CITACONOMIA : Economic and Business Studies

Volume 5 No.3
ISSN: 2963-492x
The article is published with OpenAccess at:
https://ejournal.citakonsultindo.or.id/index.php/CITACONOMIA/indexdex

THE EFFECT OF PERCEIVED RISK, TRUST, SECURITY, AND INFORMATION QUALITY ON ONLINE PURCHASE DECISIONS IN TOKOPEDIA E-COMMERCE

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Abstract: *This study examines the effect of perceived risk, trust, security, and information quality on online purchase decisions in Tokopedia e-commerce among university students in Purwokerto, Indonesia. A quantitative cross-sectional survey design was employed. The sample comprised 120 students from Universitas Jenderal Soedirman, Universitas Muhammadiyah Purwokerto, and UIN Prof. K.H. Saifuddin Zuhri (formerly IAIN Purwokerto), selected through purposive sampling with proportional allocation. Data were collected using an online questionnaire on a five-point Likert scale and analyzed using multiple linear regression following validity, reliability, and classical assumption tests. The results indicate that the four variables jointly have a significant effect on purchase decisions ($F = 54.457$; $p < 0.001$), with an adjusted R^2 of 0.642. Individually, information quality ($\beta = 0.333$; $p < 0.001$), trust ($\beta = 0.328$; $p = 0.001$), and security ($\beta = 0.193$; $p = 0.034$) exert positive and significant effects, whereas perceived risk has no significant effect ($\beta = 0.070$; $p = 0.368$). These findings suggest that on a platform that already provides transaction protection mechanisms, purchase decisions are driven more by accurate product information and confidence in sellers and platform security than by consumers' perceived risk.*

Keywords: *Perceived Risk; Trust; Security; Information Quality; Purchase Decision; E-Commerce*

INTRODUCTION

Online shopping has become an integral part of the daily lives of young Indonesian consumers. A survey of 410 Millennial and Generation Z respondents in Bandung revealed that both generations prefer to shop online for food, clothing, technology products, and personal care items, with shopping styles that tend to be thrifty, trend-oriented, and impulsive (Helmi et al., 2025). Generation Z has grown up in a thoroughly digital living and working environment (Zuhaena, 2026) and is therefore accustomed to using technology across a wide range of activities, including shopping. This generation also relies heavily on the quality of information available on platforms when forming purchase intentions (Huwaida et al., 2024). For this group, the *marketplace* has become the primary channel for searching reviews, comparing prices, and reading product specifications before making a purchase.

Tokopedia is one of the largest *marketplaces* in Indonesia and among the platforms most frequently used by consumers, alongside Shopee, Lazada, and Bukalapak (Ginting et al., 2023). Its competitive landscape changed significantly when ByteDance, the parent company

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of TikTok, acquired a 75.01% stake in Tokopedia and merged it with TikTok Shop Indonesia in early 2024 (CNBC Indonesia, 2024). This change in ownership keeps the question of what shapes Tokopedia consumers' purchase decisions relevant, both as a basis for evaluating platform strategy and as a benchmark for post-integration studies.

In online shopping, consumers can neither physically inspect products nor meet sellers in person. This condition positions trust, perceived risk, and security as key determinants of purchasing behavior. A meta-analysis by Handoyo (2024) showed that trust has the largest effect size on digital purchasing behavior, followed by perceived risk, whereas security has the weakest and least precise effect. A cross-market study likewise found that perceived security builds trust and that trust strongly affects purchase intention (Quintus et al., 2024). Meanwhile, information quality determines how confident consumers feel about products they cannot touch (Huwaida et al., 2024; Kakkar et al., 2025).

Empirical findings on these factors remain inconsistent. Perceived risk has been reported to have a significant negative effect on purchase decisions (Sutisna et al., 2023), yet another study found no significant effect on purchase intention (Ikhlash & Linda, 2024). Tran et al. (2026) even found a positive direct effect, although perceived risk weakened the conversion of intention into purchase. Trust has a positive effect according to Celestia et al. (2026) and Tran et al. (2026), but no direct effect according to Ginting et al. (2023) and Ikhlash and Linda (2024). For information quality, some evidence suggests that its influence operates indirectly, for example through perceived value (Kakkar et al., 2025). These inconsistencies point to a *research gap* that warrants re-examination in different contexts and populations.

This study examines perceived risk, trust, and security simultaneously and extends the model by incorporating information quality. This extension is grounded in the characteristics of student consumers, who rely heavily on product descriptions, photos, and reviews before purchasing. The novelty of this study lies in testing all four factors simultaneously among Tokopedia users who are university students in Purwokerto, a non-metropolitan education city that has rarely been examined in *e-commerce* research. In Banyumas, digitalization has also encouraged micro, small, and medium enterprises (MSMEs) to shift toward technology- and creativity-based businesses (Pahlevi et al., 2026), while efforts continue to strengthen the entrepreneurial spirit of Purwokerto residents to increase household income (Zuhaena et al., 2026). Understanding online buyer behavior in this region is therefore also relevant for local businesses that market their products through *marketplaces*.

Based on the foregoing, this study aims to analyze the partial and simultaneous effects of perceived risk, trust, security, and information quality on online purchase decisions in Tokopedia *e-commerce*.

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LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Foundation

This study draws on a trust- and risk-based purchase decision framework in *e-commerce*. The framework posits that online consumers face uncertainty, so that trust, security assurance, and high-quality information serve to reduce uncertainty and encourage purchasing (Handoyo, 2024; Quintus et al., 2024). From a consumer behavior perspective, the purchase decision is part of a process that encompasses need recognition, information search, evaluation of alternatives, the purchase decision, and post-purchase behavior (Kotler et al., 2022).

Purchase Decision

A purchase decision is the stage at which consumers settle on a product, brand, and purchase channel after evaluating the available alternatives (Kotler et al., 2022). In the *marketplace* context, this decision is shaped by trust in sellers and platforms as well as by information obtained from other consumers' reviews (Celestia et al., 2026). Beyond trust- and information-related factors, purchase decisions have also been examined from the perspective of the marketing mix and consumer characteristics, such as product quality, price, promotion, brand image, and lifestyle, including among consumers in Banyumas and its surrounding areas (Subagyo et al., 2026). The indicators used are fit with needs, product benefits, accuracy of the purchase, and repeat purchase.

Perceived Risk and Purchase Decision

Perceived risk refers to the uncertainty and possible negative consequences that consumers perceive when buying online, such as mismatched products, unsafe payments, or delivery problems (Tran et al., 2026). Its dimensions include functional, physical, time, and psychological risk. In this study, the indicators were measured in terms of consumers' confidence that such risks would not occur, for instance that the product functions properly and that the item matches the order. Accordingly, higher scores reflect risk that is perceived as controlled. When consumers judge purchase risk to be controllable, their propensity to buy increases (Sutisna et al., 2023). Nevertheless, some studies have found no significant effect of perceived risk on purchase intention (Ikhlash & Linda, 2024).

H1: Perceived risk has a positive and significant effect on purchase decisions.

Trust and Purchase Decision

Trust is consumers' belief in the benevolence, integrity, and competence of a seller or platform (Manu & Fuad, 2022). In *e-commerce*, trust is foundational because buyers hand over money before receiving goods. The indicators used are benevolence, ability, integrity,

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and willingness to depend. Trust has been shown to strongly influence purchase intentions and decisions (Quintus et al., 2024; Celestia et al., 2026) and to exhibit the largest effect in a meta-analysis of digital purchasing behavior (Handoyo, 2024).

H2: Trust has a positive and significant effect on purchase decisions.

Security and Purchase Decision

Security is consumers' perception that a platform has adequate safeguards to protect personal data and transactions (Quintus et al., 2024). When security assurances meet expectations, consumers are willing to provide personal information and transact with a sense of safety. Its indicators include not misusing personal data, protecting data from hackers, and providing confidence in security guarantees. Perceived security has been shown to build online consumer trust (Mofokeng, 2023; Quintus et al., 2024) and to correlate significantly with digital purchasing behavior (Handoyo, 2024).

H3: Security has a positive and significant effect on purchase decisions.

Information Quality and Purchase Decision

Information quality is the extent to which product information presented on a platform is accurate, timely, relevant, and reliable, thereby helping consumers make decisions. Its indicators are accuracy, timeliness, relevance, and economy and reliability. Information quality has been shown to drive Generation Z's purchase intentions (Huwaida et al., 2024) and to increase consumers' perceived value (Kakkar et al., 2025). Specific website content, namely detailed product information, has also emerged as the strongest predictor of trust in online shopping (Manu & Fuad, 2022).

H4: Information quality has a positive and significant effect on purchase decisions.

H5: Perceived risk, trust, security, and information quality jointly have a significant effect on purchase decisions.

Research Model

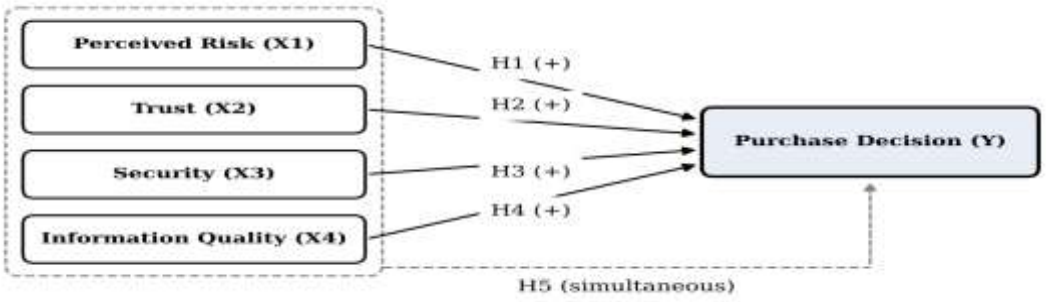


Figure 1. Research Model

Note: solid lines = partial effects (H1–H4); dashed line = simultaneous effect (H5).

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RESEARCH METHOD

Design, Population, and Sample

This study adopted a quantitative approach with a *cross-sectional* survey design. The population consisted of university students in Purwokerto who had shopped on Tokopedia. Three universities were selected because they have the largest student enrollments in Purwokerto according to PDDikti (the Indonesian Higher Education Database) and were thus considered most representative of the city's student population: Universitas Jenderal Soedirman (21,006 students), Universitas Muhammadiyah Purwokerto (13,455), and IAIN Purwokerto, now UIN Prof. K.H. Saifuddin Zuhri (11,307).

The sample was determined through *purposive sampling*. The criteria were: (1) active students at one of these universities, (2) aged at least 17 years, (3) holding a Tokopedia account, and (4) having shopped on Tokopedia within the previous six months, as evidenced by a transaction screenshot. Following Roscoe's guideline as cited in Sugiyono (2022), the minimum sample size for multivariate analysis is ten times the number of variables. With five variables, the sample was set at 120 respondents to exceed this minimum and to anticipate unusable questionnaires. The sample was allocated proportionally to each university's student enrollment (Table 1).

Table 1. Sample Allocation by University

University	Number of Students	Proportion	Sample
Universitas Jenderal Soedirman	21,006	46%	55
Universitas Muhammadiyah Purwokerto	13,455	29%	35
IAIN Purwokerto (now UIN Saizu)	11,307	25%	30
Total	45,768	100%	120

Source: PDDikti, processed.

Data Collection and Instrument

This article was developed from the undergraduate thesis of Subagyo (2021). Primary data were collected through an online questionnaire (Google Forms) distributed via WhatsApp in December 2020. All 120 questionnaires were returned and deemed suitable for analysis (*response rate* of 100%). Each variable was measured using four statement items on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The operational definitions of the variables are presented in Table 2.

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Table 2. Operational Definitions and Variable Indicators

Variable	Indicators
Perceived risk (X1)	Functional risk, physical risk, time risk, psychological risk
Trust (X2)	Benevolence, ability, integrity, willingness to depend
Security (X3)	No misuse of personal data, protection of data from hackers, security guarantee
Information quality (X4)	Accurate, timely, relevant, economical and reliable
Purchase decision (Y)	Fit with needs, beneficial, purchase accuracy, repeat purchase

Source: indicators adapted from previous research instruments and tailored to the Tokopedia context.

Data Analysis

Instrument quality was assessed using the *Pearson product-moment* validity test (r table = 0.151 at df = 118, α = 0.05) and the *Cronbach's alpha* reliability test (threshold 0.60). The classical assumption tests comprised normality (Kolmogorov–Smirnov), multicollinearity (*tolerance* > 0.10 and VIF < 10), and heteroscedasticity (Glejser test) (Ghozali, 2021). The hypotheses were tested using multiple linear regression in IBM SPSS 20 with the following equation.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \quad (1)$$

Y denotes purchase decision, X1 perceived risk, X2 trust, X3 security, and X4 information quality. A one-tailed t-test was used for H1–H4 (t table = 1.658; df = 115; α = 0.05), and an F-test for H5 (F table = 2.45; df = 4; 115). A hypothesis was accepted when the computed value exceeded the critical value and the significance level was ≤ 0.05.

RESULTS

Respondent Profile

Respondents were predominantly female (87; 72.5%), while males numbered 33 (27.5%). By institution, 55 respondents (45.8%) were from Universitas Jenderal Soedirman, 35 (29.2%) from Universitas Muhammadiyah Purwokerto, and 30 (25.0%) from IAIN Purwokerto. A total of 93 respondents (77.5%) had a monthly allowance below IDR 1,500,000, 24 (20.0%) between IDR 1,500,000 and IDR 2,999,999, 2 (1.7%) between IDR 3,000,000 and IDR 4,500,000, and 1 (0.8%) above IDR 4,500,000. This profile indicates that most respondents shop on a limited budget.

Descriptive Statistics

The means of all variables fall within the range of 3.68–3.77, between neutral and agree, with a tendency toward agreement (Table 3).

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Table 3. Descriptive Statistics of Variables (n = 120)

Variable	Min	Max	Mean	Std. Deviation
Perceived risk (X1)	2.00	5.00	3.74	0.654
Trust (X2)	2.25	5.00	3.77	0.576
Security (X3)	2.00	5.00	3.69	0.598
Information quality (X4)	2.00	5.00	3.68	0.634
Purchase decision (Y)	2.00	5.00	3.72	0.616

Source: primary data, processed (2020).

For perceived risk, the highest-rated item was the belief that the product functions properly (3.89), whereas the lowest was not worrying that the item would not match the order (3.52). For trust, the lowest item was the seller's willingness to exchange incorrectly shipped items (3.62). For security, the lowest items were the belief that data can be accessed only by the account owner and that the platform guarantees data security (3.65 each). For information quality, the lowest item was the timeliness of information (3.62).

Validity and Reliability Tests

All items were valid, as their computed r values (0.720–0.910) exceeded the r table value of 0.151. All variables were also reliable, with *Cronbach's alpha* values above 0.60 (Table 4).

Table 4. Validity and Reliability Test Results

Variable	Range of r	Cronbach's Alpha	Remark
Perceived risk (X1)	0.803–0.870	0.865	Valid, reliable
Trust (X2)	0.720–0.831	0.792	Valid, reliable
Security (X3)	0.766–0.877	0.853	Valid, reliable
Information quality (X4)	0.808–0.910	0.892	Valid, reliable
Purchase decision (Y)	0.853–0.898	0.903	Valid, reliable

Source: primary data, processed (2020).

Classical Assumption Tests

The regression model satisfied all classical assumptions. The residuals were normally distributed (Kolmogorov–Smirnov Z = 0.849; Asymp. Sig. = 0.467 > 0.05). There was no multicollinearity, as *tolerance* values ranged from 0.312 to 0.516 (> 0.10) and VIF values from 1.938 to 3.203 (< 10). The Glejser test also indicated no heteroscedasticity, as the significance of each variable against the absolute residuals exceeded 0.05 (0.499–0.881).

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Regression Analysis and Hypothesis Testing

Table 5. Multiple Linear Regression and t-Test Results

Variable	B	Std. Error	Beta	t	Sig.	Decision
Constant	0.928	0.964	–	0.963	0.338	–
Perceived risk (X1)	0.066	0.073	0.070	0.903	0.368	H1 rejected
Trust (X2)	0.351	0.105	0.328	3.348	0.001	H2 accepted
Security (X3)	0.198	0.092	0.193	2.149	0.034	H3 accepted
Information quality (X4)	0.324	0.074	0.333	4.368	0.000	H4 accepted

Dependent variable: purchase decision. t table = 1.658 (df = 115; α = 0.05, one-tailed).
Source: primary data, processed (2020).

The resulting regression equation is as follows.

$$Y = 0.928 + 0.066X_1 + 0.351X_2 + 0.198X_3 + 0.324X_4 \quad (2)$$

All coefficients are positive. Trust has the largest unstandardized coefficient (0.351), whereas information quality has the largest standardized coefficient (Beta = 0.333), making it the predictor with the strongest relative contribution. Perceived risk has a t value of 0.903 < 1.658 and a significance of 0.368 > 0.05; hence, H1 is rejected. Trust (t = 3.348; p = 0.001), security (t = 2.149; p = 0.034), and information quality (t = 4.368; p < 0.001) all exceed the t table value with significance below 0.05; hence, H2, H3, and H4 are accepted.

The F-test yielded an F value of 54.457 > F table 2.45 with a significance of < 0.001; hence, H5 is accepted: the four variables jointly have a significant effect on purchase decisions. The R^2 of 0.654 and adjusted R^2 of 0.642 indicate that the model explains 64.2% of the variance in purchase decisions, while the remaining 35.8% is attributable to factors outside the model.

DISCUSSION

Effect of Perceived Risk on Purchase Decisions

Perceived risk has no significant effect on purchase decisions (β = 0.070; p = 0.368). In other words, an increase or decrease in consumers' perceived risk neither raises nor lowers their propensity to shop on Tokopedia. Consumers remain aware of risk, as reflected in the lowest-rated item, "not worrying that the item will not match the order" (3.52), yet this awareness does not deter purchasing.

Three explanations are plausible. First, students' main motivations for shopping online are need, lower prices, and the availability of goods not found in local markets. Young Indonesian consumers tend to shop in thrifty and impulsive ways (Helmi et al., 2025), and

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with limited allowances (77.5% below IDR 1,500,000), need and price weigh more heavily than risk considerations. Second, purchase risk on Tokopedia has been transferred to the platform through escrow accounts, refund guarantees, and buyer reviews. Institution-based trust mechanisms in *marketplaces* have been shown to substitute for trust in individual sellers (Wen et al., 2024), so risk becomes a baseline condition that is assumed to be met. Third, part of the effect of perceived risk is likely absorbed by trust and security, with which it is correlated (tolerance of perceived risk = 0.504). This is consistent with findings that trust lowers perceived risk (Quintus et al., 2024) and moderates the relationship between intention and purchase decision (Tran et al., 2026).

This finding is consistent with Ikhlash and Linda (2024), who found no significant effect of perceived risk on purchase intention in a sample dominated by university students. Conversely, it differs from Sutisna et al. (2023), who found a significant negative effect of perceived risk on online purchase decisions.

This finding should be interpreted with caution. The absence of an effect does not imply that consumers ignore risk. A more likely explanation is that risk has shifted from an active consideration to a background condition regarded as already managed. The student respondents had generally shopped on Tokopedia repeatedly, so the uncertainty felt during a first purchase no longer arises as strongly. Repeated shopping experience enables consumers to recognize transaction patterns, know how to file complaints, and understand that funds are not released to the seller until the goods are received.

The nature of the products that students buy may also explain this finding. Students typically purchase daily necessities, study supplies, clothing, and accessories at relatively affordable prices. For such products, the potential loss if a problem occurs is relatively small, so risk is not regarded as a primary consideration. Perceived risk is likely to play a greater role in purchases of high-value products, such as electronic devices, where the consequences of a wrong purchase are far greater.

Another explanation concerns how perceived risk operates within the decision process. Tran et al. (2026) showed that perceived risk acts more as a factor that weakens the conversion of intention into a purchase decision than as a direct driver. Handoyo's (2024) meta-analysis likewise found that perceived risk moderates the relationship between trust and digital purchasing behavior. Both findings suggest that the influence of perceived risk is contingent, that is, dependent on the level of trust and the strength of consumer intention. The multiple linear regression model used in this study tests only direct effects and therefore does not capture this contingent role.

Sutisna et al. (2023) offer an additional perspective. In their study, seller service

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quality reduced perceived risk, and perceived risk served as a pathway between trust and purchase decisions. Applying this logic to Tokopedia, platform services and guarantees may have suppressed perceived risk to a level that is relatively uniform across respondents. When most consumers regard risk as controlled, the variable loses its power to explain why some consumers are more confident in purchasing than others.

The relationship between trust and risk does not always follow theoretical expectations either. Ikhlash and Linda (2024) found that online trust increased perceived risk, contrary to their hypothesis. Such findings indicate that consumers who trust a platform may still be aware of risk, yet that awareness does not prevent them from purchasing. A similar pattern appears in this study: respondents still expressed concern about the possibility of receiving items that do not match their orders, but this concern coexists with the decision to keep shopping.

In practical terms, this finding does not mean that platforms can neglect risk management. On the contrary, perceived risk has no effect precisely because transaction protection mechanisms function well. Should these guarantees weaken, for example due to changes in refund policies or more complicated complaint procedures, perceived risk could again become a determinant of purchase decisions. The lowest-rated item concerning item mismatch indicates that the greatest vulnerability lies in the correspondence between the product promised and the product received.

Effect of Trust on Purchase Decisions

Trust has a positive and significant effect on purchase decisions ($\beta = 0.328$; $p = 0.001$). The more confident consumers are in a seller's sincerity, competence, and honesty, the greater their propensity to buy. In transactions without face-to-face contact, buyers pay before receiving the goods, so the belief that the seller will keep its promises is a precondition for the transaction. The lowest-rated item for this variable, the seller's willingness to exchange incorrectly shipped items (3.62), indicates that trust is most fragile with respect to post-transaction problem handling. This result supports Quintus et al. (2024), Celestia et al. (2026), and Tran et al. (2026), as well as Handoyo's (2024) meta-analysis, which identifies trust as the strongest determinant. However, it differs from Ginting et al. (2023) and Ikhlash and Linda (2024), who found no direct effect of trust.

Trust in online shopping has several dimensions. Manu and Fuad (2022) distinguish benevolence, integrity, and competence, and found that competence increases consumers' intention to shop online. In the Tokopedia context, competence is reflected in the seller's ability to ship the correct items, package them well, and respond to inquiries promptly. Integrity is reflected in the honesty of product descriptions, while benevolence is evident in the seller's willingness to help when problems arise. Respondents rated these dimensions fairly

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positively, enabling trust to function as a driver of purchase decisions.

Notably, a *marketplace* involves two objects of trust: the seller and the platform. Wen et al. (2024) found that seller-based mechanisms have the strongest effect on trust and that trust in the platform can partly substitute for trust in the seller in driving repurchase. Mayayise (2024) similarly distinguishes the antecedents of trust in sellers, such as reputation, product reviews, price, and profile photos, from those of trust in platforms, such as structural assurances and website quality. This study measured trust primarily with respect to sellers. The significance of this variable indicates that, although Tokopedia provides institutional guarantees, confidence in sellers remains an important consideration for students.

The divergence from Ginting et al. (2023) and Ikhlash and Linda (2024) can be explained by differences in model specification and dependent variables. Ginting et al. (2023) examined repurchase intention and included satisfaction as a mediator, so the effect of trust was channeled through satisfaction. Ikhlash and Linda (2024) included attitude as an intervening variable, and attitude emerged as the only direct predictor of purchase intention. This study included no mediators, so the effect of trust appears directly. In other words, divergent results do not necessarily indicate contradiction but rather reflect different pathways in explaining the role of trust.

This finding is also consistent with Celestia et al. (2026), who concluded that trust matters more than perceived value in driving Generation Z's purchase decisions in *marketplaces*. For students on limited budgets, a wrong purchase carries tangible consequences. Trust in sellers reduces this hesitation, making consumers more willing to commit. Tran et al. (2026) add that trust strengthens the conversion of intention into decision, meaning that trusting consumers do not merely intend to buy but actually do so.

Trust does not emerge on its own. Halim et al. (2023) showed that satisfaction, customer experience, and electronic service quality build consumer trust in *marketplaces*. Mofokeng (2023) found that on-time delivery, perceived security, product variety, and ease of use are antecedents of trust. The lowest-rated item in this study, the seller's willingness to exchange incorrectly shipped items, indicates that after-sales service is the most vulnerable component of trust. Sellers who respond well to shipping errors are better positioned to build stronger trust and encourage repeat purchases.

From a theoretical standpoint, this finding confirms that trust remains at the core of exchange relationships in electronic commerce, even when platforms provide various guarantees. Institutional guarantees reduce consumers' need to fully trust sellers but do not eliminate it. Consumers continue to choose sellers they perceive as honest and capable, particularly when many sellers offer similar products at nearly identical prices. Under such

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intense competition, trust becomes the decisive differentiator in determining which seller consumers buy from.

Effect of Security on Purchase Decisions

Security has a positive and significant effect on purchase decisions (β = 0.193; p = 0.034). Consumers feel more confident purchasing when the platform is perceived as capable of protecting personal data and transactions. The security coefficient is the smallest among the significant variables. This pattern is consistent with Handoyo's (2024) meta-analysis, which found that security has the weakest effect compared with trust and perceived risk. This suggests that security functions as an expected prerequisite that operates mainly by building trust (Mofokeng, 2023; Quintus et al., 2024). Indonesian consumers outside major cities also take security and privacy into account in forming attitudes toward online shopping (Cheng et al., 2024).

The role of security in this study can be understood through the concept of a hygiene factor. Security is a condition that consumers expect to be present. Its presence does not necessarily drive large volumes of purchases, but its absence may lead consumers to avoid a platform altogether. This pattern accords with Handoyo's (2024) meta-analysis, which found that security has the weakest and most variable effect across studies. Such variation suggests that the influence of security depends heavily on context, including platform maturity and consumer experience.

Security also operates through trust. Quintus et al. (2024) found that perceived security builds trust in both advanced and emerging markets. Mofokeng (2023) reported similar results, while privacy concerns had no significant effect on trust. Because trust and security were entered together in a single model, part of the effect of security has likely been absorbed by trust. The unique contribution of security that remains is therefore smaller, although still significant.

The lowest-rated security items concern the belief that data can be accessed only by the account owner and that the platform guarantees data security. This indicates that consumers' concerns extend beyond payment security to the protection of personal data. Media coverage of user data breaches across various digital platforms in Indonesia may reinforce these concerns. Consumers may continue to shop, but without a complete sense of security.

Security is also related to the diversity of available payment methods. Young consumers can now pay via bank transfer, digital wallets, retail outlets, or cash on delivery. Each method carries a different perception of security. Methods that allow consumers to pay after receiving the goods provide additional reassurance, whereas digital wallets require trust

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in account protection. This range of options allows consumers to match their payment method to the level of security they need, so that security concerns need not result in abandoned purchases.

The regional context of the study is also relevant. Cheng et al. (2024) examined security, privacy, perceived risk, and cognitive trust among Indonesian consumers in suburban areas. This attention to consumers outside metropolitan centers aligns with the focus of the present study on Purwokerto. Consumers in an education city such as Purwokerto enjoy good digital access, but their digital security literacy may vary. Education on account security practices, such as two-factor authentication and vigilance against fraudulent links, therefore remains necessary.

From the platform's perspective, this finding underscores that investment in security must be communicated, not merely implemented. Security features that remain invisible to consumers will not shape perceptions of security. Placing data protection information on payment pages, sending account activity notifications, and offering simple explanations of how the platform safeguards buyers' funds can strengthen perceived security and, through it, consumer trust.

Effect of Information Quality on Purchase Decisions

Information quality has a positive and significant effect and is the predictor with the largest relative contribution ($\beta = 0.333$; $p < 0.001$). Because consumers cannot inspect products directly, descriptions, photos, specifications, and reviews serve as substitutes for physical experience. This result supports Huwaida et al. (2024), who identified information quality as a direct driver of Generation Z's purchase intentions, as well as Manu and Fuad (2022), who found specific website content to be the strongest predictor of trust. The overall quality of *e-commerce* platforms has also been shown to drive purchasing, including impulse buying (Arissaputra et al., 2024). The lowest-rated item on the timeliness of information (3.62) points to the need for *real-time* stock and price updates. Unlike Kakkar et al. (2025), who found that information quality operates through perceived value, this study found a strong direct effect.

The importance of information quality can be explained through information asymmetry between sellers and buyers. In online transactions, sellers know the full condition of the product, whereas buyers rely solely on what is displayed on the product page. Accurate, complete, and relevant information narrows this gap. The narrower the information gap, the easier it is for consumers to compare alternatives and make a choice. For students accustomed to comparing several stores before buying, information quality is the primary basis for evaluating alternatives.

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Information quality is also likely to influence decisions through trust. Manu and Fuad (2022) found that specific website content is the most important factor in building trust in online shopping. This means that detailed product information not only helps consumers understand the product but also signals that the seller is serious and trustworthy. Information quality thus plays a dual role: as a basis for rational evaluation and as a signal of seller credibility.

It should also be noted that information in a *marketplace* does not originate solely from sellers. Reviews, ratings, and photos from previous buyers constitute user-generated information that is often perceived as more honest than seller descriptions. Mayayise (2024) identified product reviews as one of the antecedents of trust in sellers. For students, other buyers' reviews serve to verify sellers' claims. When seller information and buyer reviews reinforce each other, consumers' confidence to buy increases; conversely, discrepancies between the two may create doubt.

This finding is consistent with Huwaida et al. (2024), who found that information quality drives Generation Z's purchase intentions, together with subjective norms, hedonic and utilitarian outcome expectations, and self-efficacy. In contrast, Kakkar et al. (2025) found that information quality affects purchase intention through perceived value, with a small effect. This difference can be explained by context. The study by Kakkar et al. (2025) was conducted in a *social commerce* setting in India, where consumers encounter products incidentally through social media. In *marketplaces* such as Tokopedia, consumers arrive with specific needs and actively search for and compare information, so information quality plays a more direct role.

The shopping style profile of young consumers also supports this finding. Helmi et al. (2025) identified a fashionable and smart shopping style, describing consumers who enjoy shopping online while seeking trendy yet economical products. Consumers with this style depend heavily on information to find products offering the best value. The students in this study, most of whom have limited budgets, are likely to share a similar shopping style and are therefore highly responsive to information quality.

The lowest-rated information quality item concerns timeliness, such as the accuracy of displayed stock and prices. Such inaccuracies often lead to order cancellations or items that fall short of expectations. This highlights the link between information quality and perceived risk: up-to-date information reduces the likelihood of item mismatch, which was precisely respondents' main concern under the perceived risk variable. Arissaputra et al. (2024) also showed that *e-commerce* quality is associated with the emergence of both positive and negative *e-WOM*. Inaccurate information may trigger negative reviews that subsequently

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influence other prospective buyers.

Simultaneous Effect

Jointly, the four variables have a significant effect on purchase decisions ($F = 54.457$; $p < 0.001$) and explain 64.2% of their variance. The remaining 35.8% is influenced by other factors such as electronic service quality and *e-WOM* (Ginting et al., 2023; Celestia et al., 2026), as well as price, promotions, and free shipping.

The simultaneous effect of the four variables indicates that online purchase decisions result from a holistic assessment. Consumers do not weigh each factor in isolation but form an overall impression from the information they see, their confidence in the seller, their sense of security about the system, and their assessment of potential losses. Although perceived risk has no partial effect, its inclusion in the model still provides a more complete picture of consumer considerations. By encompassing the seller, the platform, and consumer evaluation, the model offers an adequate explanation of students' purchase decisions on Tokopedia.

The strength of this model should also be read in light of its limitations. Factors outside the model may include satisfaction and electronic service quality (Ginting et al., 2023), *e-WOM* and perceived value (Celestia et al., 2026), attitudes toward online shopping (Ikhlash & Linda, 2024), and subjective norms as well as hedonic and utilitarian expectations (Huwaida et al., 2024). These factors could be incorporated into future model development, particularly to explain how the four variables in this study interact with consumers' psychological and social factors. Marketing mix factors such as product quality, price, promotion, and brand image, examined by Subagyo et al. (2026) among consumers in Banyumas and its surroundings, also merit consideration.

Synthesis of Findings

Taken together, the four findings reveal a consistent pattern. Factors within the control of sellers and the platform, namely information quality, trust, and security, influence purchase decisions. By contrast, perceived risk, which reflects consumers' internal assessment of potential losses, does not. This pattern suggests that on a mature platform, purchase decisions are determined more by what consumers see and experience on the platform than by abstract concerns about risk.

The three influential factors can also be arranged as a sequence. Information quality provides the basis for evaluation and a signal of credibility. Trust is built on honest information, responsive service, and satisfying experiences. Security forms the foundation that enables trust to develop. When all three are in place, consumers' perceived risk declines on its own and ceases to be a decisive consideration. This sequence is consistent with findings that trust reduces perceived risk (Quintus et al., 2024) and that trust in the platform can partly

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substitute for trust in the seller (Wen et al., 2024).

Theoretically, this synthesis contributes to the understanding of the role of perceived risk in mature *e-commerce*. Many models of online consumer behavior position perceived risk as a major barrier to purchasing. The findings of this study, together with those of Ikhlash and Linda (2024) and Tran et al. (2026), indicate that this role should be reconsidered. On platforms with strong transaction protection systems, perceived risk is more appropriately positioned as a variable mediated by trust or as a moderator of relationships among variables, rather than as a direct determinant of purchase decisions.

These findings should also be situated within the changing landscape of Tokopedia following its integration with TikTok Shop. The integration introduced *social commerce* elements such as live-stream selling and promotion through content creators. In such an ecosystem, product information is no longer confined to product pages but also includes videos and direct interaction with sellers. Trust may likewise shift from sellers and platforms toward the creators who promote products. Consequently, the relative weights of the four factors in this study may change, and further research is needed to test whether the same pattern holds.

For local businesses in Purwokerto and Banyumas that market products through *marketplaces*, this synthesis carries a clear message. Sellers need not focus on convincing consumers that online shopping is safe in general, as the platform has taken over that role. What matters more is the seller's ability to present accurate product information, maintain honest descriptions, respond to inquiries promptly, and handle shipping errors responsibly. These are the attributes that distinguish one seller from another in the eyes of young consumers.

Nevertheless, this synthesis is based on cross-sectional data collected before Tokopedia's integration with TikTok Shop. Causal relationships among the variables cannot yet be fully established, and the sequence described above remains an interpretation that should be tested using path or structural equation models. Future research that tests trust as a mediator and perceived risk as a moderator, and that compares conditions before and after the integration, would strengthen or correct this interpretation.

CONCLUSION

Trust, security, and information quality have positive and significant effects on online purchase decisions on Tokopedia, whereas perceived risk has no significant effect. Jointly, the four variables have a significant effect and explain 64.2% of the variance in purchase decisions. Information quality is the strongest predictor, followed by trust and security.

Theoretical implications. These findings reinforce the trust-based decision

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framework by showing that, on a platform that already provides transaction protection mechanisms, perceived risk no longer differentiates purchase decisions. That role shifts to trust and information quality, consistent with evidence that institutional trust mechanisms can substitute for trust in sellers (Wen et al., 2024).

Practical implications. Tokopedia's management may prioritize three measures. First, enforcing standards for accurate product information updated in *real time*, particularly stock and prices. Second, strengthening exchange and return policies for incorrectly shipped items to sustain post-transaction trust, including through customer experience and service quality, which have been shown to build trust (Halim et al., 2023). Third, communicating account and data protection, such as two-factor authentication, more clearly to users. For sellers, especially MSMEs, the finding that information quality is the strongest predictor underscores the importance of presenting accurate and up-to-date product information. Programs that strengthen entrepreneurial capacity and the use of technology among business owners (Pahlevi et al., 2026; Zuhaena et al., 2025) could be directed toward building these skills.

Limitations. First, the data were collected in December 2020, before Tokopedia's integration with TikTok Shop in 2024, so generalization to the platform's current conditions should be made with caution. Second, the sample was limited to 120 students from three universities in Purwokerto using *non-probability sampling*. Third, the perceived risk indicators were formulated in a positive direction (controlled risk) and thus do not directly capture perceived risk in the sense of concern.

Suggestions for future research. Future studies are advised to replicate the model among Tokopedia users after the integration with TikTok Shop, to extend the population beyond students, and to include price, promotion, free shipping, and *e-WOM*. Perceived risk should be measured using negatively worded items and tested as a moderating or mediating variable, for example using SEM-PLS (Tran et al., 2026; Mayayise, 2024).

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