Effects Of Social Interactions on Purchase Intention in E-Commerce: An Analysis Based on The Stimulus-Organism-Response (S-O-R) Model

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ARTICLE INFO	ABSTRACT
Article type: Research Article **Article History:** Received 05 May 2023 Revised 24 August 2023 Accepted 07 October 2023 Published Online 12 June 2024 **Keywords:** *E-commerce,* *Perceived risks,* *Risk-related feelings,* *Social interactions,* *Purchase intention.*	This study examines the effects of social interactions, including online review quality and source credibility, on consumers' risk perception and purchase intention in e-commerce based on the Stimulus-Organism-Response (S-O-R) model. Further, it investigates the role of risk-related feelings (immediate negative emotions) in consumers' decision-making journeys. We used Structural Equation Modelling (SEM) to analyze 405 online questionnaires. Our analysis reveals that review quality and source credibility lower perceived risk and risk-related feelings while enhancing purchase intention. Moreover, it indicates that the online decision journey is twofold and varies based on emotions. Our results have considerable theoretical and practical implications. We enrich consumer risk perception and behaviour literature by incorporating social interactions and risk-related feelings. We also provide several impactful suggestions for marketing strategies for e-commerce businesses. **JEL:** D01, D12, D81, D91

1. Introduction

E-commerce has become popular across all customer segments. With the advent of e-commerce, formerly inconvenient face-to-face interactions between merchants and customers are no longer necessary (Manzoor, 2010). However, several challenges arise with e-commerce, such as concerns about the safety of online transactions and personal data privacy (Chatterjee & Datta, 2008; Shafiyah et al., 2013). Therefore, e-commerce, more generally, and the aspect of risk in e-commerce are considered critical areas for research.

Current studies in the e-commerce and marketing literature have primarily focused on investigating the effects of external stimuli (related to stimuli rooted in websites, brands, sellers, and products) or internal stimuli (within consumers) on consumers' perceived risk and purchase intention (Hajiheydari et al., 2017; Kim & Lennon, 2013). However, to our knowledge, the impact of external situational stimuli rooted in society and the community has not yet been investigated sufficiently. Online social interactions, including information searching and review reading, are crucial in consumers' information processing and decision-making processes. Engaging in social interactions before making online purchases can provide customers with increased trust, knowledge, a sense of belonging, and unique, tailored experiences.

Further, prior studies examining the subjective experience of consumers have predominantly focused on the impact of perceived risk on decision-making among online consumers (Featherman and Pavlou 2003; Pires et al. 2004). However, these studies have primarily considered risk as a cognitive construct, neglecting the affective assessments integral to the customer experience. Therefore, our study aims to address the following research questions:

> RQ1. Do social interactions impact risk perception and consumers' purchase intention in e-commerce?
> RQ2. Do risk-related feelings (i.e., immediate negative emotions) impact decision-making?

This study adopts the S-O-R (Stimulus-Organism-Response) framework proposed by Mehrabian & Russell (1980) and integrates theories such as prospect theory, risk perception, social exchange theory, and social interactions. The objective is to explore whether social interactions, specifically review quality and source credibility, can alleviate consumers' perceived risk and associated negative emotions while enhancing their purchase intentions. Based on this, companies can, hypothetically, enhance purchase intention by incorporating effective social interaction tools into their platforms. Additionally, the study examines the role of risk-related feelings, such as immediate negative emotions, in mediating the relationship between perceived risk and purchase intention.

This research differs from existing studies in three ways. First, it emphasises the significance of risk-related feelings in consumers' decision-making processes, highlighting how these feelings, driven by perceived risk, impact their behavioural intentions. Second, the study adopts the Stimulus-Organism-Response (S-O-R) framework to investigate the relationship between risk perception, consumer behaviour, and the influence of perceived risk and risk-related feelings on purchase intention. The S-O-R framework offers a novel approach that considers cognitive and affective processes, allowing for a more comprehensive understanding of consumer responses to environmental stimuli. Last, the research focuses on situational stimulus factors rooted in society and the community, specifically examining the impact of social interactions, such as the quality of online reviews and source credibility. It argues that these social interactions act as situational stimuli that can mitigate risk perceptions and risk-related feelings while improving purchase intentions in e-commerce. The study aims to provide theoretical insights into risk perception, consumer behaviour in e-commerce, and practical implications for e-businesses regarding marketing strategies.

2. Theoretical background

2.1 The stimuli-organism-response (S-O-R) model

The Stimuli-organism-response (S-O-R) framework posits that environmental stimulus triggers one's internal evaluations, encompassing both cognitive and emotional assessment. The interplay between these responses determines the behaviour (Mehrabian & Russell, 1980). This framework is commonly used in marketing research to understand how consumers respond to various stimuli. For example, social media interactivity has been found to serve as a purchase-information cue that influences

consumers' purchase intention (Hewei and Youngsook, 2022). Additionally, web design quality and responsiveness, considered components of e-service quality, significantly impact consumers' purchase intentions (Nam et al., 2021). Similarly, web design quality and responsiveness, considered components of e-service quality, significantly impact consumers' purchase intentions (Albarq, 2021).

2.2 Prospect theory

Prospect theory, introduced by Kahneman & Tversky (1979), offers an alternative to Expected Utility Theory (EUT) by accounting for individuals' irrationality and deviations from rational decision-making (Tversky & Kahneman, 1992). Prospect theory introduces several concepts, including the certainty effect (a preference for more minor specific outcomes over larger risky ones), the reflection effect (increased risk-aversion when limiting losses), the framing effect, and the isolation effect (risk preferences vary based on framing and sequential structure), and magnitude perception (change in 8-10 feels different than 56-58) (Ruggeri et al., 2020). Additionally, the theory highlights losses' more significant negative emotional impact compared to the positive emotional impact of equivalent gains (Abdellaoui et al., 2007). Prospect theory explains the asymmetries in consumer behaviour between perceived losses and gains in online shopping, elucidating the role of emotions and risk perception (Chiu et al., 2014).

2.3 Risks: perceived risks and risk-related feelings in consumer behaviour

Current research on online consumer behaviour primarily emphasises that risk perception is a cognitive activity involving analytical, logical, reason-based, and deliberative processing. For example, Glover and Benbasat (2010, p. 48) define perceived risk in e-commerce as "*a consumer's expectation that the actions entailed in purchasing goods or a service from an e-commerce site could have unwanted outcomes.*"

In other words, current research on online consumer behaviour lacks a comprehensive exploration of the emotional aspect of risk. While researchers have acknowledged the presence of anxiety and conflict in uncertain environments (Featherman and Pavlou, 2003), they have not sufficiently considered negative feelings in their conceptualisation and measurement. However, feelings, particularly those related to risk, significantly impact individuals' behaviour and decision-making. Hartley and Phelps (2012) have noted a connection between anxious behaviour and risk, while Maner and Schmidt (2006) find that people's risk perception increases with their anxiety levels. Additionally, Loewenstein et al. (2001) assert that risk-related feelings go beyond being a mere epiphenomenon in decision-making.

2.4 Social exchange theory

Social exchange theory (SET) emphasises the interdependence of individuals within a relationship, in which their behaviour and decisions are motivated by the social costs and rewards (Cortez & Johnston, 2020). SET identifies two core aspects of consumer behaviour: customer satisfaction and trust. When customers feel satisfied and trust a company, they are more likely to remain committed and extend their relationships with that company (Farhana, 2021). As a result, in e-commerce, SET constructs, such as reciprocity, reputation, and trust, can positively impact consumer satisfaction, online purchase intention, and loyalty (Shiau & Luo, 2012).

2.5 Social Interactions and consumer behaviour

Social interactions significantly impact individuals' purchasing behaviour (Godes et al., 2005). Through social interactions, consumers gain knowledge, make informed decisions, and reduce their perceived risk when making purchases (Gu et al. 2012; Lee and Bell 2013). In the digital realm, social interaction refers to the network connections among online users (Chiu et al., 2006). Previous research reveals that social interactions are an essential precursor to purchasing behaviour (Lu et al., 2014; Wang & Yu, 2017). Consumers perceive the data obtained through online social interactions as more reliable and authentic than traditional marketing channels (Park et al. 2007).

Social interactions are classified into two primary groups: opinion-based and behaviour-based social interactions. Opinion-based social interactions are more commonly known as online reviews. The effectiveness of these interactions is influenced by three key factors: message, source, and

audience. (Chen et al., 2011; Cheung et al., 2009). According to Zhang et al. (2010), The quality of reviews and the credibility of the source are essential in shaping consumers' acceptance of online reviews. Consumers value reviews because they help them assess the quality of products more accurately (Wang & Chang, 2013). Scholars agree that high-quality reviews may influence customers' purchasing decisions and that customers are more likely to trust reviews from reliable sources (Park & Lee, 2008; Wang & Chang, 2013; Zhang et al., 2014, 2010).

3. Research model and hypothesis development

3.1 Response: Purchase intention

Online purchase intention refers to consumers' willingness to buy a product or service through an e-commerce platform (Meskaran et al., 2013). Factors such as website quality and credibility are associated with purchase intention (Alsoud and Othman, 2018). Determinants of online purchase intention include prior online purchase experience, impulse purchase orientation, quality orientation, and online trust (Khasawneh and Rishi, 2017). Perceived risk and emotional factors also shape purchase intention in e-commerce (Crespo et al., 2009; Featherman & Pavlou, 2003; Park et al., 2004).

3.2 Organism: Perceived risks and Risk-related feelings

Based on prior research, we define perceived risk in e-commerce as the belief that there may be potential losses when buying products or services on a digital platform. This perception of risk negatively affects consumer purchase intention (Shekari & Azizi, 2022; Soleimani et al., 2017). Various studies have shown that perceived risks act as a deterrent, leading to a decrease in online purchase intention (Amirtha et al., 2021; Rahmi et al., 2022; Tangmanee & Rawsena, 2016). Therefore, we propose the following:

H₁. Perceived risks are negatively related to purchase intention.

Loewenstein et al. (2001) define risk-related feelings as immediate anticipatory emotions of risk that individuals experience while deciding or engaging in an action. Negative cognitive evaluations, such as the fear of monetary loss or privacy invasion, can generate these risk-related feelings in consumers (Sha, 2018). Therefore, we propose the following:

H₂. Perceived risks are positively related to risk-related feelings.

Negative emotions such as anxiety, depression, and loneliness can directly influence consumers' purchase behaviour in e-commerce (Luo et al., 2018). For example, Sha (2017) finds that negative feelings prevent consumers from checking out their shopping carts. According to Li et al. (2011), the initial emotions of consumers form their overall impression of a new e-commerce vendor and influence their behaviour regarding online information disclosure. Specifically, initial negative emotions, such as fear, can alert consumers to potential issues. Therefore, we propose the following:

H₃. Risk-related feelings are negatively related to purchase intention.

3.3 Stimuli: social interactions

3.3.1 Review quality

Review quality is defined as the extent to which consumers find that online reviews accurately reflect users' experiences with products (Zhang et al., 2014). The quality of information available on a product is essential in e-commerce (Kollmann and Suckow, 2012). Previous research has found that in e-commerce, buyers generally perceive online product reviews as credible and valuable for making purchasing decisions (Wang 2010). Xu et al. (2020) suggest that e-consumers prefer to acquire product reviews from other consumers to evaluate product quality, decrease risk, feel safe about the website (Xu et al., 2020), and motivate themselves to purchase products online (Zhang et al. 2014). Therefore, we propose the following:

H₄. Review quality is negatively related to perceived risks.
H₅. Review quality is negatively related to risk-related feelings.
H₆. Review quality is positively related to purchase intention.

3.3.2 Source Credibility

Ohanian (1990), defines source credibility as the way consumers feel about the knowledge and reliability of review sources, as opposed to individual reviews. Individuals will infer the trustworthiness of a message based on how they perceive the authenticity of the source. For example, when determining the quality of a product, personal recommendations from friends are more reliable (Kiecker and Cowles 2002). More generally, consumer concerns about a brand are alleviated if the brand's reviews come from a credible source (Wu and Wang 2011). Therefore, we propose the following:

H7. Source credibility is negatively related to perceived risks.
H8. Source credibility is negatively related to risk-related feelings.
H9. Source credibility is positively related to purchase intention.

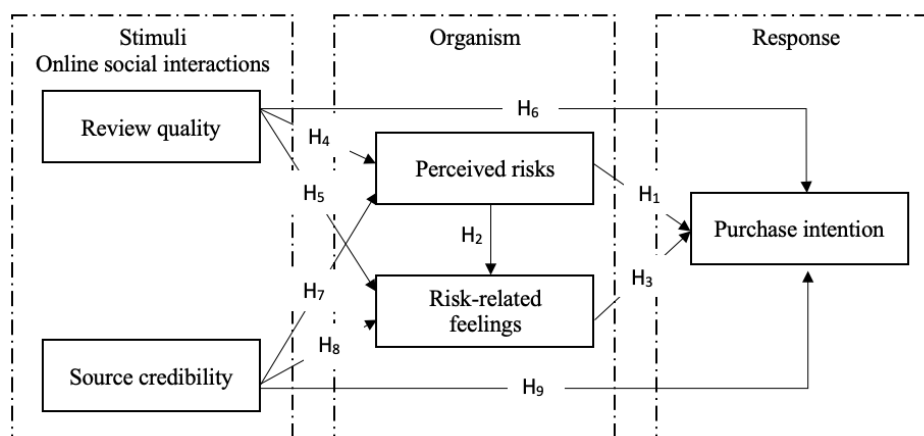Based on our propositions, the research model is presented in Figure 1.

Fig. 1. Research model. Source: Author's construction

4. Methodology

4.1 Procedures

We conduct empirical research to investigate the validity of the conceptual model and test the hypotheses. An online survey method is applied because it can gather accurate information from consumers who purchase on e-commerce websites. To benefit respondents, we adopt a drop-off survey, in which we drop off questionnaires for respondents to complete at their leisure. The questionnaires are distributed via emails and social media (e.g., Facebook, Instagram, and Zalo). Accordingly, we send emails or notifications to invite online consumers across Vietnam to participate in our survey. A URL link is attached to the posts or emails. The questionnaire consists of two sections. One relates to respondents' socio-demographic characteristics and the other relates to the studied constructs. The completed forms are returned to us when the respondents click the "Submit" button. Therefore, each participant only has one attempt to do the survey.

We select the two largest and most popular e-commerce websites in Vietnam as our research sites (i.e., shopee.vn and tiki.vn). Both websites offer a wide range of products and have similar website designs regarding product reviews. Accordingly, consumers can leave their reviews within 15 days of delivery and only have one attempt to edit the reviews. The content of the review includes (1) rating the product on a five-star Likert scale, (2) providing images of the product (if any), and (3) an open assessment of the product. The websites also provide the number of online reviews and the sales volume of products. Therefore, these websites are appropriate for our investigation.

4.2 Participants

The study's target population is online consumers who have experience with e-commerce sites, such as Tiki.vn and Shopee.vn. Therefore, the participants are required to answer whether they have ever made any purchases on these websites. Only online consumers who have purchased on these websites can join the next part of the questionnaire. At the end of the survey, we collect 405 valid responses.

The purpose of the study is to investigate the effects of social interactions on risk perception and purchase intention in e-commerce and not to provide profiles of the consumers. Therefore, no sampling quotas in terms of age or gender are specified. The sample includes a total of 405 respondents. The total sample (N=405) consists of 67.7% female and 32.3% male, with most respondents (52.1%) being 18 to 25 years old. 27.7% of the total sample are from 26 to 35 years old.

Regarding employment status, 50.6% of the respondents are students, and 45.2% of the total sample are full-time employed. Regarding consumption for online shopping, 55.1% of our respondents pay under 100 USD per month, and surprisingly, many are students. 44.9% spend from 100-500 USD monthly for online shopping, most of whom are married (Table 1).

Table1. Demographic characteristics.

		Number (N=405)	Frequency (%)
Gender	Female	274	67.7
	Male	131	32.3
Age	18-25	301	52.1
	26-35	112	27.7
	36-45	82	20.2
Education qualification	Bachelor's degree	291	71.9
	Master's degree	72	17.8
	Doctoral degree	33	8.1
	Prefer not to say	9	2.2
Marital status	Married	184	45.4
	Single	221	54.6
Employment status	Full-time employment	183	45.2
	Part-time employment	17	4.2
	Student	205	50.6
Monthly online shopping amount	<100USD	223	55.1
	100-500USD	182	44.9

Source: Author's contribution

4.3 Measures and statistical methods

We apply some well-validated measures of constructs. To measure Source credibility, we apply the scale of Cheung et al. (2008) with 4 items. To measure Review quality, we apply the scale of Park et al. (2007) with 4 items. To measure perceived risk, we apply the scale of Naiyi (2004) with 24 items. To measure risk-related feelings, we apply the scale of Sha (2018) with 3 items. To measure purchase intention, we apply the scale of Pavlou (2003) with 2 items. We also use a five-point Likert scale from 1= "strongly disagree" to 5= "strongly agree" to evaluate the items.

We adopt Structural Equation Modelling (SEM) using ADANCO software to analyse the data. SEM is also one of the most preferred tools for marketing academics (Martinez-Lopez et al., 2013). ADANCO is preferred because this software can implement a subset of techniques in a variance-based SEM (Henseler & Dijkstra et al. 2015).

5. Data analysis and results

5.1 The goodness of model fit

We analyse the model's Goodness of fit (GoF) based on the standardised root mean squared residual (SRMR), the unweighted least squares discrepancy (dULS), and the geodesic discrepancy (dG) as presented in Table 2.

Table 2. Goodness of model fit.

Saturated model			
	Value	HI95	HI99
SRMR	0.0325	0.0387	0.0471
dULS	0.2214	0.3151	0.4653
dG	0.2479	0.3681	0.8219
Estimated model			
SRMR	0.0325	0.0387	0.0471
dULS	0.2214	0.3151	0.4653
dG	0.2479	0.3681	0.8219

Source: Author's contribution

The lower the SRMR, the better the fit of the theoretical model (Henseler & Dijkstra et al. 2015). According to Byrne (1998), an SRMR value of less than 0.05 suggests an adequate fit. Therefore, the result implies a good fit for the research model. Similarly, The dULS value and the dG value should not exceed their values of the 95%-percentile ("HI95") and 99%-percentile ("HI99") to ensure the fit of the model (Dijkstra and Henseler 2015). Generally, the results show that our model has a good GoF.

5.2 Analysis of the measurement model

The reliability of construct scores is assessed drawing upon Dijkstra-Henseler's rho (ρA) (Dijkstra & Henseler, 2015); Composite reliability (ρc) (Werts et al., 1978); and Cronbach's alpha (α) (Cronbach, 1951). In Table 3, all values of latent constructs are higher than 0.7, which implies good reliability. Convergence validity is measured by Average variance extracted (AVE) with the condition that AVE values should be greater than 0.5. Table 4 presents that all AVE values are higher than 0.5, which implies the convergent validity of the constructs.

Table 3. Construct Reliability

Construct	Dijkstra-Henseler's rho (ρA)	Jöreskog's rho (ρc)	Cronbach's alpha(α)
Review Quality	0.8971	0.8961	0.8966
Source credibility	0.8872	0.8816	0.8827
Risk-related feelings	0.8397	0.8395	0.8393
Purchase intention	0.8954	0.8953	0.8953
Perceived risks	0.9504	0.949	0.9485

Source: Author's contribution

Table 4. Convergent Validity

Construct	Average variance extracted (AVE)
Review Quality	0.6834
Source credibility	0.652
Risk-related feelings	0.6356
Purchase intention	0.8105
Perceived risks	0.727

Source: Author's contribution

Regarding discriminant validity, we assess the discriminant validity (DV) through the models of Fornell and Larcker (1981) and the Heterotrait − Monotrait Ratio (HTMT) of Henseler et al. (2015). Looking at Table 5, the square root of AVE is higher than the correlation values of the columns and the rows, presenting a good discriminant validity.

Further, according to J. Henseler et al. (2015), it is recommended that HTMT levels are below 0.85. From Table 6, all HTMT values are less than 0.85, which shows good discriminant validity.

Table 5. Discriminant Validity: Fornell-Larcker Criterion

Construct	Review Quality	Source credibility	Risk-related feelings	Purchase intention	Perceived risks
Review Quality	0.6834				
Source credibility	0.001	0.652			
Risk-related feelings	0.114	0.0339	0.6356		
Purchase intention	0.0732	0.0477	0.2513	0.8105	
Perceived risks	0.2185	0.0536	0.4763	0.346	0.727

Source: Author's contribution

Table 6. Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT)

Construct	Review Quality	Source credibility	Risk-related feelings	Purchase intention	Perceived risks
Review Quality					
Source credibility	0.0309				
Risk-related feelings	0.337	0.1836			
Purchase intention	0.2702	0.2182	0.5013		
Perceived risks	0.4672	0.2304	0.6908	0.5879	

Source: Author's contribution

5.3 Multicollinearity

To analyse the multicollinearity among the constructs of the research model, we calculate the variance inflation factor (VIF) per set of indicators. According to Hair et al. (2017), VIF values should be lower than 5.0 to guarantee the collinearity problem of the model. The result shows that all VIF values of this model are acceptable (Table 7).

Table 7. Indicator Multicollinearity

Indicator	Review Quality	Source credibility	Risk-related feelings	Purchase intention	Perceived risks
RQ1	2.2252				
RQ2	2.3479				
RQ3	3.9052				
RQ4	3.1889				
SC1		2.2634			
SC2		2.4709			
SC3		3.157			
SC4		2.5005			
RF1			2.2081		
RF3			1.9355		
RF4			1.8816		
PI1				2.9144	
PI2				2.9144	
Fraud risk					4.9119
Delivery risk					3.3667
Financial risk					4.677
P&T risk					2.7151
Product risk					3.8043
Privacy risk					3.0203
Information risk					2.1966

Source: Author's contribution

5.4 Analysis of the structural model

Figure 2 shows the graphical representation of the research model.
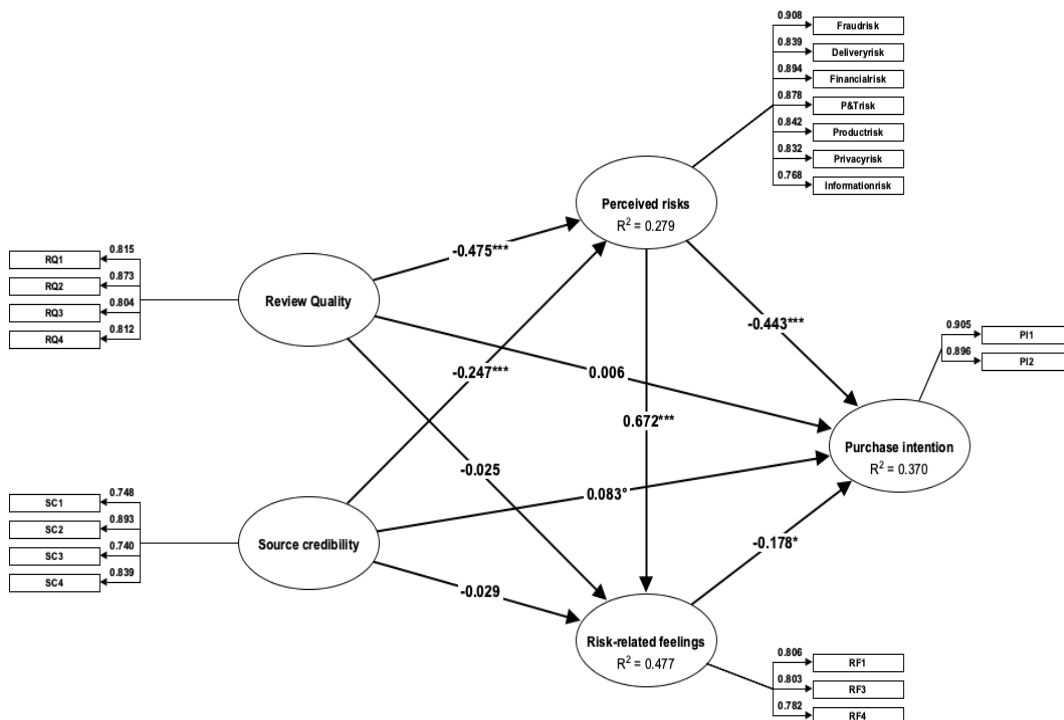
Fig. 2. Graphical representation of the research model. Source: Author's contribution/ ADANCO output

We explain the explanatory power of endogenous variables by using the adjusted R^2. Table 8 presents the explanatory power of risk-related feelings, purchase intention, and perceived risk. Adjusted R^2 of these constructs is equal to 0.4734, 0.3635, and 0.2757, which means that the degrees of explanatory power are 47.3%, 36.3%, and 27.57%, respectively.

Table 8. Adjusted R-Squared

Construct	Adjusted R^2
Risk-related feelings	0.4734
Purchase intention	0.3635
Perceived risks	0.2757

Source: Author's contribution

Effect size (f^2) indicates the magnitude of a direct effect. According to Cohen (1988), the effect of perceived risks on risk-related feelings is strong ($f^2=0.6225$). The effect of review quality on perceived risks is moderate ($f^2=0.3131$). The effects of perceived risks on purchase intention, risk-related feelings on purchase intention, and source credibility on perceived risks are weak ($f^2=0.1386, 0.0263, 0.0843, respectively$) (Table 9).

Table 9. Effect overview

Effect	Cohen's f2
Review Quality -> Risk-related feelings	0.0009
Review Quality -> Purchase intention	0
Review Quality -> Perceived risks	0.3131
Source credibility -> Risk-related feelings	0.0015
Source credibility -> Purchase intention	0.0101
Source credibility -> Perceived risks	0.0843
Risk-related feelings -> Purchase intention	0.0263
Perceived risks -> Risk-related feelings	0.6225
Perceived risks -> Purchase intention	0.1386

Source: Author's contribution

Hypothesis testing

Table 10 shows the results of the hypotheses tests. We accept H_1, H_2, H_3, H_4, and H_7. Review quality and source credibility negatively affect perceived risks *($\beta=-0.4753$, $p<0.01$; $\beta=-0.2466$, $p<0.01$, respectively)*. Perceived risks and risk-related feelings also negatively influence purchase intention *($\beta=-0.4434$, $p<0.01$; $\beta=-0.178$, $p<0.05$, respectively)*. By contrast, perceived risks positively affect risk-related feelings *($\beta=0.6719$, $p<0.01$)*.

Table 10. Direct Effects Inference

Effect	Original coefficient	t-value	p-value (2-sided)	Decision
Review Quality -> Risk-related feelings H_5	-0.0245	-0.4063	0.6846	Rejected
Review Quality -> Purchase intention H_6	0.0057	0.1235	0.9017	Rejected
Review Quality -> Perceived risks H_4	-0.4753	-9.3895	0.0000	Accepted
Source credibility -> Risk-related feelings H_8	-0.0293	-0.5643	0.5726	Rejected
Source credibility -> Purchase intention H_9	0.0831	1.7974	0.0724	Rejected
Source credibility -> Perceived risks H_7	-0.2466	-5.0646	0.0000	Accepted
Risk-related feelings -> Purchase intention H_3	-0.178	-2.1581	0.0310	Accepted
Perceived risks -> Risk-related feelings H_2	0.6719	10.0818	0.0000	Accepted
Perceived risks -> Purchase intention H_1	-0.4434	-5.3885	0.0000	Accepted

Source: Author's contribution

Mediating effects

Table 11 presents the accepted mediating effects among constructs. Accordingly, review quality indirectly affects risk-related feelings and purchase intention *($\beta=-0.3193$, $p<0.01$; $\beta=0.272$, $p<0.01$, respectively)*. Similarly, source credibility indirectly affects risk-related feelings and purchase intention *($\beta=-0.1657$, $p<0.01$; $\beta=0.144$, $p<0.01$, respectively)*. Whereas perceived risk has a partial indirect effect on purchase intention *($\beta=-0.1196$, $p<0.05$)*.

Table 11. Indirect Effects Inference

Effect	Original coefficient	t-value	p-value (2-sided)	Decision
Review Quality -> Perceived risks -> Risk-related feelings	-0.3193	-7.2201	0.0000	Accepted
Review Quality -> Perceived risks -> Purchase intention	0.272	7.1626	0.0000	Accepted
Source credibility -> Perceived risks -> Risk-related feelings	-0.1657	-4.5468	0.0000	Accepted
Source credibility -> Perceived risks -> Purchase intention	0.144	5.1565	0.0000	Accepted
Perceived risks -> Risk-related feelings ->Purchase intention	-0.1196	-2.1542	0.0313	Accepted

Source: Author's contribution

6. Discussion

This section presents a discussion of the findings from the analysis. We explain what the findings tell us about this research. Further, we also examine the findings with interpretations from previous studies highlighted in the literature review. We indicate whether there are any contradictions with previous studies. If there are, we also explain why these inconsistencies exist.

6.1 The impact of perceived risk on purchase intention

Our study demonstrates a negative effect between consumers' perceived risk and their purchase intention in e-commerce *(β=-0.4434, p<0.01)*. This indicates that as consumers' perceived risk increases on e-commerce platforms, their intention to make purchases decreases. This finding aligns with observations made by Amaro & Duarte (2015) and Kim & Lennon (2013). Numerous scholars have highlighted the negative influence of perceived risk on consumers' purchase intentions in online shopping. Further, our study reveals that fraud and financial risks receive much more attention than other risk dimensions. In other words, online consumers are mostly concerned about the reliability of e-retailers as well as potential monetary losses. Our results are consistent with Alrawad et al. (2023), Ashoer (2016), and Nguyen et al. (2021) who consider perceived risk a multi-dimensional construct.

6.2 The impact of perceived risk on risk-related feelings

Our research indicates a significant positive relationship between perceived risk and risk-related feelings in e-commerce *(β=0.6719, p<0.01)*. This suggests that consumers' perception of risk can predict their negative feelings (such as worry, threat, and fear) when engaging in e-commerce transactions in Vietnam. In other words, if e-consumers perceive high levels of risk on an e-commerce website, they are more likely to experience negative emotions that can influence their final decision-making. This finding aligns with the results of previous studies conducted by Hajiheydari et al. (2017) and Sha (2017, 2018), which also demonstrated a positive relationship between perceived risk and risk-related feelings.

6.3 The mediating effect of risk-related feelings

We further investigated the role of risk-related feelings in the relationship between perceived risk and purchase intention and found that risk-related feelings partially mediate the impact of perceived risk on consumers' purchase intention *(β=-0.1196, p<0.05)*. This suggests that risk-related feelings generated by consumers' perceived risk, play a significant role in shaping consumer behaviour. The findings align with previous research conducted by Sha (2018), which also highlighted the mediating role of risk-related feelings (such as immediate negative emotions like threat and fear) between perceived risk and purchase intention. While previous studies have examined the effect of negative emotions as mediators in the relationship between perceived risk and intention (Hajiheydari et al., 2017), our study stands out by confirming the mediating role of risk-related feelings in the context of e-commerce, specifically in the Vietnamese e-commerce market.

6.4 The impact of social interactions on perceived risk

The results from the structural equation modeling indicate that social interactions, specifically review quality and source credibility, significantly negatively impact perceived risk. This suggests that the quality of online reviews and the credibility of sources are influential factors in shaping consumers' perceived risk in Vietnamese e-commerce. These factors serve as effective means to reduce perceived risk and enhance purchase intention in e-commerce. These findings align with previous studies, which

have also shown that source credibility and positive comments can decrease consumers' perceived risk (Amarullah et al., 2022; Zhao et al., 2017), while negative comments increase perceived risk (Liao & Huang, 2021).

6.5 The impact of social interactions on risk-related feelings
Furthermore, our study hypothesised that social interactions (review quality and source credibility) negatively affect risk-related feelings. However, contrary to the initial hypotheses, the results revealed no significant direct effects of review quality and source credibility on risk-related feelings. This suggests that the quality of online reviews and the credibility of sources do not directly influence consumers' negative feelings. Instead, these factors indirectly affect risk-related feelings through their impact on perceived risk. In other words, the study found that the influence of social interactions on risk-related feelings operates through the mediation of perceived risk.

6.6 The impact of social interactions on purchase intention
Similarly, we find no significant direct effect of review quality and source credibility on consumers' purchase intention in e-commerce. This suggests that the quality of online reviews and the credibility of sources do not directly influence consumers' purchase decisions. Instead, the purchase intention of e-consumers is shaped by a combination of cognitive and affective evaluations.

7. Conclusion
7.1 Revisiting the research questions
The premise of this study is rooted in the recognition that contemporary online consumers face various risks, such as opportunistic behaviour, information asymmetry, privacy concerns, security issues, financial risks, and quality concerns. Therefore, researchers, online companies, and e-retailers must understand consumers' perceptions of risk and find ways to mitigate those perceived risks. Previous research on perceived risk and purchase intention in e-commerce has predominantly focused on examining the impact of website design, marketing strategies, and internal factors on consumers' perceived risk. However, limited attention has been given to consumers' feelings and the role of emotions in the decision-making process. This study argues that social interactions, specifically review quality and source credibility, significantly reduce consumers' perceived risk and improve their purchase intention in e-commerce. Furthermore, the study emphasises the importance of consumers' feelings, particularly risk-related emotions, in their decision-making journey. This study presented a conceptual model (Figure 1) with 9 proposed hypotheses to analyse these arguments, whose empirical validation answers the research questions.

Hypotheses 4 to 9 were proposed to address the first research question (RQ1), while Hypotheses 1 to 3 addressed the second research question (RQ2). RQ1 investigates the impact of social interactions on risk perception and consumers' purchase intentions in e-commerce. After testing hypotheses 4 to 9, the study concludes that social interactions, specifically review quality and source credibility, reduce consumers' perceived risk and risk-related feelings. As a result, this enhances consumers' purchase intentions in e-commerce, providing an answer to RQ1. RQ2 explores the influence of risk-related feelings, characterised by immediate negative emotions, on the decision-making process. The research suggests that risk-related feelings partially mediate the causal relationship between perceived risk and purchase intentions in e-commerce, answering RQ2.

7.2 Theoretical implications
This study contributes in several ways to the existing literature on marketing and online consumer behaviour. Firstly, it adopts the consumers' "cognitive-affective-behaviour" hierarchy theory of reaction and develops a rational model of "perceived risk - risk-related feelings - purchase intention." This enriches the understanding of risk perception theory in the context of e-commerce. The study highlights that the online decision journey is twofold and influenced by the presence of emotions. In other words, consumers approach risky decisions through two paths (i.e., (1) think-decide and (2) think-feel-decide): (1) by cognitively evaluating risks and then making a decision, or (2) by cognitively assessing risks, experiencing negative emotions, and then making a decision. This

framework recognises the significance of emotions in the decision-making process and provides a deeper understanding of consumer behaviour in e-commerce.

Second, while some previous research, such as Hajiheydari et al. (2017) and Kim and Lennon (2013), has explored the role of positive emotions or dimensions of satisfaction in consumer behaviour, this study specifically focuses on the negative emotions generated by consumers' perceived risk in e-commerce. It recognises that negative emotional impacts are often felt more strongly than positive ones, as emphasised by prospect theory (Abdellaoui et al., 2007). The study identifies these negative emotions as "immediate visceral reactions" (such as fear, anxiety, and dread) that arise in response to risks and uncertainties in e-commerce. These immediate negative emotions differ from anticipated negative emotions, such as disappointment or regret, which are experienced in the future when making risky decisions (Loewenstein et al., 2001). Consequently, the research highlights the importance of considering risk-related feelings, specifically immediate negative emotions, as an independent construct alongside perceived risk. Many marketing researchers have often overlooked this distinction. The study further acknowledges the differentiation between types of negative emotions under risk and uncertainty, contributing to a deeper understanding of consumer behaviour in these contexts.

Third, the findings of our study support using the S-O-R model for analysing consumers' online purchase behaviour because it provides a comprehensive understanding of consumers' information processing and decision-making journeys. While previous research has primarily focused on website stimuli (e.g., Chang et al., 2019; Hajiheydari et al., 2017; and Kim & Lennon, 2013) and marketing stimuli (e.g., He et al., 2022; Wu et al., 2011), this study reveals the significance of social interactions, specifically the quality of online reviews and the credibility of sources, in reducing consumers' perceived risk. These social interactions indirectly alleviate risk-related feelings and enhance consumers' purchase intention in e-commerce. The research emphasises the crucial role of social interactions as situational stimuli in mitigating perceived risk and improving purchase intention in e-commerce.

7.3 Practical Implications and Suggestions

This paper provides practical recommendations for practitioners aiming to enhance online consumers' purchase intention and reduce risk perception in e-commerce. First, it offers valuable suggestions for e-retailers and e-businesses when dealing with specific nations' consumers for their international SEO strategies. For a geographical market like Vietnam, where 57.6 million out of 97 million people participated in e-commercial transactions in 2022, reducing fraud risk and financial risk is crucial, as Vietnamese e-consumers commonly express concerns about the reliability of e-sellers and potential monetary losses. One recommendation is for foreign e-commerce companies operating in Vietnam to obtain certification from the Ministry of Industry and Trade (MOIT), which can enhance their reputation and brand visibility. Additionally, displaying comprehensive information, including contact details, addresses, emails, product information, return policies, and guarantees, can improve consumers' perception and purchase intention. For new e-retailers entering the Vietnamese e-commerce market, establishing collaborations with well-established selling sites like Tiki and Shopee can be beneficial. These strategies can help e-retailers address consumer concerns, enhance trust, and increase purchase intention in the Vietnamese e-commerce market.

The second recommendation is that e-commerce companies focus on reducing consumers' negative feelings. Negative emotions, especially risk-related ones, can significantly impact consumers' evaluation and decision-making processes. Therefore, establishing a long-term relationship with online consumers and fostering trust and positive emotions becomes crucial. Given the digital nature of e-commerce, building and maintaining this relationship should be an ongoing goal in companies' marketing strategies.

Finally, e-commerce platform companies should prioritise the development of a high-quality product review system. Credible and sufficient reviews significantly decrease consumers' perceived risks and negative emotions when making purchases through e-commerce platforms. Some companies may overlook the importance of their review systems, resulting in incomplete or unreliable customer feedback and a lack of a healthy and trustworthy social interaction ecosystem on their websites. Companies can implement an accurate and carefully designed review form to address this, providing

clear instructions for consumers to provide thoughtful feedback. Additionally, incorporating comment and sharing functions can encourage online consumers' social interactions, further enhancing the quality and credibility of reviews.

7.4 Limitations and Future Research

The paper acknowledges several limitations that can guide future research. Firstly, the study was conducted in Vietnam, a country known for its high degree of collectivism. This cultural context may influence the results regarding the impact of social interactions on consumers' perceived risk in e-commerce. Therefore, conducting comparative studies across different countries and cultures would be valuable for future research.

Secondly, access to customers from international e-commerce websites is a limitation in this article, as many Vietnamese online shoppers may not be familiar with several popular international e-commerce platforms. Expanding the scope of the study to include other e-commerce websites and their users from around the world would provide a more comprehensive understanding and further inform the hypotheses and model proposed in this paper.

Lastly, the study indicates that the dependent variable, perceived risk, accounts for only 27.9% of the variance. This suggests that other important stimuli or factors may not be considered in the current model. Future research can expand the model to incorporate additional stimuli, such as website or marketing stimuli, to better understand their impact on consumers' perceived risk.

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