International Journal of Business, Management and Economics
e-ISSN: 2746-1351
Vol. 2, No. 4, November 2021

Research on Factors Affecting Customers' Shopping Behavior on E-Commerce Exchanges during the Covid-19 Pandemic

Trinh Le Tan, Phan Thanh Hieu, Nguyen Thi Thao Van, Do Thuy Linh, Nguyen Nguyen Phuc Hung, Do Thi My Duyen

FPT University, Vietnam

Tantl2@fe.edu.vn

Abstract

The article's objective was to investigate the factors that affected customers' shopping behavior on e-commerce exchanges during the COVID-19 pandemic in Da Nang city. During the pandemic, in-store purchases are extremely difficult, and further research into e-commerce issues will attract more customers to online stores, and e-commerce platforms will become more common. Because of this, research is being conducted in order to address the aforementioned issues. In our research, we utilize qualitative research to build up hypotheses. A structured questionnaire with five-point Likert scales was distributed among 203 participants in Da Nang city (students, housewives, freelance businessmen) in order to collect data for the quantitative research The analysis technique, first is to test the reliability and validity of the instrument used, then the EFA discovery factor analysis, Pearson correlation and multiple regression analysis are performed. The research reveals that four variables influence buying on e-commerce exchanges: Payment method, Convenience, Trust factor, and Product variety, in which Payment method having the most impact. The study is important for e-commerce firms to improve their sales strategies in order to better fulfill the demands of their customers throughout the Covid-19 pandemic.

Keywords: Customer Behavior, E-Commerce, Online Shopping, Payment Method, Covid-19

Tan, T. L., Hieu, P. T., Van, N. T. T., Linh, D. T., Hung, N. N. P., Duyen, D. T. M. (2021). Research on Factors Affecting Customers' Shopping Behavior on E-Commerce Exchanges During The Covid-19 Pandemic. *International Journal of Business, Management and Economics*, *2*(4). 251 - 269. DOI: https://doi.org/10.47747/ijbme.v2i4.440

1. Introduction

The outbreak of COVID-19 affects a lot of people's health but also affects many other areas of our country in particular, but also the world in general, especially: medical, social, and economic (Nguyen, 2020). Worldwide, more than 219 million people have been infected (World Health Organization, 2021), and it is increasing as more dangerous new variants appear. Overall, COVID-19 has wreaked havoc on the world economy, jobs, and social relationships between people. As a result, poverty and inequality are increasing globally, especially in the least developed and developing countries (UNDP). According to the report of the Ministry of Health - Department of Preventive Medicine (2020), the epidemic has

caused world trade and commerce, education, and other activities to stall. Especially in terms of economy, supply chains are broken, trade activities are stopped and transportation is limited. Since then, blockade measures to control the epidemic have been enacted in many countries.

Not except other countries, Vietnam is also affected by the COVID-19 epidemic. With a total of 624,000 infections, the economy's production and business activities have stalled (World Health Organization, 2021). According to the statistics of the first quarter of 2020 showing that the economy was badly affected with GDP growth at the lowest rate in a decade, most of the important industries experienced a decline in growth, employment, and growth, seriously affecting income. Almost all sectors of the market were affected and declined, including the e-commerce sector.

E-commerce has become a popular and growing shopping method in the world in recent years, especially in Vietnam, as an emerging e-commerce market in Southeast Asia (Choi & Mai, 2018). This is shown by the fact that there are many large e-commerce exchanges opened such as Shopee, Lazada, Tiki, or the increasing number of consumers shopping. According to statistics, Vietnamese people participate in online shopping with the highest rate (41%), compared with the average of Southeast Asia about 36%, Indonesia and the Philippines with 37%, Malaysia with 36 %, Singapore and Thailand with 30% (Anh, 2021). All figures are positive for the e-commerce sector. In addition, this sector is still subject to certain impacts of the COVID-19 epidemic in Vietnam. Distance orders, blockade orders, and travel restrictions greatly impact the supply chain between buyers and sellers and the source of goods. Income and consumption demand also changed a lot during the COVID-19 pandemic. It comes from the fact that productive labor activities in society have been halted and revenue sources have been cut off (Pham, 2020).

Da Nang is one of the major commercial centers of Vietnam, so the COVID-19 epidemic also affects large and small sales establishments. The issuance of distance orders and city-wide blockade orders make it more difficult to choose products or shop directly at the point of sale. Leading to shopping through an e-commerce platform will be a completely new option to satisfy the shopping needs of customers in this case.

According to a study by Neger & Uddin (2020), the study of factors affecting internet shopping behavior is an urgent task during the COVID-19 pandemic, through assessing the influence of seven factors. And product factors, time-saving factors, payment factors, administrative factors, and psychological factors are strongly related to consumers. Research also shows that the work of understanding and uncovering issues related to e-commerce will attract more customers to online shops and e-commerce will become more popular.

From the above issues, the study of customers' shopping behavior will help determine the factors affecting consumers when choosing to buy products, and learn about customers' habits when using e-commerce platforms. Thereby, businesses in Da Nang will have foresight, better understand the desires of consumers to come up with appropriate strategies, support, and serve customers better during the epidemic.

2. Literature Review

2.1 Customer behavior

In the book “A Theory of Behavior in Organizations” (Naylor, Pritchard, & Ilgen, 2013), behavior is defined here as an "ongoing act" or process. In the study (Kuester, 2012)

considers consumer behavior as the study of individuals, groups, processes, and organizations they use to secure, select, and arrange experiences, products, services, experiences, or ideas to satisfy the consumer and society.

(Kotler ,2012) found that there are four basic types of behavior: technical behavior, instinctive behavior, intellectual behavior, and responsive behavior. Research on consumer behavior is the analysis of psychological factors, motivations, behaviors, ... that directly affect the actions, frequency, and preferences of customers in choosing and consuming used products and services. Some distinct characteristics reflected in the consumer behavior can be mentioned as to how customers evaluate a brand or a certain product. How customers compare different brands. Objective factors influence the decision on consumer behavior. How consumers approach advertising campaigns. Consumer behavior is influenced by three types of factors. The first is personal factors; demographics can influence an individual's interests and opinions (age, gender, culture, so on). The second category is psychological factors, such as reflexes. The way a person reacts to a marketing message is determined by their perceptions and attitudes. The third variables are social: family, friends, education, social media, income, all of them having an impact on the behavior of consumers (Luu, 2021).

2.2 Types of online purchasing consumers

Consumers can randomly choose any channel they like without any rules. What all online customers have in common is that they use a search engine at some stage in the shopping process. A joint study between Google and Shopper Sciences conducted in 2012 found that 50% of buyers use search engines before making a purchase decision. There are 6 typical customer groups with 6 different approaches to online shopping (Stokes, 2014):

The first group is the "Basic" buyer group. This group has always had the comfort and freedom of online shopping. They use a variety of search engines, including retail and brand websites. These people rarely access social networks and rarely use mobile devices. (Stokes, 2014)

The second group makes up 22 percent of buyers, known as "Retails Scouts". The characteristic of this group is that they make purchasing decisions very quickly, usually making a purchase decision within three steps. They are likely to use mobile devices such as phones and tablets, and they prefer to use search and retail sites (Shopee, Lazada) rather than brands' websites. (Stokes, 2014)

The third group of customers, at a rate of 20 percent, who are called "Brand Scouts" make decisions very quickly but rely heavily on searching and researching. The other thing here is that they prefer to use brand websites over retail sites. Their purchasing decisions are not based on price, but more on perks like Freeship or money-back guarantees. (Stokes, 2014)

The fourth customer group is the "Digitally Driven Segment". Only 16 percent of customers are mobile-enabled and heavily dependent on social media. This group is very important for convenience in shopping and do not want to go to the store to shop directly, they are very easy to receive and access the ads, their ad reach is 30% higher than other groups of customers. other goods. (Stokes, 2014)

The fifth group of customers often spend a lot of time shopping online on e-commerce platforms. They are called "Calculated Shoppers" - people who scrutinize all their choices very carefully. They don't rush into a decision because they want the best deal and take an

average of 14 buying steps. This group often uses the search engine and is very interested in advertising, discounts, and special announcements. (Stokes, 2014)

The last group is a small group, making up only 2 percent of buyers who are "Eternal Shoppers". It usually takes them up to 35 steps to make a purchase decision. This team will research their deals on virtually every news channel and search engine. Thereby to get the best advice and knowledge about the product to buy, as well as the value of the transaction. (Stokes, 2014)

2.3 E-commerce

E-commerce is defined as the process of purchasing, selling, transferring, serving, or exchanging items, services, or information through computer networks such as the Internet (Turban et al, 2008). Concepts called electronic market, virtual market, e-commerce, or e-business are a form of buying and selling goods and services through computer networks around the world. It is the process of virtual transactions through the transmission of data between electronic devices, through distribution policy. The relationship between the supplier and the customer is established online. E-commerce contributes to increasing the competitiveness and technology deployment as well as the marketing communication ability of the participants. E-commerce is the use of technology to automate and change the buying and selling process between suppliers and customers (Chaffey, 2007).

E-commerce processes include internal business processes (electronic market, e-commerce); and external processes (electronic market, e-commerce). For Vietnam as well as other countries in the world, e-commerce is considered as a driving force for the development of technology as well as an economic field; This is also a key industry and contributes to the world's economy (Chaffey, 2007). E-commerce has really been prominent and booming in Vietnam since 2015, commercial sites and the number of transactions on e-commerce sites have steadily increased since then. However, the number of online sales in Vietnam is still not high and sellers and customers are still limited from websites (Nguyen & Khoa, 2019).

2.4 The impact of shopping affected by Covid-19

The COVID-19 pandemic is a huge challenge to economies all over the world. Simeon Siegel, managing director at BMO Capital Markets, told Retail Dive in an interview that "Right now it's very unclear how long this impact will be — not only because we don't know the duration of the virus but because there's a latent fear that's emerging as well. The longer the impact, the more lingering the fear, and the more evolution there will be of consumer processes (Howland, 2020). With the increase of internet penetration, payments and delivery have made buying online all around. In addition, COVID 19 has made online purchasing even more enticing in view of the limited conditions.

COVID-19 has affected consumer behavior in five key ways, some of which will have a lasting impact. The first one is the shift to value and essentials. Many consumers globally intend to shift their spending largely to essentials, such as grocery and household supplies and cut back on discretionary categories. Secondly, flight to digital and omnichannel. In markets that had high online conversion rates before the pandemic (e.g., UK and the US), e-commerce continues to grow across all categories. Thirdly, a shock to loyalty. For certain products and brands, COVID-19 caused supply-chain disruptions, leading consumers who couldn’t find their preferred product at their preferred retailer to change their shopping behavior, including trying different brands and stores. Across the globe, the value was the main driver for consumers trying a new brand or place to shop. Fourthly, health and a

"caring" economy. Across countries, survey respondents say they buy more from companies that have healthy and hygienic packaging and care for their employees. The actions that businesses take during this pandemic are likely to be remembered for the long term. Last but not least, the homebody economy. In most countries, more than 70 percent of consumers don't yet feel comfortable resuming their "normal" out-of-home activities. While many consumers plan to go out for grocery shopping and socializing with friends, they are staying away from travel and crowded spaces (Arora et al, 2020).

2.5 Factors affecting customers' shopping behavior on e-commerce and hypothesis

- **Convenience:**

Customers may shop online twenty-four hours a day, seven days a week at online retail businesses. Busy customers may see the time commitment required to make a purchase at a typical retail store as a disadvantage (Verhoef & Langerak, 2001).

Convenience is frequently addressed in relation to the variety of goods and services available. (Darian et al, 2001) defined five categories of convenience for in-home purchasing: reduced shopping time, time flexibility, saving the physical effort of visiting a traditional store, reducing annoyance, and offering the chance to engage in impulsive buying, or immediately reacting to advertising.

H1: Convenience has a positive effect on E-commerce shopping behaviours.

- **Psychology:**

Psychological variables, in general, operate as motivators for people. Motivation, vision, knowledge, and attitudes are the four major parts of the psychological factor. Consumers make purchasing decisions based on perception, attitudes, motivation, personality, and emotion, all of which play a role in their online purchasing behavior (Smith and Rupp, 2003). Internal elements such as motivations, emotions, personality, and attitudes have the most impact on a consumer's buying decision (Neger & Uddin, 2020). Individual perceptions may differ from one another. People's selection criteria are influenced by their personal perceptions. Perception is the process through which people think about and see the world, drawing a meaningful image from the data provided by their sense organs. People choose and select specific products based on their perceptions, and they are impacted by it (Lake, 2009). Consumers' opinions on music, clothing, food, and other topics may have differed. An individual's attitude has an impact on their purchasing decisions. Only when consumers' sentiments toward potential products or services are favorable do they make a purchase. Marketers must ensure that their products or services have a favorable impression on customers (Durmaz, 2014)

H2: Psychology has a positive effect on E-commerce shopping behaviours.

- **Trust:**

Trust inside the context of online buying is the willingness to accept vulnerability (risks) from online retail websites after obtaining knowledge about them (McKnight et al, 2002). According to research, customer trust in one retail website is an essential element that influences buying intention. One of the most crucial aspects of internet purchasing is security. Because e-commerce sites collect increasing volumes of information and data about their consumers, the issue of security appears to be more pressing than it was previously (Pinto et al, 2009). In online shopping, people online contact suppliers instead of direct touch in online

purchasing, therefore there are several potential dangers: Economic risks (loss of money), risk from sellers, risk of privacy (personal information can be unlawfully exposed), and danger of security (credit card information can be stolen) are among the risks that online customers may face (Ratnasingam & Pavlou, 2003).

H3: Trust has a negative effect on E-commerce shopping behaviours.

- **Payment method:**

The payment options available have a direct impact on online purchase habits. When it comes to payment trends, many markets are known for their extensive use of cash. In many countries, cash on delivery is the most popular way of payment, for example, Czech Republic accounting for 45 percent of all transactions. However, this raises additional costs for sellers who face late payment, which is only accepted upon delivery. Businesses have realized that customers have a need to pay by card to make online purchases more convenient (Svobodová, 2020). They need an E-payment system. E-payment system is a type of electronic payment system that allows consumers to conduct money transfers anywhere. Besides, the E-payment system also has the M-payment system that allows mobile users to conduct worldwide transactions using their mobile device and communication technology with an internet connection (Dahlberg et al, 2006).

H4: Payment method has a positive effect on E-commerce shopping behaviours.

- **Product variety:**

Product variety is defined as the quantity and range of brands or goods supplied by a provider are referred to as (Wilson, 2019). The research found that the availability of product information on websites is a crucial feature affecting consumers' option of buying online. Using a sophisticated search engine, consumers may purchase higher-quality items at a reasonable price from a larger range of retailers (Balasubramanian et al, 2005).

The greater the variety of products available online, the greater the demand for product information. This may lead to more rational purchasing decisions and a better degree of pleasure (Sin & Tse, 2002).

H5: Product variety has a positive effect on E-commerce shopping behaviours.

Conceptual Framework and Hypotheses

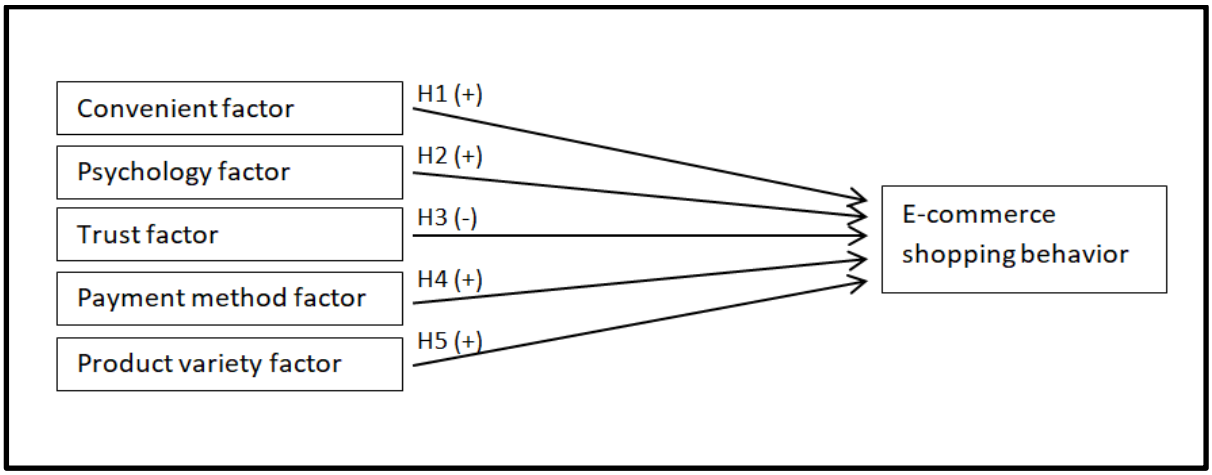

Figure 1. Research model

3. Research Method

3.1 The General Research Process

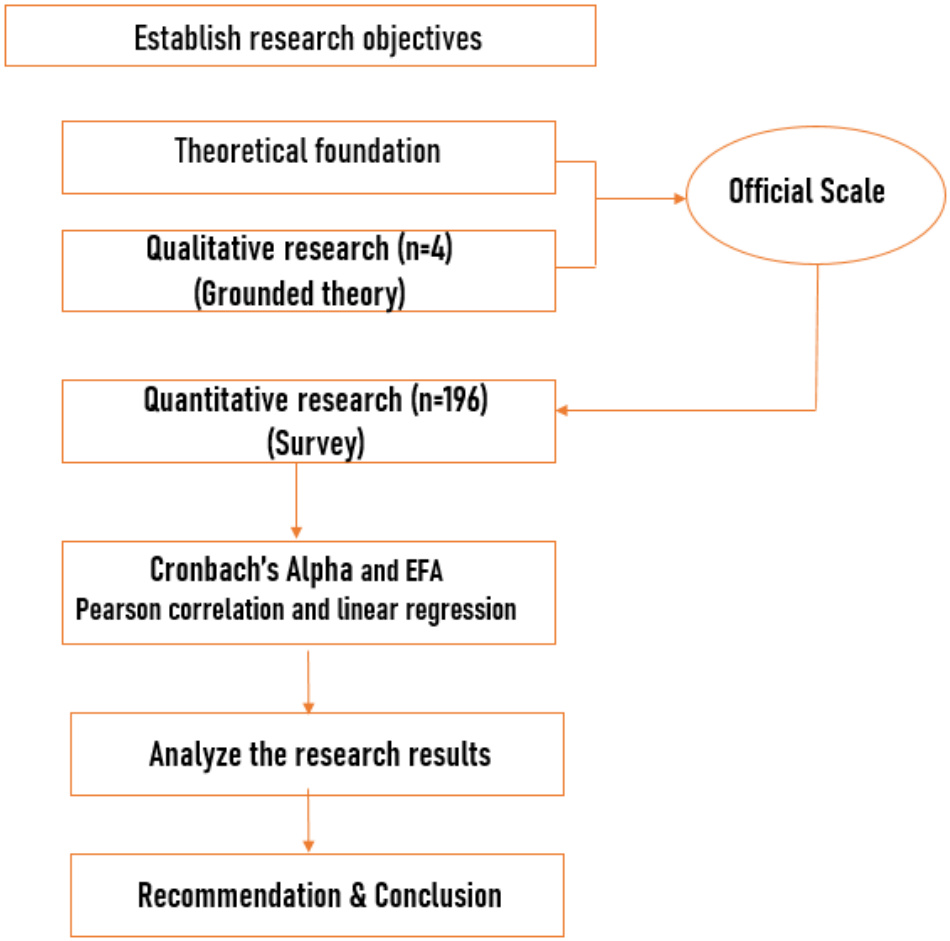

Figure 2. Research process

Source: Authors

3.2 Research objective

As mentioned in the introduction, the main objective of this study is to determine the factors affecting the shopping behavior of consumers on e-commerce platforms. And the specific objectives of this study are: Understanding customer shopping behavior on e-commerce during COVID-19 and providing businesses with a broader perspective to devise the right strategies, support, and serve customers.

3.3 Qualitative research

According to the study by Thang & Do (2016), the aim of qualitative research is to test, screen, and identify the link between the variables in a theoretical model, on this basis, to suggest a model research form. The study also attempts to rectify and develop the scales of

earlier studies that are adapted to the Vietnamese research setting. Qualitative research is used to determine the nature of the research problem. Qualitative research is flexible and exploratory (Khoa, 2014). To fulfill the aforementioned goals, the author employed the grounded theory approach to collect data and evidence from a large number of articles (n > 50). According to Oktay (2012), grounded theory is one of the best-known qualitative research methods, both within and outside of social work. It combines the advantages of quantitative and qualitative techniques (Walker & Myrick, 2006). From then, determine the elements that influence online buying behavior on e-commerce sites during Covid. This process is a new tool for analyzing the strategic conduct of e-commerce firms, which uses those elements to fill upscales and questionnaires.

3.4 Quantitative research

A quantitative data-based study was created, and a survey questionnaire was used as a data collection instrument. The questionnaire is carefully prepared to satisfy the purpose of this study. The study used a 5-point Likert Scale to assess the level of agreement of the respondents.

3.4.1 Design a scale: Likert Scale

To raise response rate and quality while lowering respondents' "frustration level," a 5-point Likert-type scale was adopted (Babakus, and Mangold, 1992). Preston & Colman (2000) found that 5-point Likert scales had higher reliability

A 5-point scale was chosen over a 7-point scale for a range of reasons, including one that is the opportunity to compare reliability coefficients with previous research involving 5-point Likert Scales (Saleh & Ryan, 1992).

Table 1. Point Likert scale

Scale	Representation
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

Source: Authors

Table 2. Official Scale

Variables	Items	Sources
Convenient factor (CF)	CF1: I can shop online on e-commerce platforms anytime, anywhere	Meher Neger, Burhan Uddin (2020)
	CF2: I find online shopping on e-commerce platforms more time-saving	Meher Neger, Burhan Uddin (2020)
	CF3: During the lockdown due to Covid-19, it is still possible to order online on e-commerce	Meher Neger, Burhan Uddin (2020)

Psychology factor (PF)	PF1: I feel comfortable when surfing at e-commerce platforms	Gurvinder S Shergill, Zhaobin Chen (2005)
	PF2: I prefer online shopping on e-commerce platforms because I like virtual interaction	Meher Neger, Burhan Uddin (2020)
	PF3: I buy because I feel convinced by the marketing of that e-commerce platforms	Meher Neger, Burhan Uddin (2020)
Trust factor (TF)	TF1: This website is full of features to protect customers' personal information	Gurvinder S Shergill, Zhaobin Chen (2005)
	TF2: Products are delivered on time as promised by the e-commerce platform	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)
	TF3: The product is carefully packed and intact when the buyer receives it	Ha Ngoc Thang, Nguyen Thi Lien Huong, Pham Thanh Van, Nguyen Thi Hong Tham (2021)
	TF4: If problems arise, I can expect to be treated fairly by this online shop on e-commerce platform	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)
Payment method factor (PMF)	PMF1: The payment methods on the e-commerce platform are diverse	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)
	PMF2: I can pay simply and fast using a variety of methods.	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)
	PMF3: Electronic payment on e-commerce platforms have more promotions than direct payment	Meher Neger, Burhan Uddin (2020)
Product variety factor (PVF)	PVF1: Most of the products I want to buy are readily available	Meher Neger, Burhan Uddin (2020)
	PVF2: I can find many products from different brands	Wilson, N. (2019)
	PVF3: Products on e-commerce platforms are diverse in price from cheap to expensive	Bakos and Peterson, Balasubramanian (1997)
E-commerce shopping (ES)	ES1: Shopping on e-commerce platforms is essential for everyone during Covid-19	Meher Neger, Burhan Uddin (2020)
	ES2: Shopping on e-commerce platforms makes buyers more active	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)
	ES3: I think shopping on e-commerce platforms will become popular in the future	Paulo Rita a, Tiago Oliveira a, Almira Farisa (2019)

Source: Authors

3.4.2 Sampling

People who frequently do online shopping in Da Nang will be our target responders. The questionnaires were sent in person and through the Internet to the research subjects

Non-probability sampling method was used for data collection. In this research, the sample calculation formula can be used to determine the minimum sample size. Using the formula of Cochran (1977):

$$n = \frac{z^2 \times (q \times p)}{e^2} = \frac{1.96^2 \times (0.5 \times 0.5)}{0.07^2} = 196$$

Based on the results from the formula with a sample of n = 196 respondents - the minimum sample size for this study with a tolerance of ±7%. The result was 215 respondents, of which 12 were invalid due to lack of information or not being part of the study population; all these questionnaires were removed before data processing. Therefore, the number of official respondents used for analysis was 203 respondents. Roscoe (1975) suggested that sample sizes greater than 30 and less than 500 are appropriate for most studies.

3.4.3 Data Analysis Methods

Data processing methods were implemented, including collecting data from questionnaires; encoding the data, evaluating the reliability of the scale with Cronbach's Alpha coefficient; EFA exploratory factor analysis based on KMO coefficient (Kaiser-Meyer-Olkin) and Bartlett test of sphericity; correlation analysis and regression analysis - checking the suitability of the research model.

4. Findings and Discussions.

4.1 Result

4.1.1 Characteristics

The entire sampling method, 215 questionnaires, was distributed to all people of all ages who are now staying in Danang City, collecting 215 samples, 12 samples were removed before data processing, because invalid due to lack of information or not being part of the study population, using 203 samples to observe.

Table 3. Descriptive statistics of demographic factors

	Categories	**Frequency**	**Percentage**
Gender	Male	89	43.8%
	Female	111	54.7%
	Other	3	1.5%
Age	Under 20 years old	19	9.4%
	20 - 40 years old	169	83.3%
	40 - 60 years old	13	6.4%
	Over 60 years old	2	1%
Occupation	Freelance business	27	13,3%
	Workers	5	2.5%
	Doctors/ Teachers	20	9.9%
	Housewife	2	1%
	Other	10	4.8%
	Student	139	68.5%
Income	Under 10 million VND	170	83.7%
	10 to 20 million VND	21	10.3%
	21 to 30 million VND	6	3%
	Over 31 million VND	6	3%
Have you ever used an	Very often (more than 5 times/month)	39	19.3%

e-commerce platform?	Regularly (3-5 times/month)	67	33%
	Sometimes (1-2 times/month)	89	43.8%
	Never been used	8	3.9%
How much money did you spend on online shopping BEFORE Covid-19	Under 500.000 VND	97	47.8%
	From 500.000VND to 2.000.000 VND	84	41.4%
	From 2.000.000 VND to 5.000.000 VND	14	6.9%
	Over 5.000.000 VND	8	3.9%
How much money do you spend on online shopping AFTER Covid-19	Under 500.000 VND	142	70%
	From 500.000 VND to 2.000.000 VND	48	23.6%
	From 2.000.000 VND to 5.000.000 VND	11	5.4%
	Over 5.000.000 VND	2	1%
What criteria are important to you when shopping online?	Price	61	30%
	Delivery time	6	3%
	Promotions	38	18.7%
	Product quality	90	44.3%
	Other	8	4%

Source: Authors

4.1.2 Assessing the Reliability of the Scale (Cronbach's Alpha)

The results showed that variables with Cronbach's coefficient's alpha are greater than 0.6 and have a correlation coefficient of variables greater than 0.4. Variables are used in the subsequent EFA analysis.

Table 4. Summary table of Cronbach's Alpha coefficients of the scales

No	Items	N of Items	N of Items satisfying	Cronbach's Alpha
1	Convenient factor	3	3	0.887
2	Psychology factor	3	3	0.896
3	Trust factor	4	4	0.887
4	Payment method factor	3	3	0.822
5	Product variety factor	3	3	0.964

Source: Authors

4.1.3 Exploratory Factor Analysis EFA

16 independent observation variables were included in the EFA factor analysis with the "Principal Component" method and the "Varimax" rotation. After analysis, the Barlett test result with a sig.= 0.000 is less than 0.005 and a KMO coefficient of 0.793 is greater than 0.5.

For Eigenvalues > 1, the total variance extracted is 81.423% > 50% so it is possible to explain 81.423% variations of data. This suggests that the correlation observed variables are strong enough to run EFA. There are 5 groups of factors extracted.

Table 5. Results of the EFA analysis from independent observation variables

Items	**Factor loading**				
	1	2	3	4	5
TF4	0.874				
TF3	0.850				
TF2	0.841				
TF1	0.837				
PVF2		0.959			
PVF3		0.934			
PVF1		0.922			
PF1			0.916		
PF2			0.878		
PF3			0.876		
CF3				0.906	
CF1				0.880	
CF2				0.877	
PMF3					0.871
PMF1					0.861
PMF2					0.841
The coefficients satisfy the conditions					
Cronbach's Alpha	0.887	0.964	0.896	0.887	0.822
Eigenvalue	4.747	2.409	2.254	1.959	1.659
Cumulative %	81.423				
KMO	0.793				
Barlett's Test	Sig. = 0.000				

Source: Authors

Table 6. EFA analysis results for the dependent variables

	Factor loading
	1
ES1	0.954
ES2	0.950
ES3	0.944
The coefficients satisfy the conditions	
Cronbach's Alpha	0.943
Eigenvalue	2.705

Cumulative %	90.152
KMO	0.772
Barlett's Test	Sig. = 0.000

Source: Authors

The EFA results show that the 3 observed variables are extracted into a dependent variable factor, all of which have factor loading factor > 0.5 with a total extraction variance of 90.152%, only KMO number is 0.772 good with significance level Sig. = 0.000 in the Barlett test, the quantity Eigenvalue = 2.705 satisfies the condition. Therefore, these observed variables are retained for further analysis.

4.1.4 Correlation Matrix

Table 7. Correlation between variables

		ES	TF	PVF	CF	PMF	PF
ES	Pearson Correlation	1	0.523**	0.515**	0.595**	0.508**	0.257**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	N	203	203	203	203	203	203
TF	Pearson Correlation	0.523**	1	0.251**	0.252**	0.080	0.201**
	Sig. (2-tailed)	0.000		0.000	0.000	0.257	0.004
	N	203	203	203	203	203	203
PVF	Pearson Correlation	0.515**	0.251**	1	0.225**	0.098	0.352**
	Sig. (2-tailed)	0.000	0.000		0.001	0.163	0.000
	N	203	203	203	203	203	203
CF	Pearson Correlation	0.595**	0.252**	0.225**	1	0.025	0.206**
	Sig. (2-tailed)	0.000	0.000	0.001		0.722	0.003
	N	203	203	203	203	203	203
PMF	Pearson Correlation	0.508**	0.080	0.098	0.025	1	-0.024
	Sig. (2-tailed)	0.000	0.257	0.163	0.722		0.736
	N	203	203	203	203	203	203
PF	Pearson Correlation	0.257**	0.201**	0.352**	0.206**	-0.024	1
	Sig. (2-tailed)	0.000	0.004	0.000	0.003	0.736	
	N	203	203	203	203	203	203

**. Correlation is significant at the 0.01 level (2-tailed)

Source: Authors

According to the correlation matrix in the table above, there is a linear correlation between ES dependent variables with independent variables TF, PVF, CF, PMF, PF because of the Sig significance level less than 0.05. Thus, the use of these linear regression analysis variables is appropriate.

4.1.5 Multiple Regression Analysis

Table 8. Estimate the beta coefficient of the model by the Enter method

	Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	-3.166	0.241		-13.148	0.000		
TF	0.390	0.044	0.301	8.853	0.000	0.885	1.130
PVF	0.371	0.045	0.292	8.274	0.000	0.820	1.219
CF	0.572	0.044	0.440	13.026	0.000	0.896	1.116
PMF	0.611	0.044	0.444	13.772	0.000	0.982	1.018
PF	0.019	0.048	0.014	0.392	0.695	0.846	1.181

Source: Authors

Adjusted R Square = 0.794;

F (ANOVA) = 156.307;

Sig. (ANOVA) = 0.000;

Durbin – Watson = 2.060

ANOVA analysis results show that the statistical value F = 156.307 with the value sig = 0.000 proves that the regression model is suitable for the data set. Durbin-Watson is 1 < 2.060 < 3, showing no correlation between variables in the model. VIF of all variables has value < 2, it means that no collinearity phenomenon occurs. The adjusted R square coefficient is 0.794 which shows that 79,4% of the variation of the dependent variable is explained by the independent variables.

As the table above can see, the factor PF has the regression coefficient Sig = 0.695 > 0.05, so this independent variable has no explanatory significance for the dependent variable. The standardized regression equation: ES = 0.444*PMF + 0.440*CF + 0.301*TF + 0.292*PVF. The 4 factors that were originally set were accepted, 1 factor was eliminated.

4.1.6 Verification of Conformity of the Model

Scatterplot scatter plots show that the residual scattering randomly around the path passes through zero degrees and fluctuates much in the range of +/- 1, proving that the linear relation assumption is not violated. The histogram shows the standard distribution curve superimposed on the frequency chart, a very small mean value close to 0 (mean = 1.29E-15), and a standard deviation near 1 (Std. Dev = 0.988), indicating the distribution of the approximate residual.

The P-P plot also shows that the viewpoints do not disperse too far from the expected straight line, so it can be concluded that the residual distribution with standard distribution is not violated. Thus, the linear regression model above is a suitable model.

4.2 Discussion

Based on the research results, the author concludes that there are factors affecting shopping behavior on e-commerce platforms during the Covid-19 pandemic, through the combined use of qualitative and quantitative research methods, numerical processing, to give results to identify 4 factors. Those factors are arranged in descending order of impact as follows: Payment method factor, Convenient factor, Trust factor, Product variety factor. These factors are correct as suggested in the research model. Exploring these factors helps e-commerce platforms have appropriate marketing policies to better serve the needs of customers during the covid 19 pandemic as well as similar situations in the future.

4.2.1 Recommendation

The results of the analysis show that payment method factor has the strongest influence, and the product variety has the lowest effect on customer behavior on e-commerce platforms during the Covid-19 pandemic. On this premise, the author proposes suggestions and strategy that will help e-commerce firms for attracting consumers and improving service quality in the future, as follows:

Firstly, is the Payment method factor. According to research, customers are extremely concerned with payment methods, therefore in the near future e-commerce platforms should have greater variety in payment methods when buying online so that customers may pay in a variety of ways. Improvements to raise customer happiness and loyalty by shortening the transaction processing procedure when paying by card and processing refunds through card faster if the order is canceled.

Secondly, it is Convenient factor, consumers sometimes find it difficult to pick items and make purchases, therefore e-commerce trading floors should improve the interface to make it neater and simpler to view so that all customers can choose products and make purchases easily. Additionally, it is both convenient and time-saving, voice search is a functionality that should be implemented to help consumers look for goods to purchase.

Third is Trust factor, e-commerce platforms need to pay more attention to providing the best service and security to customers. Many consumers fear buying online, because e-commerce platforms fail to ensure their proper security, trust and confidence. Therefore, it is always necessary to ensure the privacy and security of consumers' personal information. In addition, companies can guarantee fast nationwide delivery to attract consumers. Besides, when an incident occurs, it is necessary to quickly and fairly solve it for customers. Especially in the time of Covid-19, they have limited movement, so they need to deliver fast and timely.

Finally, is Product variety factor, at the time when Covid-19 is happening, e-commerce platforms need to have more diversified products available, because consumers will choose to buy online during this time. Especially items that are considered necessities. Not only product diversity, but also price diversity to be able to meet the needs of more customers.

The findings of the study have aided in the development of recommendations and key foundations for developing solutions to improve the quality of services offered and increase customer satisfaction on e-commerce platforms during the Covid- 19 pandemic.

4.2.2 Limitation

The study's selection of previous research is one of its weaknesses.

Limitation 1: Due to time constraints, the author only looked for a few research publications

linked to the article's keywords. As a result, it is conceivable that the author overlooked some important empirical research.

Limitation 2: Since the pandemic scenario is extremely difficult, the author can only develop a survey and obtain the results online. Therefore, it is not feasible to interview customers face-to-face, the study's result does not accurately reflect the research topic.

Limitation 3: The issue is that when authors send out a survey to customers, some of them will answer the pertinent questions. The remainder of the individuals are mucking around and will not respond. As a result, data entry into statistic software takes a long time to complete.

Based on the constraints stated above, this research should be developed in the future to better utilize the research aims and develop them at a higher level. Develop quantitative and qualitative research methodologies, as well as direct interviews with customers, to get more accurate findings. Following that, provide more accurate and effective arguments and proof.

5. Conclusion

The study was conducted in the context of e-commerce platforms facing the Covid-19 epidemic. The research is based on the theory of shopping behavior, synthesizing relevant practical studies to build a model to evaluate the factors affecting the shopping behavior of Da Nang people. On that basis, through qualitative and quantitative research methods, with techniques evaluated by Cronbach's Alpha tool, EFA exploratory factor analysis, correlation and regression analysis. With data collected from samples N = 203 (Da Nang people). Based on the survey results, the study adjusted and perfected the scale for 6 research concepts including the elements constituting shopping behavior on the e-commerce platform: Convenience, Psychology, Trust, Payment method, Product variety (independent variable) and Shopping behavior on e-commerce platform scale (dependent variable). In which, the payment method variable has the strongest influence on the shopping behavior of customers on e-commerce platforms. The research results have helped provide important suggestions and foundations in building solutions for people to easily buy goods through e-commerce platforms during the Covid-19 period, and at the same time help those platforms improve quality and service more.

References

Anh. N. (2021). Vietnam's e-commerce revenue grew by 18%. Economic life in Vietnam & the world. *Vietnam Economic Times*. Retrieved from https://bitly.com.vn/xs8zo0.

Arora, N., Charm, T., Grimmelt, A., Ortega, M., Robinson, K., Sexauer, C., Staack, Y., Whitehead, S., & Yamakawa, N. (2020). A global view of how consumer behavior is changing amid COVID-19. *McKinsey & Company*.

Balasubramanian, S., Raghunathan, R., & Mahajan, V. (2005). Consumers in a multichannel environment: Product utility, process utility, and channel choice. *Journal Of Interactive Marketing*, *19*(2), 12-30. DOI: https://doi.org/10.1002/dir.20032

Babakus, E., & Mangold, W. G. (1992). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Health services research*, *26*(6), 767.

Cochran, W. G. (1977). *Sampling techniques*. John Wiley & Sons, Inc.

Choi, Y., & Mai, D. (2018). The Sustainable Role of the E-Trust in the B2C E-Commerce of Vietnam. *Sustainability*, *10*(1), 291. DOI: https://doi.org/10.3390/su10010291

Chaffey, D. (2007). *E-business and E-commerce Management: Strategy, Implementation and Practice*. Pearson Education.

Durmaz, Y. (2014). The Impact of Psychological Factors on Consumer Buying Behavior and an Empirical Application in Turkey. *Asian Social Science, 10(6),* 194. DOI: https://doi.org/10.5539/ass.v10n6p194

Dahlberg, T., Mallat, N., Ondrus, J., Zmijewska, A. (2006). Mobile payment market and research - past, present and future. *Sprouts: Working Papers on Information Systems*, *6*(48). http://sprouts.aisnet.org/6-48

Darian, J., Tucci, L., & Wiman, A. (2001). Perceived salesperson service attributes and retail patronage intentions. *International Journal Of Retail & Distribution Management*, *29*(5), 205-213. DOI: https://doi.org/10.1108/09590550110390986

Howland, D. (2020). The consumer after COVID-19. *Retail Dive.* Retrieved from https://www.retaildive.com/news/the-consumer-after-covid-19/575634/

HA, N. T., NGUYEN, T. L. H., PHAM, T. V., & NGUYEN, T. H. T. (2021). Factors influencing online shopping intention: An empirical study in Vietnam. *The Journal of Asian Finance, Economics and Business*, *8*(3), 1257-1266.

Kuester, S. (2012). MKT 301: Strategic marketing & marketing in specific industry contexts. *University of Mannheim*, *110*, 393 - 404.

Kotler, P., Armstrong, G. (2012). *Principles of Marketing*. New Jersey: Pearson Education.

Khoa, T. T. (2014). Graduate thesis in management – an approach from a qualitative method. *SOCIAL SCIENCE*, *9*(1), 39-47.

Luu, H. C. (2021). Consumer Buying Behavior and Model. *Luan van Viet.* Retrieved from https://luanvanviet.com/hanh-vi-nguoi-tieu-dung/#3_Dieu_gi_anh_huong_den_hanh_vi_cua_nguoi_tieu_dung.

Lake, L. (2009). *Consumer behavior for dummies*. John Wiley & Sons, Inc.

McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and Validating Trust Measures for e-Commerce: An Integrative Typology. *Information Systems Research*, *13*(3), 334–359. DOI: https://doi.org/10.1287/isre.13.3.334.81

Ministry of Health - Department of Preventive Medicine (2020). A year Covid-19 took over the world. *Vietnam Electronic information Department of Preventive Medicine.* Retrieved from https://vncdc.gov.vn/mot-nam-covid-19-khuynh-dao-the-gioi-nd15917.html

Nguyen, H. N. (2020). Impact of the Covid-19 passion on economic activities in Vietnam. *Proceedings of the national scientific conference,* 123-149.

Naylor, J. C., Pritchard, R. D., & Ilgen, D. R. (2013). *A theory of behavior in organizations*. Academic Press.

Neger, M., & Uddin, B. (2020). Factors Affecting Consumers' Internet Shopping Behavior During the COVID-19 Pandemic: Evidence From Bangladesh. *Chinese Business Review*, *19*(3). 91 - 104. DOI: https://doi.org/10.17265/1537-1506/2020.03.003.

Nguyen, H. M., Khoa, B. T. (2019). The Relationship between the Perceived Mental Benefits, Online Trust, and Personal Information Disclosure in Online Shopping. *Asian Finance, Economics and Business, 6*(4), 261-270. DOI: https://doi.org/10.13106/jafeb.2019.vol6.no4.261

Oktay, J. S. (2012). *Grounded theory*. Oxford University Press.

Pham, H. C. (2020). Impact of the COVID-19 pandemic on Vietnam's economy. *Journal of Economics and Development, 274.*

Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences. *Acta psychologica, 104*(1), 1-15. DOI: https://doi.org/10.1016/S0001-6918(99)00050-5

Pinto, J., Slevin, D., & English, B. (2009). Trust in projects: An empirical assessment of owner/contractor relationships. *International Journal of Project Management, 27*, 638–648. DOI: https://doi.org/10.1016/j.ijproman.2008.09.010

Ratnasingam, P., & Pavlou, P. A. (2003). Technology Trust in Internet-Based Interorganizational Electronic Commerce: *Journal of Electronic Commerce in Organizations, 1*(1), 17–41. DOI: https://doi.org/10.4018/jeco.2003010102

Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon, 5*(10), e02690.

Roscoe, J.T. (1975). *Fundamental Research Statistics for the Behavioural Sciences* (2nd ed). New York: Holt Rinehart & Winston.

Saleh, F., & Ryan, C. (1991). Analysing service quality in the hospitality industry using the SERVQUAL model. *Service Industries Journal, 11*(3), 324-345.

Stokes, R. (2014). The 6 Types of Online Buyers. *Entrepreneur Magazine*. Retrieved from https://www.entrepreneur.com/article/231668.

Smith, A. D., & Rupp, W. T. (2003). Strategic online customer decision making: leveraging the transformational power of the Internet. *Online Information Review, 27*(6). 418 - 432. DOI: https://doi.org/10.1108/14684520310510055

Sin, L., & Tse, A. (2002). Profiling Internet Shoppers in Hong Kong. *International Consumer Marketing, 15*(1), 7–29. DOI: https://doi.org/10.1300/J046v15n01_02

Svobodová, Z., and Rajchlová, J. (2020). Strategic Behavior of E-Commerce Businesses in Online Industry of Electronics from a Customer Perspective, *Administrative Sciences, 10*(4). 78. DOI: https://doi.org/10.3390/admsci10040078

Turban, E., Leidner, D., McLean, E., & Wetherbe, J. (2008). *Information Technology for Management Transforming Organizations in the Digital Economy* (6th ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.

Thang, H. N., & Do, N. T. (2016). Factors affecting online shopping intention of Vietnamese consumers: An extended study on the theory of planned behavior. *Economics and Business, 32*,(4), 21-28. Retrieved from https://js.vnu.edu.vn/EAB/article/view/3877

United Nations Development Programme (2021). *Socio-economic impact of COVID-19.* Retrieved from https://www.undp.org/coronavirus/socio-economic-impact-covid-19.

Verhoef, P. C., & Langerak, F. (2001). Possible determinants of consumers' adoption of electronic grocery shopping in the Netherlands. *Journal of Retailing and Consumer Services*, *8*(5), 275–285. DOI: https://doi.org/10.1016/S0969-6989(00)00033-3

Walker, D., & Myrick, F. (2006). Grounded Theory: An Exploration of Process and Procedure. *Qualitative Health Research*, *16*(4). 547 - 59. DOI: https://doi.org/10.1177%2F1049732305285972

Wilson, N. (2019). The Impact Of Perceived Usefulness And Perceived Ease-Of-Use Toward Repurchase Intention In The Indonesian E-Commerce Industry. *Jurnal Manajemen Indonesia*, *19*(3), 241. DOI: https://doi.org/10.25124/jmi.v19i3.2412

World Health Organization (2021). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved from https://covid19.who.int/.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/4.0/)