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THE IMPACT OF FLASH SALE, FREE SHIPPING, AND PAYMENT CONVENIENCE ON IMPULSIVE PURCHASING BEHAVIOR AMONG MARKETPLACE CONSUMERS IN YOGYAKARTA SPECIAL REGION

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Abstract

This study aims to identify the factors that influence consumers' impulsive purchases on marketplaces in Special Region of Yogyakarta, focusing on the variables of flash sale, free shipping, and ease of payment. The employed sampling approach was non-probability sampling utilizing a purposive strategy, whereby sample selection was predicated on established criteria. The study's criteria for respondents included users of marketplace platforms in Indonesia who actively engage in purchases and had previously utilized flash sale, free shipping, and digital payment methods in their transactions. The precise population size for this study remains undetermined. However, the optimal sample size was approximated to be 260 respondents based on 26 questionnaire items. Multiple regression analysis served as the analytical instrument. The study's findings indicate that impulse purchasing is positively influenced by flash sale, while free shipping and ease of payment do not significantly affect impulse purchasing. Additionally, the combined effect of flash sale, free shipping, and ease of payment is significant on impulse purchasing.

Keywords: flash sale, free shipping, ease of payment, impulse purchasing

INTRODUCTION

Digital technology has reshaped a wide range of social practices, including how people trade and consume (Syahban et al., 2025). As internet access has expanded worldwide, marketplace platforms have emerged as one of the principal channels through which contemporary transactions take place (Indriyani & Furqon, 2021). Indonesia illustrates the scale of this shift: APJII (2025) places the number of internet users at 229.4 million in 2025, equivalent to 80.66% of the national population, while marketplace transactions reached Rp 487 trillion in 2024 (GoodStats, 2025). At 42.6% of total ASEAN sales value, Indonesia also records the region's highest marketplace transaction value (Cube Asia, 2024), and within the domestic market Shopee leads with a 53.22% user share, ahead of TikTok Shop, Tokopedia, and Lazada (APJII, 2025).

Much of this convenience rests on digital payment systems that simplify how Indonesian consumers complete a purchase. Available methods range from options tied to a single platform, such as ShopeePay (Dewi & Amaniyah, 2025) and Lazada Wallet (Kontan, 2019), to instruments usable across platforms, including bank transfers, credit cards, and e-wallets (Putri & Pramurindra, 2022).

Because this range of options lets transactions be settled quickly and with little friction, it may shape how consumers decide to purchase (Fitriyani & Afrizal, 2024).

Wider market reach and easier product access, in turn, appear to push consumer behavior toward more impulsive tendencies (Syahban et al., 2025). Thakur et al. (2020) define impulsive buying as a spontaneous purchase decision made without prior planning, under the influence of momentary emotion. This behavior is common enough to account for close to half of all consumer transactions (Thakur et al., 2020). Identifying what drives it therefore carries practical weight, particularly for transactions on marketplace platforms, whose volume continues to grow.

Flash sale programs are one promotional format reported to shape impulsive buying (Rohman et al., 2023). This program offers a price reduction available only for a limited time and in limited stock (Wangi & Andarini, 2021). A number of studies attribute this to the sense of urgency flash sales generate (Norhilaliah & Agustina, 2024; Wijianto et al., 2024; Zai et al., 2025), while Pangesti et al. (2026) found the effect on impulsive buying to be inconsistent.

Additional support for a positive flash-sale effect comes from Adytya et al. (2024) and Aqsa et al. (2024), aligning with Wijianto et al. (2024): because flash sales impose both a time limit and a stock limit, they may generate the urgency and emotional pull that lead consumers to purchase without carefully weighing the decision. However, Ervina et al. (2024) and Pangesti et al. (2026) found that temporary price cuts in flash sales do not reliably translate into unplanned purchases. One possible explanation is that online buyers have grown more discerning, weighing product quality, other buyers' feedback, and prices across sellers before deciding, so that the urgency a flash sale creates may no longer outweigh deliberate evaluation. Technical friction during a flash sale, such as stock shortages or system errors, may compound this by eroding trust in the offer and, with it, the inclination to buy on impulse.

A second dimension of marketplace promotion concerns free shipping, a strategy platforms commonly deploy. For some consumers, shipping cost is itself a barrier to purchase, particularly when it exceeds the price of the product. Several studies report that waiving this cost lowers the perceived barrier and shortens the time consumers take to complete a transaction (Fattahillah et al., 2025; Ilyas et al., 2025; Pangesti et al., 2026), whereas a few others find no significant effect of free shipping on impulsive buying (Laksmawan & Handayani, 2024; Manafe et al., 2025).

Aprilia et al. (2023) and Ervina et al. (2024) similarly report a positive effect of free shipping on impulsive buying, consistent with the studies cited earlier. Waiving shipping cost lightens the overall cost consumers associate with an online purchase relative to one made without the promotion, and the minimum-purchase threshold often attached to a free-shipping voucher can prompt consumers to add unplanned items simply to qualify. By contrast, Laksmawan and Handayani (2024) and Manafe et al. (2025) report a different pattern: consumers tend to weigh real need and budget ahead of a shipping incentive, so free shipping functions as a supplementary benefit rather than a primary reason to buy. Conditions attached to the offer, such as a minimum purchase threshold or a restricted delivery area, may narrow its effect further, suggesting that free shipping's influence on impulsive buying depends on the purchasing considerations at play and the shopping context in which they arise.

Having considered these promotional strategies, this section turns to the ease of using digital payment systems, a third factor in how consumers purchase. Perceived ease of use, in the context of digital payment, denotes the confidence a user holds that a system requires little effort to operate (Davis, 1989), and this confidence shapes the degree to which the technology is accepted and used (Yuliana et al., 2020). On marketplace platforms, a smoother payment process may shorten the time to complete a transaction and, by extension, raise the likelihood of impulsive buying. A number of studies report a substantial association between ease of payment and impulsive buying (Lestari & Nuraeni, 2025; Susilowati et al., 2025; Wahyuningrum, 2025; Yanti & Sujana, 2024), while Zahra et al. (2026) found no significant relationship.

The positive effect of payment ease reported by Lestari and Nuraeni (2025), Susilowati et al. (2025), Wahyuningrum (2025), and Yanti and Sujana (2024) can plausibly be traced to the speed such ease affords. A payment process with few obstacles lets consumers settle a transaction faster and more efficiently, which may shorten the deliberation that precedes a decision, particularly when a consumer becomes interested in a product while browsing the marketplace. Methods such as QRIS, paylater services, and e-wallets extend this convenience further, leaving consumers more susceptible to purchasing without prior planning. However, Zahra et al. (2026) found no significant effect. As digital payment has become routine in everyday shopping, its convenience may have become an

unremarkable facility rather than a trigger for impulsive buying, so that payment ease is no longer treated as a primary driver of the emotional impulse behind a spontaneous purchase. Consumers, on this account, still weigh need, product benefit, and financial standing before completing a purchase.

Two broad conclusions follow from this body of work. First, evidence on how flash sales, free shipping, and payment ease affect impulsive buying remains inconsistent, with some studies reporting significant effects for all three variables and others reporting none. Second, the literature has concentrated disproportionately on cashback and discounts, or examined promotional variables one at a time; studies integrating payment ease, free shipping, and flash sales into a single model remain scarce, despite marketplaces routinely deploying all three together to stimulate impulsive purchasing.

The novelty of this study lies in integrating payment ease with two promotional variables, flash sales and free shipping, within a single model of their effects on impulsive buying in online marketplaces. These three variables were chosen because they represent different stages of the purchasing process. Flash sales cause urgency to purchase, free shipping reduces extra costs while shopping, and ease of payment minimizes obstacle while checking out a product. Examining them within a single model will provide more information of how promotional rewards and ease of payment may contribute to impulse buying.

The Special Region of Yogyakarta offers a relevant empirical setting for this study. Internet penetration there reached 91.18% in 2025, placing it among the provinces with the highest estimated penetration rates in Indonesia and above the national figure of 80.66% (APJII, 2025). Impulsive buying among marketplace consumers in the region has also been investigated using a different set of variables, providing a basis for extending the existing local evidence. Aprilia et al. (2023) investigated discounts and free shipping among Generation Z Shopee users in Yogyakarta, with seller service as a moderating variable. The present study builds on this local evidence by examining flash sales, free shipping, and ease of payment among marketplace consumers without restricting the sample to Generation Z or a single marketplace platform. Whereas Aprilia et al. (2023) examined a general discount variable, this study focuses specifically on flash sales, a promotional format limited by time and stock. It also adds ease of payment, a transaction-related factor that was not examined in the earlier study.

This gap calls for the present study, which aims to build more consistent empirical evidence on how Flash Sale, Free Shipping, and Ease of Payment jointly influence impulsive buying. In scientific terms, the study adds to the literature in two respects. First, it examines the three factors simultaneously within one model. Second, it supplies additional evidence on relationships that earlier studies have reported inconsistently. From a practical standpoint, the study responds to marketplace platforms' need to know whether promotional and transaction-related mechanisms, when used together, are comparably relevant to impulsive buying. The findings show that impulsive buying was significantly associated with Flash Sale, but not with Free Shipping or Ease of Payment. This pattern gives practitioners a basis for differentiating the roles of these mechanisms instead of assuming that all of them exert equal influence. For consumers, the findings underscore the value of making more deliberate purchase decisions when they encounter promotions limited by time or quantity.

LITERATURE REVIEW

Stimulus-Organism-Response Theory

The Stimulus-Organism-Response (S-O-R) theory originates with Mehrabian and Russell (1974) and has since been applied widely to explain consumer behavior, particularly within digital marketing. In an online retail setting, external factors such as flash sale promotions, free shipping, and ease of payment may shape a consumer's purchasing decision (Prasetya & Kuswati, 2025).

Hochreiter et al. (2023) describe the S-O-R model as comprising three stages. The first, stimulus, refers to the internal and external cues that trigger a purchase, arising both from the social and marketing context surrounding a consumer and from that consumer's own socio-psychological makeup. The second, organism, concerns the internal psychological process, spanning activation and cognition, through which a consumer becomes aware of a product and weighs the alternatives; this process is shaped strongly by the consumer's attitude toward the stimulus received, an attitude that can determine whether the stimulus proceeds to the next stage or resolves directly into a behavioral response. The third, response, is the behavioral outcome of this internal processing, taking the form either of approach, favorable engagement with the stimulus, or avoidance, its rejection or disregard. In

impulsive buying, the organism stage is dominated by affective activation rather than extended evaluation, so that the approach response occurs with limited deliberation (Thakur et al., 2020).

In this study, flash sales, free shipping, and payment ease are positioned as stimuli in the marketplace environment, and impulsive buying as the approach response. Each stimulus is expected to act on the organism through a distinct internal state. The time and stock limits of a flash sale may evoke a sense of urgency and emotional arousal; free shipping may lighten the perceived cost of a purchase and weaken the financial restraint that usually precedes it; and payment ease may reduce the effort and time needed to complete a transaction, narrowing the opportunity for deliberation, a pathway elaborated through the Technology Acceptance Model in the following section. When these internal states outweigh deliberate evaluation, the response may take the form of an unplanned purchase. The organism stage is not measured as a separate construct in this study; it serves as the theoretical explanation for the direct effects tested in the model.

Technology Acceptance Model

The Technology Acceptance Model (TAM), proposed by Davis (1989), explains why people adopt technology: users' beliefs inform their attitudes and intentions, and these in turn drive whether the technology is actually used (Zahra et al., 2026).

Natsir et al. (2023) identify two perceptions through which acceptance is formed within this model. Perceived usefulness refers to how far users believe a technology makes their activities more effective. Perceived ease of use refers to how easy users judge a system to operate and how little effort they expect it to need.

This study adopts perceived ease of use instead of perceived usefulness, because the digital payment variable under examination relates to how much effort a payment system requires, not to the benefits it provides. Within TAM, the belief that a system takes little effort to use influences the extent of its acceptance and use (Yuliana et al., 2020). Once digital payment is accepted, marketplace transactions can be completed with minimal friction, a condition that may affect how consumers reach a purchase decision (Fitriyani & Afrizal, 2024). Research on the pain of paying adds a further explanation of why this matters. The discomfort consumers feel when parting with money typically restrains spending, and payment methods that make the outflow less noticeable may dampen that restraint (Prelec & Loewenstein, 1998). When paying requires little effort, the gap between initial interest in a product and completing the purchase shrinks, which may limit the opportunity to reflect before an unplanned purchase goes through. TAM and S-O-R therefore complement each other in this study, an integration also used by Hoang et al. (2023) to explain impulsive buying urges. S-O-R supplies the overarching framework, with flash sales, free shipping, and ease of payment as stimuli and impulsive buying as the response, while TAM accounts for why ease of payment can serve as a stimulus.

Flash Sale

Flash sale is a promotional strategy in which marketplace platforms offer products at a discounted price for a set period and in limited quantity (Zakiyah et al., 2025). Such conditions may pressure consumers to act immediately, raising their likelihood of buying on impulse (Martaleni et al., 2022). Marketplace platforms also commonly run flash sales to clear inventory and to introduce new or limited-edition products (Divya et al., 2025; Rahmah et al., 2025).

Kotler and Keller (as cited in Ervina et al., 2024) propose that flash sales can be measured through four indicators: (1) promotion frequency, the regularity with which sales promotions are offered to consumers over a given period; (2) promotion quality, the effectiveness of the promotion strategy; (3) promotion timing, the duration for which a sales promotion strategy is carried out; and (4) determination and appropriateness of promotion targets, a factor critical to achieving the company's objectives.

Free Shipping

Free shipping is one of the promotional strategies marketplace platforms implement, under which consumers are not charged a delivery fee when making a purchase (Hidayah & Ahmadi, 2025). Platforms apply this strategy to raise customers' interest in transacting on the marketplace (Nasution et al., 2023). Prospective buyers often hesitate before purchasing because of the shipping cost involved

(Pratama et al., 2021); free shipping has accordingly been found to ease this perceived cost burden and, in doing so, encourage impulsive purchases (Istikomah & Hartono, 2022).

Razali et al. (2022) state that free shipping promotions can be measured through four indicators, namely: (1) free shipping attracts consumer attention; (2) free shipping has strong appeal; (3) free shipping increases consumers' desire to purchase; (4) free shipping motivates purchase actions.

Ease of Payment

Ease of payment reflects how simply and efficiently users perceive a technology-based payment system to function. Earlier studies indicate that digital payment options make transactions more convenient and quicker, which contributes to a more comfortable payment process overall (Maulana et al., 2024; Prayoga et al., 2025). When a system is perceived as easy to operate, users are more inclined to rely on it for online transactions, a tendency that can encourage impulsive purchases (Fakriah et al., 2025).

Ease of use, in the context of technology, is conceptualized through the Technology Acceptance Model (TAM) proposed by Davis (1989, as cited in Zahra et al., 2026). Under this model, technology adoption depends primarily on two perceptions: perceived usefulness and perceived ease of use. This study draws on perceived ease of use to explain how users perceive the ease of using digital payment systems on marketplace platforms.

Wahyuningrum (2025) states that ease of payment can be measured through four indicators, namely: (1) easy to learn, how readily a consumer can understand and operate the digital payment system on a marketplace platform; (2) easy to use, the degree of ease a consumer experiences in completing a digital transaction without technical obstacles; (3) clear and understandable, the extent to which the interface and user experience of the digital payment system make it easy for a consumer to understand how to transact; (4) flexible, the system's capacity to be used across varied transaction conditions according to consumer needs.

Impulse Buying

Impulsive buying is characterized by a spontaneous purchase driven by emotion and made without deliberate prior planning (Rook & Fisher, 1995, as cited in Fitriyah & Pohan, 2023). This behavior is typically triggered by external stimuli such as attractive offers and product displays (Wijianto et al., 2024), under which the purchase decision is made quickly and with little rational consideration, leading consumers to buy something they had not previously intended to.

Rook and Fisher (1995, as cited in Fitriyah & Pohan, 2023) identify four indicators to measure impulsive buying, namely: (1) spontaneity, the sudden and unexpected urge that can prompt a consumer to purchase a product immediately; (2) power, compulsion, and intensity, the factors that drive a consumer to act on a purchase directly; (3) excitement and stimulation, the sudden urge that motivates a consumer to buy in pursuit of pleasure and satisfaction; (4) disregard for consequences, a condition in which the consumer does not weigh the negative consequences of the impulsive purchase.

The Effect of Flash Sale on Impulse Buying

Flash sale promotions may generate not only a sense of urgency from their limited time and availability, but also positive emotions such as excitement and enjoyment throughout the shopping experience, both of which can shape how consumers engage with and perceive a promotional offer on a marketplace platform. Viewed through the Stimulus-Organism-Response (S-O-R) perspective, the emotional engagement a flash sale evokes may lead consumers to experience the shopping process as more engaging and enjoyable; this positive response, in turn, may strengthen their perception of the platform and push purchase decisions toward being faster and less deliberative, raising the tendency toward impulse buying.

This is consistent with prior studies reporting a significant relationship between flash sale promotions and impulsive buying (Adytya et al., 2024; Aqsa et al., 2024; Wijianto et al., 2024), although Ervina et al. (2024) and Pangesti et al. (2026) reported the opposite, finding no significant effect of flash sale promotions on impulse buying.

H1: It is believed that flash sale has a positive impact on consumers’ impulse purchases.

The Effect of Free Shipping on Impulse Buying

Shipping fees are widely seen as an extra burden in online shopping. A free shipping promotion eliminates this charge, so the purchase looks financially more attractive to consumers. From the Stimulus-Organism-Response (S-O-R) perspective, free shipping acts as an external stimulus that shapes how consumers evaluate a purchase. A lower perceived cost may ease the financial barrier to the transaction and reduce consumers' concern about the total amount they pay. With cost weighing less in their evaluation, consumers have less reason to postpone or reconsider the purchase and may be more inclined to buy immediately. This reasoning leads to the expectation that free shipping can increase impulsive buying.

Earlier studies are divided on free shipping and impulsive buying. Some report a significant effect (Aprilia et al., 2023; Ervina et al., 2024), while others detect none (Laksmawan & Handayani, 2024; Manafe et al., 2025). The disagreement concerns whether an effect appears at all, not its direction, since none of these studies points to a negative relationship. Such inconsistency points to the possibility that the impact of free shipping depends on the way the promotion is offered. Despite this inconsistency, the positive findings suggest that eliminating an extra cost can increase consumers' willingness to complete a purchase, especially when they perceive the promotion as beneficial. In those cases, a lower perceived cost may ease the barrier to acting on an immediate desire to buy, providing both theoretical reasoning and empirical support for expecting a positive effect of free shipping on impulsive buying.

H2: It is believed that free shipping has a positive impact on consumers' impulsive purchases.

The Effect of Ease of Payment on Impulse Buying

Ease of payment can lower the effort needed to complete an online purchase. In the Technology Acceptance Model (TAM), perceived ease of use denotes the degree to which consumers regard a technology as simple to use and demanding little effort. Applied to digital payment, this perception may make the payment process easier to navigate and reduce the effort of finishing a transaction. From the Stimulus-Organism-Response (S-O-R) perspective, the ease a digital payment system offers can act as an external stimulus that shapes consumers' responses during purchasing. When payment demands less effort and involves less friction, fewer interruptions may arise between the desire to buy and the completion of the transaction. This matters especially for impulsive buying, because a spontaneous purchase desire may not lead to an actual purchase if consumers meet obstacles or gain more time to reconsider. Ease of payment therefore may not necessarily generate the initial urge to buy, but it can help convert an existing spontaneous desire into an actual purchase, raising the likelihood of impulsive buying.

A number of earlier studies report a significant positive effect of ease of payment on impulsive buying (Lestari & Nuraeni, 2025; Susilowati et al., 2025; Wahyuningrum, 2025; Yanti & Sujana, 2024), but Zahra et al. (2026) did not find a significant effect. As in the case of free shipping, the discrepancy lies in whether an effect is detected, not in its direction. Such inconsistency suggests that the part played by ease of payment in impulsive buying may depend on how consumers perceive and use digital payment services. Even so, the positive findings indicate that reducing the effort needed to complete a transaction can help consumers act on a spontaneous desire to buy. Accordingly, notwithstanding the mixed evidence, a positive relationship between ease of payment and impulsive buying is theoretically expected because TAM's account of perceived ease of use and the broader S-O-R view of how external stimuli shape consumer responses both support this expectation.

H3: It is believed that ease of payment has a positive impact on consumers' impulsive purchases.

Conceptual Framework

Impulsive buying reflects a purchase decision made spontaneously and with limited deliberation, shaped by external factors such as promotional offers and the convenience a system provides. Consumers are drawn toward such purchases by the urgency a flash sale's limited-time discount creates, an urgency that can crowd out careful consideration (Norhilaliah & Agustina, 2024; Wijianto et al., 2024).

The absence of a delivery charge may similarly ease consumers' hesitation to proceed with a purchase, making an unplanned decision more likely (Fattahillah et al., 2025; Ilyas et al., 2025; Pangesti et al., 2026).

Ease of payment, in turn, makes the transaction process faster and more practical, shortening the time consumers spend deliberating and prompting them to transact right away, a pattern of

spontaneous decision-making consistent with the Technology Acceptance Model and with prior research (Lestari & Nuraeni, 2025; Susilowati et al., 2025; Wahyuningrum, 2025; Yanti & Sujana, 2024). Based on this discussion, the relationships among the variables are set out in the research framework below.

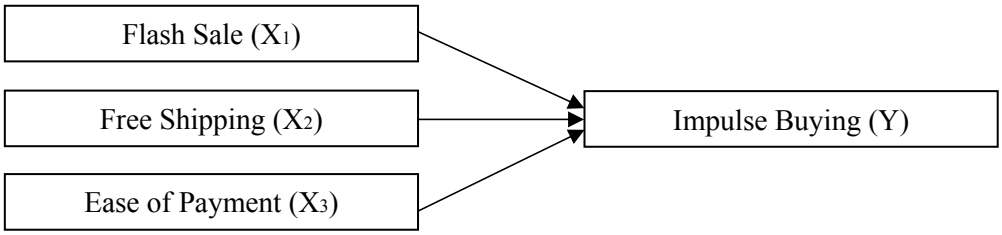


Figure 1. Conceptual Framework

RESEARCH METHOD

This study employs a quantitative approach to examine the effects of flash sales, free shipping, and ease of payment on impulsive buying among marketplace users in Indonesia. Respondents were selected through non-probability sampling, specifically purposive sampling, under which selection follows a set of predetermined criteria. No specific demographic quotas were set in this study. The sample comprised Indonesian marketplace consumers residing in the Special Region of Yogyakarta who actively make purchases and have used flash sale programs, free shipping, and digital payment methods in their transactions. Following the formula proposed by Hair et al. (2022), an adequate sample size falls between five and ten times the number of indicators in the study; with 26 questionnaire items in the present research, the target sample size was set at 260 respondents.

Flash sale (X1), free shipping (X2), and ease of payment (X3) serve as the independent variables in this study, with impulsive buying (Y) as the dependent variable. Table 1 presents the operational definition and corresponding indicators for each variable.

Table 1.
Operational definitions and indicators of variables

Variable	Operational definition	Indicator
Flash Sale (X1)	Sales promotion strategy by marketplace platforms that offer products in limited quantities, special prices, and for a short period of time (Zakiyah et al., 2025)	Promotion frequency
		Promotion quality
		Promotion timing
		The determination and appropriateness of promotion targets
Free Shipping (X2)	Promotional strategy that offers free shipping to consumers on marketplace platforms (Hidayah & Ahmadi, 2025; Nasution et al., 2023).	Free shipping attracts consumer attention
		Free shipping has strong appeal
		Free shipping increases the desire to buy
		Free shipping motivates purchase actions.
Ease of Payment (X3)	User perceptions of the convenience, transaction speed, and efficiency offered by digital payment system while making purchases through marketplace platform (Maulana et al., 2024; Prayoga et al., 2025)	Easy to learn
		Easy to use
		Clear and easy to understand
		Flexible
Impulsive Buying (Y)	Spontaneous consumers purchasing behavior that occurs without prior	Spontaneity
		Power, compulsion, and intensity

	planning due to emotional impulses or external stimuli (Rook & Fisher, 1995 in Fitriyah & Pohan, 2023; Wijianto et al., 2024)	Excitement and stimulation
		Disregard for consequences

Data were collected through a questionnaire built around the indicators representing each research variable. Respondents' attitudes, judgements, and perceptions were measured on a Likert scale following Sugiyono (2019), with responses ranging from 1 (strongly disagree) to 5 (strongly agree). For the regression analysis, responses to the items representing each construct were totaled to obtain a composite score for each variable.

Multiple linear regression served as the main analytical technique. The multiple linear regression model used in this study was specified as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

where Y represents impulsive buying, α is the constant, β_1, β_2, and β_3 are the regression coefficients of flash sale, free shipping, and ease of payment, respectively, X1, X2, and X3 represent the corresponding independent variables, and ε is the error term. Before hypothesis testing, the research instrument was assessed for adequacy through three stages. The first stage tested data feasibility, comprising validity and reliability tests. The second consisted of the classical assumption tests: normality using a Probability-Probability (P-P) Plot, multicollinearity using Tolerance and Variance Inflation Factor (VIF) values, and heteroscedasticity using a Scatterplot and Glejser test. The final stage carried out hypothesis testing itself, made up of the F-test (simultaneous), the t-test (partial), and the coefficient of determination (R^2), to establish the effect of the independent variables on the dependent variable.

RESULT AND DISCUSSION

Research Result

Table 2 summarizes the characteristics of the 260 respondents who completed the questionnaire. Of these respondents, 153 (58.8%) were male and 107 (41.2%) were female. Respondents aged 21–25 years formed the largest age group, numbering 126 (48.5%). In terms of domicile, the largest share of respondents lived in Sleman Regency (125; 48.1%), followed by Yogyakarta City (81; 31.2%). Nearly three-quarters of the sample (187; 71.9%) used Shopee most frequently, while TikTok Shop ranked second with 55 respondents (21.2%). The most common shopping frequency was two to three times per month, reported by 125 respondents (48.1%).

Table 2.
Respondent Data

Characteristic	Category	Amount	Percentage (%)
Gender	Male	153	58,8%
	Female	107	41,2%
Age	17–20	56	21,5%
	21-25	126	48,5%
	26-30	9	3,5%
	31-40	29	11,2%
	41-50	40	15,4%
Domicile	Yogyakarta City	81	31,2%
	Sleman Regency	125	48,1%
	Bantul Regency	38	14,6%
	Kulonprogo Regency	3	1,2%
	Gunungkidul Regency	13	5%
Marketplace	Shopee	187	71,9%
	TikTok Shop	55	21,2%

	Tokopedia	17	6,5%
	Lazada	1	0,4%
Shopping Frequency (times/month)	1	74	28,5%
	2-3	125	48,1%
	4-5	22	8,5%
	>5	36	13,8%
	Never	3	1,2%

Source: processed primary data, 2026

Validity Test

A validity test was performed to evaluate the quality of the indicators employed to measure the research variables. For each indicator, the computed correlation coefficient (r-count) was compared with the critical value from the r table (r-table). Following Ghozali (2021), an item is deemed valid if its r-count is greater than the r-table value.

Table 3.
Validity Test Result

Variable	Indicator	Item	R value	R table	Result
Flash Sale (X1)	Promotion frequency	X1.1	.777	0,121	Valid
		X1.2	.560	0,121	Valid
	Promotion quality	X1.3	.828	0,121	Valid
		X1.4	.842	0,121	Valid
	Promotion timing	X1.5	.668	0,121	Valid
	The determination and appropriateness of promotion targets	X1.6	.809	0,121	Valid
		X1.7	.816	0,121	Valid
Free Shipping (X2)	Free shipping attracts consumer attention	X2.1	.721	0,121	Valid
		X2.2	.747	0,121	Valid
	Free shipping has strong appeal	X2.3	.739	0,121	Valid
	Free shipping increases consumers' desire to purchase	X2.4	.780	0,121	Valid
	Free shipping motivates purchase actions.	X2.5	.813	0,121	Valid
Ease of Payment (X3)	Easy to learn	X3.1	.790	0,121	Valid
		X3.2	.828	0,121	Valid
	Easy to use	X3.3	.873	0,121	Valid
		X3.4	.870	0,121	Valid
	Clear and easy to understand	X3.5	.876	0,121	Valid
		X3.6	.875	0,121	Valid
	Flexible	X3.7	.760	0,121	Valid
		X3.8	.788	0,121	Valid
Impulsive Buying (Y)	Spontaneity	Y1.1	.791	0,121	Valid
		Y1.2	.820	0,121	Valid
	Power, compulsion, and intensity	Y1.3	.618	0,121	Valid
	Excitement and stimulation	Y1.4	.813	0,121	Valid
	Disregard for	Y1.5	.659	0,121	Valid

consequences	Y1.6	.775	0,121	Valid

Source: processed primary data, 2026

As Table 3 shows, 26 questionnaire items were used to measure flash sales (X1), free shipping (X2), ease of payment (X3), and impulsive buying (Y). The r-count of every item exceeded the r-table value, confirming that all items across the four variables were valid.

Reliability Test

A reliability test was also carried out to establish whether the research instrument would yield consistent results if administered repeatedly under relatively similar conditions. Cronbach's alpha was calculated for each variable. Following Ghozali (2021), a variable is considered reliable when its Cronbach's alpha value is greater than 0.60.

Table 4.
Reliability Test Result

Variable	Cronbach's Alpha	Criteria	Result
Flash Sale (X1)	0,880	Cronbach's Alpha > 0,60 thus reliable	Reliable
Free Shipping (X2)	0,816		Reliable
Ease of Payment (X3)	0,936		Reliable
Impulsive Buying (Y)	0,842		Reliable

Source: processed primary data, 2026

Table 4 shows that the Cronbach's alpha values for flash sales (X1), free shipping (X2), ease of payment (X3), and impulsive buying (Y) all exceeded 0.60, indicating that each variable can be regarded as reliable.

Normality Test

The normality test, according to Ghozali (2021), examines whether the residuals a regression model generates follow a normal distribution, normally distributed residuals being one hallmark of a well-specified model. As specified in the research methodology, normality was assessed using the Probability-Probability Plot (P-P Plot), under which residuals are taken as normally distributed when the plotted points cluster around the diagonal line and broadly follow its direction.

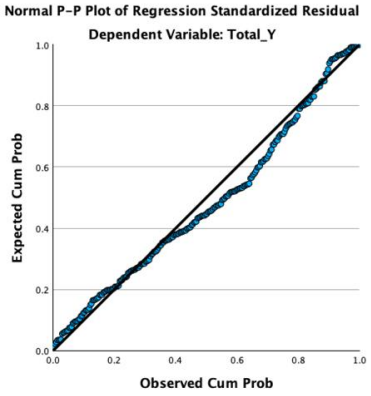


Figure 2. Normality Test

As shown in the Normal P-P Plot (Figure 2), the data points are dispersed largely along the diagonal line and follow its direction although minor deviations appear in a few areas, the overall pattern remains close to the diagonal. This indicates that the residuals produced by the regression model are normally distributed, so that the normality assumption is satisfied.

Multicollinearity Test

The multicollinearity test, per Ghozali (2021), identifies whether the independent variables in a regression model are correlated with one another. As specified in the research methodology, multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF) values. A model is judged free of multicollinearity when Tolerance exceeds 0.1 or VIF falls below 10.

Table 5.
Multicollinearity Test Result

Model	Collinearity Statistics	
	Tolerance	VIF
Coefficient		
Flash Sale (X1)	0,798	1,253
Free Shipping (X2)	0,709	1,441
Ease of Payment (X3)	0,792	1,263

Source: processed primary data, 2026

Based on the data presented in Table 5, the Flash Sale (X1) variable has a tolerance value of 0.798 > 0.1 and a VIF value of 1.253 < 10. The Free Shipping (X2) variable has a tolerance value of 0.709 > 0.1 and a VIF value of 1.441 < 10. The Ease of Payment (X3) variable has a tolerance value of 0.792 > 0.1 and a VIF value of 1.263 < 10. Therefore, multicollinearity is not shown in the regression model

Heteroscedasticity Test

The heteroscedasticity test establishes whether residual variance in a regression model differs across observations (Ghozali, 2021). A model is deemed free of heteroscedasticity when this variance stays relatively constant throughout. As specified in the research methodology, heteroscedasticity was checked through a scatterplot of the standardized predicted values of the dependent variable (ZPRED) against the studentized residuals (SRESID), with the model judged free of heteroscedasticity when the points scatter randomly above and below zero on the Y-axis without forming a discernible pattern.

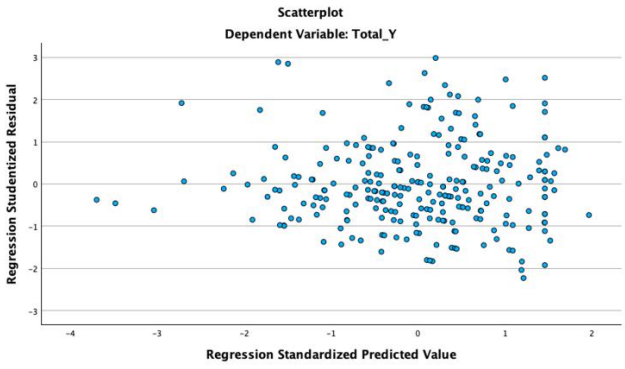


Figure 3. Scatterplot

As Figure 3 shows, the points scatter randomly above and below zero on the Y-axis, with no discernible pattern. Although some cluster in particular areas, none shows the systematic narrowing or widening typical of heteroscedasticity. The regression model therefore appears free of heteroscedasticity.

Heteroscedasticity was further examined using the Glejser test, in which the absolute residuals were regressed on the independent variables. A significance value above 0.05 for a given predictor indicates that the predictor does not significantly predict the absolute residuals.

Table 6.
Glejser Test Result

Model	Unstandardized B	Std. Error	t	Sig.

Constant	0,942	1,636	0,576	0,565
Flash Sale (X1)	0,062	0,038	1,630	0,104
Free Shipping (X2)	0,024	0,069	0,343	0,732
Ease of Payment (X3)	0,022	0,046	0,468	0,640

a. Dependent Variable: Abs_RES

Source: processed primary data, 2026

As shown in Table 6, the Glejser test yielded significance values of 0.104 for Flash Sale (X1), 0.732 for Free Shipping (X2), and 0.640 for Ease of Payment (X3). Because every value exceeded 0.05, none of the independent variables significantly predicted the absolute residuals. Accordingly, the test revealed no evidence of heteroscedasticity in the regression model.

Multiple Linear Regression Analysis

Table 7.
Multiple Linear Regression

Variable	Regression Coefficient	Std. Error	t-statistics Value	Sig	sr^2	f^2
Constant	8,198	2,600	3,153	0,002		
Flash Sale (X1)	0,349	0,060	5,785	<0,001	0,114	0,131
Free Shipping (X2)	-0,068	0,110	-0,625	0,532	0,001	0,002
Ease of Payment (X3)	-0,029	0,074	-0,395	0,693	0,001	0,001
F-statistics = 12,362 R^2 = 0,127 Adjusted R^2 = 0,116				<0,001		

Source: processed primary data, 2026

Based on Table 7 above, the regression equation formed in this regression test is:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

$Y =$ 8,198 + 0,349 Flash Sale - 0,068 Free Shipping - 0,029 Ease of Payment

The regression coefficient for flash sales (X1) was 0.349, indicating a positive effect on impulsive buying (Y): each one-unit increase in flash sales was associated with a 0.349-unit increase in impulsive buying. Flash sales were a significant predictor of impulsive buying (t = 5.785, p < 0.001), as the significance value fell below the 0.05 level. Flash sales (X1) therefore have a positive and significant effect on impulsive buying (Y), and Hypothesis 1 was supported.

Free shipping (X2) had a regression coefficient of -0.068, indicating a negative effect on impulsive buying (Y); accordingly, each one-unit increase in free shipping was associated with a 0.068-unit decrease in impulsive buying. This effect did not reach statistical significance (t = -0.625, p = 0.532), since the significance value exceeded 0.05. Free shipping (X2) has a negative but non-significant effect on impulsive buying (Y), and Hypothesis 2 was therefore not supported.

Ease of payment (X3) yielded a regression coefficient of -0.029, suggesting a negative effect on impulsive buying (Y), which means that each one-unit increase in ease of payment corresponded to a 0.029-unit decrease in impulsive buying behavior. The t-test produced a t value of -0.395 and a p value of 0.693, which is higher than the 0.05 significance level. Hence, ease of payment (X3) has a negative but non-significant effect on impulsive buying (Y), and Hypothesis 3 was not supported.

An F-test was carried out to examine the simultaneous effect of flash sales (X1), free shipping (X2), and ease of payment (X3) on impulsive buying (Y). The test produced an F value of 12.362 with

$p < 0.001$, below the 0.05 significance level set for this study. These results indicate that the three independent variables jointly have a significant effect on impulsive buying (Y).

The adjusted R^2 was 0.116, indicating that flash sales (X1), free shipping (X2), and ease of payment (X3) jointly accounted for 11.6% of the variance in impulsive buying (Y). The remaining 88.4% represents variance in impulsive buying that is not explained by the variables included in the model. This modest explanatory power suggests that impulsive buying is influenced by a wider set of determinants than the three examined here, including promotional, psychological, and consumer-related factors. This is consistent with the nature of impulse buying as a behavior that is shaped by external stimuli in the marketplace and consumers' internal states and conditions while purchasing. The model therefore offers only a partial account of impulsive buying, although the significant F-test indicates that the three predictors remain jointly relevant to the dependent variable. Academically, this finding suggests that impulsive buying is a multidimensional behavior that cannot be sufficiently explained by promotional and transaction-related factors alone. Future research could extend the model by incorporating additional factors to provide a more comprehensive explanation of impulsive buying.

Discussion

The Impact of Flash Sales on Impulsive Buying

Flash sales were positively and significantly associated with impulsive buying ($p < 0.001$), supporting H1. The estimated coefficient was positive ($B = 0.349$), indicating a positive direction in the relationship. Holding free shipping and ease of payment constant, respondents who evaluated flash sale programs more positively tended to report a greater inclination to buy without prior planning. Since the data are cross-sectional, the finding reflects an association consistent with the hypothesized relationship; it does not directly demonstrate that flash sales produce impulsive purchases.

In terms of effect size, flash sales uniquely explained about 11.4% of the variance in impulsive buying ($sr^2 = 0.114$; $f^2 = 0.131$). By Cohen's (1988) benchmarks, this represents a small effect, although it is near the upper end of that category. This share constitutes nearly all of the variance explained by the full model ($R^2 = 0.127$), whereas free shipping and ease of payment contributed almost nothing after flash sales were accounted for. In questionnaire units, increasing each of the seven flash sale items by one response category corresponds to an increase of about 2.4 points in the summed impulsive buying score, or an average increase of roughly 0.4 response category per impulsive buying item. The effect is therefore meaningful but far from decisive. Most of the variation in impulsive buying lies beyond flash sales, which accords with the view that impulsive buying results from external stimuli combined with consumers' internal states.

Impulsive buying was measured as a self-reported tendency, not as spending or transaction value, so the data here cannot translate the association between flash sales and impulsive buying into monetary terms. Its economic relevance can nevertheless be considered against the scale of the behavior involved. Impulse buying has been described as accounting for approximately 50% of customers' total spending (Thakur et al., 2020), while the value of e-commerce transactions in Indonesia reached Rp 487 trillion in 2024 (GoodStats, 2025). A difference in consumers' tendency to buy impulsively is therefore relevant to an activity of substantial economic scale. Whether such a difference translates into net gains for platforms or sellers, however, also depends on the margins affected by price reductions and the operating costs of time-limited campaigns, both of which would require transaction-level data to assess.

This result supports the findings of Norhilaliah and Agustina (2024), Wijianto et al. (2024), and Zai et al. (2025), who each found that flash sales significantly and positively influence impulse buying. One possible explanation is that discounts offered within a short window draw consumers' attention and pull purchase decisions earlier, before the offer lapses, while limits on duration and stock may create a sense of urgency that curbs deliberation. Flash sales may also make the shopping experience more stimulating, so positive emotion may accompany urgency in triggering unplanned purchases, a reading that is consistent with the excitement-and-stimulation dimension of impulsive buying (Rook & Fisher, 1995, as cited in Fitriyah & Pohan, 2023). Perceived urgency may also differ depending on the timing of the promotion, how long it stays available, and how attractive consumers judge it to be. The flash sale measure in this study, however, assessed promotion frequency, quality, timing, and targeting instead of perceived urgency itself, so the urgency account remains an interpretation, not a mechanism that was tested.

The results also bear on the theoretical framework. Within the S-O-R framework, when the three stimuli were examined together, only flash sales, as the promotional stimulus examined in this study, were significantly associated with impulsive buying. The stimuli that reduce the cost of a purchase or the effort of completing it did not show a significant association. Although the contrast relies on significance values and not on a formal comparison of the coefficients, it suggests that impulsive responses may be more closely related to promotional stimuli that create immediate psychological engagement than to stimuli that primarily facilitate the transaction. This interpretation is consistent with the S-O-R perspective, in which external stimuli may influence behavioral responses through consumers' internal psychological states (Thakur et al., 2020). Since the organism stage was not measured in this study, future research could examine whether perceived urgency and positive emotion mediate the relationship between flash sales and impulsive buying.

Ervina et al. (2024) and Pangesti et al. (2026) show a different pattern, reporting that flash sales do not always lead to impulsive purchases. Some consumers, especially younger ones, keep weighing price, product quality, and user reviews even while a promotion is under way, and exhausted stock or system failures at checkout can erode interest before the purchase is finalized. This is consistent with the small effect found in the present study: the flash-sale measure was associated with a higher tendency to buy impulsively, but the presence of a flash sale alone was not sufficient to account for most variation in impulsive buying.

The Impact of Free Shipping on Impulsive Buying

Unexpectedly, free shipping did not significantly predict impulsive buying ($p = 0.532$). The estimated coefficient had a negative sign ($B = -0.068$), suggesting an inverse direction in the relationship. Since this coefficient was not statistically significant, though, the direction cannot be taken as evidence that free shipping lowers impulsive buying. Accordingly, the data do not provide enough evidence that this type of promotion reliably leads marketplace users in the Special Region of Yogyakarta to buy things they had not planned.

The negative sign may reflect the contextual role of free shipping in the purchasing process. Free shipping may act chiefly as a supplementary benefit and not as a psychological driver that directly sets off impulsive buying. Waiving a shipping fee does lower the total price of a purchase, but a lower price does not automatically create a stronger wish to buy. If free-shipping promotions appear often on a marketplace, consumers may see them as an ordinary feature of online shopping instead of a special incentive that generates urgency. Free shipping may then remove one financial concern while leaving untouched the more basic need or desire driving interest in the product. Consumers may still ask whether the product is needed, whether the price is fair, whether the quality meets their expectations, and whether the purchase fits their budget. These questions can outweigh the shipping benefit itself. Consequently, free shipping may make an already-formed purchase decision easier to carry out without necessarily making it impulsive. This could explain the negative coefficient: respondents who came across or valued free-shipping promotions may still have depended on other considerations before buying, which left little or no inclination to buy impulsively. Because the relationship was not significant, however, the negative coefficient is better understood as a pattern in this sample than as a sign that free shipping genuinely discourages impulsive buying.

This null result is consistent with Laksmawan and Handayani (2024) and Manafe et al. (2025), who likewise reported that free shipping had no significant bearing on impulsive buying. One explanation is that consumers may assign more weight to promotions with a more immediate or noticeable financial payoff, such as discounts or cashback, than to waived delivery fees (Rahayu et al., 2025). Free shipping lowers one component of the transaction cost, but it may not alter how consumers evaluate the product itself. Informational cues may also matter in the purchase decision. Hartanto et al. (2025) reported that customer reviews and cashback shaped online buying decisions. This points to the possibility that consumers draw on information from other buyers, as well as other forms of promotional value, when judging whether a product is worth buying. Such evaluation gives consumers more reasons to examine a purchase before finalizing it, which may weaken the pull toward spontaneous buying.

Fattahillah et al. (2025), Ilyas et al. (2025), and Pangesti et al. (2026) reach a different conclusion from the present finding. They argue that free shipping can lessen the barrier that perceived cost creates and thereby promote impulsive purchase decisions. In this view, a waived delivery fee makes the deal look more attractive and raises the value consumers see in the promotion, which may prompt

them to finish buying before the offer ends. They also suggest that when free shipping requires a minimum spend, consumers may put extra items in their carts to meet it, which raises the odds of unplanned purchases. The gap between those findings and the present result may therefore stem from respondent characteristics, marketplace platforms, promotional conditions, or consumers' perceptions of free-shipping offers. Here, respondents may have regarded free shipping as a routine saving rather than a time-limited promotional stimulus. The current data, though, cannot establish which of these contextual factors accounts for the negative coefficient. Further research is needed to examine under what conditions free shipping is more likely to prompt impulsive buying.

The Impact of Ease of Payment on Impulsive Buying

Ease of payment, too, was not a statistically significant predictor of impulsive buying ($p = 0.693$). The estimated coefficient was negative ($B = -0.029$), pointing to an inverse direction. Because the result was non-significant, however, this direction cannot be taken as evidence that easier payment lowers impulsive buying. Accordingly, the data offer no evidence that simpler payment procedures, by themselves, lead marketplace users to make unplanned purchases.

Zahra et al. (2026) reached a similar result, finding that digital payment ease had no significant bearing on impulsive purchases. A plausible explanation is that purchase decisions may be driven more by how much consumers feel they need a product and by how appealing the promotion is than by how easy payment is (Bakar et al., 2025). Ease of payment chiefly lowers the effort needed to finish a transaction, yet lowering that effort does not necessarily generate a wish to buy. An easy payment system serves planned purchases as well as spontaneous ones. In this sense, payment ease may help a purchase get completed without settling whether it was impulsive to begin with. Viewed through the Technology Acceptance Model (TAM), perceived ease of use may thus relate more closely to consumers' willingness to adopt and keep using a payment system than to what kind of purchase decision is being made.

This distinction may also account for the negative coefficient found here. If consumers mainly use convenient payment methods to complete purchases they have already weighed or planned, easier payment need not come with stronger impulsive buying. Consumers may still weigh their needs, what they can spend, the value of the product, and any promotional benefits before they decide to buy. In these circumstances, ease of payment may take friction out of the transaction while leaving the underlying purchase intention as it was. The negative coefficient may therefore reflect the response pattern in this sample, not a true negative influence of easier payment on impulsive buying. Because the relationship was not statistically significant, the result is best read as an inverse pattern in the data, not as support for the view that simpler payment deters impulsive purchasing.

The present finding nevertheless departs from Lestari and Nuraeni (2025), Susilowati et al. (2025), Wahyuningrum (2025), and Yanti and Sujana (2024), who each found digital ease of payment to be positively and significantly associated with impulse buying. They reason that frictionless payment allows consumers to finish transactions faster, which leaves less time to deliberate and so makes impulsive purchases simpler to carry out. By this logic, fewer barriers to transacting can raise the likelihood of impulsive buying. The gap between these findings and the present result may arise from differences in who was sampled, how the marketplace is used, payment habits, or what respondents bought. Here, respondents may have used convenient payment mainly as a practical tool for finishing purchases, not as something that prompted spontaneous buying. The current data, though, cannot show which contextual factor lies behind the negative coefficient. More research is therefore needed to identify when convenient payment is more likely to support impulsive buying.

CONCLUSION AND SUGGESTIONS

Following the preceding analysis and discussion, the following conclusion can be derived from this research is:

1. Flash sale has a positive and significant impact on impulsive buying.
2. Free shipping does not have a significant impact on impulsive buying.
3. Ease of payment does not have a significant impact on impulsive buying.

This study carries two limitations that bear directly on how the findings should be read. First, the 260 respondents, though located within the Special Region of Yogyakarta, were not proportionally distributed across domicile, age group, gender, or marketplace platform; the results should therefore not be taken as fully representative of the target population. Second, because the data were collected

through self-administered questionnaires, the responses may not consistently reflect respondents' actual views, as differences in comprehension and candor can shape how a questionnaire is completed.

These findings are expected to carry practical implications for three groups of stakeholders. For marketplace platforms, the results indicate that flash sale programs, which were shown to increase impulsive buying, merit priority in marketing strategy. Such campaigns nonetheless require adequate operational planning: platforms can stagger campaigns across time slots, align their timing with expected traffic and system capacity, and state the promotional duration and remaining stock clearly. These measures may preserve the urgency that makes flash sales effective while lowering the risk of checkout congestion or system failure. For consumers, the significant effect of flash sales suggests that promotional urgency may shape spontaneous purchasing decisions. Shoppers can therefore ask whether a product was already needed or planned before the promotion appeared, and whether they would still buy it without the offer; this simple check may help separate genuine needs from decisions driven mainly by urgency. For future researchers, replication across a wider geographic area with a larger, more proportionally distributed sample would strengthen the generalizability of these results, and adding constructs such as brand image and electronic word-of-mouth (e-WOM) would extend the model's explanatory scope.

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