

# Factors affecting consumer purchasing behavior on e-commerce platforms in Hanoi city, Vietnam, during the COVID-19 pandemic and implications for the postpandemic era



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**Abstract** This paper examines the determinants of consumer buying behavior on e-commerce platforms in Hanoi city utilizing factor analysis and regression techniques, with fear of the COVID-19 pandemic serving as a moderating variable. Drawing on a survey of 203 consumers in Hanoi who made purchases through e-commerce platforms, the research findings reveal that four key factors significantly impact consumer purchasing behavior: perceived risk, perceived ease of use, fear of the pandemic, and perceived usefulness. Notably, perceived risk emerges as the most influential factor. Moreover, when fear of the pandemic acts as a moderator, consumers exhibit reduced concern for other risks, consequently driving a surge in online shopping during the pandemic in Hanoi. These empirical insights offer valuable implications for enhancing the performance of e-commerce enterprises and optimizing the customer experience on e-commerce platforms in the postpandemic era.

**Keywords:** purchasing behavior, e-commerce platforms, Hanoi, COVID-19 pandemic

## 1. Introduction

In 2020 and 2021, the global COVID-19 pandemic had significant adverse socioeconomic consequences. However, it has also acted as a catalyst for the advancement of digitalization, contributing to the explosive growth of the e-commerce sector worldwide and, in particular, in Vietnam (Ministry of Industry and Trade, 2021a). With its young population and substantial number of smartphone users, Vietnam has experienced rapid growth in its e-commerce market, positioning itself as one of the most promising e-commerce markets in the ASEAN region (Google et al., 2019, 2022). According to the Ministry of Industry and Trade (2021b), in 2020, Vietnam's e-commerce sector experienced 18% growth, reaching a market size of USD 11.8 billion. Notably, Vietnam stands out as the only country in Southeast Asia to achieve double-digit growth in e-commerce during the COVID-19 pandemic. It is projected that by the year 2025, the scale of Vietnam's digital economy will surpass USD 47 billion, securing its position as the third largest digital economy in the ASEAN region (Google et al., 2022; Ministry of Industry and Trade, 2021a).

Hanoi, one of Vietnam's major cities, stands out for its significant volume of business-to-customer (B2C) and business-to-business (B2B) transactions, surpassing other regions in the country (VECOM 2021, 2022). Despite the challenging circumstances brought about by the COVID-19 epidemic, e-commerce has experienced robust growth in Hanoi, with a growth rate of 30% and contributing approximately 8% of the city's total retail sales. Given Hanoi's vital role in Vietnam's e-commerce development landscape, it is essential to investigate the factors influencing the purchasing decisions of consumers on e-commerce platforms within the city. Such analysis will enable businesses to leverage this potential market effectively and improve customers' experience when shopping online.

The literature on e-commerce development in Vietnam has made significant contributions. Recent studies by Pham (2016), Do et al. (2020) and Tran & Nguyen (2022) examined the current state and proposed solutions for e-commerce in Vietnam. Nguyen (2019) analyzed the opportunities and challenges of developing mergers and acquisitions (M&As) through e-commerce in Vietnam. Duong & Vu (2020) focused on providing solutions to enhance the quality of B2C e-commerce services, while Luong (2019) proposed measures to encourage the adoption of e-commerce in freight forwarding activities in Vietnam. Furthermore, Nguyen (2022) and Phi (2022) discussed ways to improve Vietnam's e-commerce-related laws and regulations.

A few recent papers have tried to shed more light on the development of e-commerce platforms in Vietnam. Huynh (2022) highlighted the significant shift in Vietnamese enterprises' trading activities from traditional websites to e-commerce platforms. It was emphasized that Vietnam has favorable conditions for business development through e-commerce



platforms, including its participation in 15 Free Trade Agreements, supportive policies, and regulations to facilitate the adoption of e-commerce and a substantial proportion of the young workforce. However, the country faces various challenges, such as weak digital infrastructure, limited human resources, and an inadequate legal framework for e-commerce. Given the development of e-commerce in Vietnam, a large number of past studies have explored the factors affecting the online purchasing decisions of consumers in Vietnam. Previous studies have identified mass psychology (Hoang & Phan, 2014), website design and links, company policies (Pham, 2021), consumers' attitudes and perceptions (Ha and Nguyen, 2016; Lee and Ngoc, 2010), and price and reliability (Ha and Be, 2018; Ha and Nguyen, 2016; Hoang and Phan, 2014; Ta and Dang, 2021) as significant determinants of online purchasing decisions. In addition, perceived benefits, as emphasized by Vu et al. (2019) and Pham et al. (2022), perceived ease of use, reputation, subjective standards, and risk perception also influence online shopping behavior. Numerous papers have specifically investigated determinants of purchasing behavior on e-commerce platforms, such as those authored by Nguyen and Ly (2023), Nguyen (2022) and Nguyen et al. (2022).

A review of the literature indicates several research gaps related to the study of online shopping behavior in Vietnam. Primarily, the majority of previous studies have focused predominantly on consumers' purchase intentions, which refer to their inclination to make a purchase but may not necessarily translate into actual online purchases. Consequently, there is a lack of research investigating consumers' actual purchase behavior in the context of online shopping. Furthermore, the exploration of online shopping behavior through e-commerce platforms in Hanoi during the COVID-19 pandemic has not been studied. In light of these research gaps, this paper aims to distinguish itself from prior studies in three key aspects. First, rather than solely examining consumers' purchase intentions, this paper proposes a model to evaluate the factors influencing consumers' actual purchasing behavior. Second, this paper seeks to assess the impact of the COVID-19 pandemic on consumers' shopping behavior, through which specific recommendations can be made for similar potential future crises. Finally, this paper concentrates on purchasing behavior on e-commerce platforms among consumers residing in Hanoi, the capital city of Vietnam. By examining this metropolitan area, implications and recommendations are generated to assist both customers and businesses in Hanoi in effectively promoting e-commerce development in the postpandemic era.

## 2. Methodology and data

### 2.1. Proposed research model

On the basis of theories and empirical studies concerning e-commerce and factors affecting consumer behaviors, this paper proposes a model to analyze the factors that influence purchasing behavior through e-commerce platforms for consumers in Hanoi city, as shown in Figure 1.

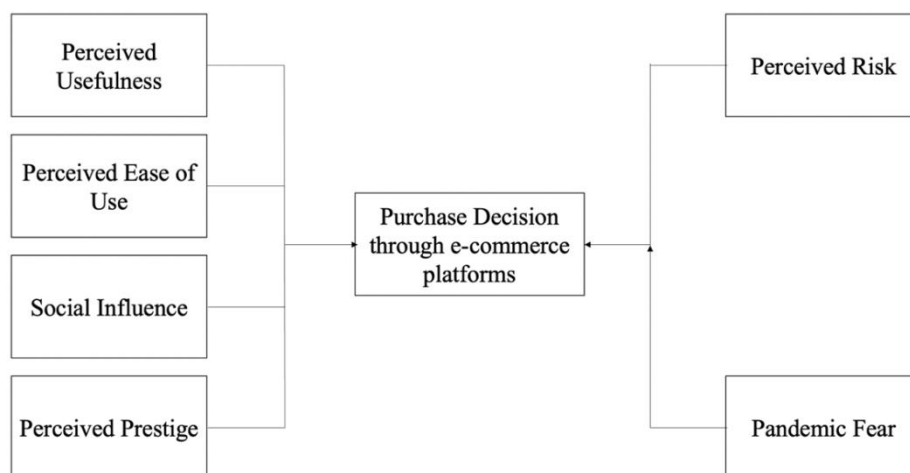


Figure 1 Proposed research model.

### 2.2. Dependent variable

#### 2.2.1. Purchase decision through e-commerce platforms (PD)

Consumer purchase behavior is strongly influenced by cultural, social, demographic and psychological factors (Kotler et al., 2005). To measure consumers' purchasing decisions on e-commerce platforms in Hanoi (PD), this study identified four observed variables, denoted PD1 to PD4, which are associated with safety concerns during the pandemic (PD1) (Aldo et al 2020), individual perceptions of the benefits of online shopping (PD2) (Park et al., 2004), individual needs (PD3) and consumption trends (PD4) (Vu et al., 2019) (Table 1). The paper argues that the individual demand factor has a considerable influence on consumer behavior, as awareness of demand represents the initial step in the consumer's purchasing decision

process. When consumers perceive that shopping through e-commerce platforms aligns with their specific needs, it fosters a positive attitude toward this form of shopping and ultimately leads to actual purchasing behavior.

**Table 1** Factors and observed variables affecting consumer purchasing decisions through e-commerce platforms in Hanoi city.

Factors	Factors and observed variables	Code
Dependent variable	<ul style="list-style-type: none"> <li>Purchase decision through e-commerce platforms</li> </ul>	PD
	I will continue to buy goods and services through the e-commerce platforms because it is safe during the pandemic	PD 1
	I will continue to buy goods through e-commerce platforms in the future because it brings many benefits	PD 2
	I feel that buying through the e-commerce platforms is suitable for my needs	PD 3
Independent variables	I feel that shopping through e-commerce platforms is a good trend	PD 4
	<ul style="list-style-type: none"> <li>Perceived usefulness</li> </ul>	PU
	Buying goods and services through the e-commerce platforms is very helpful for me to find and update necessary information	PU 1
	Buying goods and services through the e-commerce platforms helps me save more time than the traditional way of buying	PU 2
	Buying goods and services through the e-commerce platforms helps me save more costs than the traditional form of purchase	PU 3
	E-commerce sites offer a wide variety of products	PU 4
	I can make purchases through the e-commerce platforms at any place and time	PU 5
	Buying goods and services through e-commerce platforms helps to reduce the risk of disease transmission compared to conventional buying methods	PU 6
	<ul style="list-style-type: none"> <li>Perceived ease of use</li> </ul>	PE
	I can easily find the information and products I need on the e-commerce floor	PE 1
	The interface of e-commerce sites is easy to manipulate	PE 2
	I easily manipulate to fulfill orders with simple steps	PE 3
	<ul style="list-style-type: none"> <li>Social influence</li> </ul>	SI
	My family and relatives have thought that I should buy goods and services through the e-commerce platforms	SI 1
	My friends and colleagues have bought goods and services through e-commerce platforms and introduced me to use this form	SI 2
	Many people around and the media have mentioned the method of buying through the e-commerce platforms, so I joined and used it	SI 3
	<ul style="list-style-type: none"> <li>Perceived prestige</li> </ul>	PP
	I see that sellers on the e-commerce platforms always do the right things	PP 1
	I believe the sellers on the e-commerce platforms provide accurate information about the products	PP 2
	I believe that the seller on the e-commerce platforms will be responsible for the goods	PP 3
	I think the sellers on the e-commerce platforms are honest	PP 4
	<ul style="list-style-type: none"> <li>Perceived risk</li> </ul>	PR
	I am worried that the products are not satisfactory, do not match the advertisement	PR 1
	I am worried that I will be infected if the shipper unfortunately has Covid-19 virus	PR 2
	I am worried that I will not be compensated when there is a problem with the goods	PR 3
	I am worried that I will have a payment risk when shopping through the e-commerce platforms	PR 4
	I am worried that the transportation process will affect the quality of the goods	PR 5
	I am worried that I will not receive the goods on time or the goods will be lost in transit	PR 6
<ul style="list-style-type: none"> <li>Pandemic fear</li> </ul>	PF	
I think I should change from the traditional method of shopping (markets, supermarkets, traditional stores, ...) to online shopping to avoid being infected with Covid-19	PF 1	
I fear the risk of being infected with Covid-19 more than other risks associated with the traditional shopping method	PF 2	
I am worried that the direct shopping systems (markets, supermarkets, traditional stores, etc.) will experience shortage of essential goods as people race to store goods when the Covid-19 pandemic continues to spread.	PF 3	
I think the possibility of catching Covid-19 when going out is high	PF 4	



### 2.3. Independent variables

#### 2.3.1. Perceived usefulness (PU)

Perceived usefulness (PU) refers to the extent to which consumers believe they will derive benefits from utilizing an online shopping service. Chen et al. (2002) argued that online shopping is perceived as useful and productive if the characteristics of the online shopping system align with certain requirements and provide significant value to consumers. PU has a positive impact on the decision-making process of online shoppers (Tunsakul, 2020; Lin et al., 2010). Within the context of this paper, the PU factor is measured through 6 observed variables, labeled PU1 to PU6 (Table 1). These variables encompass different aspects of usefulness, namely, updated information, reduced time and cost, variety of products, ease of shopping and reduction in the risk of disease transmission (Nguyen, 2016; Aldo et al., 2020).

#### 2.3.2. Perceived ease of use (PE)

In line with the technology acceptance model (TAM) proposed by Fred D. Davis (1989), perceived ease of use (PE) denotes users' belief that employing an information technology system or product does not require significant effort. PE has a positive effect on consumers' trust since it can help motivate them to use an online shopping service for the first time and subsequently foster their willingness to invest in and commit to the buyer–seller relationship (Davis, 1989; Ha and Be, 2018). In this paper, PE is measured by 3 observed variables, denoted as PE1 to PE3 (Table 1). These variables pertain to the ease of locating necessary information and products, the ease of operating on the interface and the ease of placing orders with minimal steps (Davis, 1989).

#### 2.3.3. Social Influence (SI)

Social influence (SI) is defined as the perceived social pressure exerted on individuals to either engage in or refrain from a particular behavior (Ajzen and Fishbein, 1975). It refers to the influence of close individuals who can affect how a person performs a behavior. SI has a direct and positive impact on consumers' intentions to engage in online shopping (Davis, 1989). In this paper, SI is measured via 3 observed variables, labeled SI1 to SI3, which encompass various subjects that can influence consumers' online purchasing decisions, such as family, friends, colleagues, used customers and the media (Chen et al., 2005; Nguyen, 2016).

#### 2.3.4. Perceived prestige (PP)

The perceived prestige of sellers (PPs) through an e-commerce platform is similar to the reputation of a brand and includes elements such as names, logos, designs and signs that differentiate products from different suppliers. Seller reputation is not only reliant on the image of the business but also dependent on the reviews and feelings of the customers. Prior studies have indicated that consumers trust online retail websites when they perceive that the business possesses a good reputation and credibility among the masses (Lin et al., 2010). Darban and Li (2012) argued that purchase decisions are more likely to increase when the seller demonstrates honesty and responsibility, thus establishing credibility. In this paper, PP is measured via 4 observed variables, denoted PP1 to PP4 (Table 1), which capture different facets of reputation related to commitment fulfillment, accurate information provision (Lin et al., 2010), honesty and accountability (Darban and Li, 2012).

#### 2.3.5. Perceived risk (PR)

In addition to considering the benefits of online shopping, consumers also hold concerns about product risks, seller dishonesty, payment issues, and returns, especially for new customers who are unable to physically inspect and assess product quality prior to making a decision (Hsu et al., 2013). Moreover, Lin et al. (2010) suggested that the risks of financial loss, nondelivery, and incorrect deliveries have a negative impact on consumers' intention to engage in online shopping. According to Barreda et al. (2015), online shopping risk includes financial risk, product risk, information security risk and online seller fraud risk.

In this paper, PR is measured through 6 observed variables labeled PR 1 to PR 6, which are related to the risk of the product (Park et al., 2004; Hsu et al., 2013; Barreda et al., 2015; Nguyen, 2016), the risk of being infected with disease, the risk of payment (Park et al., 2004; Lin et al., 2010), and the risk of receiving goods (Lin et al., 2010; Nguyen, 2016).

#### 2.3.6. Pandemic fear (PF)

A pandemic refers to the emergence of a new disease that most individuals lack immunity to, resulting in its global spread (WHO, 2010), and epidemics are becoming one of the greatest threats to the world today (Harvard Institute for Global Health, 2020). The fear associated with the COVID-19 pandemic has become a pressing issue, affecting consumer spending and altering purchasing behaviors (Khan and Huremovic, 2019; Tran, 2021; Laato et al., 2020). The fear of a pandemic has prompted consumers to utilize e-commerce platforms for their product purchases.

In this paper, PF was assessed through 4 observed variables labeled PF1 to PF4 (Table 1), which refer to fear of being infected with COVID-19 and fear of scarcity of goods (Laato et al., 2020; Tran, 2021).

### 2.4. Moderator variable

The moderating effect describes a situation in which the relationship between two variables is not constant but varies depending on the value of a third variable, which is called the moderator variable. The moderator variable alters the strength or direction of the relationship between the two concepts within the model (Hair Jr. et al 1998).

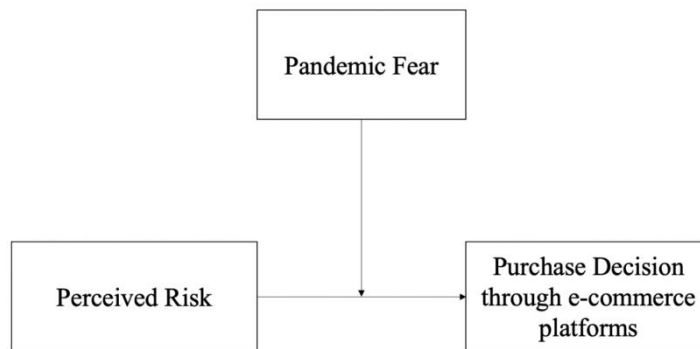


Figure 2 Model with moderator.

In this paper, the factor Pandemic Fear (PF) acts as a moderator in the relationship between Perceived Risk (PR) and Purchase Decision through E-commerce Platforms (PD). This relationship is not uniform for all consumers but varies depending on their level of pandemic fear. The constructed hypothesis is that when PF is higher, the relationship between PR and PD will be weaker, and consequently, consumers will reduce their concerns regarding the risks associated with shopping on e-commerce platforms.

In summary, the proposed model includes a total of 6 groups of independent variables comprising 26 observed variables and 1 dependent variable with 4 observed variables.

### 2.5. Data

Primary data were collected through a survey with a well-structured questionnaire. The questionnaire consists of 2 sections: (i) general information about the participants and (ii) an assessment of the factors affecting consumers’ purchasing decisions through e-commerce platforms. Participants were required to evaluate the degree to which they perceived each observed variable on a 5-point Likert scale ranging from “totally disagree” (1) to “totally agree” (5). The questionnaire was designed using Google Forms and distributed via email, as well as posted on social networking sites such as Facebook and LinkedIn and consumer forums such as Zda. The survey was conducted between October 25, 2021, and December 15, 2021.

The survey participants were Hanoi consumers who had purchased goods through an e-commerce platform. A total of 215 responses were received, of which 203 were valid (Table 2). More than 66% of the respondents were female, and nearly 60% of the total lived in the inner city. The data were analyzed through scale reliability assessment, exploratory factor analysis (EFA) and multiple regression. SPSS and Excel were used to analyze the primary data.

Table 2 Demographic characteristics of the sample.

Demographic profile	Indicator	Quantity (person)	Percent (%)
Gender	Male	68	33.5
	Female	135	66.5
Residing area	Inner Hanoi city	121	59.61
	Outskirt of Hanoi city	82	40.39
Monthly expenditure	Under VND 4 million	70	34.48
	VND 4 – less than 7 million	42	20.69
	VND 7 - under 11 million	37	18.23
	VND 11 - under 14 million	30	14.78
	VND 14 - under 17 million	13	6.40
	VND 17 - under 20 million	5	2.46
	Over VND 20 million	6	2.96
Total		203	100

Source: Survey results.

### 3. Research results



### 3.1. Scale reliability analysis

Scale reliability assessment is the process of examining the suitability of a scale for measuring corresponding variables. In this paper, the reliability coefficient Cronbach's alpha was used to assess the robustness of the scale. Based on the criteria proposed by Nunnally and Bernstein (1994), factors with Cronbach's alpha values greater than 0.6 and observed variables with corrected items and total correlations exceeding 0.3 were considered satisfactory and were retained in the model. The results of the reliability analysis indicate that the Cronbach's alpha values of all 7 factors exceeded 0.8 (Table 3 and Appendix 2). Furthermore, for the corrected item, the total correlations of all the observed variables also surpassed the threshold of 0.3. Hence, the scales can be applied for EFA with reliability, or all factors and observed variables can be retained in the model for further analysis.

**Table 3** Cronbach's alpha results.

	Factors	Code	Cronbach's Alpha
1	Purchase decision	PD	0.872
2	Perceived usefulness	PU	0.874
3	Perceived ease of use	PE	0.833
4	Social influence	SI	0.809
5	Perceived prestige	PP	0.902
6	Perceived risk	PR	0.823
7	Pandemic fear	PF	0.839

### 3.2. Exploratory factor analysis (EFA)

All the variables had loading factors exceeding 0.5, the Kaiser–Meyer–Olkin (KMO) coefficient was between 0.5 and 1, and Bartlett's test was significant (Table 4, Table 5 and Table 6), confirming the adequacy of the sample for factor analysis. Furthermore, given that the eigenvalue was higher than 1, six factors were extracted and added for further analysis of the determinants of Hanoi consumers' purchase decisions on e-commerce platforms. The total variance extracted was 68.34%, implying that these six factors explained more than 68% of the variability in the original observed variables. Based on these results, all of the observed variables are retained and utilized for the regression analysis.

**Table 4** Rotated component matrix.

Variables	Component					
	1	2	3	4	5	6
PU5	0.830					
PU6	0.825					
PU4	0.759					
PU2	0.656					
PU3	0.642					
PU1	0.628					
PP4		0.899				
PP1		0.837				
PP3		0.830				
PP2		0.813				
PR5			0.798			
PR4			0.784			
PR3			0.735			
PR6			0.718			
PR1			0.702			
PR2			0.610			
PF4				0.840		
PF2				0.803		
PF3				0.721		
PF1				0.678		
PE3					0.760	
PE2					0.704	
PE1					0.683	
SI2						0.687
SI1						0.593
SI3						0.528
Eigenvalue	8.022	3.237	2.724	1.698	1.069	1.018
Total variance explained				68.338%		



**Table 5** Results of the KMO and Bartlett tests for the independent variables.

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		0.863
Bartlett's Test of Sphericity	Approx. Chi-Square	2893.113
	Df	325
	Sig.	0.000

**Table 6** Results of the KMO and Bartlett tests of the dependent variable.

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		0.828
Bartlett's Test of Sphericity	Approx. Chi-Square	2893.113
	df	325
	Sig.	0.000

**3.3. Multiple regression analysis**

**3.3.1. Model without the moderator variable**

The estimation results show that the VIFs of 5 independent variables are less than 2, and the tolerance indices are between 0.5 and 1, except for the variable “social influence” (SI) (Appendix 1). Therefore, the variable SI was removed from the model to avoid multicollinearity.

After removing the SI, the VIF and tolerance index were satisfactory (Table 7). The regression results show that the model is useful because it explains more than 59% of the change in purchasing decisions (PDs). Except for perceived prestige (PP), for which the significance level was greater than 0.05, the remaining four factors included perceived usefulness (PU) and perceived ease of use (PE). PR (perceived risk) and PF (pandemic fear) are significantly related.

**Table 7** Estimation results.

Factor	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2,380	0.317		7.516	0.018		
PU	0.211	0.056	0.228	3.751	0.002	0.562	1.779
PE	0.273	0.059	0.282	4.619	0.003	0.559	1.789
PP	0.017	0.043	0.020	0.401	0.689	0.797	1.255
PR	-0.324	0.046	-0.330	-6,973	0.000	0.928	1.078
PF	0.223	0.048	0.250	4.658	0.004	0.721	1.387
R squared	0.591						

The regression results also reveal the order of importance of each factor affecting the decision to purchase on e-commerce platforms. PR has the greatest impact on purchasing decisions, followed by PE and PF. PU had the smallest impact on purchase decisions (Table 8).

**Table 8** Order of importance of each factor.

Factor	Standardized Beta	Absolute Beta	Contribution	Order of importance
PR	-0.330	0.330	30.28%	1
PE	0.282	0.282	25.87%	2
PF	0.250	0.250	22.94%	3
PU	0.228	0.228	20.91%	4
Total		1.09	100%	

**3.4. Model with the moderator variable**

The regression results of the model with pandemic fear (PF) as a moderator show that the model explains 60.7% of the change in the dependent variable (Table 9). The VIFs of all three variables are less than 2, and the tolerance indices are both greater than 0.5 and less than 1, showing that multicollinearity did not exist in the model.

All three variables are statistically significant in the proposed model. Therefore, the variable PF has a moderating negative effect (-0.227) on the relationship between perceived risk (PR) and purchase decisions through e-commerce platforms (PD). The impact of PR on PD is inverse, with a coefficient of -0.330 when there is no moderator variable. These estimation results imply that when fear of the pandemic increases, the relationship between PR and PD decreases, and vice versa.

**4. Discussion**

**4.1. Discussion on the deletion of observed variables and statistically insignificant factors**



The social influence factor (SI) was excluded from the model, indicating that consumers' decision-making process regarding e-commerce shopping relies predominantly on personal feelings through individuals' experiences rather than external influences from entities such as family, relatives, friends or media. Moreover, Perceived Prestige (PP) was nonsignificant, revealing that consumers in Hanoi do not exhibit a significant interest in the reputation of sellers on e-commerce platforms. In practice, numerous stores on these platforms continue to generate substantial sales despite receiving negative comments regarding quality. When buying via e-commerce platforms, many consumers seem to prioritize affordability and diverse product designs over actual product quality. As a result, the reputation of sellers and businesses does not emerge as a concern for consumers when engaging in e-commerce shopping.

**Table 9** Estimation results.

Factor	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	4.355	0.308		14.151	.004		
PR	-0.439	0.054	-0.447	-8.150	.002	0.891	1.122
PF	0.349	0.049	0.391	7.107	.000	0.887	1.127
PR.PF	-0.226	0.055	-0.227	-4.109	.000	0.877	1.140
R squared	0.607						

**4.2. Discussion on the importance of each factor for purchasing decisions on e-commerce platforms**

The model results reveal 4 factors affecting consumers' purchase decisions about e-commerce platforms in Hanoi city, namely, perceived risk (PR), perceived ease of use (PE), pandemic fear (PF) and perceived usefulness (EU). Among these factors, the PR played the most important role in determining PD, with a contribution of 30.28%, while the PU had the least impact, with a contribution of 20.91% (Table 8). However, it is noteworthy that the differences in the importance of each factor for purchase decisions are not substantial.

Among the risk-related factors, as evidenced by the results of factor rotation in Table 4, consumers in Hanoi express the highest level of concern regarding how the transportation process may affect product quality (PR5). In fact, the transportation of most online-purchased goods in Hanoi is typically handled by untrained motorbike drivers lacking specialized equipment. Issues such as transport infrastructure and traffic congestion can further exacerbate the risk of product damage during transportation. Additionally, consumers express apprehension about payment-related risks when making purchases on e-commerce platforms (PR4), such as the misuse of information for fraud or the disclosure of bank account details. This concern is amplified due to the inability of consumers to inspect goods before making payments and inadequate and cumbersome policies regarding product returns in the case of faults. These concerns are highlighted by the Department of Competition and Consumer Protection's report (2021), which documents numerous consumer petitions and complaints regarding scams and financial losses associated with e-commerce platform purchases.

PE plays the second most influential role in consumers' purchase decisions on e-commerce platforms in Hanoi, with a contribution of 25.87%. The factor rotation result indicates that the variable PE3 (reduced order steps) has the highest loading factor, suggesting that it has the highest influence on purchase decisions. In addition, setting up an e-commerce website with user-friendly interfaces is also a vital determinant of customers' decision-making process. With a contribution of 22.94%, PF ranks third in affecting consumer purchasing decisions in Hanoi. Given the COVID-19 outbreaks in Hanoi, consumers express their greatest concern regarding the possibility of virus infection when going out (PF4). Shopping on e-commerce platforms might minimize face-to-face interactions and can be performed even during periods of isolation, thereby ensuring the uninterrupted operation of the economy and meeting consumers' timely needs. When PF acts as a moderating variable in the model, the results indicate that it mitigates the impact of PR on purchase decisions through e-commerce platforms. This suggests that as fear of the pandemic intensifies, consumers become less responsive to other risks associated with shopping on e-commerce platforms.

PU contributes 20.91% to consumers' purchasing decisions on e-commerce platforms in Hanoi. According to the rotation matrix results, the variable PU5 (making purchases on the e-commerce platforms at any place and time) plays the most crucial role. This can be attributed to the busy lifestyles of Hanoi people, where consumers exhibit a keen interest in convenient and time-saving shopping methods. Particularly during the epidemic, when individuals need to limit their outdoor activities, the ability to shop from home is highly advantageous. In addition, PU6 (buying goods through an e-commerce platform helps reduce the risk of disease transmission) also displays a high loading factor in this group, revealing consumers' awareness of the benefits associated with reducing disease transmission when opting for e-commerce platforms over traditional brick-and-mortar stores.

**5. Final considerations and implications**



Based on a survey conducted among 203 consumers in Hanoi, Vietnam, this study employs EFA and regression analysis to identify the factors influencing consumers' purchasing behavior on e-commerce platforms during the COVID-19 pandemic. The findings highlight four significant determinants of consumers' decisions, namely, perceived risk, perceived ease of use, pandemic fear, and perceived usefulness. Among these factors, Perceived Risk has the most substantial impact on purchasing decisions, followed by Perceived Use, Pandemic Fear, and Perceived Usefulness. Notably, the paper provides evidence that the fear surrounding the COVID-19 pandemic has played a crucial role in driving the rapid growth of e-commerce in Vietnam. Based on these results, this paper proposes implications for the continued development of e-commerce in Vietnam after the pandemic.

Given that risk is the most important factor affecting the decision to purchase on e-commerce platforms, businesses engaged in e-commerce platforms must strategically prioritize the establishment of flexible return and exchange policies when a product's faults occur, develop effective delivery policies and implement adequate customer protection by proactively addressing concerns related to online payment and delivery problems. Furthermore, enhancing network security is of utmost importance for preventing sophisticated cybercrimes. Companies must devise strategies aimed at enhancing user friendliness and convenience when navigating e-commerce platforms. This approach involves diverse purchase experiences for customers through various devices, with a particular emphasis on mobile devices, enabling customers to shop online at any time and from any location. To foster customer trust, businesses should consistently update product information on e-commerce platforms with honesty, accuracy, completeness, and vivid imagery, recognizing the unique challenge of online shopping where consumers lack physical interaction with products. Designing websites with intuitive interfaces is crucial for facilitating customers in easily and quickly finding their desired products. Businesses should categorize their products efficiently to enhance consumers' searchability. The ordering process should be streamlined to be simple, quick, flexible, and universally accessible to all customers. Establishing a 24/7 customer support team is essential for providing timely advice and answers to customers.

One important aim of this paper is to provide evidence of the positive impact of the pandemic fear on shopping behavior on e-commerce platforms. As the pandemic has acted as a catalyst for promoting shopping online in Hanoi, understanding the pandemic fear of customers taking appropriate measures to encourage customers to shop through e-commerce platforms during such times is crucial. However, the implications of these findings might extend beyond the COVID-19 pandemic. After the pandemic, businesses can take proactive measures to address the evolving online shopping habits of customers while maintaining their interest in online shopping. Moreover, the fear of a pandemic can be viewed in a broader context, encompassing concerns about "potential" pandemics, transmitted diseases and general insecurities. Considering this, businesses should underscore the advantages of shopping through e-commerce platforms over traditional shopping, especially in unforeseen circumstances, and create incentives for online shopping, such as using medical masks and hand sanitizers as gifts to online customers and developing promotional programs for online shopping.

To mitigate the risks associated with e-commerce transactions, consumers can opt for cash-on-delivery as a payment method. When direct payment through e-commerce platforms is chosen, it is necessary for customers to verify the reputation of the platform and retain the invoice for potential future exchange or return. To prevent lost goods and delayed delivery, customers should actively monitor order progress on e-commerce sites to promptly make inquiries about any problems that may occur. To increase the usefulness of shopping through e-commerce platforms, consumers can chat or call on sellers or customer service departments to receive advice and consult reviews from previous customers. Consumers should pay attention to the periodic promotions of e-commerce platforms, understand the policies of e-commerce platforms, and choose platforms with transaction methods that align with individual preferences.

In conclusion, this paper contributes to the literature by evaluating and quantifying the factors affecting consumer purchasing decisions through e-commerce platforms in Hanoi, Vietnam, during the COVID-19 pandemic and providing recommendations for businesses and customers postpandemically. Future research can broaden the geographical coverage to include more provinces in Vietnam or provide more in-depth exploration of the determinants of purchasing decisions through e-commerce platforms in Hanoi with a focus on demographic factors. Exploring the reasons behind Hanoi customers disregarding social influences and seller prestige on e-commerce platforms when shopping online could be another potential direction for future research.

### **Acknowledgments**

The authors are thankful to the respondents who provided valuable feedback for the survey.

### **Ethical considerations**

The authors declare that we have received consent from the respondents and that all the details are kept confidential as per ethical considerations.

### **Conflict of interest**

The authors declare no conflicts of interest.

## Funding

This research did not receive any financial support.

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