Vol. 8, No. 1, February 2026

ISI Journal of Information Systems and Informatics

Published By Asosiasi Doktor Sistem Informasi Indonesia

Determinants of Impulsive Buying During Shopee Flash Sales: Ajzen's Theory of Planned Behavior Approach

Alif Baidhawi[1], Mira Afrina[2], Ken Ditha Tania[3], Rizka Dhini Kurnia[4]

[1,2,3,4]Information System, Faculty of Computer Science, Sriwijaya University, Indonesia

Received:
November 19, 2025
Revised:
January 15, 2026
Accepted:
January 26, 2026
Published:
February 14, 2026

Corresponding Author:
Author Name*:
Mira Afrina
Email*:
miraafrina@unsri.ac.id

DOI:
10.63158/journalisi.v8i1.1452

Abstract. This research investigates the psychological elements that affect consumers' impulsive buying behavior during Shopee flash sale events using the TPB. This inquiry employs a quantitative causal approach using survey data from 154 Shopee users engaged in flash sale purchases. Data were analyzed using a variance-based structural equation modeling approach with SmartPLS. The findings indicate that AT, SN, and PB jointly demonstrate significant effects on impulsive buying intention (β = 0.401; β = 0.395; β = 0.161), jointly explaining 59.9% of its variance. In addition, impulsive buying intention demonstrates a strong influence on actual impulsive buying behavior (β = 0.656, p < 0.001), accounting for 43.1% of the behavioral variance. Among the antecedents, attitude represents the most dominant predictor of intention, followed by subjective norms. A key advancement of this research stems from the integration of the TPB framework within flash sale contexts, positioning impulsive buying intention as a central psychological mechanism under conditions of time pressure. From a practical standpoint, the findings suggest that Shopee sellers and digital marketers should emphasize benefit-oriented messaging, urgency cues, and social validation features such as reviews, real time purchase indicators, and influencer endorsements to strengthen consumers' impulsive buying intention during flash sale campaigns.

Keywords: Impulsive Buying, Flash Sale, Theory of Planned Behavior, Shopee, Time Pressure,

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

1. INTRODUCTION

In the last two decades, rapid advances in digital technology have fundamentally reshaped global consumption, particularly through the rise of e-commerce, which has transformed how consumers search for information, evaluate alternatives, and make purchase decisions [1], [2], [3]. Beyond convenience, this shift also carries broader economic and social consequences, as digital commerce increasingly reorganizes everyday consumption habits and shopping routines within technology-mediated environments [4]. However, the same digital infrastructure that enables efficiency—instant information access, visually persuasive promotions, and frictionless checkout—also amplifies a growing behavioral concern: impulsive buying [5]. In Indonesia, the continued rise in e-commerce transaction values suggests that online shopping has moved from an occasional activity to a lifestyle practice, especially among urban consumers who adapt quickly to digital technologies [6], [7]. This raises an important problem for both scholars and practitioners: as online retail becomes more embedded in daily life, promotional designs may intensify unplanned purchases and potentially weaken deliberative decision-making.

Among Southeast Asian e-commerce platforms, Shopee stands out for its aggressive promotional strategies and system-based features, particularly Flash Sale programs [8]. Market evidence further confirms Shopee's dominance in Indonesia, where it records the highest average monthly visitor traffic at approximately 195.8 million users [9]. Flash sales typically combine steep discounts with short time windows and limited stock, creating powerful scarcity and time-pressure cues [10], [11]. These cues are not merely marketing tactics; they shape the online shopping environment into a high-pressure decision context where speed, urgency, and trend-driven consumption become central to purchasing behavior [4]. Reinforced by app notifications, countdown timers, and limited-quantity signals, flash sales have been shown to heighten psychological urgency and trigger rapid, spontaneous purchases [12], [13], [14]. Consequently, flash sale environments represent a particularly intense and practically relevant setting for investigating impulsive buying mechanisms.

Prior research has consistently found that flash sales can increase impulsive buying by stimulating emotional responses and weakening consumers' rational evaluation

processes [15], [16], [17]. Related evidence also indicates that urgency-based promotions strengthen spontaneous purchasing tendencies through heightened excitement and fear of missing out (FOMO) [18], [19], [20], [21]. In Indonesia specifically, Shopee's flash sale practices have been associated with strong impulsive buying patterns, particularly among younger consumers who are accustomed to digitally mediated shopping and frequent promotional exposure [14], [22]. Despite these insights, much of the existing literature still emphasizes descriptive relationships (e.g., "flash sales increase impulse buying") rather than rigorously explaining why and through which psychological routes consumers form impulsive intentions and translate them into actual impulsive purchases within such high-pressure promotional settings.

To explain intention formation and subsequent behavior, Ajzen's Theory of Planned Behavior (TPB) provides a widely used framework, positing that attitude, subjective norms, and perceived behavioral control (PBC) shape intention, which then predicts behavior [23]. TPB is particularly relevant in digital contexts where system features and situational cues can rapidly shift attitudes, social influences, and perceived control during decision-making [4]. Empirical studies have shown that TPB constructs significantly influence impulsive buying intention, which in turn drives impulsive purchasing behavior, especially in contexts such as live streaming commerce and interactive digital advertising [24], [25]. Yet a key theoretical and empirical issue remains unresolved: evidence on the role of perceived behavioral control is mixed, with its effect varying across contexts and appearing sensitive to promotional intensity and platform-specific features [26], [27], [28]. This inconsistency suggests that the predictive structure of TPB may not be stable across different digital shopping environments—especially those designed to create urgency and scarcity.

Here lies the central gap motivating this study. Although TPB has been extensively applied to online consumer behavior, most prior studies examine general e-commerce settings or other interactive digital formats (e.g., live selling platforms). Empirical evidence remains limited regarding how TPB operates specifically within flash sale environments, where extreme time pressure and scarcity cues may meaningfully alter the relative influence of attitude, subjective norms, and perceived behavioral control on impulsive buying intention and actual impulsive buying. In addition, few studies have quantitatively compared the predictive relevance and relative strength of TPB pathways under high-

pressure promotional conditions—particularly within local urban contexts in developing economies, where rapid digital adoption intersects with intensive platform promotions.

Therefore, this study investigates how attitude, subjective norms, and perceived behavioral control shape impulsive buying intention and how intention affects actual impulsive buying among Shopee users during flash sale events in Palembang City. Palembang is an empirically relevant setting because Statistics Indonesia (BPS) reports rapid digital adoption and high internet usage among residents: approximately 83.73% of Palembang's population used the internet in 2024, and 89.15% used internet-enabled devices such as smartphones or computers, indicating strong readiness for online engagement and e-commerce participation in the city. By focusing on an urban population embedded in fast-growing digital consumption practices, this research offers a contextually grounded examination of impulsive buying in a high-pressure promotional setting.

The novelty and contributions of this study are threefold. First, it extends the Theory of Planned Behavior by situating its application within a high-pressure promotional environment (flash sales), offering context-specific insight into how urgency cues and system features interact with psychological determinants to shape impulsive buying. Second, it empirically quantifies and compares the strength and predictive relevance of TPB constructs in explaining both impulsive buying intention and behavior, directly addressing the mixed findings surrounding perceived behavioral control in digital promotion contexts [26], [27], [28]. Third, it provides practical recommendations for e-commerce platforms—particularly Shopee—on designing flash sale strategies that remain effective while encouraging more responsible consumer engagement, a need that becomes increasingly important in rapidly urbanizing regions such as Palembang.

2. METHODS

2.1. Research Design

A quantitative causal framework was employed to assess factors driving impulsive buying on Shopee flash sale events. The research model was grounded in the TPB by Ajzen, which posits that behavior is primarily predicted by intention, while intention emerges from the combined influence of 3 factors. [23]. Based on this theoretical foundation, a

conceptual research framework was constructed to represent the hypothesized causal linkages among the study variables. In Figure 1, the framework outlines the direct influences of 3 factors of TPB on intention, including the role of intention in shaping impulsive buying behavior within Shopee flash sale settings. This research design was adopted to evaluate both the explanatory strength and predictive performance of the TPB model within a time-pressured e-commerce environment.

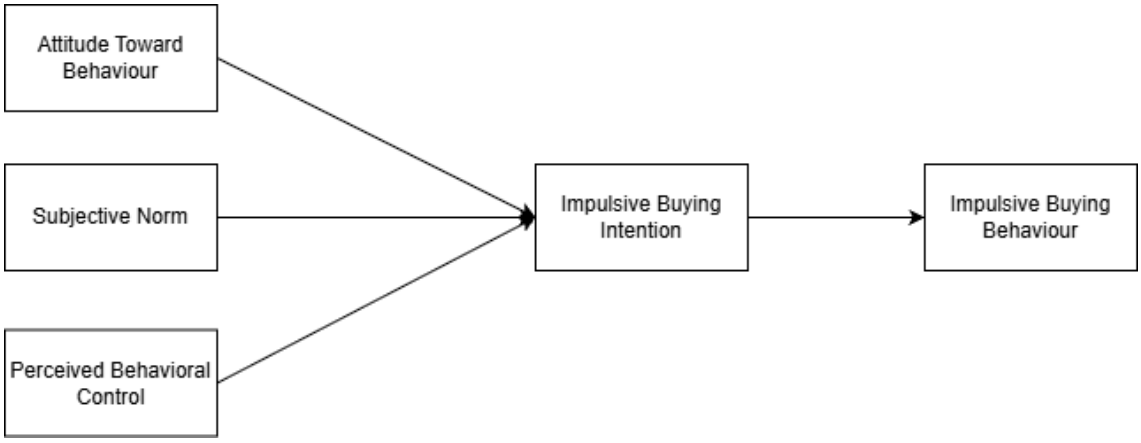

Figure 1. Conceptual Research Framework

To provide conceptual clarity and ensure consistency with the research framework shown in Figure 1, the following section explains each construct employed in this study:

1) Attitude

Attitude toward behavior represents an individual's overall appraisal of a particular behavior, whether it is perceived positively or negatively. Ajzen (1991) [23] explains that attitude emerges from cognitive assessment of the consequences that arise from a behavior and the value assigned to those outcomes.. In flash sales, a positive attitude emerges when consumers perceive impulsive purchasing as a beneficial and enjoyable activity. Barbera and Ajzen (2020) [29] emphasize that positive emotional experiences, such as shopping enjoyment, strengthen consumers' attitudes toward purchasing behavior.

2) Subjective Norms

Denote interpersonal normative cues individuals feel to adopt or desist from certain behaviors, informed by the perspectives and expectations of salient others, such as family, friends, or social groups [23]. In the e-commerce context, social influences, including user reviews and recommendations from influencers, can shape consumers'

normative perceptions. Tran (2022) [30] states that when consumers observe others in their social environment engaging in impulsive purchasing behavior, their tendency to imitate such behavior increases.

3) Perceived Behavioral Control

Perceived behavioral control indicates how much individuals feel that they have the capabilities, resources, and chances needed to undertake a particular behavior [23]. Within the setting of impulsive buying during flash sale events, this perception relates to aspects like user-friendly application, transaction speed, and the availability of digital payment methods. Ajzen [23] asserts that higher levels of PBC strengthen the formation of intention.

4) Intention

Intention represents a person's motivational readiness to act [23]. This readiness is shaped by how individuals evaluate a behavior, perceive social expectations, and assess their ability to carry it out. Under flash sale conditions, such readiness is activated through both cognitive appraisal and emotional stimulation driven by time pressure. Li and Kang [24] state that impulsive buying intention constitutes a psychological stage that precedes consumers' actual purchasing behavior.

5) Impulsive Buying

It defined as a buying act that materializes occurs spontaneously, rapidly, and without careful planning or thorough evaluation of alternatives and consequences [31], [32]. In flash sale settings, impulsive buying is triggered by external stimuli that increase emotional arousal and reduce consumers' rational evaluation processes [11], [17].

2.2. Research Object and Subjects

This study focuses on the Shopee e-commerce platform as its empirical setting, with a specific focus on its flash sale feature, which is characterized by limited time discounts and restricted product availability. The research subjects consisted of Shopee users residing in Palembang City, Indonesia, who had previously made purchases during flash sale events. Palembang City is selected as the research context due to its rapidly developing digital economy and increasing engagement with online commerce. Several studies have documented high e-commerce usage, digital marketing adoption, and integration of digital payment systems among consumers and small business actors in Palembang, indicating strong digital adoption and urban consumer behavior relevant to this study's focus on impulsive online purchasing decisions in a time-pressured context

[33], [34]. The context was also selected because recent local statistics report significant internet penetration and digital engagement among residents, supporting the appropriateness of Palembang for studying online consumer behavior in e-commerce settings.

2.3. Data Collection

Empirical data were sourced from a self-administered online survey. disseminated using Google Forms to Shopee consumers in Palembang City who met the predetermined research criteria. The study targeted consumers who had participated in flash sale transactions; however, due to the indeterminate size of the population, a non-probability sampling approach was deemed appropriate. Accordingly, respondents were deliberately selected using purposive criteria to ensure alignment with the research objectives.

The respondent criteria included: (1) a minimum age of 17 years, (2) active use of e-commerce platforms within the last six months, and (3) prior experience in purchasing products during Shopee flash sale programs. The determination of the minimum sample size followed the recommendation Hair et al. [35], that recommends the lower bound of required respondents in PLS SEM analysis should be between five and ten times the total set of measurement. As the research model consisted of 15 indicators, the lower bound of required ranged from 75 to 150 respondents.

2.4. Measurement Items and Sources

All study constructs were operationalized through multi-item scales adapted from Li and Kang (2024) [24] and adjusted to the Shopee flash sale context. Each item was assessed using a five-point Likert-type scale, anchored from 1 ("strongly disagree") to 5 ("strongly agree"). The detailed operationalization of each construct, including the corresponding measurement items and their sources, is presented in Table 1. The items capture respondents' evaluations, social influences, perceived control, purchase intention, and actual impulsive buying behavior during Shopee flash sale events.

Table 1. Variable measurement.

Construct	Items	Sources
Attitude	a) AT1: I find making immediate purchases during Shopee flash sales to be appealing.	[24]

Construct	Items	Sources
	b) AT2: I like buying products instantly when Shopee flash sales occur. c) AT3: I believe that purchasing quickly during Shopee flash sales is a good idea.	
Subjective Norms	a) SN1: I am likely to make immediate purchases during Shopee flash sales if people who are important to me encourage me to do so. b) SN2: Recommendations from my close friends motivate me to make instant purchases during Shopee flash sales. c) SN3: Opinions of people who are important to me influence my spontaneous purchasing decisions during Shopee flash sales.	[24]
Perceived Behavioral Control	a) PB1: I feel capable of making spontaneous purchases on Shopee during flash sales. b) PB2: I feel that I have the control over my decision to make quick purchases during Shopee flash sales. c) PB3: I have sufficient resources, knowledge, and ability to make immediate purchases on Shopee when flash sales occur.	[24]
Intention	a) IN1: If given the opportunity, I intend to make quick purchases during Shopee flash sales. b) IN2: If given the chance, I am likely to buy products spontaneously during Shopee flash sales. c) IN3: In the near future, I may make immediate purchases when Shopee flash sales take place.	[24]
Impulsive Buying	a) IB1: During Shopee flash sales, I often think, "buy now, think later." b) IB2: During Shopee flash sales, I often buy products based on how I feel at that moment. c) IB3: During Shopee flash sales, I tend to make purchasing decisions quickly.	[24]

2.5. Common Method Bias Assessment

Since the data were gathered from a single source using self-reported measures, CMB was evaluated both procedurally and statistically. Procedurally, anonymity was assured and respondents were encouraged to answer honestly. Statistically, Harman's single-factor test showed that the first factor explained 47.3% of the variance, indicating that common method bias was not a significant issue.

2.6. Data Analysis Technique

The data were examined using a PLS SEM approach executed in SmartPLS. This technique was selected because it is especially fit for prediction focused research, accommodates multifaceted structural models, and remains robust when data do not strictly satisfy multivariate normality assumptions [35].

The measurement model was assessed to establish indicator reliability and construct soundness. Convergent validity was demonstrated by outer loadings exceeding 0.70 and AVE values above 0.50. Discriminant validity was verified using the HTMT criterion, with all values below the recommended threshold of 0.90. In addition, construct reliability was confirmed as both Cronbach's Alpha and Composite Reliability values surpassed 0.70 [35].

Several benchmarks were applied to assess the structural model. Predictor collinearity was examined using VIF, while explanatory strength was interpreted through R^2 thresholds corresponding to strong, moderate, and weak model performance. [35]. To evaluate the model's predictive relevance, the PLSpredict procedure was applied to obtain Q^2_predict values. A positive Q^2_predict value suggests that the model demonstrates adequate out of sample predictive performance. Effect sizes (f^2) were also examined to determine the contribution of exogenous constructs, with thresholds of 0.02, 0.15, and 0.35 indicating small, medium, and large effects, respectively. Hypothesis testing was conducted using the bootstrapping technique. Structural relationships were deemed statistically significant when resulting t statistics exceeded 1.96 and p values were below 0.05, consistent with a two tailed significance level of 5%.

2.7. Research Hypotheses

Grounded in TPB, Intention is understood as a key antecedent of actual behavior, emerging from a set of evaluative, social, and control related considerations. Within the

context of flash sale promotions in e-commerce platforms, these psychological mechanisms are expected to shape consumers' impulsive buying intention and subsequently influence their purchasing behavior.

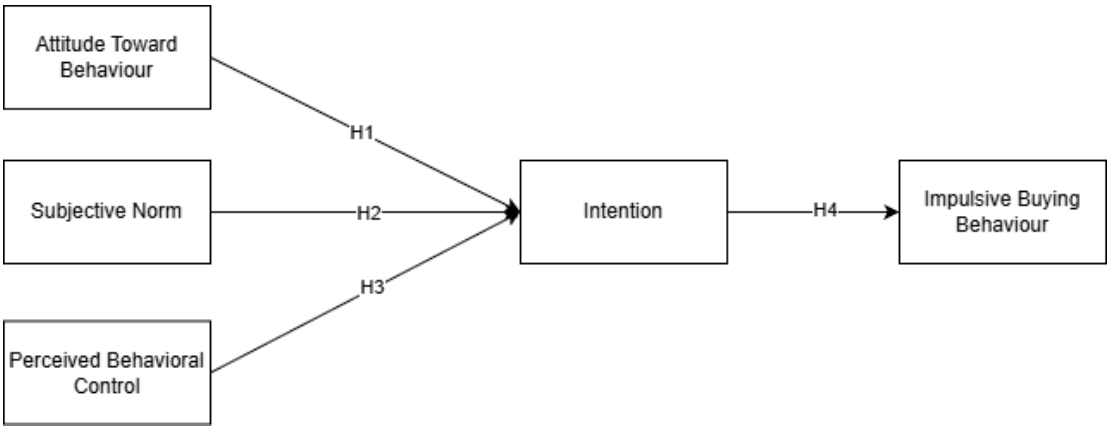

Figure 2. Hypothesized of the Research

Based on this theoretical reasoning, the hypothesized causal relationships among the study constructs are illustrated in Figure 2. The model proposes that Attitude, Subjective Norms, and Perceived Behavioral Control influence Intention, which in turn affects Impulsive Buying behavior in Shopee flash sale settings.

1) H1: Attitude exhibits a positive relationship with Intention.
2) H2: Subjective Norms exhibit a positive relationship with Intention.
3) H3: Perceived Behavioral Control exhibits a positive relationship with Intention.
4) H4**:** Intention exhibits a positive relationship with Impulsive Buying.

3. RESULTS AND DISCUSSION

Using SmartPLS 4 and grounded in the suggested TPB research framework, the gathered questionnaire data were examined to produce the outcomes of the structural and measurement models. Figure 3 depicts the research model together with the estimated values of the outer model

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

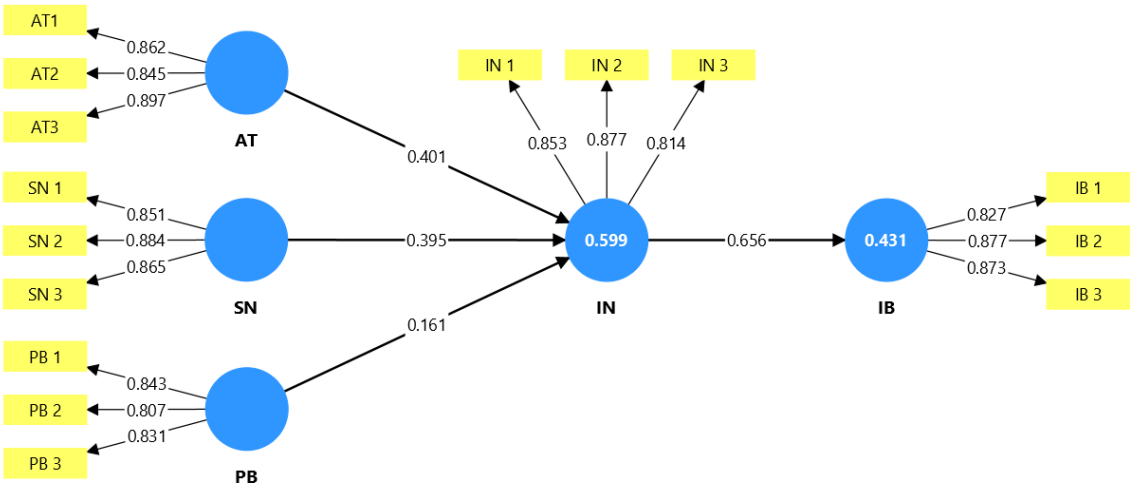

Figure 3. Outer Model Results Using SmartPLS 4

Figure 3 illustrates the estimated values of the outer model with indicator loadings supporting construct reliability and validity.

3.1. Data Collection and Sample Description

Data were gathered using a digital survey shared through Google Forms over the period from 9 to 27 December 2025. A complete of 154 respondents filled out the questionnaire entirely and satisfied the set criteria, thus qualifying for further analysis. This number of observations surpasses PLS SEM minimum guidelines and is deemed sufficient to represent Shopee users in Palembang City who have participated in flash sale transactions.

3.2. Measurement Model Evaluation

Following the description of respondent characteristics, the quality of the research instruments was first examined by assessing the measurement model in terms of validity and reliability, prior to evaluating the structural relationships. Table 2 presents the measurement model evaluation. The findings indicate that all indicators exhibit adequate convergent validity, since their loading values surpass the suggested limit of 0.70. Moreover, the All constructs demonstrate AVE values above 0.50, indicating that each construct explains more than half of the variance of its indicators. Internal consistency is likewise supported, as Cronbach's Alpha and CR values for all constructs surpass the 0.70 benchmark. In general, these results support the validity of the measurement model, then its appropriateness for later structural model evaluation.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

Tabel 2. Summary of Measurement Model Evaluation

Item	Indicator	Outer Loading	Cronbach Alpha	CR	AVE
Attitude (AT)	AT1	0.862	0.836	0.902	0.754
	AT2	0.845			
	AT3	0.897			
Subjective Norms (SN)	SN1	0.851	0.835	0.901	0.751
	SN2	0.884			
	SN3	0.865			
Perceived Behavioral Control (PB)	PB1	0.843	0.771	0.867	0.684
	PB2	0.807			
	PB3	0.831			
Intention (IN)	IN1	0.853	0.805	0.885	0.720
	IN2	0.877			
	IN3	0.814			
Impulsive Buying (IB)	IB1	0.827	0.823	0.894	0.738
	IB2	0.877			
	IB3	0.873			

Table 3. shows The HTMT values for all constructs were lower than 0.90, suggesting that each construct was empirically separate and devoid of multicollinearity issues.

Tabel 3. HTMT Ratio Matrix for Discriminant Validity

	AT	IB	IN	PB	SN
AT					
IB	0.661				
IN	0.784	0.804			
PB	0.629	0.661	0.702		
SN	0.474	0.717	0.771	0.591	

3.3. Structural Model Evaluation

Once it was verified that all constructs satisfied the necessary validity and reliability standards, the analysis moved on to assess the structural model to evaluate the proposed hypothese.

1) Collinearity Assesment (VIF)

Collinearity between the predictor constructs was assessed via VIF diagnostics. Hair state that VIF values less than 5 show that the structural model is free from multicollinearity concerns. Table 4 shows VIF values for structural paths. The findings indicate that the VIF values associated with the examined structural relationships remain below the recommended cutoff level. This result suggests that predictor collinearity is not a methodological concern, thereby confirming that the structural model is appropriate for subsequent hypothesis testing.

Table 4. Multicollinearity Assessment Results (VIF)

	VIF
AT -> IN	1.423
SN -> IN	1.364
PB -> IN	1.564
IN -> IB	1.000

2) Coefficient of Determination (R^2)

The R^2 values indicate how well the proposed model accounts for variations in the dependent variables.

Table 5. the R^2 coefficient

	R^2 Value	R^2 Adjusted
IB	0.431	0.427
IN	0.599	0.591

As shown in Table 5, Intention variance of 59.9% is jointly explained by Attitude, Subjective Norms, and Perceived Behavioral Control, reflecting moderate to significant explanatory strength. At the same time, Intention accounts for 43.1% of the variation in Impulsive Buying, indicating a moderate degree of predictive precision. These results

suggest that the suggested model can account for consumers' impulsive buying within Shopee flash sales.

3) Predictive Relevance (Q^2)

Table 6 reports the Q^2_predict values obtained for Intention (0.565) and Impulsive Buying (0.449) exceed zero, indicating that the proposed model possesses adequate out of sample predictive capability and is reliable in predicting both impulsive buying intention and actual impulsive buying behavior.

Table 6. Predictive Relevance (Q^2)

	Q^2predict
IN	0.565
IB	0.449

4) Effect Size (f^2)

f^2 metrics were applied to assess the influence of each predictor on endogenous variables. Per Table 7, Attitude and Subjective Norms exert moderate to near large effects on Intention, highlighting their substantial role in shaping consumers' impulsive buying intentions. In contrast, Perceived Behavioral Control demonstrates a relatively small effect on Intention, suggesting that although it is statistically significant, its practical contribution is weaker compared to the other predictors. Notably, Intention exhibits a large effect size on Impulsive Buying behavior (f^2 = 0.756), indicating that intention is the most dominant factor driving actual impulsive purchases during flash sale events.

Table 7. Effect Size (f^2) Values

	f-square
AT -> IN	0.283
SN -> IN	0.286
PB -> IN	0.041
IN -> IB	0.756

3.4. Hypothesis Testing

After confirming the structural model's explanatory capacity, predictive relevance, and effect sizes, hypothesis testing was conducted to determine the statistical support for the proposed causal relationships. The testing procedure was performed using the bootstrapping technique implemented in SmartPLS, where the decision to support or reject each hypothesis was determined by the statistical support observed in the estimated path coefficients. A hypothesis was regarded as supported when the relationship met the criteria of $p < 0.05$ with t-values above 1.96, reflecting significance level of 5%. At this stage, the analysis focused on examining how exogenous variables influence endogenous variable, as well as how Intention subsequently affects Impulsive Buying.

Tabel 87 Path Coefficient Estimation Results

Item	Coefficient	Sample mean (M)	Std. Error	t-value	p-value
AT -> IN	0.401	0.400	0.077	5.222	0.000
SN -> IN	0.395	0.390	0.098	4.045	0.000
PB -> IN	0.161	0.170	0.078	2.070	0.039
IN -> IB	0.656	0.663	0.043	15.198	0.000

Drawing from the path coefficient findings shown in Table 8, all hypothesized relationships in this study are empirically supported, indicating that the proposed structural model is robust. The detailed discussion of each hypothesis is as follows:

1. H1 is accepted. Attitude positively and significantly influence Intention, as indicated by a coefficient estimate of 0.401 and statistically robust test results ($t = 5.222$; $p < 0.05$). This result indicates that a more favorable consumer attitude toward impulsive buying significantly increases impulsive buying intention.
2. H2 is accepted. Subjective Norms positively and significantly influence Intention, indicated by a coefficient value of 0.395 and statistically robust results ($t = 4.045$; $p < 0.05$). This discovery indicates that social influences, like those from friends, family, or digital communities, significantly impact consumers' impulsive purchasing intentions during flash sales

3. H3 is accepted. A positive relationship is observed between Perceived Behavioral Control and Intention. with a coefficient estimate of 0.161 and statistical evidence of significance at the 5% level (t = 2.070; p = 0.039). Although the effect size is relatively smaller compared to Attitude and Subjective Norms, this result indicates that consumers' perceived ability to control purchasing decisions such as ease of transaction and payment availability still contributes to the formation of impulsive buying intention.
4. H4 is accepted. Intention positively and significantly influence Impulsive Buying behavior, with a coefficient estimate of 0.656 and highly robust statistical evidence (t = 15.198; p < 0.05). The result confirms that impulsive buying intention is the most critical determinant driving actual impulsive purchasing behavior during flash sale events.Overall, these findings validate the proposed structural relationships within the TPB Framework and demonstrate that intention serves as a central mechanism linking psychological antecedents to impulsive buying behavior.

Among the three antecedent variables influencing Intention, Attitude emerges as the strongest predictor, followed closely by Subjective Norms, as indicated by their higher path coefficient values (0.401 and 0.395, respectively), compared to Perceived Behavioral Control (0.161). This finding implies that psychological evaluations and social influences are more dominant in shaping impulsive buying intention than perceived control factors in the context of Shopee flash sales.

3.5. Multi-Group Analysis (PLS-MGA)

To examine potential behavioral differences based on flash sale participation intensity, a multi group analysis (PLS-MGA) was conducted by categorizing respondents into two groups according to their flash sale purchase frequency. Frequent flash sale buyers are defined as consumers who participate in flash sale purchases three times or more per month, while infrequent flash sale buyers are those who engage in flash sale purchases fewer than three times per month. This classification reflects habitual engagement with time limited promotional events rather than occasional exposure.

Based on this criterion, out of 154 respondents, 80 were classified as infrequent flash sale buyers, while 74 were categorized as frequent flash sale buyers, indicating a relatively balanced group distribution suitable for multi group comparison.

Table 9. PLS-MGA Results by Flash Sale Frequency

	Path Coefficient (Infrequent Frequency Group)	Path Coefficient (Frequent Frequency Group)	Difference (Infrequent - Frequent)	PLS-MGA p-value (1-tailed)	PLS-MGA p-value (2-tailed)
AT -> IN	0.446	0.411	0.035	0.408	0.816
IN -> IB	0.559	0.763	-0.204	0.993	0.014
PB -> IN	0.238	0.084	0.154	0.141	0.282
SN -> IN	0.279	0.523	-0.244	0.915	0.170

The PLS-MGA results presented in Table 9 indicate that the path from Intention to Impulsive Buying (IN → IB) differs significantly between the two groups (2-tailed p = 0.014). This finding suggests that intention translates more directly into actual impulsive purchasing behavior among frequent flash sale buyers than among infrequent buyers. The stronger intention–behavior relationship in the frequent group reflects a more automatic and less deliberative decision making process, likely shaped by repeated exposure to flash sale mechanisms.

In contrast, the differences in the effects of AT, SN, and PB on Intention are not statistically achieved statistical significance at the 5% threshold, which implies that while evaluative and social factors play important roles in forming impulsive buying intention across both groups, purchase frequency primarily moderates the execution of intention rather than its formation. This multi group analysis provides a more nuanced understanding of impulsive buying behavior by highlighting how repeated engagement with flash sale promotions strengthens the intention–behavior link, thereby enriching the interpretation of TPB mechanisms across different consumer segments.

3.6. Discussion

This study's results offer empirical backing for TPB in explaining impulsive buying under flash sale conditions in e-commerce. The findings indicate that AT and SN exert a stronger effect impulsive buying intention compared to PBC. This pattern indicates that consumers' positive evaluations of impulsive purchasing and the influence of social surroundings are more influential than perceived control when decisions are made under time pressure.

In the context of flash sale promotions, the strong influence of Attitude on impulsive buying intention can be interpreted as consumers' perceived enjoyment and benefit derived from price discounts and the urgency cues embedded in flash sale features. Flash sales create not only economic incentives but also emotional stimulation through scarcity signals (e.g., countdown timers, limited stock alerts), which heighten hedonic responses and make immediate purchasing more attractive. Under such conditions, attitude reflects not only rational price considerations but also the hedonic gratification associated with "getting a good deal quickly", which aligns with prior research showing that hedonic motivations and urgency cues reinforce impulsive responses in e-commerce settings (e.g., studies on hedonic shopping and flash sales influencing impulsive buying.

Similarly, the significant role of Subjective Norms indicates that impulsive buying intention during flash sales is strongly shaped by social proof mechanisms, such as peer recommendations, online reviews, real time purchase indicators, and influencer cues visible on the platform. Limited time offers amplify the salience of these social signals, encouraging consumers to conform to perceived collective purchasing behavior to avoid missing out. Social influence in flash sale environments is thus strengthened by visible engagement cues and digital community dynamics, which are known to enhance consumers' perceptions of normative pressure and interactive endorsement.

In contrast, the relatively weaker effect of Perceived Behavioral Control suggests that consumers' sense of control becomes less relevant under intense flash sale pressure. The presence of urgency cues and rapid changes in product availability reduces the opportunity for deliberative self regulation, prompting consumers to make quick decisions regardless of their perceived ability to control the purchasing process. This observation supports the idea that time pressure inherent to flash sales diminishes the

role of control considerations, making emotional and social stimuli more impactful drivers of intention than perceived control.

The relevance of these psychological mechanisms is further underscored by recent empirical research specific to Palembang. [34] found that Electronic Word of Mouth and digital marketing strategies significantly influence Shopee users' purchase decisions in Palembang City, highlighting the importance of online reviews and digital engagement in shaping consumer behavior in the local marketplace. This evidence indicates that digital promotional features and socially embedded signals, which are integral to flash sale environments, play a meaningful role in consumer decision processes in Palembang.

Additionally, studies on local consumer behavior show that promotional activities associated with e-commerce and flash sales contribute to heightened consumer interest and altered shopping patterns among online shoppers in Palembang, particularly where digital platform use is widespread and integrated into daily routines [36]. Research focusing on hedonic shopping motivations and flash sale influence among Shopee users in Palembang also confirms that flash sale stimuli significantly impact impulsive buying tendencies, reinforcing the generalizability of our findings to urban, digitally engaged consumers in this regional context [37].

These characteristics help explain why Attitude and Subjective Norms emerge as dominant predictors in this study, as consumers' purchasing decisions in Palembang are strongly shaped by shared digital experiences, peer validation, and socially reinforced perceptions of value. Within the TPB framework, such socially embedded consumption patterns reduce the relative role of individual behavioral control, while amplifying the influence of evaluative attitudes and perceived social expectations.

The most prominent of this inquiry is the significant effect of Intention on Impulsive Buying. This result underscores the critical role of intention as the primary psychological mechanism translating consumers' cognitive and emotional responses into actual impulsive purchasing actions. In flash sale environments characterized by limited time and heightened promotional stimuli, intention emerges as the decisive factor that triggers spontaneous buying behavior.

From a managerial perspective, these findings imply that e-commerce platforms such as Shopee can enhance impulsive purchasing outcomes by designing flash sale experiences that reinforce positive attitudes and social validation cues. For example, platforms could Emphasize benefit messaging (discount rates, exclusive deals) and urgency signals (countdowns, remaining stock alerts) to elevate perceived value and enjoyment, integrate social proof elements such as user reviews, buyer counts, and influencer endorsements prominently in flash sale interfaces, streamline user interaction features (e.g., notifications about friends' activity, shareable flash sale badges) to leverage social influence. These actionable strategies can strengthen consumers' intention to buy impulsively, thus enhancing overall engagement and conversion during flash sale events.

3.7. Practical Implications

Based on the empirical findings, this research offers practical insights for e-commerce platforms and online sellers, particularly in designing effective flash sale strategies. As summarized in Table 10, each significant predictor in the TPB framework provides actionable insights for influencing consumers' impulsive buying behavior under time limited promotional conditions.

Table 10. Practical Implications

Predictor	What Platforms or Sellers Can Do	Expected Effect
Attitude (AT)	Highlight benefits + urgency (countdown, exclusive deals)	Higher intention to engage impulsively
Subjective Norms (SN)	Leverage social proof (reviews, influencer tags, share functions)	Increase social validation, stronger intention
Perceived Behavioral Control (PB)	Simplify checkout (one click buy, secure payment)	Reduce friction, slightly boost intention
Intention (IN)	Personalized reminders during flash sales	Direct conversion to impulsive purchase

First, attitude (AT) was identified as dominant predictor of impulsive buying intention. indicating that Consumers exhibit a greater tendency toward impulsive buying when flash sale offers are perceived as attractive and beneficial. Therefore, platforms and sellers

should emphasize clear value propositions, such as price discounts, limited time offers, and exclusive deals, supported by urgency cues like countdown timers. These strategies can strengthen positive consumer evaluations toward flash sales and directly enhance impulsive buying intention.

Second, subjective norms (SN) were found to have a substantial influence on impulsive buying intention, highlighting the importance of social influence in flash sale environments. This suggests that consumers tend to rely on others' opinions and behaviors when making quick purchasing decisions. To leverage this effect, platforms can enhance social proof mechanisms by displaying product reviews, real time purchase notifications, influencer endorsements, and sharing features. Such social validation signals can reinforce perceived social approval and further stimulate impulsive purchase intentions.

Third, perceived behavioral control (PB) showed a positive, albeit weaker, effect on impulsive buying intention. This implies that consumers are more likely to engage in impulsive purchases when they perceive the transaction process as easy and manageable. In practice, simplifying the checkout process through one click purchasing, secure and familiar payment options, and a user friendly interface can reduce perceived barriers and friction, thereby supporting impulsive decision making during flash sale events.

Finally, Intention (IN) was proven to have a strong and significant effect on actual impulsive buying behavior. This finding underscores the importance of converting intention into action in real time. Accordingly, platforms may utilize personalized reminders, push notifications, and in app alerts during flash sales to prompt immediate purchases, especially when aligned with users' browsing history or prior interest. These practical implications demonstrate how e-commerce platforms and sellers can strategically align promotional design, social features, and system usability with consumer psychological mechanisms to maximize the effectiveness of flash sale campaigns.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

4. CONCLUSION

This study concludes that TPB offers a solid explanatory basis to interpreting impulsive buying behavior within e-commerce flash sale settings. The results indicate that evaluative, social, and control-related factors hold a central position in influencing consumers' impulsive buying intention, which subsequently acts as the key mechanism driving actual impulsive purchasing behavior. Among these factors, attitude emerges as the leading contributor to intention, suggesting that favorable evaluations and affective responses toward flash sale offers exert a stronger impact than perceived control when purchase decisions are made under time pressure. The strong effect of intention on impulsive buying behavior highlights its central function as a psychological mechanism translating cognitive and social influences into spontaneous purchasing actions. Theoretically, this inquiry serves to advance by extending the applicability of TPB framework to digitally mediated, high-pressure promotional environments and by empirically reinforcing the dominant role of intention in impulsive consumption.

By drawing on data from an emerging market, this study adds empirical support to the TPB literature, particularly within a medium sized Indonesian city. By examining impulsive buying behavior during flash sales in Palembang, this research demonstrates that TPB constructs remain robust in non-Western, rapidly digitalizing markets where mobile-based e-commerce and socially embedded consumption practices are increasingly prevalent. The findings highlight that Attitude and Subjective Norms play a more dominant role than Perceived Behavioral Control in such contexts, underscoring how cultural and social dynamics play a pivotal role in the formation of consumer behavior in emerging digital economies.

From a practical perspective, the findings imply that e-commerce platforms operating in emerging markets can enhance the effectiveness of flash sale strategies by focusing on mechanisms that strengthen positive consumer attitudes and social validation. Emphasizing perceived benefits and enjoyment through attractive discount framing, urgency cues, and visually engaging flash sale interfaces may reinforce favorable evaluations toward impulsive purchases. In addition, integrating socially embedded features such as real time purchase indicators, user reviews, and influencer endorsements can amplify subjective norms and increase consumers' intention to buy

impulsively. These strategies are particularly relevant for local digital commerce platforms seeking to optimize flash sale performance in competitive and socially connected online marketplaces.

Despite its contributions, this study is subject to several limitations. First, the cross-sectional research design restricts causal interpretation of the observed relationships. Second, the data rely on self-reported measures, which may be susceptible to response bias. Third, the empirical context is limited to a single city and one e-commerce platform, which may constrain the generalizability of the findings. Future research is encouraged to employ longitudinal or experimental designs, extend the analysis to different regional or national contexts, and integrate additional constructs, including emotional arousal, promotional framing, or technological features to further enrich the comprehension of impulsive purchasing behavior in digital flash sale environments.

ACKNOWLEDGEMENT

The authors wish to convey their heartfelt thanks to all participants whose involvement made this study possible and generously supplied the data needed for the analysis. Heartfelt thanks are given to colleagues and academic mentors for their insightful direction and helpful critiques during the research journey. This research received backing from the academic resources and research facilities of Sriwijaya University. The authors express gratitude to everyone who contributed, whether directly or indirectly, to the completion of this research.

REFERENCES

[1] Y. Benn, T. L. Webb, B. P. I. Chang, and J. Reidy, "What information do consumers consider, and how do they look for it, when shopping for groceries online?," *Appetite*, vol. 89, pp. 265–273, 2015, doi: 10.1016/j.appet.2015.01.025.

[2] A. C. Haridasan, A. G. Fernando, and B. Saju, "A systematic review of consumer information search in online and offline environments," *RAUSP Manag. J.*, vol. 56, no. 2, pp. 234–253, 2021, doi: 10.1108/RAUSP-08-2019-0174.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

[3] S. D. Thamara, M. Syarif, and S. Suyono, "Triggers of Consumer Impulse Buying Behavior on E-Commerce Platforms: A Systematic Literature Review," *J. Ekon. dan Bisnis Digit.*, vol. 4, no. 3, pp. 325–334, 2025, doi: 10.55927/ministal.v4i3.14898.

[4] M. Afrina, Samsuryadi, A. R. C. Hussin, and S. Miskon, *Derivation of a Customer Loyalty Factors Based on Customers' Changing Habits in E-Commerce Platform*, vol. 72. Springer International Publishing, 2021. doi: 10.1007/978-3-030-70713-2_79.

[5] Y. Jiang and N. Stylos, "Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID- 19 . The COVID-19 resource centre is hosted on Elsevier Connect , the company ' s public news and information," *Technol. Forecast. Soc. Chang.*, no. January, 2021.

[6] V. Hokil, D. L. Pakiding, and U. U. Bubun, "Pengaruh Flash Sale E-Commerce Shopee Terhadap Keputusan Pembelian," *J. Ilmu Ekon. Manaj. dan Bisnis*, vol. 3, no. 2, pp. 96–109, 2025, doi: 10.30787/jiembi.v3i2.2116.

[7] M. Melis, "Tren Belanja Online Pada Masyarakat Kota Palembang Masa Pandemi Covid 19 (Analisis Perilaku Konsumen Perspektif Ekonomi Islam)," *SALAM J. Sos. dan Budaya Syar-i*, vol. 9, no. 4, pp. 1151–1166, 2022, doi: 10.15408/sjsbs.v9i4.26889.

[8] D. E. Dewanti, M. S. Wangi, and A. A. Itasari, "Pengaruh Konformitas Dan Iklan Pada Shopee Flash Sale Terhadap Keputusan Pembelian Produk Skin Care The Body Shop," *J. Ilmu Sos.*, vol. 7, no. 1, pp. 1–11, 2023.

[9] M. Afrina, N. Kawadha, A. Ariani, and M. F. Febriady, "The Effect of Chatbot Usage on Customer Satisfaction: A Quantitative Study of Shopee, Tokopedia, and Lazada Using SmartPLS," *J. Sisfokom (Sistem Inf. dan Komputer)*, vol. 14, no. 1, pp. 114–122, 2025, doi: 10.32736/sisfokom.v14i1.2380.

[10] S. F. Lamis, P. W. Handayani, and W. R. Fitriani, "Impulse buying during flash sales in the online marketplace," *Cogent Bus. Manag.*, vol. 9, no. 1, 2022, doi: 10.1080/23311975.2022.2068402.

[11] H. Nguyen-Van, T. Le-Duy-Duc, A. Nguyen-Duy, M. Pham-Thi-Tra, D. Ho-Ngoc, and A. Le- Hai, "Impact of Flash Sale on Impulse Buying on E-Commerce Platforms of Gen Z Consumers in Vietnam," *Int. J. Soc. Sci. Humanit. Manag. Res.*, vol. 3, no. 06, 2024, doi: 10.58806/ijsshmr.2024.v3i6n02.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

[12] T. T. A. Ngo, H. L. T. Nguyen, H. P. Nguyen, H. T. A. Mai, T. H. T. Mai, and P. L. Hoang, "A comprehensive study on factors influencing online impulse buying behavior: Evidence from Shopee video platform," *Heliyon*, vol. 10, no. 15, p. e35743, 2024, doi: 10.1016/j.heliyon.2024.e35743.

[13] P. Azhari Utami and I. Thaib, "The Influence of Scarcity on Flash Sale Against Impulsive Buying and Shopping Enjoyment with Attitude to Wards Flash Sale as a Mediating Variable on Shopee Users," *Int. J. Econ. Manag. Res.*, vol. 3, no. 3, pp. 351–358, 2025, doi: 10.55606/ijemr.v3i3.429.

[14] A. Hakim and A. S. Farid, "The Effects of 'Fear of Missing Out' (FOMO) in Flash Sale Business Models: Strategy or Manipulation?," *J. Perspekt.*, vol. 23, no. 1, pp. 16–24, 2025, doi: 10.31294/jp.v23i1.25259.

[15] W. Souisa, "Pembelian impulsif on the Internet," *J. Mirai Manag.*, vol. 7, no. 2, pp. 508–514, 2022, doi: 10.37531/mirai.v7i2.2674.

[16] W. Gunawan and R. Arfianti, "Impulse Buying Behavior and Social Interaction in Purchasing During the Pandemic (Perilaku Impulse Buying dan Interaksi Sosial dalam Pembelian di Masa Pandemi)," *SOSIOGLOBAL J. Pemikir. dan Penelit. Sosiol.*, vol. 5, no. 1, p. 44, 2020.

[17] D. Aulya, "The Influence of the Shopee Flash Sale Program on Impulsive Purchase Decisions of," *Int. J. Adm. Bus. Organ.*, vol. 3, no. 3, pp. 98–105, 2022.

[18] D. Hermawan and A. Rofiq, "The Effect of Flash Sale on Impulsive Buying with Positive Emotion as Mediating Variable among Shopee Users in Malang City," *East Asian J. Multidiscip. Res.*, vol. 3, no. 6, pp. 2067–2078, 2024.

[19] V. Rachmania, M. I. Ramadhan, and S. E. Fatimah, "The Impact of Scarcity and Flash Sale Techniques on Impulse Buying of Cosmetics," *J. Manag. Entrep. Res.*, vol. 6, no. 2, pp. 113–123, 2025, doi: 10.34001/jmer.2025.6.06.2-64.

[20] L. Nur Ramadhani and D. Ari Nugroho, "Pengaruh Live Streaming, Flash Sale, Dan Hedonic Shopping Motivation Terhadap Impulsive Buying," 2023.

[21] M. K. Nindy M.S. Maley, Ronald P.C. Fanggidae, "The Influence of Promotions, Price, and Hedonic Shopping Motives on Shopee Users' Impulsive Buying Behavior (A Study of FEB Undana Students) Pengaruh Promosi, Harga, Dan Motif Belanja Hedonis Terhadap Perilaku Pembelian Impulsif Pengguna Shopee (Study Pada Mahasiswa Feb Undana)," *GLORY J. Ekon. dan Ilmu Sos.*, pp. 123–141, 2022.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

[22] Y. Y. M. Zai, R. M. Nur, and S. N. Hafiza, "The Effect of Discount Flash Sale on Online Impulsive Buying of Mercubaktijaya University Students at Shopee Marketplace," *J. La Bisecoman*, vol. 6, no. 1, pp. 85–100, 2025, doi: 10.37899/journallabisecoman.v6i1.1942.

[23] I. Ajzen, "The theory of planned behavior," *Organ. Behav. Hum. Decis. Process.*, vol. 50, no. 2, pp. 179–211, 1991, doi: 10.1016/0749-5978(91)90020-T.

[24] L. Li and K. Kang, "Discovering online Chinese consumers' impulse buying in live streaming by the theory of planned behavior," *J. Econ. Anal.*, vol. 3, no. 2, pp. 121–133, 2024, doi: 10.58567/jea03020008.

[25] P. Amalia and S. D. Firmialy, "How does the Theory of Planned Behavior Mediate The Relationship Between Financial Literacy And Impulse Buying on Live Selling Platforms?," *Asia Pacific Manag. Bus. Appl.*, vol. 12, no. 3, pp. 251–268, 2024, doi: 10.21776/ub.apmba.2024.012.03.2.

[26] Z. A. Lubis, U. Musahidah, and S. Sa'adah, "Factors Influencing Purchase Decisions on Shopee Live Using the Theory of Planned Behavior (Faktor-Faktor Yang Memengaruhi Keputusan Pembelian Di Shopee Live Menggunakan Theory of Planned Behavior)," *Gt. J. Manaj. dan Bisnis Islam*, vol. 1, no. 2, pp. 236–251, 2024, doi: 10.62108/great.v1i2.755.

[27] J. Nyrhinen, A. Sirola, T. Koskelainen, J. Munnukka, and T. A. Wilska, "Online antecedents for young consumers' impulse buying behavior," *Comput. Human Behav.*, vol. 153, no. November 2022, p. 108129, 2024, doi: 10.1016/j.chb.2023.108129.

[28] N. Peña-García, I. Gil-Saura, A. Rodríguez-Orejuela, and J. R. Siqueira-Junior, "Purchase intention and purchase behavior online: A cross-cultural approach," *Heliyon*, vol. 6, no. 6, 2020, doi: 10.1016/j.heliyon.2020.e04284.

[29] F. La Barbera and I. Ajzen, "Control interactions in the theory of planned behavior: Rethinking the role of subjective norm," *Eur. J. Psychol.*, vol. 16, no. 3, pp. 401–417, 2020, doi: 10.5964/ejop.v16i3.2056.

[30] V. D. Tran, "Consumer impulse buying behavior: the role of confidence as moderating effect," *Heliyon*, vol. 8, no. 6, p. e09672, 2022, doi: 10.1016/j.heliyon.2022.e09672.

[31] D. W. Rook, "Journal of consumer research," *J. Consum. Res.*, vol. 14, no. 2, pp. 189–199, 1987, doi: 10.1016/0002-8223(94)92568-2.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

[32] M. Mandolfo and L. Lamberti, "Past, Present, and Future of Impulse Buying Research Methods: A Systematic Literature Review," *Front. Psychol.*, vol. 12, no. July, pp. 1–11, 2021, doi: 10.3389/fpsyg.2021.687404.

[33] S. P. Achira, S. Ambarwati, and P. C. Azwari, "The Impact of E-commerce Usage on Increasing the Income of Micro, Small, and Medium Enterprises (A Study in Palembang City) Pengaruh Penggunaan E-commerce terhadap Peningkatan Pendapatan Usaha Mikro Kecil Menengah (Penelitian di Kota Palembang)," *J. Ekon. KIAT*, vol. 34, no. 2, 2023, doi: 10.25299/kiat.2023.15397.

[34] E. Changreani, A. B. Manalu, R. F. Purb, and D. Putri, "The Influence of E-Wom and Digital Marketing on Purchasing Decisions at Shopee Marketplace in Palembang City," *J. Bus. Econ. Agribus.*, vol. 1, no. 2024, pp. 1–12, 2024.

[35] J. F. Hair, G. T. M. Hult, C. M. Ringle, M. Sarstedt, N. P. Danks, and S. Ray, *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Charm, Switzerland: Springer, 2021.

[36] A. B. Manalu and E. Changreani, "The Influence of Sales Promotion and Shopping Lifestyle on Impulsive Buying Behavior of Mr DIY in Palembang City," pp. 1–11, 2024, doi: 10.47134/jbea.v1i2.77.

[37] R. N. Sari, E. D. Purnamasari, and M. Veronica, "Pengaruh Motivasi Belanja Hedonis dan Flash Sale Terhadap Impulsive Buying di Shopee Pada Siswa / i SMA Bina Warga 1 Palembang," vol. 3, no. 3, pp. 740–751, 2024, doi: 10.56799/ekoma.v3i3.3102.