

THE ROLE OF PERCEIVED RISK AND INFORMATION SECURITY IN GEN Z CONSUMERS' ONLINE PURCHASING DECISIONS IN VIETNAM

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Received: 2 March 2026; Revised: 16 April 2026; Accepted: 9 April 2026

ABSTRACT

The rapid expansion of e-commerce has significantly reshaped consumer behavior in Vietnam, particularly among Generation Z. While online shopping offers convenience, perceived risks remain a critical barrier to purchase decisions. This study investigates the effects of financial risk, product/service risk, information security risk, and perceived system security on online purchasing decisions. Using data from 231 Gen Z consumers and applying PLS-SEM, the results reveal that financial risk and information security risk negatively influence purchasing decisions, while perceived system security has a positive effect. Notably, product risk is found to be statistically insignificant, suggesting a shift in risk perception among digitally native consumers. The study contributes to the literature by highlighting the dominant role of information security risk in an emerging market context and provides practical implications for enhancing consumer trust in e-commerce platforms.

Keywords: Perceived risk, information security, online purchasing decisions, Generation Z, e-commerce.

1. INTRODUCTION

In recent years, the rapid development of e-commerce has reshaped consumer behavior, particularly among the youth in Vietnam. While online shopping offers benefits such as transaction efficiency, market accessibility, and improved information search, it also increases uncertainty and perceived risk. These factors can diminish trust and hinder consumers' online purchasing decisions. In this context, risk perception and perceived system security play a central role in explaining online shopping behavior. When consumers assess the safety of an online shopping platform as low, the tendency to avoid online transactions tends to increase; conversely, effective information security can reduce perceived risk and promote purchase decisions. In the digital economy, young people (Generation Z) will have a significant impact on the development of the e-commerce sector in Vietnam, as this group exhibits a high level of adaptability as well as a certain level of knowledge about computers, e-commerce platforms, and electronic payments compared to other groups. Although numerous prior studies have examined perceived risk and trust in e-commerce, limited research has simultaneously investigated multiple dimensions of perceived risk alongside system security in the context of Generation Z consumers in Vietnam. Moreover, existing studies often regard product risk as a key determinant without re-evaluating its relevance in the digital economy. This study addresses these gaps by (i) developing an integrated model of perceived risk and information security, and (ii) providing empirical evidence on the evolving role of risk dimensions among Generation Z consumers. Therefore, this study aims to analyze the impact of risk perception

and information security on the online purchase decisions of Gen Z consumers in Vietnam, which is extremely necessary in the current context.

2. LITERATURE REVIEW AND RESEARCH MODEL

2.1. Literature Review

The form of online purchasing on e-commerce platforms has experienced remarkable growth in recent years. However, this activity inherently contains numerous risks that can cause harm to consumers. Consequently, the perception of risk and the security of customer information play an extremely important role. Risk perception is a foundational concept in consumer behavior research, reflecting the degree of uncertainty and the potential for loss that consumers perceive when making a purchase decision [1]. In e-commerce, risk perception is often higher than in traditional shopping because consumers cannot directly inspect products and are influenced by technology.

Risk perception significantly influences online shopping behavior. Risk perception reduces the acceptance of e-commerce and adversely affects purchase decisions [2], [3]. Risk is reflected through various dimensions, such as financial risk and product risk, which are factors that strongly influence online shopping decisions [4]. A high level of perceived risk diminishes consumers' willingness to engage in online shopping [5], [6].

Furthermore, the risk of personal information security has increasingly become a major concern in the digital environment. Concerns about security and privacy have a significant negative impact on online purchasing behavior [7]. Information security is a core element in building consumer trust, thereby reducing perceived risk and promoting purchase decisions [8]. Perceived system security influences shopping behavior based on trust in others [9].

Regarding Generation Z, although this consumer group is tech-savvy and highly engaged in e-commerce, several studies indicate that they are very sensitive to issues related to information security and personal privacy. Gen Z's high expectations for technological experience go hand in hand with significant concerns about data safety [10]. Risk perception indirectly influences the shopping behavior of young people through intermediary factors related to technological platforms [11]. In Vietnam, the perception of information security risk negatively impacts the online shopping behavior of Gen Z consumers [12].

Based on the aforementioned approaches, the author conducts a study on the impact of risk perception and perceived system security on consumers' online purchase decisions, with the proposed model as follows:

2.2. Research Model and Methodology

2.2.1. Research Model

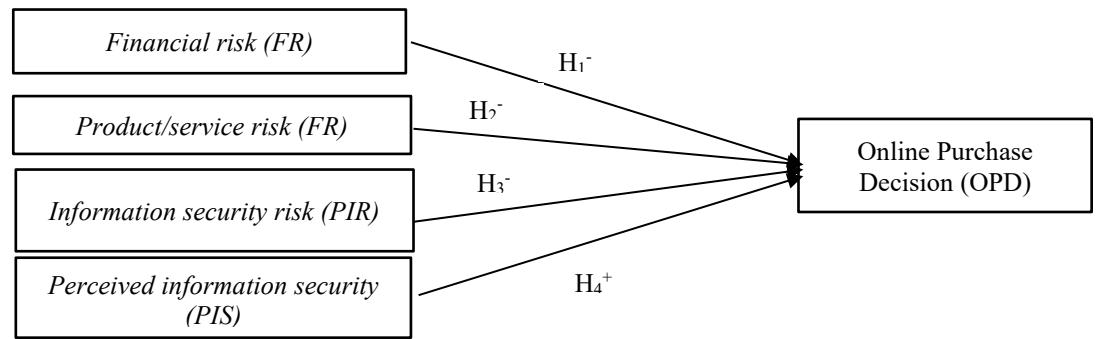


Figure 1. Research Model
 (Source: Author's own elaboration)

Research Hypotheses:

First, financial risk reflects consumers' concerns about the potential for monetary loss in online transactions. Previous studies have shown that financial risk is a significant barrier to online shopping behavior, reducing the level of e-commerce acceptance and purchase decisions [2], [3], [4].

H1: Financial risk has a negative impact on the online purchase decisions of Gen Z consumers in Vietnam.

Second, product/service risk arises from the uncertainty regarding the quality and the ability to meet expectations of products purchased online. The lack of direct experience increases perceived risk and reduces the likelihood of making a purchase decision [5], [13].

H2: Product/service risk has a negative impact on the online purchase decisions of Gen Z consumers in Vietnam.

Third, *information security risk* relates to concerns about the unauthorized collection and use of data and is considered a key factor influencing online purchasing behavior [7], [8]. For Gen Z, their high sensitivity to privacy further amplifies this negative impact.

H3: Information security risk has a negative impact on the online purchase decisions of Gen Z consumers in Vietnam.

Fourth, a positive perception of system security helps reduce perceived risk, reinforces trust, and promotes online purchasing behavior [9].

H4: Perceived information security has a positive impact on the online purchase decisions of Gen Z consumers in Vietnam.

2.2.2. Methodology

This study investigates the impact of perceived risk and information security on the online purchasing behavior of Gen Z consumers through the design of a questionnaire utilizing a 5-point Likert scale. The study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, analyzed using SmartPLS software. The structural model is evaluated through Cronbach's alpha coefficient, the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). The measurement model ensures reliability when: Cronbach's Alpha and Composite Reliability ($CR > 0.7$); Average Variance Extracted ($AVE > 0.5$); and the Fornell–Larcker Criterion and HTMT (< 0.85) are satisfied [14].

3. RESULTS AND DISCUSSION

3.1. Research Sample Characteristics

The survey results are based on 231 valid questionnaires (Table 1). Regarding gender, females accounted for 51.5%, while males represented 48.5%. In terms of age, the 20-25 years old group had 93 individuals (40.3%), followed by the 18-20 years old group (32.5%) and the over 25 years old group (27.3%), reflecting the characteristics of the Gen Z consumer group with a high level of participation in online shopping. In terms of occupation, students accounted for the largest proportion (56.3%), followed by office workers (24.7%) and freelancers (16.9%). Regarding income, individuals with a monthly income under 10 million VND were predominant, of which the 5-10 million VND group accounted for the highest proportion (38.5%). Notably, the majority of survey participants demonstrated a high level of concern regarding risks when online shopping, with 42.42% being very concerned and 33.77% concerned, indicating that risk is a primary factor influencing online shopping behavior.

Table 1. Demographic Characteristics of the Research Sample

Criterion	Classification	Frequency (Persons)	Percentage (%)
Gender	Male	112	48.5
	Female	119	51.5
Age	18-20 years old	75	32.5
	20-25 years old	93	40.3
	Over 25 years old	63	27.3
Occupation	Student	130	56.3
	Office Worker	57	24.7
	Freelancer	39	16.9
	Others	5	2.2
Monthly Income	Under 5 million VND	79	34.2
	5-10 million VND	89	38.5
	11-15 million VND	37	16.0
	Over 15 million VND	26	11.3
Level of Concern about Risks when Online Shopping	Very Concerned	98	42.42
	Concerned	78	33.77
	Neutral	33	14.29
	Slightly Concerned	22	9.52

(Source: Author's calculation based on survey data)

3.2. Assessment of the Measurement Model

Table 2. Reliability and Convergent Validity of Constructs

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
FR	0.891	0.943	0.922	0.748
OPD	0.866	0.866	0.909	0.714
PIR	0.866	0.872	0.909	0.714
PIS	0.859	0.887	0.903	0.700
PR	0.883	0.961	0.917	0.736

(Source: Author's calculation based on survey data)

The results in Table 2 demonstrate the reliability and convergent validity of the measurement scales through the indices of Cronbach's alpha, Composite Reliability (pa, pc), and Average Variance Extracted (AVE). Cronbach's alpha coefficients for all constructs exceed the threshold of 0.7, reflecting good reliability. The Composite Reliability indices (pa and pc) are all greater than 0.8, meeting the recommended criteria for exploratory and confirmatory research. Furthermore, the AVE values for the constructs range from 0.700 to 0.748, surpassing the 0.5 threshold, thereby confirming the convergent validity of the measurement model. Thus, these results indicate that the measurement scales in the study meet the requirements for reliability and validity, enabling the testing of the structural model.

3.3. Assessment of the Structural Model

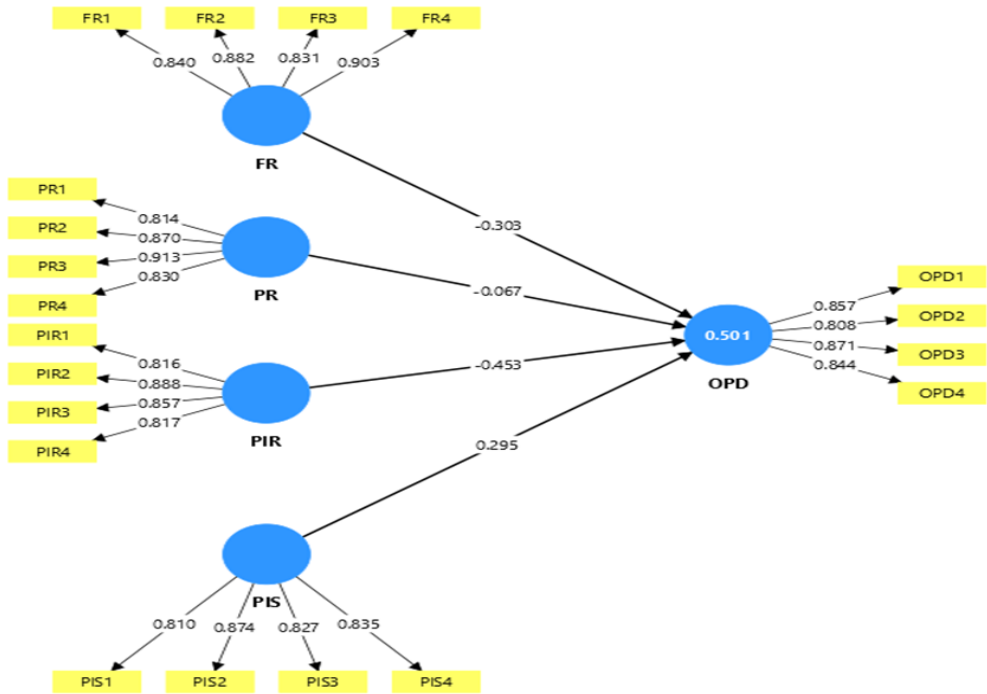


Figure 2. Structural Equation Model

(Source: Author's calculation)

Figure 2 shows that all indicators have high outer loading, ranging from 0.810 to 0.913, exceeding the recommended threshold of 0.7, thereby confirming the convergent reliability of the measurement scales. The dependent variable, online purchase decision (OPD), is explained relatively well, with a coefficient of determination $R^2 = 0.501$, indicating that the independent variables in the model explain approximately 50.1% of the variance in online purchase decisions. To assess potential multicollinearity issues, the Variance Inflation Factor (VIF) was examined. The results indicate that all VIF values range from 1.734 to 2.819, which are below the recommended threshold of 3.3. This confirms that multicollinearity is not a concern in this study, and the structural model does not suffer from collinearity issues that could bias the estimation results.

Regarding structural relationships, financial risk (FR) and information security risk (PIR) exhibit negative effects on online purchase decisions, whereas perceived system security (PIS) has a positive effect. In contrast, product/service risk (PR) shows only a weak effect. Additionally, the effect size (f^2) and predictive relevance (Q^2) were assessed. The results indicate that information security risk (PIR) has a large effect size ($f^2 = 0.663$), while financial risk (FR) and perceived system security (PIS) exhibit medium effect sizes ($f^2 = 0.279$ and 0.268 , respectively). In contrast, product/service risk (PR) shows a negligible effect ($f^2 = 0.009$). The Q^2 values are greater than zero, confirming that the model demonstrates adequate predictive relevance.

Thus, the proposed research hypotheses regarding risk management and enhanced system security have an impact on consumers' online purchase decisions.

Table 3 shows that all observed items have factor loadings greater than the recommended threshold of 0.7, ranging from 0.808 to 0.913, thereby confirming the good convergent validity of the measurement scales. The scales for FR, PR, PIR, and PIS all meet the requirements. The

online purchase decision (OPD) scale also demonstrates high and stable factor loadings, reflecting its ability to effectively measure the research concept.

Table 3. Outer Loadings of Measurement Items

Item	FR	OPD	PIR	PIS	PR
FR1	0.840				
FR2	0.882				
FR3	0.831				
FR4	0.903				
OPD1		0.857			
OPD2		0.808			
OPD3		0.871			
OPD4		0.844			
PIR1			0.816		
PIR2			0.888		
PIR3			0.857		
PIR4			0.817		
PIS1				0.810	
PIS2				0.874	
PIS3				0.827	
PIS4				0.835	
PR1					0.814
PR2					0.870
PR3					0.913
PR4					0.830

(Source: Author's calculation based on survey data)

3.4. Discriminant Validity

Table 4. Discriminant Validity (Fornell–Larcker Criterion)

Matrix (squared)	FR	OPD	PIR	PIS	PR
FR					
OPD	0.413				
PIR	0.152	0.628			
PIS	0.129	0.463	0.187		
PR	0.085	0.201	0.234	0.125	

(Source: Author's calculation)

Table 4 presents the discriminant validity assessment using the Fornell–Larcker criterion. The results show that the shared variance between each pair of constructs is lower than the corresponding AVE values, indicating that each construct explains the variance of its own indicators better than that of other constructs.

Additionally, the HTMT values are all below the recommended threshold of 0.85, further confirming discriminant validity. Therefore, the measurement model satisfies the requirements for discriminant validity, and the constructs are empirically distinct.

Table 5. Results of Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	P-Value	Conclusion
H1	FR -> OPD	-0.303	0.000	Supported
H2	PR -> OPD	-0.067	0.327	Unsupported
H3	PIR -> OPD	-0.453	0.000	Supported
H4	PIS -> OPD	0.295	0.000	Supported

(Source: Author's calculation based on survey data)

The survey results indicate that financial risk (FR) has a negative and statistically significant impact on online purchase decisions ($\beta = -0.303$, $p < 0.001$), thereby supporting hypothesis H1. Similarly, information security risk (PIR) exhibits the strongest negative impact on online purchase decisions ($\beta = -0.453$, $p < 0.001$), confirming hypothesis H3. Conversely, perceived system security (PIS) has a positive and statistically significant impact on online purchase decisions ($\beta = 0.295$, $p < 0.001$), thus supporting hypothesis H4. However, product/service risk (PR) does not show a statistically significant impact on online purchase decisions ($\beta = -0.067$, $p = 0.327$); therefore, hypothesis H2 is not supported. Product/service risk (PR) can be explained by the behavioral characteristics of Generation Z. Unlike previous generations, Gen Z consumers rely heavily on online reviews, ratings, and social proof mechanisms prior to making purchase decisions. These tools help reduce uncertainty regarding product quality, thereby diminishing the perceived impact of product risk. This finding is consistent with Social Proof and Online Review Acceptance theories, suggesting that Gen Z leverages collective intelligence to mitigate risks before making a purchase. These results indicate the importance of factors related to financial risk and information security in shaping the online purchase decisions of Gen Z consumers in Vietnam.

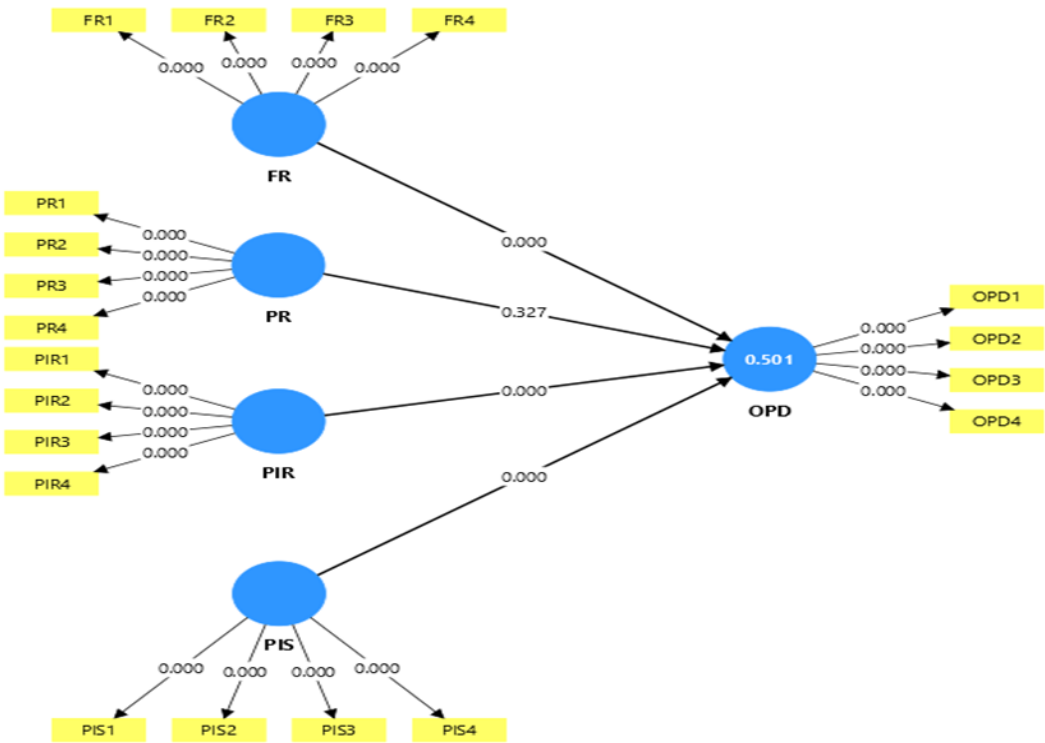


Figure 3. Results of Structural Equation Modeling (SEM) Analysis

(Source: Author's calculation)

The results of testing the structural model using the PLS-SEM method, in which p-values are displayed directly on the relationships. The results show that financial risk (FR) has a negative and statistically significant impact on online purchase decisions (OPD) with $p < 0.001$. Similarly, personal information security risk (PIR) also exhibits a highly statistically significant negative impact on OPD ($p < 0.001$). The findings are consistent with prior studies, confirming the negative role of perceived risk in online shopping [2], [4]. However, this study extends the literature by demonstrating that personal information security risk exerts a stronger impact than financial risk in the Vietnamese context. This contrasts with earlier research that identified financial risk as the primary concern, indicating a shift in consumer priorities in the digital economy. Conversely, perceived system security (PIS) has a positive and statistically significant impact on online purchase decisions ($p < 0.001$), indicating the promoting role of security factors in online shopping behavior.

Meanwhile, the relationship between product/service risk (PR) and online purchase decisions is not statistically significant ($p = 0.327$), indicating that this factor does not play a decisive role in the research model. The dependent variable OPD has an R^2 value of 0.501, indicating that the independent variables in the model explain 50.1% of the variance in online purchase decisions.

4. CONCLUSION

This study identifies three key factors influencing the online purchase decisions of Gen Z consumers in Vietnam, among which financial risk and information security risk are two factors that negatively impact online purchase decisions, with information security risk being the most dominant. Conversely, a positive perception of system security has a positive and statistically significant impact on online purchase decisions. Meanwhile, product/service risk does not demonstrate a statistically significant impact in the research model. Through these research findings, the author aims to provide empirical supplementation to risk perception theory in the context of e-commerce in an emerging market like Vietnam, while also emphasizing the role of information security in the shopping behavior of Generation Z. These research findings once again affirm that in e-commerce, the state and enterprises need to prioritize investment in security systems, transparent data protection policies, and minimize financial risks in order to foster trust and purchase decisions among young consumers.

Although the study provides meaningful insights, several limitations should be acknowledged. First, the use of a cross-sectional design and self-reported data may introduce common method bias. Second, the sample is limited to Generation Z consumers in Vietnam, which may affect the generalizability of the findings. Third, while PLS-SEM is appropriate for exploratory research, future studies could employ covariance-based SEM or longitudinal approaches to enhance the robustness and causal interpretation of the results.

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