisjah, 2024; Relja et al., 2023).

In established markets, regulatory attention has focused on BNPL's risks for financially vulnerable groups, including students and those with unstable incomes (Schomburgk & Hoffmann, 2023). Reports link its use to financial distress, missed payments, and heightened impulsive spending (Ajouz et al., 2024; Australian Securities and Investments Commission, 2020; Powell et al., 2023). Indonesia presents a compelling and urgent context for study. The market has seen explosive growth, with users reaching 13.4 million and transaction values climbing over 20% annually (Puspadini, 2024). This surge coincides with rising default rates, most acute among young adults aged 20-30 (Khadafi, 2023). This tension between widespread adoption and emerging financial risk underscores the need to understand the specific behavioral mechanisms driving sustained BNPL use among Indonesia's Generation Z.

Current literature offers important but limited insights. Most studies frame the relationship between BNPL use and psychological factors—such as perceived ease of use, security, or impulse—as linear and one-way. Some treat these attitudes as predictors of adoption (Hidayat et al., 2024; Kumar & Nayak, 2024), while others view BNPL use as an antecedent of outcomes such as reduced payment pain or increased impulsivity (Ah Fook & McNeill, 2020; Relja et al., 2023). A more complete explanation likely involves a reciprocal, self-reinforcing process. Initial engagement with BNPL may alter key perceptions and habits—for instance, diminishing the psychological pain of payment while normalizing impulsive spending. These shifted attitudes could then catalyze further, more entrenched use, creating a feedback loop vital to understanding the model's long-term sustainability and risks.

This study examines the reciprocal dynamic. Focusing on Generation Z in Indonesia, we investigate the bidirectional relationship between BNPL use and four core constructs: perceived security, ease of use, payment pain, and impulse buying tendency. Employing a longitudinal design and drawing on the Technology Acceptance Model (TAM), the research traces how initial usage influences attitudes and how those evolving attitudes shape subsequent behavior. Our work contributes in two key ways. First, it advances theoretical understanding in behavioral finance by testing a dynamic reciprocal model that moves beyond static cause-and-effect frameworks to capture the ongoing interaction among behavior, perception, and technology design. Second, it delivers practical, evidence-based insights for Indonesian policymakers, regulators, and industry leaders aiming to balance fintech innovation with responsible consumer protection in the BNPL ecosystem.

Theoretical framework and hypotheses

This research employs Cognitive Emotion Theory (CET) (Schachter & Singer, 1962) and Technology Acceptance Model (TAM) (Davis, 1989) as theoretical framework to explore the impact of individual cognition on emotions and subsequent behaviors related to BNPL usage. First, CET posits that beliefs and desires are fundamental mental states and suggests that the decision-making process involves three sub-processes: cognition, emotion, and behavior (Verhagen & van Dolen, 2011). The cognitive stage involves information processing through various cognitive activities, while the emotional perception stage results from the cognitive evaluation of events or thoughts. Emotions are considered the product of cognitions (beliefs) and motives (desires), with beliefs assumed to precede emotions. Verhagen and van Dolen (2011) proposed a link between emotions and action tendencies, demonstrating that emotions lead to consumption action tendencies. Given the involvement of numerous cognitive factors (e.g., perceived ease of use, perceived security) and emotional factors (e.g., the pain of payment, and impulse buying tendency), the application of CET is deemed suitable for elucidating consumers' financial behaviors within the BNPL context.

Second, the Technology Acceptance Model (TAM) is widely used to explain individual behavior toward technology. Therefore, for this study investigating the financial behavior of FinTech services (e.g., BNPL), we will define the framework based on TAM. Specifically, we will adopt the perceptions of ease of use from TAM and the experience of use as forming attitudes from TAM 2 and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Venkatesh & Davis, 2000). Perceived security is a crucial factor in TAM, influencing users' attitudes towards technology adoption. Users' perception of the security of BNPL platforms, including data protection and transaction security, can impact their willingness to use the service (Almaiah et al., 2022; Miyazani & Fernandez, 2001; Mofokeng, 2021; Raj et al., 2023, 2024b; Souiden et al., 2020; Tran & Nguyen, 2022; Trinh et al., 2020). Furthermore, the concept of "pain of payment," which refers to the psychological discomfort associated with spending money, can influence users' attitudes toward BNPL usage (Relja et al., 2023; Schomburgk & Hoffmann, 2023). Users' perception of the deferred payment feature of BNPL services can impact their decision-making and usage behavior. Additionally, impulse buying tendencies, characterized by spontaneous and unplanned purchases, can be influenced by users' attitudes and intentions toward BNPL usage. The convenience and instant gratification offered by BNPL platforms may encourage impulse buying behavior (Ajouz et al., 2024; Elsayed et al., 2021; Fook et al., 2020; Raj et al., 2024a),

BNPL usage and perceived security

Perceived security and risk are the main considerations for individuals when using financial services and electronic transactions (Damghanian et al., 2016; Qalati et al., 2021). With the increase in online activity, extensive research has focused on the significance of safety and privacy concerns in the online domain. Customers often perceive increased unreliability and express appreciation regarding safety issues when engaging in online shopping (Lăzăroiu et al., 2020; Qalati et al., 2021). Privacy and safety concerns have been identified as primary barriers to Internet banking and various financial activities on online platforms (Balapour et al., 2020; Lăzăroiu et al., 2020; Nangin et al., 2020). The pervasive nature of privacy and safety concerns in the online realm underscores the importance of addressing these issues to build trust and confidence among consumers engaging in online activities (Nangin et al., 2020; Qalati et al., 2021). Perceived security refers to a user's assessment of the application's capability to safeguard information from potential threats and ensure that a system can thwart attacks that may jeopardize data and services (Damghanian et al., 2016).

In the context of BNPL services, consumers' cognitive evaluations of the security features of these platforms can trigger emotional responses related to feelings of safety, trust, and confidence in using BNPL services. These cognitive evaluations can evoke emotions such as trust, reassurance, and peace of mind, which are associated with feelings of security and confidence in using BNPL platforms. Furthermore, CET suggests that emotions play a crucial role in influencing individuals' behaviors and decision-making processes (Ahn & Kwon, 2022; Kimiagari & Asadi Malafe, 2021; Yu, 2022). The positive emotions resulting from perceived security can lead to increased trust in the platform, higher levels of comfort in making transactions, and a greater willingness to engage in BNPL services. Conversely, negative emotions stemming from perceived security risks, such as concerns about data breaches or identity theft, can deter individuals from using BNPL services or lead to hesitancy in making purchases through these platforms. Previous also provides support that perceived risk and security are important factors determining the use of mobile payments (Almaiah et al., 2022), credit card (Trinh et al., 2020), mobile banking (Souiden et al., 2020), online purchases (Miyazani & Fernandez, 2001; Mofokeng, 2021; Tran & Nguyen, 2022), and also BNPL use (Raj et al., 2023, 2024b). Given that individuals' experiences with Buy-Now-Pay-Later (BNPL) services contribute to their assessment of perceived security, and subsequently, those who feel secure using the application are more likely to utilize the service again in the future, the following hypotheses are proposed:

$H1_a$: BNPL usage is significantly related to perceived security.
$H1_b$: Perceived security is significantly related to future BNPL usage

BNPL usage perceived ease of use.

Perceived ease of use, as defined in this study, refers to consumers' evaluation of the BNPL application as effortless to use, requiring minimal effort, and enabling immediate application without complex procedures typically associated with traditional credit methods. Previous research has established a link between perceived ease of use and intentions to utilize other financial technology services (Abushamleh et al., 2021; Malik & Annuar, 2021; Meyta Dewi et al., 2021), including BNPL services (Nangin et al., 2020). Perceived ease of use (PEOU) holds significance as a primary construct in the Technology Acceptance Model (TAM) (Davis et al., 1989) and the Theory of Planned Behavior (Ajzen, 1991), serving as a key determinant in the decision-making process.

According to the Cognitive Evaluation Theory, individuals' cognitive appraisals of the ease of use of BNPL platforms can evoke emotional responses that impact their behaviors and attitudes

towards utilizing these services. Positive cognitive evaluations regarding the simplicity and convenience of BNPL services can elicit emotions like satisfaction and trust (Nangin et al., 2020), which are linked to favorable user experiences and a heightened willingness to actual used of these platforms (Singh et al., 2020). Consequently, positive emotions arising from the BNPL application usage can bolster individuals' trust in the platform, promote repeated utilization, and stimulate positive word-of-mouth referrals. Conversely, negative emotions resulting from perceived complexity, challenges, or inefficiencies in using BNPL services may lead to feelings of frustration, discontent, and a reluctance to continue engaging with the platform.

$H2_a$: BNPL usage is significantly related to perceived ease to use
$H2_b$: Perceived ease to use is significantly related to future BNPL usage

BNPL usage and pain of payment

The concept of the "pain of payment" in the context of BNPL services, as viewed through Cognitive Emotion Theory (CET), encompasses the emotional and cognitive burden that users may experience. CET posits that users' evaluations of deferred payment options can elicit emotional responses linked to the pain of payment, leading to psychological discomfort or negative emotions when contemplating future financial obligations and repayment responsibilities associated with BNPL. Several studies (i,e., Reshadi & Fitzgerald, 2023; Rick et al., 2008; Schomburgk & Hoffmann, 2023) further validate this concept by demonstrating that the anticipation of financial pain influences individuals' willingness to spend, with payment methods that alleviate this discomfort, such as credit cards, resulting in increased spending. This emotional response to spending directly influences consumer behavior, as reducing the immediate emotional discomfort associated with spending money can lead people to spend more freely.

The use of BNPL services can affect the pain of payment and vice versa. First, while BNPL providers usually do not charge interest on installments, late payments can lead to increasing fines. Research indicates that over 20% of BNPL users miss payments each year, with 15% taking out additional loans to cover their obligations (Australian Securities and Investments Commission, 2020). Late payments can result in late fees, dishonor fees, and interest charges if a credit card is used for repayment, leading to the depletion of liquid assets and accumulation of debt, which can cause financial stress (Netemeyer et al., 2018). Secondly, studies show that the pain of payment significantly affects consumer decision-making, potentially reducing intentions to make future purchases. Negative emotions from previous BNPL experiences can influence consumers' decisions when considering using BNPL for future transactions (Relja et al., 2023; Reshadi & Fitzgerald, 2023).

$H3_a$: BNPL usage is significantly related to the pain of payment
$H3_b$: The pain of payment is significantly related to future BNPL usage

BNPL usage and impulsive buying tendency

BNPL services often provide consumers with immediate gratification by allowing them to acquire desired products without upfront payment. This aligns with the hedonic aspect of CET, where individuals seek pleasure and enjoyment from their purchases.

The convenience and instant access to products through BNPL can trigger hedonic motivations, leading to impulsive buying decisions driven by the desire for immediate satisfaction. While hedonic motivations focus on pleasure and enjoyment, utilitarian motivations in CET focus on the practical benefits and functionality of purchases. BNPL can appeal to utilitarian motivations by offering flexibility in payment terms, making high-value or essential

purchases more accessible without immediate financial strain. This aspect can rationalize impulsive buying tendencies as consumers perceive BNPL as a practical solution to acquire necessary items efficiently. The availability of BNPL services, with their seamless checkout processes and deferred payment options, can amplify impulsive buying tendencies among consumers predisposed to such behavior. The ease of completing transactions and the delayed financial consequences associated with BNPL can lower the perceived barriers to impulsive purchases, encouraging individuals to act on their impulses. Moreover, cognitive load theory (Sweller, 2011) suggests that individuals have limited cognitive resources for decision-making and are more likely to rely on heuristics and automatic processes under conditions of high cognitive load. The ease and simplicity of BNPL services may reduce cognitive effort in the payment process, making impulsive buying decisions more likely when using these services. Previous studies provide empirical evidence that BNPL triggers impulse buying behavior (Ajouz et al., 2024; Elsayed et al., 2021; Fook et al., 2020; Raj et al., 2024a), and at the same time, high impulse buying tendencies increase the likelihood of BNPL use (Schomburgk & Hoffmann, 2023).
H4$_a$: BNPL usage is significantly related to impulsive buying tendency

H4$_b$: The impulsive buying tendency is significantly related to future BNPL usage

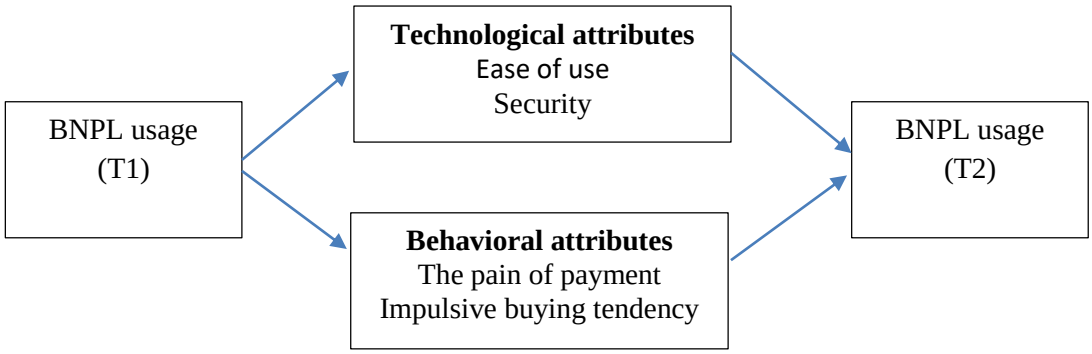

Figure 1.
Conceptual framework in this study

Methods

Sample and procedure

The aim of the study is to investigate the effects of utilizing Buy-Now-Pay-Later (BNPL) services, focusing on individuals who have prior experience with BNPL schemes. By targeting respondents who have used BNPL services in the past, the study aims to explore the impact of BNPL usage on various factors such as perceived security, ease of use, pain of payment, and impulse buying tendency. The study utilized a time-lag cross-sectional survey methodology conducted through a snowball sampling approach (Hendryadi et al., 2025). Eligible participants had to reside in Indonesia, be over the age of 20, have a source of personal income, and have utilized the buy-now-pay-later (BNPL) service payment method.

All participants voluntarily participated in the research and agreed to be respondents by selecting "Yes" to continue based on the initial questionnaire statement. Ethical approval for the study was obtained from the university prior to data collection. The first data collection in November 2023 using Google Forms, resulting in 459 responses. During this stage, respondents

provided information on demographics, BNPL usage in the previous six months, and attitudes toward the security and ease of using BNPL. The second data collection occurred in April 2025, with invitations sent to respondents via email based on records from the first stage. A total of 381 responses were received in this stage. After ensuring response completeness, the final sample size was N = 357, representing a response rate of 77%.

Table 1.
Respondents' characteristics

	Counts	% of Total
Gender		
1 Male	108	30.3 %
2 Female	249	69.7 %
Age		
1 < 25 years old	294	82.4 %
2 25–30 years old	49	13.7 %
3 > 30 years old	14	3.9 %
Education		
1 Senior High School	94	26.3 %
2 Undergraduate Student	182	51.0 %
3 Bachelor's Degree	81	22.7 %
Employment		
1 Unemployed – looking for work	76	21.3 %
2 Part-time Employment	61	17.1 %
3 Full-time Employment	107	30.0 %
4 Self-Employed/Freelance	79	22.1 %
5 N/A	34	9.5 %
Marital Status		
1 Single	329	92.2 %
2 Married	28	7.8 %

The descriptive results (Table 1) indicate that the sample population consisted of 30.3% male and 69.7% female respondents. Regarding age distribution, 82.4% were under 25, 13.7% were between 25 and 30, and 3.9% were over 30. Regarding education, 26.3% had a Senior High School education, 51.0% were Undergraduate Students, and 22.7% held a Bachelor's Degree. Regarding employment status, 21.3% were Unemployed and looking for work, 17.1% were in Part-time Employment, 30.0% were in Full-time Employment, 22.1% were Self-Employed/Freelance, and 9.5% did not specify their employment status. Moreover, 92.2% of the respondents were Single, while 7.8% were married.

Measurement

BNPL usage measured through a 5-point scale assessing the frequency of BNPL usage in the last three months, ranging from 1 (once in the last three months) to 5 (more than 5 times in the last three months). Perceived security assessed using three items adapted from Flavián et al. (2005) to measure security levels in BNPL applications based on transaction security, deposit security, and personal data security. Respondents rated each item from 1 (very unsafe) to 5 (very safe). Perceived ease to use measured with three items (Moslehpour et al., 2018) evaluating the ease of understanding instructions, displays, menus, and conducting transactions on the BNPL

application. Ratings ranged from 1 (very difficult) to 5 (very easy). Pain of payment assessed through three questions regarding respondents' feelings about paying installments, delays in payments, and fines in installment payments when using BNPL services. Ratings ranged from 1 (never) to 5 (very often). Finally, impulse buying tendency measured using four items (Schomburgk & Hoffmann, 2023) related to unintended purchases, unplanned purchases, spontaneous purchases, and buying without much thought. Ratings ranged from 1 (never) to 5 (very often).

Data analysis

The research utilized partial least squares structural equation modelling (PLS-SEM) with SmartPLS v.3 for data analysis. PLS-SEM, focusing on causal modelling, aims to enhance the explained variance in dependent latent constructs through OLS estimations. In contrast, covariance-based SEM (CB-SEM) concentrates on common variance for parameter estimation (J. F. Hair et al., 2019). PLS-SEM is more suitable for analyzing complex models, especially in exploratory research, while CB-SEM is more suitable for confirmatory purposes. Due to the study's emphasis on BNPL payment schemes and the emerging nature of related research, PLS-SEM was chosen for its explanatory objectives. Recent literature indicates that PLS-SEM can fulfil both confirmatory and explanatory modelling requirements. PLS-SEM is considered more suitable than CB-SEM for studies with complex structural models, limited sample sizes, and non-normal distributions, aligning effectively with the study's needs (Hair et al., 2019; Sarstedt et al., 2021).

Results and discussion

Common method variance

The current study employed three methods to evaluate common method bias (CMB). Firstly, Harman's single-factor test revealed an AVE of only 0.188 by a single factor, which falls below the widely accepted threshold of 0.40 (Kock, 2017; Podsakoff et al., 2003). Secondly, to further address potential biases based on Podsakoff et al.'s (2003) recommendation, a marker variable test was conducted using a variable unrelated to the study—participants' attitudes towards the colour blue (Lindell & Whitney, 2001; Schomburgk & Hoffmann, 2023). Following the Lindell and Whitney (2001) and Schomburgk and Hoffman (2023) approach, we correlate the marker variable and the latent constructs (see Appendix 1). The correlation results revealing low correlations with impulse buying tendency (r=0.163), pain of payment (r=0.063), perceived ease of use (r=-0.079), and perceived security (r=0.039). Lastly, the study identified the largest variance inflation factor (VIF) for the latent variables used in the analysis to be 2.94 (see Table 2), below the threshold of 3.30, which is considered indicative of CMV Kock, 2015). Based on these three tests, it can be concluded that there is no significant concern for common method bias in the data.

Measurement evaluation

Table 2 illustrates the establishment of internal reliability, indicating consistency across items, with all measures exhibiting Cronbach's alpha values exceeding the recommended threshold of 0.70 (J. F. Hair et al., 2019). Convergent validity, which assesses the extent to which observed variables explain a latent construct, was evaluated through factor loadings, composite reliability, and AVE. All factor loadings above 0.70 are indicative of convergent validity (Hair et al., 2019). Additionally, composite reliability was examined to support convergent validity, with values

ideally exceeding 0.70. In this study, as shown in Table 2, composite reliability values ranged from 0.88 to 0.93, well above the recommended threshold. Furthermore, the AVE for each reflective construct was calculated, with a consensus suggesting a minimum AVE of 0.50 (Hair et al., 2019) to ensure that items explain more variance than errors in the latent construct. Table 2 demonstrates that all AVE values surpassed this threshold. In conclusion, the conducted tests collectively indicated satisfactory convergent validity.

Table 2.
Measurement items, factor loadings, construct validity and reliability

	Factor loading	Mean	SD	VIF	CA	CR	AVE
BNPL T1*	-	2.74	1.37	-	-	-	-
BNPL T2*	-	2.84	1.37	-	-	-	-
Perceived ease to use (EOU)					0.88	0.93	0.80
EOU1	0.88	3.58	1.04	2.32			
EOU2	0.92	3.52	1.08	2.94			
EOU3	0.89	3.43	1.06	2.27			
Impulse buying tendency (IBT)					0.88	0.92	0.73
IBT1	0.87	2.62	1.24	2.46			
IBT2	0.81	2.83	1.23	1.94			
IBT3	0.85	2.89	1.15	2.15			
IBT4	0.89	2.79	1.22	2.31			
Pain of payment (PAIN)					0.85	0.91	0.76
PAIN1	0.88	3.43	1.18	2.81			
PAIN2	0.87	3.55	1.16	2.74			
PAIN3	0.87	3.15	1.21	1.62			
Perceived security (SEC)					0.79	0.88	0.71
SEC1	0.82	3.09	1.32	1.59			
SEC2	0.84	3.22	1.17	1.66			
SEC3	0.87	3.13	1.17	1.94			

Note: * single item, SD = standard deviation, VIF = variance inflation factor, CA = Cronbach's Alpha, CR = Composite Reliability, AVE = Average Variance Extracted.

Discriminant validity in this study assesses using various methods. First, we use Fornell and Larcker (1981) criterion which provides guidance that the square root of the Average Variance Extracted (AVE) should exceed the correlations between constructs to confirm discriminant validity (Fornell & Larcker, 1981). The analysis we present in Appendix 2 demonstrates that the square root of the AVEs (bold italic) surpasses the correlations for all latent constructs, supporting discriminant validity. Second, discriminant validity can also be evaluated using cross-loading results. As illustrated in Appendix 2, there is no evidence of cross-loading between constructs in the study. Finally, we also used the guidelines of Henseler et al. (2015) using the heterotrait-monotrait ratio (HTMT) measure as an alternative approach to assess discriminant validity; as they suggest, the HTMT value should be below 0.85 or 0.90 (Henseler et al., 2015). The analysis results reveal that all HTMT values in the study were below the recommended threshold (see Appendix 3), further confirming the discriminant validity of the constructs.

Structural model evaluation

Data were analyzed in two stages. First, BNPL usage Time 1 is exogenous, and four other constructs (impulse buying tendency, pain of payment, perceived ease of use, and perceived security) are endogenous. In the second model, four constructs are made exogenous, and BNPL usage time 2 is made endogenous. Results are displayed in Table 3. The model fit and structural relationship was evaluated using the bootstrapping function in SmartPLS to generate t-values and confidence intervals. Consistent with the recommendation of Hair et al. (2019), the study employed 5,000 bootstrapped samples to assess the significance of the path coefficients. While the assessment of model fit in a structural model in the PLS-SEM literature is still a topic of debate with evolving guidelines (Hair et al., 2019), in this study, we considered the coefficient of determination (R^2), f^2 effect size, and SRMR for goodness of fit evaluation, along with the statistical significance of the path coefficients for hypothesis testing.

Table 3.
Structural model

	Coeff	t-value	p-value	R Square	f2
Model 1					
BNPLT1 -> SEC	0.16	2.50	0.01	0.03	0.03
BNPLT1 -> EOU	0.18	2.95	0.00	0.03	0.03
BNPLT1 -> IBT	0.39	7.57	0.00	0.15	0.18
BNPLT1 -> PAIN	0.23	4.12	0.00	0.05	0.06
Model 2					
SEC -> BNPLT2	0.15	2.57	0.01	0.15	0.02
EOU -> BNPLT2	0.19	3.25	0.00		0.04
IBT -> BNPLT2	0.22	4.21	0.00		0.05
PAIN -> BNPLT2	-0.19	3.68	0.00		0.04

Note: Perceived ease to use (EOU), Impulse buying tendency (IBT), Pain of payment (PAIN), Perceived security (SEC)

Before assessing the structural relationships, collinearity was evaluated to ensure it did not bias the regression results. Table 2 indicates that none of the VIF values exceed 3, indicating that collinearity issues are not present in this model. Subsequently, the R2 value was used as a measure of model fit, with values of 0.25, 0.50, and 0.75 generally representing weak, moderate, and substantial explanatory power, respectively (Hair et al., 2019). In Model 1, where BNPL usage time 1 is considered exogenous, the R2 values for ease of use, impulse buying tendency, pain of payment, and perceived security were 0.03, 0.15, 0.05, and 0.03, respectively, indicating weak explanatory power. Similarly, in Model 2 with BNPL usage time 2 as the dependent variable, the R2 value of 0.15 also suggests weak exploratory power. Furthermore, f^2 effect sizes were utilized, with values above 0.02, 0.15, and 0.35 indicating small, medium, and large effect sizes, respectively. In the current study, only the BNPL Time to impulse buying tendency effect in Model 1 exhibited a medium effect size (f^2 = 0.18), while the others were at a small level. Additionally, the standardized root mean squared residual (SRMR) was employed as a goodness-of-fit measure, with SRMR values of 0.05, respectively, falling below the guideline of 0.08 (Benitez et al., 2020; J. Hair et al., 2019; Schomburgk & Hoffmann, 2023), indicating acceptable model fit.

Table 3 presents the results concerning the proposed direct effects of the study. BNPL usage at time 1 showed direct relationships with perceived ease of use (b = 0.18, p < 0.05, t-value = 2.95), impulse buying tendency (b = 0.39, p < 0.05, t-value = 7.57), pain of payment (b = 0.23, p < 0.05, t-value = 4.12), and perceived security (b = 0.16, p < 0.05, t-value = 2.50), providing support for H1-H4. Moreover, perceived ease of use was a significant positive predictor of BNPL usage at time 2 (b = 0.19, p < 0.05, t-value = 3.25), and impulse buying tendency also played a similar positive predictive role for BNPL usage at time 2 (b = 0.22, p < 0.05, t-value = 4.21). As expected, the pain of payment emerged as a significant negative predictor of BNPL usage at time 2 (b = -0.19, p < 0.05, t-value = 3.681), while perceived security was a significant positive predictor of BNPL usage at time 2 (b = 0.15, p < 0.05, t-value = 2.57). Consequently, H5-H8 were all supported based on the analysis results.

Discussion

The purpose of the study is to investigate the factors influencing Buy Now Pay Later (BNPL) adoption among Gen Z consumers in Indonesia and to understand the temporal dynamics of these factors in shaping consumer behavior towards BNPL services. The study's findings contribute to a deeper understanding of the factors influencing BNPL usage at different time points. By identifying direct relationships between BNPL usage and variables such as perceived ease of use, impulse buying tendency, pain of payment, and perceived security, the study sheds light on the key drivers of BNPL usage among Gen Z in Indonesia. Moreover, the present study also reveals predictors of BNPL usage at time 2, such as perceived ease of use, impulse buying tendency, the pain of payment, and perceived security, highlighting the temporal nature of these factors in influencing consumer behavior.

Theoretical implications

This study contributes both to the emerging, but still limited, literature on reciprocal effects of purchase decisions on consumer attitudes as well as to the more established literature on the BNPL model. As the latest innovation in the financial sector, BNPL usage has scantly appeared in the literature on financial decision-making, although its popularity has started to increase as one of the fastest-growing segments in consumer finance (Lupşa-Tătaru et al., 2023). BNPL is considered an alternative payment method that offers flexibility and is then compared to credit cards, making this service increasingly popular among young people (Aisjah, 2024; Powell et al., 2023).

First, the present study reveals that BNPL usage at time 1 positively influences users' perceived ease of use, which in turn positively predicts BNPL usage at time 2. This suggests that the initial experience with BNPL impacts how easy users find it to use the service, and this positive experience can lead to continued use this services in the future. This research contributes valuable insights to the limited literature on the relationship between ease of use and specific BNPL services (Relja et al., 2023). Furthermore, it offers support for the association between perceived ease of use and intentions to use other financial technology services like e-wallets (Abushamleh et al., 2021; Malik & Annuar, 2021; Meyta Dewi et al., 2021). Moreover, the findings of this study also lend support to established theoretical frameworks such as the Technology Acceptance Model (TAM) (Davis et al., 1989) and the CET in explaining consumer behavior within the fintech domain.

Second, the study also confirms a reciprocal relationship between BNPL usage and perceived security. The reciprocal relationship between BNPL usage and perceived security implies that BNPL users generally feel that BNPL services are relatively safe to use. Conversely,

individuals' sense of security regarding BNPL services can impact their willingness to use BNPL as a payment option in the future. This bidirectional relationship underscores the interplay between consumer behavior and perceptions of security in the context of BNPL. As individuals gain more experience with BNPL and become more familiar with the service, their perceptions of security may be influenced by their usage patterns and interactions with the platform. This study provides support for similar findings also imply that perceived risk and security are important factors determining the use of mobile payments (Almaiah et al., 2022), credit card (Trinh et al., 2020), mobile banking (Souiden et al., 2020), online purchases (Miyazani & Fernandez, 2001; Mofokeng, 2021; Tran & Nguyen, 2022), and also BNPL use (Raj et al., 2023, 2024b).

Third, this study reveals the link between BNPL usage at time 1 and impulsive buying tendencies indicating that consumers who have used BNPL in the past are more likely to exhibit impulsive buying behavior. Furthermore, impulsive buying tendencies also influence the use of BNPL in the future. The results of this study expand on how BNPL triggers impulse buying behavior (Ah Fook & McNeill, 2020; Ajouz et al., 2024; Elsayed et al., 2021; Raj et al., 2024a), and at the same time, high impulse buying tendencies increase higher likelihood of BNPL use (Schomburgk & Hoffmann, 2023). Hence, we contribute to this developing stream of literature by demonstrating the reciprocal relationship between BNPL usage and impulsive buying tendencies.

Finally, the study highlights a significant positive relationship between BNPL usage and the perception of pain associated with payment. Interestingly, this experience of pain of payment then leads to negative implications for subsequent BNPL use. This research complements prior studies that have also demonstrated the adverse effects of BNPL on the pain of payment (Relja et al., 2023; Schomburgk & Hoffmann, 2023). While BNPL services offer the convenience of spreading payments over time without interest, some providers may impose interest or fees if payments are not made within the specified timeframe. Consumers who miss payment deadlines or opt for extended payment plans may face additional costs in the form of interest charges or late fees. Another reason for the impact on the pain of payment is that BNPL enables consumers to divide payments into multiple installments. However, this flexibility can sometimes lead to overspending if individuals commit to more purchases than they can afford in the long term. Excessive use of BNPL can result in rapid accumulation of debt, especially when purchases are made without considering the ability to repay within the agreed timeframe. In essence, the study suggests that frequent and unchecked use of BNPL can contribute to a cycle of debt accumulation and financial strain, ultimately affecting an individual's financial health, security, and stability (Nanda & Banerjee, 2021; Netemeyer et al., 2018; Powell et al., 2023; Santos et al., 2019).

Limitations

The study has a few limitations that may be important for future research. First, the sample size and focus on Gen Z consumers in Indonesia may limit the generalizability of the findings to a broader population or different age groups. Future studies comparing BNPL adoption patterns across different age groups, socio-economic backgrounds, or regions could provide a more comprehensive understanding of consumer behavior and preferences. Second, the study relied on self-reported measures for variables such as perceived ease of use, impulse buying tendency, pain of payment, and perceived security. Additionally, the post-purchase behavior learned in this study may be biased by the respondent's memory. We suggest supplementing quantitative findings with qualitative research methods such as interviews or focus groups to gain deeper insights into the motivations, perceptions, and experiences of consumers using BNPL services. Third, the study focused on internal factors influencing BNPL adoption, but

external factors such as economic conditions, regulatory changes, or market trends could also impact consumer behavior and should be considered in future research. Furthermore, investigating the long-term financial implications of BNPL usage, including debt accumulation, default rates, and financial well-being, can help assess the risks associated with the widespread adoption of BNPL services.

Conclusion

This study delves into the relationship between reciprocal BNPL services usage and perceived ease of use, impulse buying tendency, pain of payment, and perceived security among Gen Z consumers in Indonesia. Specifically, these findings shed light on the temporal dynamics of these factors in shaping consumer behavior towards BNPL. The findings of this research prove that the initial experiences with BNPL impact users' perceptions of ease of use, impulse buying tendency, pain of payment, and perceived security and subsequent adoption of the service; emphasizing the reciprocal relationship between these factors and BNPL usage. This study not only enriches the existing literature on BNPL adoption and consumer behavior but also provides valuable implications for both academia and industry practitioners. More specifically, understanding the evolving dynamics of BNPL adoption among Gen Z consumers is crucial for promoting financial literacy and responsible financial behavior in the context of emerging payment technologies. Moving forward, further research and initiatives aimed at enhancing consumer awareness and education regarding BNPL services are essential to ensure sustainable and informed financial decision-making among young consumers.

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