

A Cross-culture Analysis of Risk Perception and Purchase Intention in Vietnamese and Hungarian e-Commerce

Van Anh Pham Thi^{1*}, Ákos Nagy², Trung Minh Ngo¹, Duc Minh Ngo³

¹*Faculty of Business and Economics, University of Pécs, Hungary*

²*Marketing and Tourism Department, Faculty of Business and Economics, University of Pécs, Hungary*

³*Vietnam Academy of Social Sciences, Vietnam*

*Corresponding author: vananhpham8494@gmail.com

Abstract

This paper examines the role of uncertainty avoidance (a cultural feature at the individual level) in the effect of risk perception and consumers' behavioural intention in e-commerce. Further, we attempt to distinguish between conventional (cognitive) perceived risks and risk-related feelings of consumers when shopping online. To this end, we utilise a sample of 603 online shoppers from Hungary and Vietnam. Data is analysed using structural equation modelling (SEM). The results reveal two different aspects of risk (i.e., perceived risk and risk-related feelings) and highlight that the online decision journey is twofold and influenced by the presence of emotions. Moreover, the result also indicates that the level of uncertainty avoidance works as a moderator in the effect of perceived risk on consumer purchase intention. The more consumers are risk-averse, the stronger the negative impact of perceived risk is on their purchase intention. Our results have considerable theoretical implications. We enrich the existing literature on risk perception in consumer behaviour by incorporating the view of cross-culture and risk-related feelings. Further, we provide meaningful, practical implications for Asian e-businesses as well as worldwide.

Keywords: e-commerce, cultural differences, perceived risk, risk-related feelings, purchase intention, uncertainty avoidance

Introduction

With the development of technology and the Internet, e-commerce has entered the lives of all people. Further, the spread of the COVID-19 pandemic in 2020 has created positive leverage for the global e-commerce market (Statista, 2021).

Vietnam is the 26th biggest market for e-commerce, with revenues anticipated to reach \$13,357,9 million by 2023 (EcommerceDB, 2022). Regarding the retail industry, Vietnam's e-commerce sales accounted for 6.5% of total retail sales in 2021 (ITA, 2022a). Compared to the pre-pandemic level in 2019, around 57% of Vietnamese online shoppers stated that shopped more online, which makes the e-commerce market value in Vietnam reach around 12 billion U.S. dollars in 2020 (Statista, 2022). The most popular products purchased online include clothes and footwear, consumer electronics, household appliances, and personal care products. And key e-commerce operators include Shopee, Tiki, Lazada, Shopee, Sendo (ITA, 2022a). Around 73% of online shoppers prefer cash-on-delivery (COD). Therefore, the Government of Vietnam is actively promoting a non-cash payment society with the goal of increasing cashless payments to over 50% by 2025. Vietnamese shoppers favour Amazon or internationally trusted e-commerce websites over local e-commerce platforms due to a lack of trust (ITA, 2022a).

In Hungary, the growth of e-commerce has been gradual initially but has experienced significant growth in recent years. The advent of the Covid-19 pandemic has precipitated a substantial surge in the realm of electronic commerce. The projected annual revenue growth rate is anticipated to be 7.3%, leading to a market volume of USD 2.706 billion by 2023 (ITA, 2022b). Leading online stores in Hungary include eMAG, Alza, Tesco, Mediamarkt, Ikea.com with top product categories such as fashion, electronics and media. Laptop and Desktop computers are the most popular devices for activities associated with e-commerce purchases (e.g., gathering information, browsing product catalogues, price comparison, order placement, and payment). Although most Hungarian consumers prefer cashless payment, cash-on-delivery (COD) is still popular. Additionally, Hungarian online shoppers also have multiple options for delivery methods such as courier delivery, pickup points, and postal delivery. However, the shipping fee is the most important factor for Hungarians (Ecommerce News EU, 2022).

Although e-commerce has been popular for both Vietnamese and Hungarian shoppers, the issues associated with perceived risk, such as delivery, price, product and etc., are still factors preventing them from engaging in e-commercial transactions (Balogh and Mészáros, 2020; Nguyen *et al.*, 2021). Therefore, research on perceived risk and its sub-dimensions in e-commerce is still necessary. Further, previous research assessing consumers' subjective experience has mainly focused on the influence of perceived risk in online consumer decision-making (Pavlou and Gefen, 2004; Pires *et al.*, 2004). However, the concept of risk in previous literature is only defined as a cognitive construct. Accordingly, online consumers often estimate and calculate the severity and likelihood of the possible outcomes toward expectations before arriving at an uncertain decision. People's experiences are not limited to cognitive evaluation. Therefore, this paper raises the question:

RQ1. Can risk-related feelings influence consumer behaviour in e-commerce in addition to cognitive risk?

Further, with the outbreak of the internet and e-commerce, the market is becoming more homogenous. Some scholars agree that globalisation has made the world a single space where people will eventually assimilate into a common culture. Others argue that if globalisation is inevitable, cross-culture will also be inevitable. Consumers are never a homogenous mass. Shopping habits and risk perceptions may differ significantly based on income, age, gender, and culture (Barabas, 2023). Thus, our research raises another question:

RQ2. Whether the cross-cultural factor is remarkable?

The originality of this article and its contribution to literature are emphasised in two main aspects. First, we investigate the effect of consumers' risk perception on their behavioural intentions. We distinguish between conventional (cognitive) perceived risks and risk-related feelings of consumers when shopping online. Further, we model perceived risk as a second-order variable with seven sub-dimensions. To the best of our knowledge, a limited number of studies model and assess perceived risk as a second-order construct. Second, we validate the moderating role of uncertainty avoidance (a cultural feature at the individual level) in the effect of perceived risk on purchase intention. The findings of this study may therefore provide novel insights regarding e-consumer segmentation for e-businesses.

Literature Review

The Theory of Planned Behaviour (TPB)

The theory of planned behaviour (TPB) is an extension of the theory of reasoned action (TRA) in which perceived behavioural control has been added as one of the key drivers affecting an individual's intention (Ajzen, 1991). Accordingly, behavioural control refers to a person's ability to perform expectedly. The theory posits that the attitude toward an actual behaviour (e.g., e-commerce purchase), subjective norms, and behavioural control, are significant predictors of behaviour. Thus, the potential consequences of engaging in e-commerce purchases linked to various risks may influence individuals' attitudes towards their purchase intention. Further, the influence of perceived risk on transactional effectiveness is noteworthy, as uncertainty regarding transaction efficacy diminishes perceived control (Pelaez et al., 2019).

Hierarchy of Effect (HOE) Model

The hierarchy of effect (HOE) model assumes that consumers first learn something from advertising, then form feelings about the product in question, and finally act (Rehman et al., 2014). According to Lavidge and Steiner (1961), the hierarchy of effect model can be formalised in three steps, including cognition (awareness or learning), affect (feeling, interest, or desire) and behaviour or conation (action). The cognition step includes the perception of the product, awareness or understanding of the product. The affection step reflects the consumers' strong preference. In the action stage,

consumers' purchase desire is stimulated, and their strong preference leads them to act. As a result, consumers purchase products (Zhu et al., 2019). This model is also known as the "think-feel-do" model of message effects. The think-feel-do model is the high-involved model, assuming that consumers are active thinkers (Rehman et al., 2014).

Risk Perception and Consumer Behaviour

Literature on online consumer behaviour primarily emphasises that risk perception is a cognitive activity involving analytical, logical, reason-based, and deliberative processing. Accordingly, this risk is considered "perceived risk". Perceived risk in e-commerce is generally defined by scholars as the potential loss perceived by a consumer in considering the purchase of products online (Amaro and Duarte, 2015; Ariffin *et al.*, 2018). Online shopping literature has thoroughly assessed perceived risk and its effects. However, the literature lacks a comprehensive exploration of the emotional aspect of risk, also known as risk-related feeling.

The aspect of emotion has been identified in several theories of decision-making under risk and uncertainty. The Affect-as-information model suggests that people will interpret their situations differently, based on positive or negative feelings (Tompkins *et al.*, 2018). Prospect theory explains the asymmetries in consumer behaviour between perceived losses and gains, elucidating the role of emotions and risk perception (Chiu et al., 2014). It highlights how losses have a more significant negative emotional impact than equivalent gains positive emotional impact (Abdellaoui *et al.*, 2007).

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. 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. Loewenstein et al. (2001) also assert that risk-related feelings or affective risk go beyond being a mere epiphenomenon in decision-making.

Cross-cultural Research

Culture refers to "The collective programming of the mind that distinguished the members of one category of people from those of another" (Hofstede and Bond, 1988, p. 6). Cultural factors shape several aspects of individual behaviour. Therefore, culture and its effects on consumer behaviour have been studied mainly in the behavioural sciences (Hofstede and Bond, 1988). Cross-cultural research has gained substantial academic interest in the field of business management. The reason is that cultural variance may give a relevant explanation for why some marketing techniques implemented by corporations abroad operate well in some countries but not in others (Jin *et al.*, 2008). With increased businesses relying on the Internet and its worldwide customer base, the need for cross-cultural research has never been higher. Some famous cultural models include Hofstede's model with five dimensions, GLOBE's framework with nine dimensions, Trompenaars' model with seven dimensions etc. However, Hofstede's cultural dimensions are still preferred in consumer behaviour and marketing research due to their familiarity, simplicity and applicability (De Mooij, 2019;

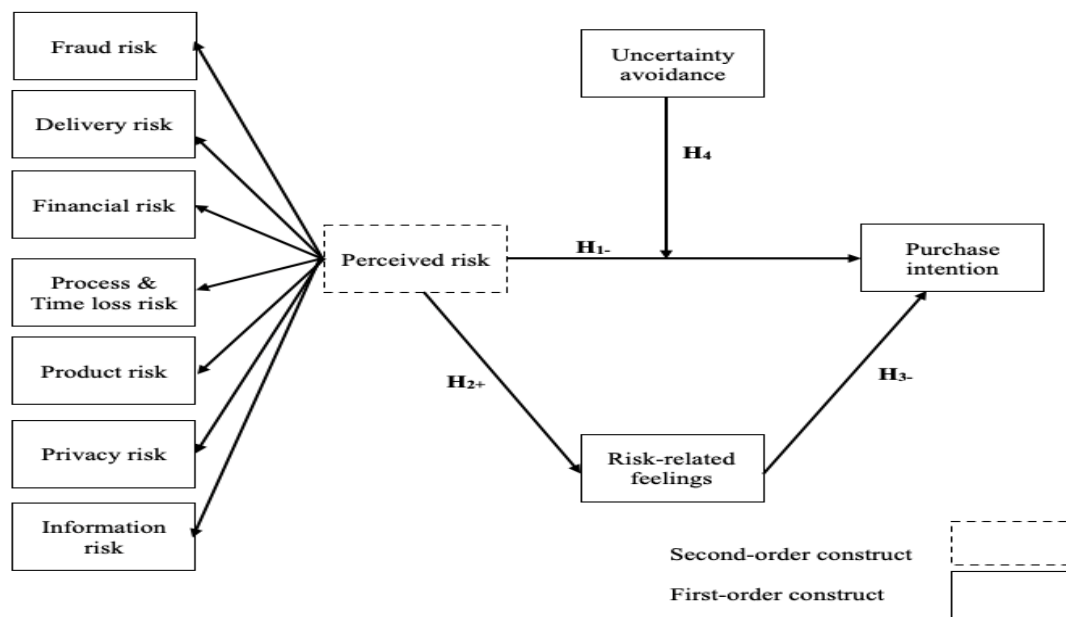
Hadwick, 2011). Under the cultural model of Hofstede, uncertainty avoidance is one of the prominent dimensions investigated in many research studies. It is defined as the extent to which people feel worried about uncertainty. Uncertainty-averse cultures will try to reduce the risk of uncertainty through strict laws and safety precautions (Hofstede and Bond, 1988).

Cross-cultural researchers have grouped into two main research streams (1) the national level and (2) the individual level. Most scholars affirm that culture varies across nations (Lee, Garbarino, *et al.*, 2007). Accordingly, these scholars have been familiar with the national cultural dimensions of Hofstede or GLOBE. They have also applied these readily available national culture data to explain a wide array of phenomena, including disparities at the national, organisational, and individual levels across different nations (Brewer and Venaik, 2012). However, considering the considerable passage of time since Hofstede's research, it would be prudent to exercise caution in assuming the continued validity of Hofstede's cultural scores. During that particular timeframe, substantial global transformations presumably influenced alterations in national cultures as well. This argument posits the need to regularly update data and, if deemed necessary, "country scores" (McCoy *et al.*, 2005). Further, the assumption in the use of "country scores" to reflect the collective culture of all individuals from that nation has been revealed not to be appropriate. For instance, "Hofstede's dimensions of national culture were constructed at the national level. They were underpinned by variables that correlated across nations, not across individuals or organizations. His dimensions are meaningless as descriptors of individuals or as predictors of individual differences because the variables that define them do not correlate meaningfully across individuals" (Minkov and Hofstede, 2011, p. 12).

By contrast, other scholars argue that culture does not always correlate to national borders (Lee, Ng, *et al.*, 2007). In some cases, members of society even do not have the same cultural values (Yoo *et al.*, 2011). According to McCoy *et al.* (2005), the assumption of homogeneity is not appropriate as there is variability across individuals in, or from any given nation. "Irrespective of their cultural background, people have complex selves that contain qualitatively different cognitions" (Bochner, 1994, p. 274). According to Patterson *et al.* (2006), the likelihood of achieving marketing success can be significantly enhanced by focusing on consumers rather than country characteristics. Research based on individual-level culture provides greater explanatory power. The application of Hofstede's cultural typology at the individual level is a justifiable approach, as it allows for the identification of an individual's values within the framework of selected cultural dimensions (Donthu and Yoo, 1998).

Hypotheses Development

Prior literature provides some premises. First, perceived risk can influence consumers' behavioural intentions in e-commerce. Second, risk comprises two aspects, including perceived risk and risk-related feelings. Third, consumers' behavioural intentions are different based on their cultural values. Based on our propositions, the research model is presented in Figure 1:

Figure 1: Conceptual model. Source: Author's construction

Perceived Risk and Purchase Intention

This paper defines perceived risk as the belief of potential losses when purchasing products or services. Nayyar and Gupta (2011) show that perceived risk in e-commerce is even higher and more significant than the perceived risk in offline commerce. According to Katawetawaraks et al. (2011), in the consumer decision-making process, perceived risk can appear in many stages, such as searching for product information (product risk), payment step (financial risk, privacy risk, security risk), and so forth. Therefore, we also investigate perceived risk through 7 multi-dimensions (i.e., fraud risk, delivery risk, financial risk, process & time loss risk, product risk, privacy risk, and information risk)

Previous studies highlight the significant impact of perceived risk in the pre-purchase stage. Hereby, many scholars found that perceived risk lowered consumers' purchase intention in e-commerce (He *et al.*, 2022; Kim and Koo, 2016; Pratesi *et al.*, 2021). Online purchase intention is defined as the desire of customers to acquire a product or service on an e-commerce platform (Meskaran *et al.*, 2013). Purchase intention is crucial to the pre-purchase process since it indicates a consumer's likelihood to purchase. According to Jean et al. (2019), perceived risk negatively relates to buying intention in online shopping. Therefore, the paper proposes the following hypotheses:

H₁ Perceived risk has a negative effect on purchase intention.

The Relationship Between Perceived Risk Dimensions and Risk-related Feelings

Risk-related feelings refer to immediate anticipatory emotions (i.e., fear, worry, threat) of risk or uncertainty while deciding or engaging in an action (Loewenstein *et al.*, 2001). Essentially, these emotions are prevalent in online consumer behaviour due to the risk and uncertainty of this virtual environment. Éthier et al. (2006) reveal that

website quality is the antecedent for consumers' cognitive appraisal, which generates emotions such as fear or frustration during the online shopping experience. Further, the perceived risks, such as monetary loss and privacy invasion, will generate affective risk and prevent them from pursuing further business transactions (Sha, 2018). Therefore, we propose that:

H₂ Perceived risk is positively related to risk-related feelings.

The Relationship Between Risk-related Feelings and Purchase Intention

Negative emotions such as anxiety, depression, and loneliness can directly influence consumers' purchase behaviour in e-commerce (Luo et al., 2018). Risk-related feelings are found to prevent consumers from checking out their shopping carts or drive them to switch intentions (Sha, 2017; Verhagen and Dolen, 2011). 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 postulate that:

H₃ Risk-related feelings have a negative effect on purchase intention.

The Role of Uncertainty Avoidance as A Cultural Dimension

Uncertainty avoidance refers to the degree that people feel threatened by something uncertain and ambiguous. The degree of uncertainty avoidance is measured by the UAI score, in which people feel much more threatened by uncertainty in a high UAI culture (Hofstede, 2022). According to Matzler et al. (2016), uncertainty avoidance is the relevant dimension often used in cross-cultural Web-based research because of its strong relationship to risks. In online shopping, consumers with a high uncertainty avoidance score tend to be risk-averse and hesitant to purchase online. In contrast, users from cultures with lower uncertainty avoidance are more comfortable making purchases online and have a more positive attitude about websites (Nath and Murthy, 2004). Yoon (2009) shows that the uncertainty avoidance index (UAI) may increase or decrease consumers' perceived risk. Further, AlKailani and Kumar (2011) reveal that the perceived risk of internet purchasing is also high in high-uncertainty avoidance societies. Therefore, we propose that:

H₄ The negative effect of perceived risk on purchase intention is moderated by uncertainty avoidance.

Methodology

Survey Design

We conducted empirical research using the online survey method. To benefit respondents, we adopted a drop-off survey in which we drop off questionnaires for respondents to complete in their own time. The survey was developed with the Google Forms software. After the survey items were set and activated online, the link was sent

to respondents via emails, Facebook, Instagram, and LinkedIn social media platforms. The completed forms were returned to us when the respondents clicked the “Submit” button.

The survey was in 2 sections. Section 1 collected demographic information from respondents. Further, we also examine the degree of uncertainty avoidance in Hungarian and Vietnamese online consumers. In section 2, respondents were asked to indicate their level of agreement or disagreement with items on a 5-point Likert Scale ranging from 1 “strongly disagree” to 5 “strongly agree”. These items were used as a measure for the constructs in our conceptual model.

We applied validated scales of the constructs. To measure dimensions of perceived risk, we applied the scale of (Naiyi, 2004) with 24 items. To measure risk-related feelings, we applied the scale of (Sha, 2018) with 4 items. To measure purchase intention, we applied the scale of (Pavlou, 2003) with 2 items. To measure uncertainty avoidance at the individual level, we applied the scale of (Yoo *et al.*, 2011) with 5 items.

Participants

The study’s target is Hungarian and Vietnamese online consumers who have experience with e-commerce websites. Therefore, prior participating in our survey, the participants were asked whether they have ever made any purchases on any e-commerce websites.

The respondents’ selection criteria were that, first, they must be Hungarian or Vietnamese adults, and second, they should have a personal experience with purchases on e-commerce platforms. The primary data collection took place from March 1, 2023, to April 1, 2023. In all, 1500 respondents were invited, out of which 603 filled questionnaires were handed in for our analysis (320 Vietnamese responses and 283 Hungarian responses). The response is 40.2%

Table 1 indicates that our sample comprises 44.63% male and 55.37% female. These percentages show that the ratio of females who joined the survey exceeded the rate of males. This is meaningful because compared to men, women spend more time online shopping. With age distribution, 57.71% and 36.63% of the respondents, were aged between 18-25 and 26-35 years, respectively. In Hungary and Vietnam, 18 years is the legal adult. Since the study seeks to investigate online adult consumers’ risk perception and purchase intention, it was prudent to sample online consumers who were 18 years and above. Respondents between 36-45 years represented 5.64%. The majority of the respondents are from 18 to 35, which is appropriate for our study’s purpose because this age group prefers online shopping in Vietnam and Hungary. The ratio of students represented 53.23% while that of full-time employment represented 46.77%. This is also meaningful because employment status can reflect the shopping habit of the respondents. Regarding expenditure for online shopping, 82.75% of total respondents spend below 100 USD per month. 17.25% of online consumers, mainly Vietnamese consumers, spend between 100-500 USD monthly on online shopping. It shows that Vietnamese consumers spend much more on online shopping than Hungarian. Further, most consumers spending 100-500 USD on online shopping monthly are female and are also full-time employees.

Table 1: Demographic characteristics

Sample		VN (No)	VN (%)	HU (No)	HU (%)	Pooled (No)	Pooled (%)
Size		320		283		603	
Gender	Male	153	47.81	98	34.63	251	44.63
	Female	167	52.19	185	65.37	352	58.37
Age	18-25	150	46.88	198	69.96	348	57.71
	26-35	136	42.50	85	30.04	221	36.65
	36-45	34	10.63	0	-	34	5.64
Employment status	Student	140	43.75	181	63.96	321	53.23
	Full-time employment	180	56.25	102	36.04	282	46.77
Monthly expenditure on online shopping	<100USD	222	69.38	277	97.88	499	82.75
	100-500USD	98	30.63	6	2.12	104	17.25

Statistical Methods

The analysis of the data was performed using SPSS and ADANCO. SPSS was used to code the responses of the participants on items represented in each variable. The coded data were exported to the ADANCO software to test for the measurement and the structural model.

Prior to hypothesis testing, we tested the measurement invariance of composite models (MICOM) developed by Henseler et al. (2016) to assess the likelihood of cultural response bias. MICOM is a three-step approach (i.e., the configural invariance, compositional invariance, and the equality of composite mean values and variances) (Hair *et al.*, 2018). Accordingly, a partial measurement invariance of the groups must be at least achieved to pool the data for the subsequent analyses (Henseler *et al.*, 2016).

To estimate and assess the second-order construct formed by first-order reflective constructs, we employed a three-stage approach by Van et al. (2017). In the first stage, we estimate a structural model containing all first-order constructs. All constructs were allowed to correlate. We employ consistent partial least squares (PLSs) to obtain consistent estimates. In the second stage, we used the standard scores of the first-order constructs to estimate the model containing the second-order construct (i.e., perceived risk). In the third stage, we obtain a consistent path coefficient for the model from the second stage.

The moderating effect is also examined by a two-stage approach (Henseler and Fassott, 2010). At stage 1, we run the main effect of the PLS path model to obtain construct scores to achieve the scores of the independent and the moderator variables. At stage 2, we build up the interaction term (Uncertainty avoidance*Perceived risk) through the construct scores of these two variables. This interaction term is used as an independent variable in a multiple regression on the latent variable scores of the Purchase intention (Fassott *et al.*, 2016).

Results

Invariance Testing

Table 2 shows the result of the measurement invariance test across the two countries (i.e., Vietnam and Hungary). All Permutation p-values are more significant than 0.05 (see column 3), which implies that we achieve compositional invariance for our data (Henseler *et al.*, 2016). The findings show that the variable measures for Vietnamese and Hungarian samples are invariant. Therefore, it allows the pooling of the data for further analysis.

Table 2: Result of measurement invariance using permutation (MITCOM)

Comparison between nations/construct	Configural invariance	Compositional invariance	Partial measurement invariance established	Equal Mean	Equal variance	Full measurement invariance established
		Permutation p-value		Permutation p-value		
Vietnam & Hungary						
Delivery risk	yes	0.074	yes	0.000	0.012	no
Financial risk	yes	0.595	yes	0.000	0.000	no
Fraud risk	yes	0.115	yes	0.000	0.017	no
Information risk	yes	0.064	yes	0.000	0.005	no
P&T risk	yes	0.726	yes	0.000	0.003	no
Privacy risk	yes	0.643	yes	0.000	0.001	no
Product risk	yes	0.500	yes	0.000	0.000	no
Purchase intention	yes	0.218	yes	0.000	0.063	no
Risk-related feelings	yes	0.516	yes	0.058	0.096	yes

Assessment of the Measurement Model

In the first stage, we assessed the model with 10 reflectively measured constructs (i.e., affective risk, fraud risk, delivery risk, financial risk, process & time loss risk, product risk, privacy risk, information risk, purchase intention, and uncertainty avoidance). We ran a confirmatory factor analysis (CFA), which means that we estimated the model with a saturated structural model, and all constructs are freely correlated. The Standardized Root Mean Square Residual (SRMR) is 0.023, below the recommended threshold of 0.08 (Hu and Bentler, 1999), indicating a good model fit.

Furthermore, we also assess indicator and construct reliability, convergent validity, and multicollinearity of the first-order constructs (Müller *et al.*, 2018). The loading of each items on its associated construct should be greater than 0.7 to achieve indicator reliability (Henseler, 2021). To establish construct reliability, Dijkstra-Henseler's rho

(ρ_A) and Cronbach's alpha(α) should be greater than 0.7 (Hair *et al.*, 2017; Henseler, 2021). To establish convergent validity, the Average variance extracted (AVE) for each construct should be larger than 0.5 (Fornell and Larcker, 1981; Hair *et al.*, 2017). Furthermore, the indicator multicollinearity is assessed via Variance inflation factors (VIF). Our results shows that all indicator loadings are higher than 0.7, Dijkstra-Henseler's rho (ρ_A) and Cronbach's alpha(α) also exceed 0.7 for all constructs in the first stage. Additionally, the AVEs are greater than 0.5 for all reflective constructs, thus indicating acceptable convergent validity. The VIF values of all indicators are also below the threshold of 3. Therefore, multicollinearity is not an issue for the second-order construct (Hair *et al.*, 2017) (see Appendix. Table 3).

In the second stage, we evaluate the Goodness of fit (Gof) of the model containing the second-order construct. The result shows that the SRMR values of the saturated and the estimated models are lower than 0.05, implying a good model fit (SRMR=0.214, $p>0.01$ and SRMR=0.0252, $p>0.01$, respectively). Our result shows a good model fit (Henseler, Dijkstra, *et al.*, 2015)

Table 4 shows the measurement properties of the second-order construct. Indicator reliabilities all first-order constructs are greater than 0.7, which indicates a high reliability of the 1st-order constructs toward the 2nd-order construct. VIF values of each type of risk are also below the threshold of 5, which is acceptable (Hair *et al.*, 2017). Further, the loading T-value is also high, which implies a strong association between the 1st-order constructs and the 2nd-order construct.

Table 4: Measurement properties of reflective perceived risk construct

2nd order construct	1st order constructs	Indicator reliability	VIF	T-value
Perceived risk	Delivery risk	0.744	4.010	38.718
	Fraud risk	0.802	4.821	51.341
	Financial risk	0.807	4.711	49.824
	P&T risk	0.749	3.580	40.856
	Product risk	0.769	4.225	45.817
	Privacy risk	0.724	3.457	38.878
	Information risk	0.716	2.696	33.200

Table 5 shows our model's construct reliability and convergent validity with the 2nd-order construct. The result indicates good reliability when all values are higher than 0.7. The convergent validity of the model is also established (AVE >0.5).

Table 5: Construct reliability, convergent validity of research model with 2nd-order construct

Construct	Construct Reliability			Convergent Validity
	Dijkstra-Henseler's rho (ρ_A)	Jöreskog's rho (ρ_c)	Cronbach's alpha(α)	Average variance extracted (AVE)
Risk-related feelings	0.9042	0.902	0.9015	0.6976
Purchase intention	0.8938	0.8938	0.8938	0.8079

Uncertainty avoidance	0.8936	0.8926	0.8924	0.6754
Perceived risk	0.9568	0.9565	0.9564	0.7587

Regarding the analysis of the discriminant validity of the model with the 2nd-order construct, we assess the discriminant validity (DV) through the models of Fornell and Larcker (1981) and Heterotrait – Monotrait Ratio (HTMT) of (Henseler *et al.*, 2015). According to the Fornell – Larcker criterion, a construct's squared correlations with all other constructs in the model must be smaller than its average variance retrieved. Discriminant validity is regarded as given if the highest absolute value of each row and each column is found in the main diagonal. By looking at Table 6, our model presents a good discriminant validity.

Table 6: Discriminant validity: Fornell-Larcker criterion

Construct	Risk-related feelings	Purchase intention	Uncertainty avoidance	Perceived risk
Risk-related feelings	0.6976			
Purchase intention	0.3476	0.8079		
Uncertainty avoidance	0.2457	0.351	0.6754	
Perceived risk	0.492	0.4484	0.3901	0.7587

Further, discriminant validity is assessed using the HTMT, which compares the correlations between two components based on their respective traits. According to Henseler *et al.* (2015), it is recommended that HTMT levels are below 0.85. Therefore, our result shows good discriminant validity (Table 7). Overall, the measurement model shows that the internal consistency reliability, convergence validity (CV), and discriminant validity (DV) for reflective constructs are good.

Table 7: Discriminant validity: Heterotrait-monotrait ratio of correlations (HTMT)

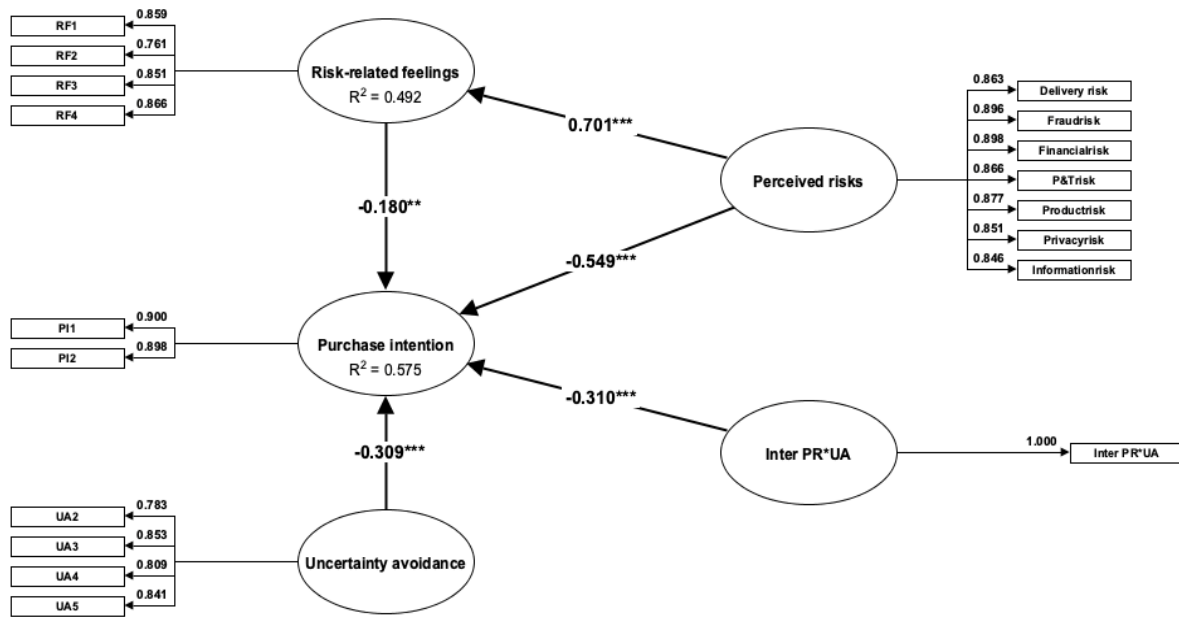
Construct	Risk-related feelings	Purchase intention	Uncertainty avoidance	Perceived risk
Risk-related feelings				
Purchase intention	0.5887			
Uncertainty avoidance	0.4945	0.5925		
Perceived risk	0.7024	0.6698	0.6244	

Analysis of the structural model

In the stage three, the structural model is analysed to show how independent and dependent constructs are related (Hair *et al.*, 2017). Accordingly, we assess the constructs' explanatory power (R-square), effect size (f²), and the significance of the hypotheses.

The values of 0.492 and 0.575 for the R² are considered as high in the behavioural science. The R² quantifies the proportion of variance of a dependent construct that its predictors explain (Henseler, 2021). Figure 2 shows the explanatory power of two endogenous constructs (i.e., Risk-related feelings and Purchase intention) in our research model, the values of R² reveal that the degrees of explanatory power are 49% and 57%, respectively.

Figure 2: Graphical representation of the mode



Additionally, the path coefficient estimates should be significant based on the percentile bootstrap confidence interval and their sign should be consistent with the associated hypotheses. Regarding significant path coefficients, an effect size (f^2) above 0.02, 0.15, and 0.35 indicates a small, medium, and large effect size, respectively (Cohen, 1988). From Table 8, the effect of perceived risk on risk-related feelings is strong ($f^2=0.9687$). The effect of perceived risk on purchase intention is moderate ($f^2=0.2273$). The effect of risk-related feelings on purchase intention is weak ($f^2=0.0382$).

Table 8. Results of the structural model

	Hypothesis	Direct/Indirect/ Moderating Effect	T-value	P- value (2- sided)	95% Confidence Interval (Percentile Bootstrap)	Effect size (f^2)	Supported
H ₁	Perceived risk -> Purchase intention	-0.5489	-6.8715	0.0000	[-0.8139, -0.5133]	0.2273	YES
H ₂	Perceived risk -> Risk-related feelings	0.7015	21.1547	0.0000	[0.6115, 0.7808]	0.9687	YES
H ₃	Risk-related feelings -> Purchase intention	-0.1804	-2.652	0.0081	[-0.3569, -0.0008]	0.0382	YES
	Perceived risk -> Risk-related feelings -> Purchase intention	-0.1265	-2.6425	0.0083	[-0.2536, -0.0006]	NA	YES
	Uncertainty	-0.309	-6.0769	0.0000	[-0.4397, -0.1726]	0.1328	YES

	avoidance -> Purchase intention						
	Perceived risk * Uncertainty						
H ₄	avoidance -> Purchase intention	-0.3097	-5.8851	0.0000	[-0.4438, -0.174]	NA	YES

Based on the results of structural model, we support all hypotheses (H₁-H₄). The perceived risk strongly negatively affects purchase intention ($\beta=-0.5489$, $p<0.01$). Similarly, risk-related feelings also negatively affect purchase intention ($\beta=-0.1804$, $p<0.01$). By contrast, the results show a positive and significant effect of perceived risk on risk-related feelings ($\beta=0.0715$, $p<0.01$). We also confirm the significant partial mediating role of risk-related feelings between perceived risk and purchase intention in e-commerce ($\beta=0.1265$, $p<0.01$). Further, we verify the moderating effect of uncertainty avoidance in our research. The result shows that Uncertainty avoidance negatively moderates the relationship between perceived risk and purchase intention ($\beta=-0.3097$, $p<0.01$).

To determine whether the country can be used as a surrogate for culture, we carried out path analysis for each sample. Our result shows that Hungarian consumers are more sensitive about perceived risk and risk-related feelings than Vietnamese consumers (Table 9).

Table 9: Path analysis by country level

Effect	Vietnam		Hungary		Pooled	
	Path coefficient	P-value	Path coefficient	P-value	Path coefficient	P-value
Risk-related feelings -> Purchase intention	-0.1715	0.0290	-0.2325	0.0359	-0.1804	0.0081
Uncertainty avoidance -> Purchase intention	-0.3728	0.0000	-0.1671	0.0293	-0.309	0.0000
Perceived risk -> Risk- related feelings	0.7078	0.0000	0.7010	0.0000	0.7015	0.0000
Perceived risk -> Purchase intention	-0.3093	0.0051	-0.6619	0.0000	-0.5489	0.0000

Discussions and Implications

The purpose of our study is to investigate the role of uncertainty avoidance as a cultural dimension in the effect of consumers' risk perception on purchase intention. Further, we distinguish two different aspects of risk, including perceived risk and risk-related feelings in e-consumers' decision-making journey.

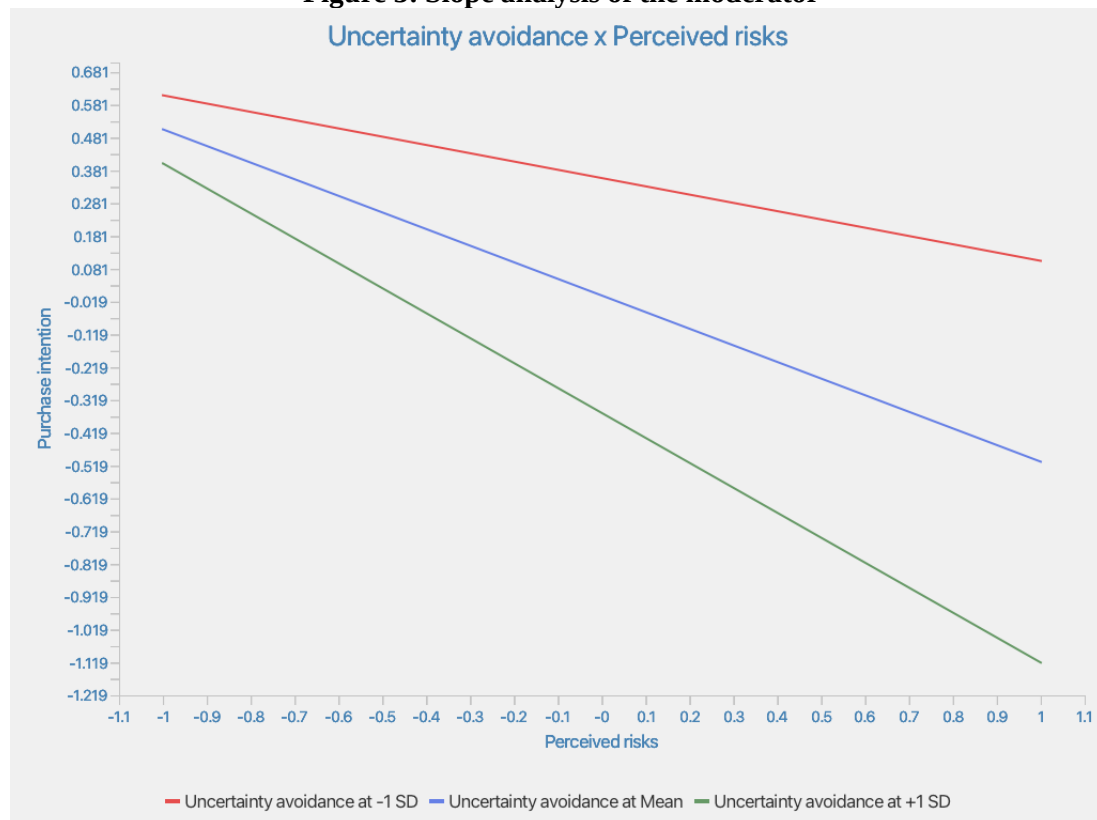
The results indicate a strongly negative effect of consumers' perceived risk (with multi-dimension) on their purchase intention in e-commerce. It indicates that risk perception is one of the critical obstacles to e-commerce. The more risk consumers perceive, the

less purchase intention they have. This finding aligns with observations made by Amaro and Duarte (2015) and Gruntkowski and Martinez (2022). Additionally, by modelling perceived risk as a second-order construct, our study show that perceived risk comprises different sub-dimensions (e.g., fraud, financial, delivery, product, privacy, process & time loss, and information risks). It is also consistent with studies of (Bertea and Zait, 2013; Rosillo-Díaz *et al.*, 2019).

Our research also suggests that perceived risk can be a good predictor of e-consumers' negative feelings (such as worry, threat, and fear) when engaging in e-commerce transactions. 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 is in accordance with the works of (Li *et al.*, 2011; Sha, 2017, 2018).

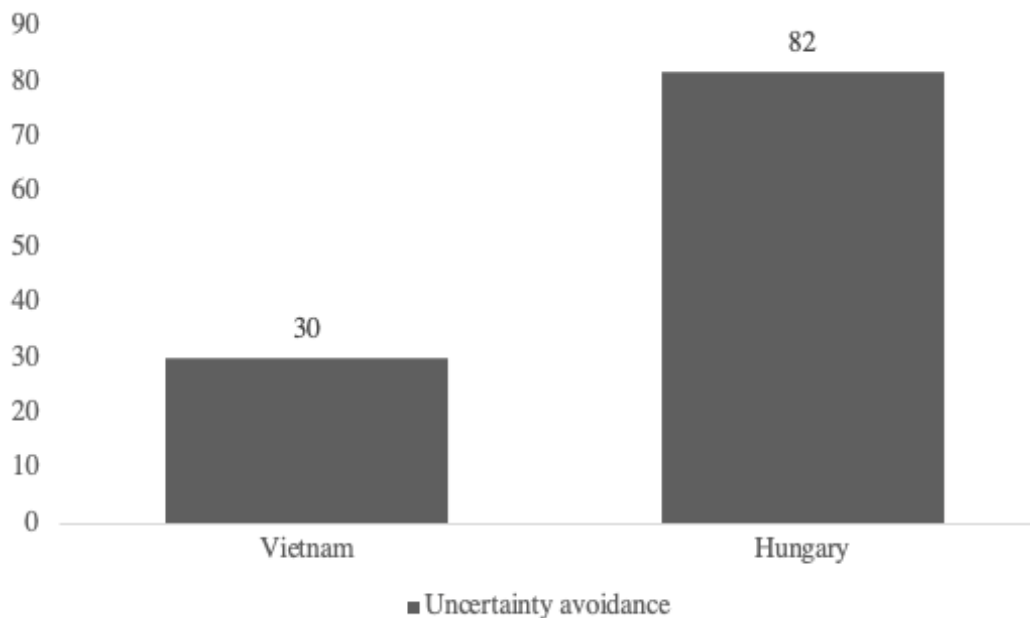
In addition, based on the belief that consumers' risk perception would vary depending on their cultural values. Our study presents the moderating role of uncertainty avoidance (a cultural dimension) in the effect of perceived risk on purchase intention. Figure 3 describes this effect. The trendlines slope downward, indicating the negative relationship between perceived risk and purchase intention. Further, when perceived risk increases and consumers are more risk-taking, their purchase intentions fall slightly lower (see the red line). By contrast, when perceived risk increases and consumers are more risk-averse, their purchase intentions fall faster (see the green line). Our study's relationship is consistent with Alcántara-Pilar *et al.* (2018) and Zendehdel *et al.* (2016).

Figure 3: Slope analysis of the moderator



This is explained by Hofstede's (2001) cultural sub-dimension of uncertainty avoidance. Accordingly, Hungary's UAI is higher than Vietnam's (Figure 4), which means that consumers in Hungary perceive and feel risk more strongly than those in Vietnam.

Figure 4: Uncertainty avoidance index (UAI) between Vietnam and Hungary – source: Hofstede, (2022)



Theoretical Implications

Theoretically, our study enriches the existing literature on online consumer behaviour under risk in some ways. First, we indicate that risk-related feelings (i.e., immediate negative emotions) are essential in the consumer decision journey. Following the consumers' "cognitive-affective-behaviour" hierarchy theory of reaction mentioned in the research of Fu et al. (2011), we build the rational model of "perceived risk – risk-related feelings – purchase intention" to enrich the risk perception theory in e-commerce. The study highlights that the online decision journey is twofold and influenced by the presence of emotions. It recognises the significance of emotions in the decision-making process and provides a deeper understanding of consumer behaviour in e-commerce. Accordingly, we reveal that there are two journeys in e-consumers' decision-making progress, such as (1) think-do and (2) think-feel-do.

Second, while some previous research, such as Hajiheydari et al. (2017) and Kim and Lennon (2013), explored the role of positive emotions or dimensions of satisfaction in consumer behaviour, our 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, as an independent construct alongside perceived risk.

Third, prior studies showed that culture impacts perceived risk more in Asia than in Europe (Hwang and Lee, 2012; Pratesi *et al.*, 2021). However, our results show the contrary. Hungarians perceive risks in e-commerce more strongly than the Vietnamese do. This can be explained by two reasons: (1) the lower uncertainty avoidance of Vietnamese consumers and (2) the more extensive spread of the e-commerce market in Vietnam. We also add to the cross-culture research on perceived risk in e-commerce at the individual level. Most scholars affirm that culture varies across nations (Lee *et al.*, 2007). However, we support the view that culture does not always correlate to national borders (Lee *et al.*, 2007). In some cases, members of the same society do not have the same cultural values (Yoo *et al.*, 2011).

Finally, this is one of the few studies examining perceived risk as a second-order construct in the context of e-commerce. Proposing and validating the measurement structure of perceived risk as a second-order variable can be considered a unique theoretical contribution of this study from measurement theory perspective. It can make a significant methodological contribution to the risk perception in e-commerce. Our study supports the view of researching perceived risk as a multi-dimensional construct.

Practical Implications

In addition to its theoretical contributions, our study presents several practical implications. First, relying on the research on perceived risk as a multi-dimensional construct, practitioners can construct several risk-reducing strategy measures for e-business managers or provide a third-party reference list to reduce consumers' perceived risk. For instance, allowing consumers to join the website as a guest or setting up an option for anonymous credit or debit card payments may decrease e-consumers' perceived risk. Further, presenting multi-dimensions of perceived risk might be useful in developing related IT tools. For instance, to complete an online purchase, a customer must provide delivery, contact, and billing information, which may include credit card numbers and expiry dates. The task of entering this data might be laborious or frustrating for a customer, especially if the user lacks the relevant credit card information throughout the transaction. Therefore, the software streamlines the ordering process by storing the customer's data on the retailer's systems can benefit consumers. Second, it is necessary for e-commerce companies to focus on reducing consumers' negative feelings. Negative emotions or risk-related feelings 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.

Limitations and Future Research

Our paper has limitations. Firstly, we conducted our research in Vietnam (an Asian country) and Hungary (a European country). Therefore, the sample does not represent the whole Asian and European continent. Further, we only used one cultural dimension in our research. Hence, in the future, adding more cultural dimensions is necessary.

Second, because Hungarian and Vietnamese consumers do not shop on one identical e-commerce website, our results might be limited to give a more comprehensive view. Therefore, conducting a simulation experiment might be added to future research.

Practical Implications for Asian Business

Further, our paper offers a few practical implications for Asian businesses that are attempting to approach cross-border e-commerce markets.

First, consumers' risk perception and risk-related feelings can reduce purchase intentions. Therefore, generating trust and positive feelings is essential for e-sellers and e-commercial companies. The results show that consumers' perceptions of fraud, financial, and product risks are relatively high. They are significant due to the absence of physical interactions between consumers and products, buyers and sellers in e-commerce. Therefore, prior to offering products for sale on websites, it is imperative to register or notify the authorised department to acquire a certification logo, which enhances the reputation and visibility of the brands. For instance, in Vietnam, any e-commerce website must register or notify with the Ministry of Industry and Trade (MOIT) of Vietnam. The requirements of registration or notification depend on type of e-commerce websites (i.e., Sales websites, Trading Floors, Online Auction, and Online promotion). Hence, to run an e-commerce website in Vietnam, it is important to comprehend the nature of the website that is being developed. It supports other companies to access the massive economic benefits of e-commerce in a nation that is enthusiastic about procuring such amenities. In addition, comprehensive information (e.g., name of the registered store, telephone number, address, email, product information, product return, guarantee policy, etc.) must be furnished and transparent on the website. They will improve consumers' perception and intention to buy.

For Vietnamese e-commerce, with an increasing number of people purchasing goods online (57.6 million out of 97 million people in 2022), information and privacy risks are also significantly concerned. According to Statista (2022), despite the emergence of other cashless payment methods, 73% of online shoppers in Vietnam chose cash-on-delivery (COD) as their shipping and payment method. The reason is that they do not want their bank account information to be misused. Therefore, companies and agents must use security forms (e.g., secure socket layer – SSL or secure electronic transaction – SET) to secure clients' information. Further, product risk is also critical for Vietnamese e-consumers due to the burning issues of trading in counterfeit goods or infringing upon intellectual property rights. Therefore, foreign brands should cooperate with major selling sites such as Tiki, Shopee, and Lazada for their penetrating and positioning strategies.

By contrast, for Hungarian e-consumers, cashless paying is preferred. However, approximately 54% of Hungarian e-shoppers have experienced a scenario wherein they either refrained from initiating the shopping process or terminated it prior to finalising their purchase due to an inability to locate a payment method deemed suitable (Reacty Digital, 2021). Therefore, diversifying payment methods can be a reference for Asian e-retailers and e-businesses when they target the Hungarian e-commerce market.

Second, our research is also meaningful for global marketing or product management strategies of e-commercial companies when targeting the Vietnamese or Hungarian market, as similar market groups may exist across nations based on consumer segmentation rather than country-level segmentation. For instance, there are groups of risk-averse and risk-taking consumers in both Vietnam and Hungary e-commerce. Therefore, it allows an equivalent marketing strategy in different countries to minimise operating costs and workforce.

Furthermore, our study focuses on the consumer level of uncertainty avoidance to identify the cultural profile of target consumers. We suggest that in both the Vietnamese and Hungarian e-commerce markets, sellers and e-commerce professionals should pay particular attention to risk-averse consumers, because risk-averse consumers are more sensitive than others. We also suggest that e-retailers and e-businesses offer customisation or charge a price premium for their online products, which offers risk-averse consumers a higher level of guarantee when making purchase transaction. For instance, the options such as delivery assurance or a 110% refund guarantee can be references for Asian e-businesses to compete with the leader of the sector in attracting e-consumers.

References

- Abdellaoui, M., Bleichrodt, H. and Paraschiv, C. (2007), “Loss Aversion under Prospect Theory: A Parameter-Free Measurement”, *Management Science*, INFORMS, Vol. 53 No. 10, pp. 1659–1674.
- Ajzen, I. (1991), “The theory of planned behavior”, *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179–211, doi: 10.1016/0749-5978(91)90020-T.
- Alcántara-Pilar, J.M., Armenski, T., Blanco-Encomienda, F.J. and Del Barrio-García, S. (2018), “Effects of cultural difference on users’ online experience with a destination website: A structural equation modelling approach”, *Journal of Destination Marketing & Management*, Vol. 8, pp. 301–311, doi: 10.1016/j.jdmm.2017.06.002.
- AlKailani, M. and Kumar, R. (2011), “Investigating Uncertainty Avoidance and Perceived Risk for Impacting Internet Buying: A Study in Three National Cultures”, *International Journal of Business and Management*, Vol. 6 No. 5, p. p76, doi: 10.5539/ijbm.v6n5p76.
- Amaro, S. and Duarte, P. (2015), “An integrative model of consumers’ intentions to purchase travel online”, *Tourism Management*, Vol. 46, pp. 64–79, doi: 10.1016/j.tourman.2014.06.006.
- Ariffin, S.K., Mohan, T. and Goh, Y.-N. (2018), “Influence of consumers’ perceived risk on consumers’ online purchase intention”, *Journal of Research in Interactive Marketing*, Emerald Publishing Limited, Vol. 12 No. 3, pp. 309–327, doi: 10.1108/JRIM-11-2017-0100.
- Balogh, Z. and Mészáros, K. (2020), “Consumer Perceived Risk by Online Purchasing: The Experiences in Hungary”, *Náše Hospodárstvo/Our Economy*, Vol. 66 No. 3, pp. 14–21, doi: 10.2478/ngoe-2020-0014.
- Barabas, B. (2023), “Price Sensitivity Remains Central in Online Shopping - BBJ”, *BBJ.Hu*, available at: <https://bbj.hu/business/industry/retail/price-sensitivity->

- remains-central-in-online-shopping (accessed 20 July 2023).
- Bertea, P.E. and Zait, A. (2013), "Perceived risk vs. intention to adopt E. commerce - A pilot study of potential moderators", *Trziste*, Vol. 25 No. 2, pp. 213–229.
- Bochner, S. (1994), "Cross-cultural differences in the self-concept: A test of Hofstede's individualism/collectivism distinction", *Journal of Cross-Cultural Psychology*, Sage Publications, US, Vol. 25 No. 2, pp. 273–283, doi: 10.1177/0022022194252007.
- Brewer, P. and Venaik, S. (2012), "On the misuse of national culture dimensions", *International Marketing Review*, Emerald Group Publishing Limited, Vol. 29 No. 6, pp. 673–683, doi: 10.1108/02651331211277991.
- Chiu, C., Wang, E.T.G., Fang, Y. and Huang, H. (2014), "Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk.", *Information Systems Journal*, Wiley-Blackwell, Vol. 24 No. 1, pp. 85–114.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., L. Erlbaum Associates, Hillsdale, N.J.
- De Mooij, M. (2019), *Consumer Behavior and Culture: Consequences for Global Marketing and Advertising*, SAGE.
- Donthu, N. and Yoo, B. (1998), "Cultural Influences on Service Quality Expectations", *Journal of Service Research*, SAGE Publications Inc, Vol. 1 No. 2, pp. 178–186, doi: 10.1177/109467059800100207.
- Ecommerce News EU. (2022), "Ecommerce in Hungary", *Ecommerce News*, available at: <https://ecommercenews.eu/ecommerce-in-europe/ecommerce-hungary/> (accessed 20 July 2023).
- EcommerceDB. (2022), "eCommerce Market Vietnam - Data, Trends, Top Stores | ecommerceDB.com", available at: <https://ecommercedb.com/markets/vn/all> (accessed 17 March 2023).
- Éthier, J., Hadaya, P., Talbot, J. and Cadieux, J. (2006), "B2C web site quality and emotions during online shopping episodes: An empirical study", *Information & Management*, Vol. 43 No. 5, pp. 627–639, doi: 10.1016/j.im.2006.03.004.
- Fassott, G., Henseler, J. and Coelho, P.S. (2016), "Testing moderating effects in PLS path models with composite variables", *Industrial Management & Data Systems*, Vol. 116 No. 9, pp. 1887–1900, doi: 10.1108/IMDS-06-2016-0248.
- Featherman, M.S. and Pavlou, P.A. (2003), "Predicting e-services adoption: a perceived risk facets perspective", *International Journal of Human-Computer Studies*, Vol. 59 No. 4, pp. 451–474, doi: 10.1016/S1071-5819(03)00111-3.
- Fornell, C. and Larcker, D.F. (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error", *Journal of Marketing Research*, American Marketing Association, Vol. 18 No. 1, pp. 39–50, doi: 10.2307/3151312.
- Fu, X., Zhang, B., Xie, Q., Xiao, L. and Che, Y. (2011), "Impact of Quantity and Timeliness of EWOM Information on Consumer's Online Purchase Intention under C2C Environment", *Asian Journal of Business Research*, Vol. 1 No. 2, doi: 10.14707/ajbr.110010.
- Gruntkowski, L.M. and Martinez, L.F. (2022), "Online Grocery Shopping in Germany: Assessing the Impact of COVID-19", *Journal of Theoretical and Applied Electronic Commerce Research*, Multidisciplinary Digital Publishing Institute, Vol. 17 No. 3, pp. 984–1002, doi: 10.3390/jtaer17030050.
- Hadwick, R. (2011), "Should I use GLOBE or Hofstede? Some insights that can assist

- cross-cultural scholars, and others, choose the right study to support their work”, Anzam.org.
- Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2017), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Thousand Oaks: Sage.
- Hair, J.F., Sarstedt, M., Christian, M.R. and Siegfried P. Gudergan. (2018), *Advanced Issues in Partial Least Squares Structural Equation Modeling*, SAGE Publications, Inc.
- Hajiheydari, N., Maskan, B.H.H. and Ashkani, M. (2017), “Sustainable Internet service provider selection: Affected by internal and external factors (quality and reputation)”, *2017 3rd International Conference on Web Research (ICWR)*, presented at the 2017 3th International Conference on Web Research (ICWR), IEEE, Iran, pp. 169–177, doi: 10.1109/ICWR.2017.7959323.
- Hartley, C.A. and Phelps, E.A. (2012), “Anxiety and Decision-Making”, *Biological Psychiatry*, Vol. 72 No. 2, pp. 113–118, doi: 10.1016/j.biopsych.2011.12.027.
- He, Y., Li, W. and Xue, J. (2022), “What and how driving consumer engagement and purchase intention in officer live streaming? A two-factor theory perspective”, *Electronic Commerce Research and Applications*, Vol. 56, p. 101223, doi: 10.1016/j.elerap.2022.101223.
- Henseler, Dijkstra, J. rg and Theo, K. (2015), *ADANCO 2.0: Composite Modeling.*, Kleve, Germany.
- Henseler, J. (2021), *Composite-Based Structural Equation Modeling: Analyzing Latent and Emergent Variables*, The Guilford Press, New York, NY, US, pp. xiv, 364.
- Henseler, J. and Fassott, G. (2010), “Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures”, in Esposito Vinzi, V., Chin, W.W., Henseler, J. and Wang, H. (Eds.), *Handbook of Partial Least Squares: Concepts, Methods and Applications*, Springer, Berlin, Heidelberg, pp. 713–735, doi: 10.1007/978-3-540-32827-8_31.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), “A new criterion for assessing discriminant validity in variance-based structural equation modeling”, *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115–135, doi: 10.1007/s11747-014-0403-8.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2016), “Testing measurement invariance of composites using partial least squares”, edited by Rudolf R. Sinkovics, R.-J. “Bryan” J. and D.K. *International Marketing Review*, Emerald Group Publishing Limited, Vol. 33 No. 3, pp. 405–431, doi: 10.1108/IMR-09-2014-0304.
- Hofstede, G. (2001), *Culture’s Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*, SAGE Publications.
- Hofstede, G. (2022), “Country Comparison”, *Hofstede Insights*, available at: <https://www.hofstede-insights.com/country-comparison/> (accessed 21 March 2022).
- Hofstede, G. and Bond, M.H. (1988), “The Confucius connection: From cultural roots to economic growth”, *Organizational Dynamics*, Vol. 16 No. 4, pp. 5–21, doi: 10.1016/0090-2616(88)90009-5.
- Hu, L. and Bentler, P.M. (1999), “Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives”, *Structural Equation Modeling: A Multidisciplinary Journal*, Routledge, Vol. 6 No. 1, pp. 1–55, doi: 10.1080/10705519909540118.

- Hwang, Y. and Lee, K.C. (2012), "Investigating the moderating role of uncertainty avoidance cultural values on multidimensional online trust", *Information & Management*, Vol. 49 No. 3, pp. 171–176, doi: 10.1016/j.im.2012.02.003.
- ITA. (2022a), "Vietnam - eCommerce", available at: <https://www.trade.gov/country-commercial-guides/vietnam-ecommerce> (accessed 17 March 2023).
- ITA. (2022b), "Hungary - eCommerce", available at: <https://www.trade.gov/country-commercial-guides/hungary-ecommerce> (accessed 20 July 2023).
- Jean, L., Ng, S. and Basha, N. (2019), "To Retire or not to Retire: Intention towards Concept of Retirement Village in Malaysia", *Asian Journal of Business Research*, Vol. 9 No. 1, p. 61, doi: 10.14707/ajbr.190056.
- Jin, B., Yong Park, J. and Kim, J. (2008), "Cross-cultural examination of the relationships among firm reputation, e-satisfaction, e-trust, and e-loyalty", *International Marketing Review*, Emerald Group Publishing Limited, Vol. 25 No. 3, pp. 324–337, doi: 10.1108/02651330810877243.
- Katawetawaraks, C., Wang, C.L., and University of New Haven. (2011), "Online Shopper Behavior: Influences of Online Shopping Decision", *Asian Journal of Business Research*, Vol. 1 No. 2, doi: 10.14707/ajbr.110012.
- Kim, G. and Koo, H. (2016), "The causal relationship between risk and trust in the online marketplace: A bidirectional perspective", *Computers in Human Behavior*, Vol. 55, pp. 1020–1029, doi: 10.1016/j.chb.2015.11.005.
- Kim, J. and Lennon, S. (2013), "Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention: Based on the stimulus-organism-response model", *Journal of Research in Interactive Marketing*, Vol. 7, doi: 10.1108/17505931311316734.
- Lee, J., Garbarino, E. and Lerman, D.B. (2007), "How cultural differences in uncertainty avoidance affect product perceptions", *International Marketing Review*, Vol. 24, pp. 330–349, doi: 10.1108/02651330710755320.
- Lee, J., Ng, S. and Soutar, G. (2007), "Tourists' intention to visit a country: The impact of cultural distance", *Tourism Management*, Vol. 28 No. 6, pp. 1497–1506, doi: 10.1016/j.tourman.2006.11.005.
- Li, H., Sarathy, R. and Xu, H. (2011), "The role of affect and cognition on online consumers' decision to disclose personal information to unfamiliar online vendors", *Decision Support Systems*, Vol. 51 No. 3, pp. 434–445, doi: 10.1016/j.dss.2011.01.017.
- Loewenstein, G., Weber, E., Hsee, C. and Welch, N. (2001), "Risk As Feelings", *Psychological Bulletin*, Vol. 127, pp. 267–86, doi: 10.1037/0033-2909.127.2.267.
- Luo, S., Gu, B., Wang, X. and Zhou, Z. (2018), "Online Compulsive Buying Behavior: The Mediating Role of Self-control and Negative Emotions", *Proceedings of the 2018 International Conference on Internet and E-Business - ICIEB '18*, presented at the the 2018 International Conference, ACM Press, Singapore, Singapore, pp. 65–69, doi: 10.1145/3230348.3230397.
- Maner, J.K. and Schmidt, N.B. (2006), "The Role of Risk Avoidance in Anxiety", *Behavior Therapy*, Vol. 37 No. 2, pp. 181–189, doi: 10.1016/j.beth.2005.11.003.
- Matzler, K., Strobl, A., Stokburger-Sauer, N., Bobovnick, A. and Bauer, F. (2016), "Brand personality and culture: The role of cultural differences on the impact of brand personality perceptions on tourists' visit intentions", *Tourism Management*, Vol. 52, pp. 507–520, doi: 10.1016/j.tourman.2015.07.017.

- McCoy, S., Galletta, D.F. and King, W.R. (2005), “Integrating National Culture into IS Research: The Need for Current Individual Level Measures”, *Communications of the Association for Information Systems*, Vol. 15 No. 12, pp. 211–224, doi: 10.17705/1CAIS.01512.
- Meskaran, F., Ismail, Z. and Shanmugam, B. (2013), “Online Purchase Intention: Effects of Trust and Security Perception”, *Australian Journal of Basic and Applied Sciences*, Vol. 7 No. 6, pp. 307–315.
- Minkov, M. and Hofstede, G. (2011), “The evolution of Hofstede’s doctrine”, edited by Chudzikowski, K., Fink, G. and Mayrhofer, W. *Cross Cultural Management: An International Journal*, Emerald Group Publishing Limited, Vol. 18 No. 1, pp. 10–20, doi: 10.1108/13527601111104269.
- Müller, T., Schuberth, F. and Henseler, J. (2018), “PLS path modeling – a confirmatory approach to study tourism technology and tourist behavior”, *Journal of Hospitality and Tourism Technology*, Emerald Publishing Limited, Vol. 9 No. 3, pp. 249–266, doi: 10.1108/JHTT-09-2017-0106.
- Naiyi, Y. (2004), “Dimensions of Consumer’s Perceived Risk in Online Shopping”, *Journal of Electronic Science and Technology*, Vol. 2 No. 3, pp. 177–182.
- Nath, R. and Murthy, N.R.V. (2004), “A Study of the Relationship Between Internet Diffusion and Culture”, *Journal of International Technology and Information Management*, Vol. 13 No. 1, doi: 10.58729/1941-6679.1247.
- Nayyar, R. and Gupta, S.L. (2011), “Determinants of Internet Buying Behavior in India”, *Asian Journal of Business Research*, Vol. 1 No. 2, doi: 10.14707/ajbr.110011.
- Nguyen, C.(1), Tran, D.(2), Nguyen, A.(3) and Nguyen, N.(4). (2021), “The Effects of Perceived Risks on Food Purchase Intention: The Case Study of Online Shopping Channels during Covid-19 Pandemic in Vietnam”, *Journal of Distribution Science*, Korea Distribution Science Association (KODISA), Vol. 19 No. 9, pp. 19–27, doi: 10.15722/jds.19.9.202109.19.
- Patterson, P.G., Cowley, E. and Prasongsukarn, K. (2006), “Service failure recovery: The moderating impact of individual-level cultural value orientation on perceptions of justice”, *International Journal of Research in Marketing*, Vol. 23 No. 3, pp. 263–277, doi: 10.1016/j.ijresmar.2006.02.004.
- Pavlou, P.A. (2003), “Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model”, *International Journal of Electronic Commerce*, Taylor & Francis, Ltd., Vol. 7 No. 3, pp. 101–134.
- Pavlou, P.A. and Gefen, D. (2004), “Building Effective Online Marketplaces with Institution-Based Trust”, *Information Systems Research*, Vol. 15 No. 1, pp. 37–59, doi: 10.1287/isre.1040.0015.
- Pelaez, A., Chen, C.-W. and Chen, Y.X. (2019), “Effects of Perceived Risk on Intention to Purchase: A Meta-Analysis”, *Journal of Computer Information Systems*, Vol. 59 No. 1, pp. 73–84, doi: 10.1080/08874417.2017.1300514.
- Pires, G., Stanton, J. and Eckford, A. (2004), “Influences on the perceived risk of purchasing online”, *Journal of Consumer Behaviour*, Vol. 4 No. 2, pp. 118–131, doi: 10.1002/cb.163.
- Pratesi, F., Hu, L., Rialti, R., Zollo, L. and Faraoni, M. (2021), “Cultural dimensions in online purchase behavior: Evidence from a cross-cultural study”, *Italian Journal of Marketing*, Springer International Publishing, Cham, Vol. 2021 No. 3, pp. 227–247, doi: 10.1007/s43039-021-00022-z.
- Rosillo-Díaz, E., Blanco-Encomienda, F.J. and Crespo-Almendros, E. (2019), “A

- cross-cultural analysis of perceived product quality, perceived risk and purchase intention in e-commerce platforms”, *Journal of Enterprise Information Management*, Emerald Publishing Limited, Vol. 33 No. 1, pp. 139–160, doi: 10.1108/JEIM-06-2019-0150.
- Sha. (2017), “EXAMINING THE CONSTRUCT VALIDITIES AND INFLUENCE OF AFFECTIVE RISK IN B2C E-COMMERCE”, *Issues In Information Systems*, doi: 10.48009/4_iis_2017_46-56.
- Sha, W. (2018), “DEVELOPMENT OF AN INSTRUMENT FOR AFFECTIVE RISK IN BUSINESS-TO-CONSUMER E-COMMERCE”, *Issues In Information Systems*, doi: 10.48009/3_iis_2018_11-21.
- Statista. (2021), “eCommerce report 2021”, *Statista*, available at: <https://www.statista.com/study/42335/ecommerce-report/> (accessed 28 February 2022).
- Statista. (2022), “Vietnam: change in frequency of shopping online during COVID-19 2020”, *Statista*, available at: <https://www.statista.com/statistics/1251176/vietnam-change-in-frequency-of-using-online-shopping-during-covid-19/> (accessed 19 August 2023).
- Tompkins, M.K., Bjälkebring, P. and Peters, E. (2018), “Emotional Aspects of Risk Perceptions”, in Raue, M., Lerner, E. and Streicher, B. (Eds.), *Psychological Perspectives on Risk and Risk Analysis: Theory, Models, and Applications*, Springer International Publishing, Cham, pp. 109–130, doi: 10.1007/978-3-319-92478-6_5.
- Van, R.A.C.R., Henseler, J., Kemény, I. and Sasovova, Z. (2017), “Estimating hierarchical constructs using consistent partial least squares: The case of second-order composites of common factors”, *Industrial Management & Data Systems*, Emerald Publishing Limited, Vol. 117 No. 3, pp. 459–477, doi: 10.1108/IMDS-07-2016-0286.
- Verhagen, T. and Dolen, W. (2011), “The influence of online store beliefs on consumer online impulse buying: A model and empirical application”, *Information & Management*, Vol. 48 No. 8, pp. 320–327, doi: 10.1016/j.im.2011.08.001.
- Yoo, B., Donthu, N. and Lenartowicz, T. (2011), “Measuring Hofstede’s Five Dimensions of Cultural Values at the Individual Level: Development and Validation of CVSCALE”, *Journal of International Consumer Marketing*, Vol. 23 No. 3, pp. 193–210, doi: 10.1080/08961530.2011.578059.
- Yoon, C. (2009), “The effects of national culture values on consumer acceptance of e-commerce: Online shoppers in China”, *Information & Management*, Vol. 46 No. 5, pp. 294–301, doi: 10.1016/j.im.2009.06.001.
- Zendehdel, M., Paim, L.H. and Delafrooz, N. (2016), “The moderating effect of culture on the construct factor of perceived risk towards online shopping behaviour”, edited by Wright, L.T. *Cogent Business & Management*, Vol. 3 No. 1, p. 1223390, doi: 10.1080/23311975.2016.1223390

Appendix

Table 3. Results for the assessment of reflective measurement model

Construct	Items	Types	Loadings	Cronbach’s Alpha	rho A	AVE	VIF
-----------	-------	-------	----------	------------------	-------	-----	-----

Fraud risk		Reflective		0.8738	0.8768	0.5832
	Fraud risk 1		0.8032			2.2026
	Fraud risk 2		0.6809			1.6635
	Fraud risk 3		0.7807			2.0598
	Fraud risk 4		0.7547			2.0632
	Fraud risk 5		0.7925			2.1036
Delivery risk		Reflective		0.8322	0.8397	0.6286
	Delivery risk 1		0.8071			2.1911
	Delivery risk 2		0.7182			1.6444
	Delivery risk 3		0.8478			2.2349
Financial risk		Reflective		0.8647	0.8684	0.6180
	Financial risk 1		0.8499			2.3915
	Financial risk 2		0.7311			1.7556
	Financial risk 3		0.7733			2.0798
	Financial risk 4		0.7855			2.2737
P&T Loss risk		Reflective		0.8158	0.8216	0.6009
	P&T loss risk1		0.7847			2.134
	P&T loss risk2		0.7150			1.5426
	P&T loss risk3		0.8219			2.0748
Product risk		Reflective		0.8947	0.8994	0.6826
	Product risk 1		0.8734			2.7269
	Product risk 2		0.7343			2.0281
	Product risk 3		0.8703			2.512
	Product risk 4		0.8190			2.8991
Privacy risk		Reflective		0.8470	0.8534	0.6529
	Privacy risk 1		0.8742			2.3912
	Privacy risk 2		0.7498			1.8753
	Privacy risk 3		0.7951			2.0675
Information risk		Reflective		0.8773	0.8778	0.7817
	Information		0.8970			2.5679

Risk-related feeling	risk 1				
	Information				
	risk 2	0.8711			2.5679
	Reflective		0.9015	0.9031	0.6971
	RF1	0.8544			2.6744
Purchase intention	RF2	0.7814			2.1804
	RF3	0.8439			2.8544
	RF4	0.8577			2.7966
	Reflective		0.8938	0.8938	0.8079
	PI1	0.9000			2.8796
Uncertainty avoidance	PI2	0.8977			2.8796
	Reflective		0.9128	0.9239	0.6770
	UA2	0.7826			2.6778
	UA3	0.8529			2.1674
	UA4	0.8092			2.6391
	UA5	0.8407			2.7146