FPT Education

FPT UNIVERSITY

Graduation Thesis Report

Business Administration

RESEARCH - 2022

GRM491_G3

FPT Education

FPT UNIVERSITY

Bachelor of Business Administration Thesis

***

Determinants of impulsive and obsessive-compulsive behaviors in online shopping: The case of Vietnam during the COVID-19 pandemic

Supervisor: Nguyễn Thị Lựu

Full Name	Student ID
Bùi Tuấn Anh	HS140716
Nguyễn Thị Hà Trang	HS140099
Bùi Quang Đạt	HS140147
Nguyễn Đức Anh	HS140131
Nguyễn Minh Ngọc	HS 140118

___ 2022___

ACKNOWLEDGMENT

With boundless love and appreciation, we would like to extend our heartfelt gratitude and appreciation to all of those who helped us maintain this project and bring this study into reality and to everyone who has supported us throughout our college years.

First and foremost, we are pleased to extend our heartfelt appreciation to our advisor, Dr.Nguyen Thi Luu for her continuous instruction of bachelor's degree studies and research, and for her inspiration, passion, and immense knowledge. Her supervision guided us during the research process and writing of this thesis.

We are very thankful to FPT University for the support and direction throughout the implementation process. In addition, we are deeply grateful and wish to express our deepest gratitude to all the business supervisors, teachers, and lecturers for their motivated support and assistance, as well as all the information and experience they offered us.

Furthermore, we cannot express enough thanks to our thesis committee for their encouragement, insightful comments, stimulating discussions, and hard questions. We offer our sincere appreciation for all the learning opportunities provided by our committee.

We are genuinely appreciative of everyone's time and input who took part in our survey. Your response is highly useful and an important source of information. Our research gets more reliable and efficient because of this information.

Lastly, an honorable appreciation goes to our family and friends, who have always been supporting us, morally and financially, as well as the encouragement to conquer all the difficulties. Without the help and encouragement mentioned above, it would be very challenging for us to achieve all the goals.

We hope you enjoy reading our thesis. If you have any questions, please do not hesitate to contact us.

EXECUTIVE SUMMARY

Online shopping is a developed business form. This business form can bring a lot of profit to the country's economy. These developments have resulted in significant changes in customer behavior. Customers' purchasing behavior and product selection are faced with various changes and developments. The field of online sales is entitled to constant development. The most recent development is a result of the sudden arrival of the worldwide pandemic COVID-19. For the majority of their requirements and wants, consumer behavior is starting to shift toward online platforms. COVID-19 has caused new consumer behavior patterns to arise, which has resulted in the development of new customer behaviors.

The study pointed out two important findings and contributed to the proposal of a conceptual model. Firstly, a large number of customers are moving to online stores. Second, COVID-19-related novel behavioral behaviors are affecting consumer purchasing patterns. A proposed conceptual model deals with the factors influencing customer impulsive and obsessive-compulsive buying behavior in online selection.

With 338 valid responses from the survey, the study identifies the primary causes of the factors that affect consumer-purchasing decisions during the COVID-19 pandemic.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

1.1. Background

1.1.1. The development of e-commerce and online shopping in Vietnam

Facing the exciting world economic situation with the e-commerce industry and preparing to enter the digital economy, in June 1998, the e-commerce working group under the Vietnam National Steering Committee on Technology information is established. Information on the economy, trade, investment, etc., has been posted on the internet. Since there is an e-commerce model, it has helped businesses and customers more conveniently in the buying and selling process. In the early days, when customers were still unfamiliar with online purchases, it was difficult for businesses to create brand and raise trust with online customers. Until now, online shopping has become a habit for many customers because of the convenience it brings.

With the explosion of the e-commerce market, online shopping is recognized as an effective transaction method. For businesses, selling online is considered an effective distribution channel, helping to remove geographical barriers, expand the group of potential customers, as well as reduce business costs such as space rental, human resources, and marketing. For consumers, online shopping brings many benefits, such as saving a lot of time, and a system of buying all kinds of goods, easy to find information about products, and can compare prices of different suppliers. Therefore, online shopping is a new trend of shopping behavior and has really exploded in the 21st century (Bui, 2018).

1.1.2. Impact of COVID-19 on e-commerce and online shopping

With the continuous development of the e-commerce industry in the Vietnamese economy, people's incomes are improving, and online shopping has become the need of a sizable portion of households and individuals with income across the country. For a field with potential for development after the COVID-19 period, we all have great expectations that we will accurately analyze the online shopping needs of everyone as well as meet their buying needs. With online shopping being done by a large number of users in Vietnam and with a very fast growth rate, e-commerce sites and online shopping forms also face many challenges and difficulties.

In the past few years, Vietnam's e-commerce sector has grown and become a popular kind of business, allowing customers to shop more conveniently and enabling businesses to stay open during the hectic times. This industry has grown rapidly in the wake of the COVID-19 pandemic. Due to the variety of operating models, objects, operational procedures, and supply of goods and services, as well as the support of Internet infrastructure and the use of current technology, e-commerce has grown to be a significant pillar of digital economic development.
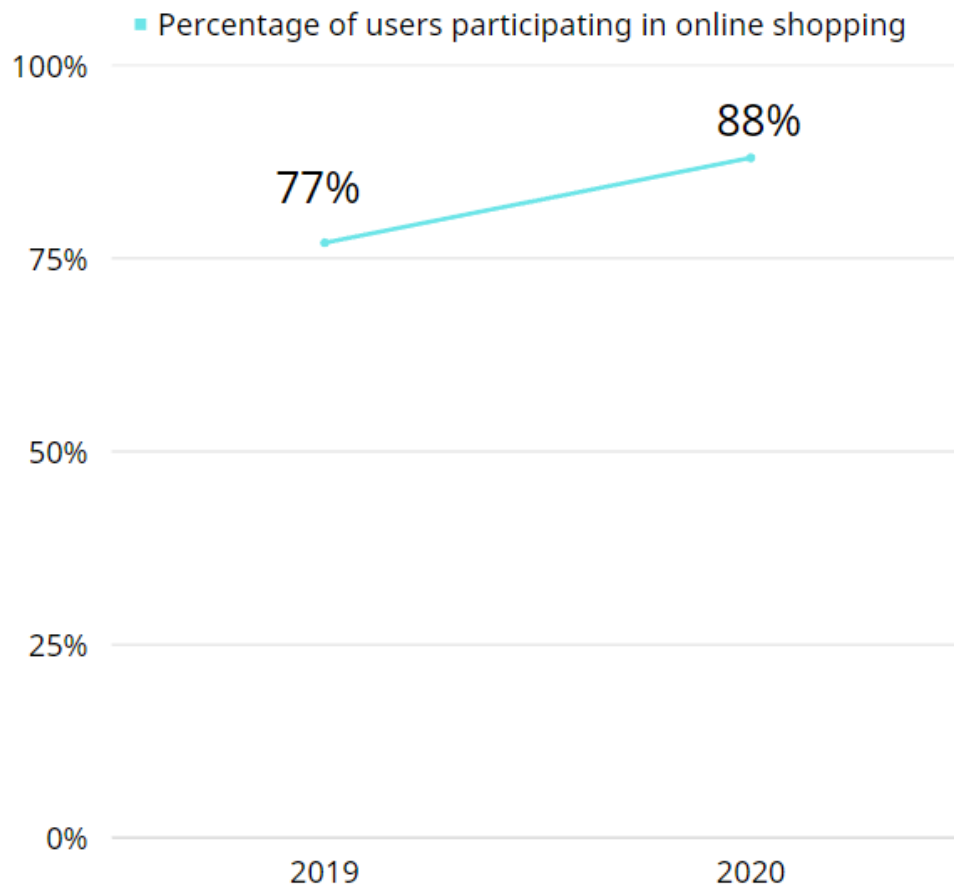
Figure 1.1: Percentage of Internet users participating in online shopping

Source: Vietnam E-Commerce White Paper 2021

Although the market for internet shopping has grown in Vietnam recently, many people still prefer the conventional method of purchasing. However, since the COVID-19 epidemic, everything has changed drastically. The government has also implemented measures to limit the risk of people purchasing, to reduce the risk of infection, as the number of infections in the community is always rising. It is shown in figure 1.1 that Online purchases made by Internet users increased from 77% in 2019 to 88% in 2020. (White Paper on Vietnam E-Commerce, 2021).
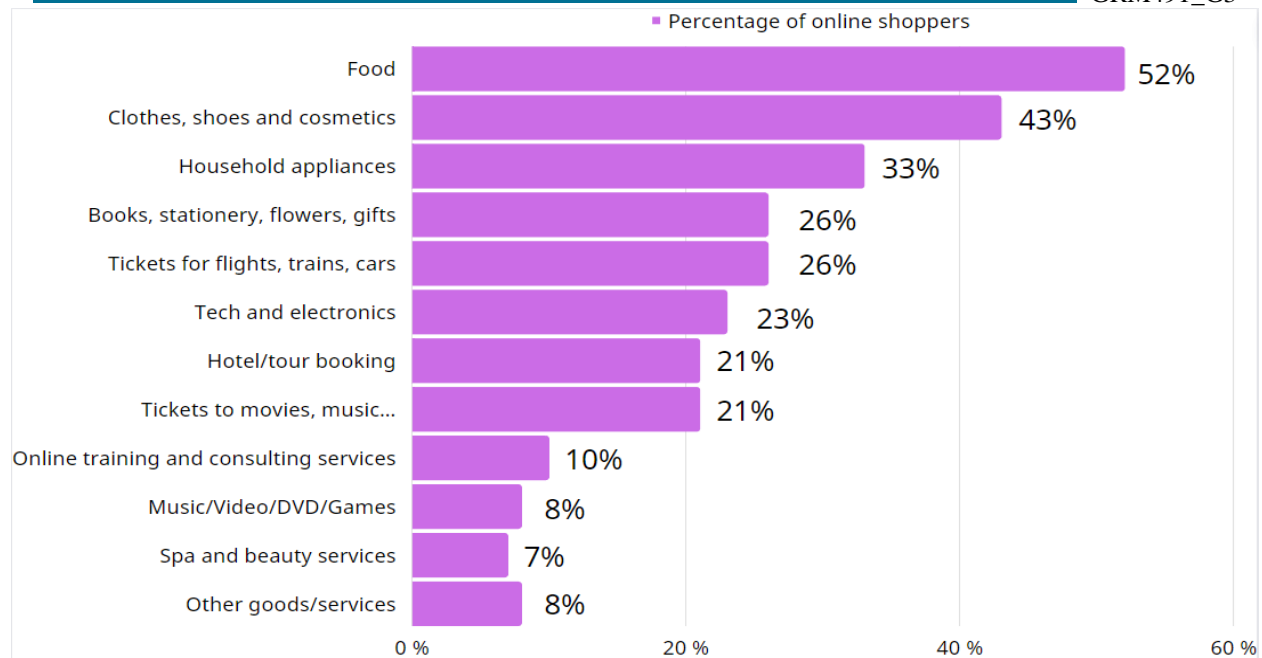
Figure 1.2: Types of goods/services commonly purchased online in 2020.

Source: Vietnam E-Commerce White Paper 2021

Figure 1.2 show that : with up to 88% of Internet users engage in online buying when accessing the network, and 43% use it to look up information about potential purchases" Up to 31% of users get daily Internet connection for three to five hours. Food is the product that internet shoppers like the most (52%), followed by apparel, accessories, and cosmetics (43%), and finally home appliances (33%). Customers who spend more than 5 million dong online have the highest rate (29%), followed by those who spend 3 to 5 million and 1 to 3 million VND. (Vietnam E-Commerce White Paper 2021). These results show that many consumers are willing to engage and love shopping online. This is also a good thing for the development of e-commerce in Vietnam.

1.2. Research Gaps

With the explosion of the e-commerce market, online shopping is recognized as an effective transaction method. For businesses, selling online is considered an effective distribution channel, helping to eliminate geographical barriers, expand the group of potential customers, as well as reduce business costs such as leasing space, human resources, and marketing. For consumers, online shopping brings many benefits, such as saving time and effort by buying at traditional stores, being able to shop anytime, anywhere and having a wide choice of items, easily finding information about products; comparing prices from different suppliers. Therefore, online shopping is a new trend in shopping behavior and has really exploded in the 21st century (Bui, 2018).

Due to the growth of online purchasing, there are a wider variety of factors influencing consumer online shopping behavior. Many academics are interested in conducting research on the variables influencing customers' online shopping behavior (Hansen et al., 2004; Chiu et al., 2005; Javadi et al., 2012). The number of articles applying behavioral theories like the behavioural intention and the theory of reasoned action on factors influencing online purchasing intention or behavior in the context of Vietnam has greatly increased in recent years (Duong, 2012; Ha & Nguyen, 2016). However, there is very little research on the online shopping behavior of Vietnamese consumers during the time of COVID-19. Some studies, including the one by Nguyen & Hoang (2020), applied the model of acceptance and use of extended technology (UTAUT2) and the theory of planned behavior to evaluate the influence of factors including attitude, behavior on online purchase intention on Vietnamese business websites. The limitation of this study is that it only focuses on the group of online shoppers through corporate websites, while in fact in Vietnam, online shopping on e-commerce platforms also plays an important role, accounting for 74%, while the number of shoppers on the website channel is lower with 52% (Ministry of Industry and Trade, 2021). In addition, the above studies only focus on customer behavior in general, but rarely pay attention to specific types of behavior, while customer behavior is in fact very complex. Impulsive buying behavior and obsessive-compulsive buying behavior are considered to be two of the most characteristic behaviors in consumers' lifestyles. (Rook, 1987; Rook and Fisher, 1995)

This thesis, on the other hand, seeks to investigate the factors affecting the online shopping behavior of Vietnamese consumers in the context of COVID-19 on all online shopping platforms such as corporate websites, social networking platforms, and e-commerce platforms in Vietnam such as Shopee, Tiki, Lazada, etc.

1.3. Research question

This study was planned to examine the following questions in order to resolve the research gap in the literature:

Question 1: What factors influence impulsive buying behavior in Vietnam during the COVID-19 pandemic?

Question 2: What factors influence obsessive-compulsive buying behavior in Vietnam during the COVID-19 pandemic?

Question 3: What implications could be drawn for marketing strategies during similar external turbulence?

1.4. Research objectives

The main purpose of this study is to determine the factors affecting the online shopping behavior of customers during the COVID-19 pandemic and provide an assessment of the online shopping situation after the pandemic in Vietnam. This study was achieved by carrying out the following objectives:

Objective 1: To investigate the factors arising during the COVID-19 including lockdown, etc. and their effect on consumers' perceived arousal during the pandemic.

Objective 2: To research the COVID-19's moderating impact the relationship between lockdown, and perceived arousal.

Objective 3: To investigate the effect of perceived arousal on two buying online behaviors including impulsive and compulsive buying behavior.

Objective 4: To examine the part of perceived arousal in mediating the relationship between lockdown, and purchase behaviors.

Objective 5: To provide recommendations for marketers and policymakers during and after turbulent times.

1.5. Research Scope

The scope of the research project is extended across Vietnam and focuses on customers who have made purchases on e-commerce sites during COVID-19 to provide the most objective and accurate data information. The characteristics of the target sample are:

- Type of survey: Online survey
- Age: all age
- Gender: Male/ Female and Other
- Expected number of respondents: 300 people
- Research scope: Vietnam
- Occupation: All types of job
- Survey time: From 01/07/2022 to 31/07/2022

1.6. Methodology and COVID-19 data overview

Individuals have an undetermined likelihood of being included in the sample in a nonprobability sampling approach, with part of the probability being zero (Vehovar et al., 2016). That means the things included in the sample must have a stronger justification for being included in the sample than the other items. Convenience sampling, Purposive sampling, Quota sampling, and Snowball sampling are examples of non-probability sampling procedures.

In this study, the auditor will make judgments and choose which items are included in the sample under this procedure, resulting in no element having an equal probability of being chosen for the sample. This approach, unlike probability sampling, is not acceptable in statistical sampling and may only be used in non-statistical sampling. The auditor chose this approach because if the significant misstatement of the distribution is concentrated in specified populations or if the population is limited, random sample selection will not be favorable.

Data employed for this study was obtained through an online survey and analyzed using the structural equation modeling (SEM) method. Measurement model verification and structural analysis are performed using SmartPLS. Then we assess the study findings to identify the critical components of impulsive and obsessive buying. Besides, secondary research is conducted using journal articles, newspapers, websites, and internal data sources.

1.7. Significance of the research

While buying behavior in online shopping and especially during the COVID-19 pandemic has attracted the attention of many scholars around the world, our research contributes to the existing knowledge on the topic with an analysis on the matter in the context of Vietnam. Moreover, we further include the factor of perceived arousal to analyze and evaluate the change in purchasing habits during COVID-19. Therefore, our research proposes solutions for individuals and organizations operating e-commerce sites to promote impulsive and obsessive-compulsive buying behavior of customers in Vietnam to avoid. That way, e-commerce sites and online businesses have an objective view of Vietnamese people's shopping behavior on the internet.

1.8. Outline of thesis

This thesis consists of six chapters as follows:

- *Chapter 1: Introduction*

Chapter 1 will provide an outline brief of the thesis background. The research plan contains all the information needed for the study, including research objectives, research questions, scope, and methodology.

- *Chapter 2: Literature review*

In Chapter 2, more terms and definitions about customer online shopping behaviors will be provided. Then, the thesis will give the advantages and disadvantages of online shopping. From that, show models predicting the determinants of online shopping behavior of consumers from previous studies.

- *Chapter 3: Theoretical foundation and hypothesis development*

Chapter 3 shows relevant theories, research philosophy, and research approaches to formulate research questions and gives a research model with hypotheses.

- *Chapter 4: Methodology*

Chapter 4 explains the research methodology: quantitative analysis, data collection methods, and data analysis methods. Then it will be explained why the thesis has to use it.

- *Chapter 5: Results*

Chapter 5 analyzes the collected data as a basis for analysis and implications for chapter 6.

- *Chapter 6: Discussion and Conclusion*

Based on the analysis of Chapter 5. Determining what factors impact the buying online behavior and recommendations on the factors that affect the customer behavior of Vietnamese during COVID-19.

II. LITERATURE REVIEW

In this chapter, our team will review existing research to summarize and provide a comprehensive background of the previous models related to this study. The topic of the thesis is "Determinants of online buying behavior during the COVID-19 pandemic in Vietnam". Therefore, the first steps in chapter two will be to define consumer buying behavior, COVID-19, online shopping, and the evolution of E-commerce in Vietnam. In the next step, we will see how COVID-19 influences Vietnam's economy and online buying behavior of customers.

In general, the main objective of this section is to identify issues related to the topic. The group will clarify the meaning of the concepts related to the research problem logically in accordance with the name of the selected research topic. Accordingly, it will be easier for people to understand the concepts as this framework will systematically cover the topic of consumer behavior in the most concise way.

2.1. Consumer buying behavior

Consumer buying behavior is a complex, dynamic topic that is difficult to explain simply and consistently (Blackwell et al., 2006). As a result, various scholars have come up with their own interpretations of the concept of consumer buying behavior.

Schiffman and Kanuk (2000) give a similar definition of consumer buying behavior, defining it as the behavior that consumers exhibit when they choose and purchase goods or services, using resources their availability to meet their needs and desires. The study of consumer behavior, as defined by Solomon et al. (2011), is the examination of the procedures through which people, groups, or organizations take charge of the acts, ideas, and emotions of their target market

consumption influenced by both internal and external influences during the decision-making process for selecting and buying those goods and services.

Although the above definitions are different, they all come to the same conclusion: consumer buying behavior is the act of selecting, purchasing, and discarding goods and services that match requirements and consumer wishes. Researchers and scholars generally agree that this process can be continually revised throughout time as customers' purchasing attributes change due to their changing physical and psychological needs. Some lasting and unique phenomena in the lives of consumers are compelling and obsessive purchases. The different characteristics of impulsive and obsessive-compulsive purchases have attracted the interest of researchers and consumer theorists in these phenomena (Rook, 1987; Rook and Fisher, 1995). So far, when studying customer behavior, research has focused on impulsive and obsessive-compulsive buying behavior, identifying aspects and distinguishing them from other types of buying behavior. (Cobb and Hoyer, 1986; Rook, 1987).

2.1.1. Impulsive buying behavior

Researchers characterize the psychological trait known as impulsivity as acting without careful consideration, making snap judgments, and failing to adequately consider the external environment. (Barratt, 1993). According to O'Quinn and Faber (1989), impulsive buying is the outcome of a consumer's strong and compulsive desire to purchase a product. This pattern of purchasing is driven by illogical variables like the sudden onset and satisfaction with the results of the purchase action (Reisch and Zhao, 2017).

According to Rook (1987), impulsive buying is the act of making an unplanned, spontaneous, and quick purchase while under the influence of a strong urge and an exhilarating or enjoyable mood. In order to solve this problem, researchers have started to concentrate on figuring out the psychological conditions that lead to impulsive consumer behavior (Rook, 1987; Rook and Gardner, 1993; Rook et al. Hoch, 1985).

One can reply that customers' internet buying behavior is extremely logical because they research and weigh their options before making a decision. However, making the right decisions is not always possible, and while shopping online, impulsive buying is always a possibility (Jeffrey and Hodge, 2007; Verhagen and van Dolen, 2011). Due to the importance of impulsive buys, which considerably contribute to a company's income, it is quite useful to investigate and research this online purchasing phenomenon. In addition to the outcome of having little cognitive control, impulsive purchases happen when there is a strong emotional demand, according to Burton et al. (2018). This impulsive and mindless predilection for purchasing can be explained by the buyer's sudden exhilaration (Pradhan et al., 2018).

2.1.2. Obsessive-compulsive buying behavior

Obsessive-compulsive buying behavior, often known as shopping addiction, is a mental health illness marked by recurrent, obsessive, and unregulated activity that continues despite being warned about psychological severity, occupational and spending consequences (Müller et al., 2015b).Obsessive-compulsive buying behavior, often known as shopping addiction, is a mental health illness marked by recurrent, obsessive, and unregulated activity that continues despite being warned about psychological severity, occupational and spending consequences .

This anomalous form of consumer behavior is characterized by prolonged purchases in a somewhat stereotypical fashion, in which the consumer finds the purchase behavior significantly irresistible. Although obsessive-compulsive buying can create some short-term positive feelings for the buyer, but ultimately it disrupts the functioning of daily life and produces negative effects as well as negative consequences (O'Guinn and Faber, 1988).

In marketing, manifestations of compulsive behavior include uncontrollable buying behaviors, over-buying, spending a lot of time shopping, and stereotyping. Although obsessive-compulsive buying behavior may be related to emotional attachment to objects, the possibility that pleasure derives from the act of purchasing is the primary cause (O'Guinn and Faber, 1989). Obsessive-compulsive buying involves "uncontrollability when it occurs to shopping," which sets it apart from impulsive activities (Faber et al., 1995: 297). The consumer addiction disease is described in terms of personality assumptions and immediate and long-term effects. Thus, according to Faber (1992), modifying brain chemistry could be a way to boost neurotransmission through compulsive purchasing. The relationship between brain chemistry and compulsive or addictive behavior may help to explain why one of the general hypotheses that aim to account for a wide spectrum of diseases views emotional arousal as a crucial element. purchase addiction (Faber, 1992; Jacobs, 1989).

2.2. Online Shopping and the evolution of E-commerce.

According to Javalgi and Ramsey (2001), E-commerce platform is a place where people connect and share, buy and sell goods as well as exchange information. The widespread use of other commercial channels, such as the phones, television, fax, or online payments, is a part of the e-commerce revolution. (Wen & Hwang, 2001).

The development of the Internet really does have a particular impact on the expansion of E-commerce.

Customers use the Internet for many purposes, including searching for features of the product, costs, or evaluations, choosing services via the Internet, placing the order, making

payments, or using any other way, which is then followed by Internet delivery of items over the Internet (Sinha, 2010). The process of purchasing products or services via the Internet is known as "online shopping behavior". It's also referred to as "Internet shopping and Internet shopping/buying behavior".

Consumer online shopping behavior has been one of the most significant study objectives in e-commerce over the last decade (Chen, 2009). Nowadays, there are multiple researches on online shopping behavior. According to Shafiee and Bazargan (2018) and Ladhari et al. (2019), online shopping is a singular, consistent activity that involves the sale of products and services via the Internet. In the previous year, Haubl & Trifts (2000) showed that online shopping is a transaction made by shoppers through a computer-based interface by which their computer is connected and able to interact with the retailer's digitized goods through the Internet. Besides, Monsuwe (2004) gave a definition of online shopping as the behavior of a customer when participating in buying activities via online stores or websites.

Thus, it can be understood that buying online is the process of purchasing groceries or services by shoppers through the Internet. Consumers could be able to buy digitally by using different tools, including personal computers, notebooks, tablet computers, smartphones, and smart speakers. They can use the shopping search engine to look up a wide range of goods and services based on images, along with product descriptions, features, and pricing details. In addition, online shopping enables them to check alternate retailers, which display the quality and pricing of the same product at various e-sellers.

2.2.1. The Advantages and Disadvantages of Online Shopping

In the technology era, buying online is no longer strange to the majority of people. With the development of information technology and scientific and technical equipment such as computers and smartphones, online shopping has become more popular than ever. The development of the Internet has given consumers benefits over traditional in-store buying. There have been many different research articles on the benefits of online shopping. But at the same time, it also has some disadvantages. Therefore, this section would like to give a better understanding of the advantages and disadvantages of online shopping by identifying and discussing studies by different authors.

2.2.1.2. The Advantages of Online Shopping

- No spatio-temporal boundary

Buying online do not have any spatio-temporal boundaries, which means that consumers can shopping from any distance at any time from any location such as their home or office as long as they connect to the Internet (Ho and Chen, 2013). The research of Abbad et al. (2011) pointed

out that online stores operate 24 hours a day, 7 days a week. That is the reason why customers would no longer have to worry about geographical distance or time limits. Besides Abbad's point of view, Monsuwé (2004) also stated that buyers can go shopping at any time of the day, regardless of day or night. Moreover, people who have little time to shop at brick-and-mortar stores, like office workers who only have time at night or on weekends for shopping, will find that online shopping is much easier for them. Shopping online will no longer affect work and daily life.

- Better prices

According to Elliot and Fowell (2000), one of the fascinating things about online shopping is that customers can buy goods at cheaper prices. At this time, Walsh and Godfrey (2000) also said that online stores have adopted a new strategy by personalizing services compared to brick-and-mortar stores at lower prices. Online stores are often focus on items and a large line of products that some traditional stores cannot due to their limitation of inventories. For example, to attract and retain customers, Amazon and eBay have been successful in selling low-priced items and large stocks. Moreover, because customers can browse into many stores at the same time when shopping via Internet, they can quickly evaluate the features and pricing of products and services provided by different market sellers, as prices for these commodities might vary greatly from one merchant to the next (Lester et al., 2005). From that, customers can choose suppliers with the most competitive prices. In addition, the research by Ho and Chen (2013) showed the main opinions expressed by respondents were that "online shopping helps us make online transactions with the best price by updating and comparing the pricing reference information of the other goods" and "getting a cheaper good due to e-vendors' promotion or sale-off program on special occasions". Therefore, in the online shopping process, customers can easily find many alternatives to suit their budget and needs.

- Convenient payment

Usually, when shopping at a traditional grocery store, buyers have to stand in line to pay, which takes a lot of time. In contrast, online shopping will be more convenient because customers will not have to wait to pay (Monsuwé et al., 2004). Technology has solved many problems, as well as diversified payment methods to fit the needs of consumers. Customers only need to sit at home, connect to the internet, select the items they want, pay online, and they will be delivered to their location, making it extremely safe.

When shopping online, you can choose between a number of different online payment methods. Not only can you purchase by Cash On Delivery, but you can also pay for your online

orders in different ways that are smarter and more convenient, such as paying by credit card or e-wallet.

- Recommendation

From buying intention to making purchasing decisions, customers are influenced by many factors, including the evaluation of other people. In online shopping activities, customers easily know the evaluations of others before making decisions. This is a significant aspect influencing customers purchasing decisions (Hsu et al., 2013). Because the online transaction process does not have direct contact between the seller and the buyer, feedback is considered a bridge between them. Reviews and recommendations are essential factors in determining buying decisions. Customers will check reviews and recommendations to understand more about the product description they intend to purchase. The research of Lepkowska – White (2013) showed that her research, as well as previous studies, both prove that recommendations are important to consumers. In short, a wealth of reviews and recommendations available online helps customers make an easy decision when shopping online.

2.2.1.2. The disadvantage of online shopping

- Product risks

The first limitation of buying online is that customers can not see the actual product and try it before purchasing (Lester et al., 2005). According to Kaur et al. (2015), many consumers do not have the intention to shop online since they cannot physically view as well as test the product and also lack the necessary information about the product. In contrast, customers in offline shopping can go directly to the store and touch, feel, or even try the product before making a purchase decision. Because of limited information, customers are unable to believe the exhibited goods. On online stores, the product is described through text, images, or videos (Kolesar and Galbraith, 2000; Lohse and Spiller, 1998), so customers cannot touch or try the product before buying (Lester et al., 2005). Besides, the product may not be as accurate as described, or the information provided by the seller may not be accurate. The quality of products is not guaranteed. Therefore, products or services when provided to consumers do not meet the expected requirements of customers. Thereby, this is one of the reasons why many people do not shop online (Choi and Park, 2006).

- The problems of information security

In the study of Lester et al. (2005), it was shown that information about credit cards of customers is at risk of being exposed when making online payments because websites can not guarantee absolute safety of data. The primary limitations to online shopping are security problems

and the availability of credit cards (Bashir 2013). Therefore, consumers are worried about their personal information being sold or exchanged between many websites once they give it to a seller on an internet site. When consumers pay online, if security cannot be effectively protected, or if the website is attacked by a hacker, consumers' personal details and account information will be affected or disclosed, resulting in significant losses. Because consumers feel they cannot totally trust suppliers, they may consider the reliability of the goods and merchants. This is the reason why many people stop online shopping because of financial insecurities (Masoud, 2013).

- Lack of face to face interaction

The lack of social communication is the third drawback of internet buying (Doolin et al., 2005; Liebermann and Stashevsky, 2002). In traditional shopping, buyers and sellers/salespeople are in direct contact with each other (Ho and Chen, 2014). However, in online shopping, the buyer does not have direct contact with the seller or salesperson, all their transactions are done through a website (Albesa, 2007). Therefore, people with a high propensity to socialize are less likely to buy online, instead choosing traditional sales channels (Albesa, 2007).

- Delivery risks

Another disadvantage of online shopping is slow delivery (Lester et al., 2005). Except for digital products (music, movies, software, books, newspapers, and electronic documents), when shopping online, customers have to wait a certain time from placing an order to receiving that item. When shopping at a brick-and-mortar store, customers can receive their goods immediately after purchasing them. In contrast, in online shopping, buyers worried that shipments will be postponed due to a variety of factors; company inability to deliver within the time frame agreed with consumers, or buyers are afraid that the groceries will be affected when handled and moved, or if they are not protected by packaging and handling during transportation (Claudia, 2012). According to Adnan (2014), product delivery has a significant impact on consumer buying behaviors. Furthermore, Adnan (2014) proposed that online merchants provide insurance coverage to online buyers in the event that an item is not delivered on time. Consumers are worried about not receiving products on time or facing delivery delays, leading to a high product delivery risk (Yeniçeri & Akin 2013). Koyuncu and Bhattacharya (2004) indicated that many customers were hesitant to shop online due to the risk of delivery.

2.3. Models predicting the determinants of online shopping behavior of consumers

After deeply analyzing all the research findings, we conclude with some observations about research. Below is a list of found-in-researches models that are merely or significantly related to

the topic of our research. These models would be a potential resource to design an ideal theoretical model for this research, with the most suitable variables to provide our theories with the most solid and structured support possible.

2.3.1. Model of factors influencing customers' online shopping behavior (Li et al., 1999)

Elements affecting consumers' online shopping behaviors have attracted a large amount of attention worldwide since it is well-witnessed the surge in online shopping status of consumers. Accordingly, Li et al. (1999)'s study has shown the integration of factors affecting online consumer behavior, such as demographics, channel knowledge, etc. The study took large-scale primary data online, enrolled 999 users in the US, and cross-examined with other national surveys such as Greenfield (1999) to retest the model. Although hypothesized about 10 relationships (refer to the figure below) with online shopping behavior, the study concluded 6 variables affected consumers' shopping status, which are education, convenience orientation, experiential orientation, channel knowledge, perceived distribution utility, and perceived accessibility.
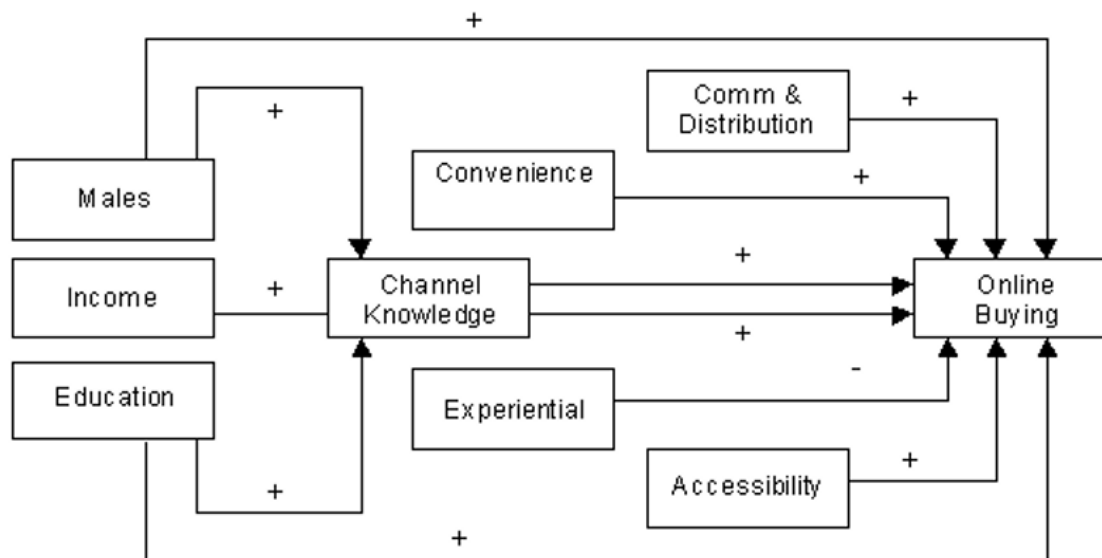
Figure 2.2. Proposed model of factors influencing customers' online shopping behavior (Li et al., 1999)

Accordingly, channel knowledge and education are considered to be the decisive factors for customers' buying behavior. High-profile people tend to be open and positive about new shopping approaches, so they might have a higher shopping frequency on e-store (*Li et al., 1999*). Similarly, knowledge of the channel will also make them feel secure about the process and products, leading to a greater trust in buying online (*Li et al., 1999*). However, this study is

considered to be ancient and lacks up-to-date properties, so testing and investigating emerging factors requires further research.

2.3.2. The relationships between atmospheric cues and the impulsive online shopping behaviour by Floh and Madlberger (2013)
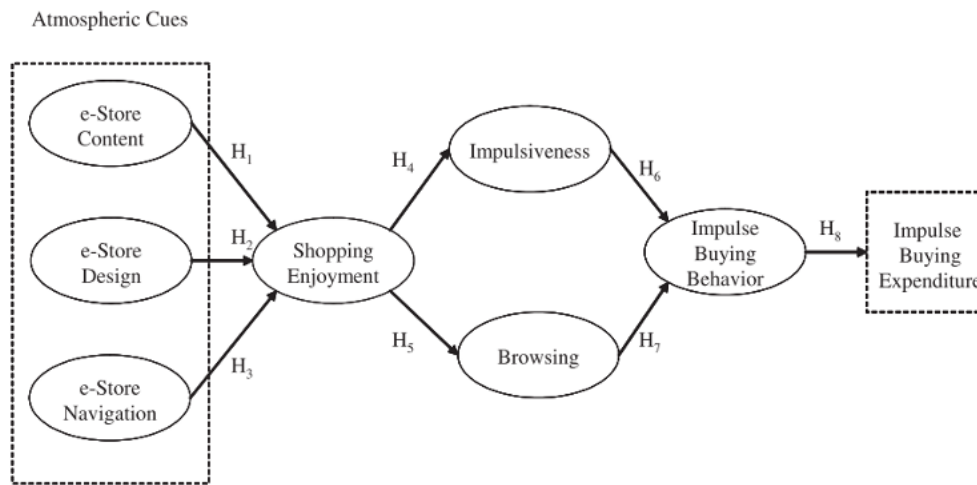
Figure 2.3. The relationships between atmospheric cues and the impulsive online shopping behaviour (Floh and Madlberger, 2013)

Floh and Madlberger (2013) extended the knowledge of individuals' online shopping behaviour by the stimulus–organism–response (S-O-R) model. According to Floh and Madlberger (2013), this theory explains personal behaviour-psychology by the external environment. In which, S represents stimulus - situations affect people's internal feelings (organism), arousing the response to such events - approach (positive react) or avoidance (negative react) (Buxbaum, 2016). Zhu et al. (2019) shared that this model helped to thoroughly understand the circulation of an individual's behaviour-psychology. The investigation of individual's online consumption shared that the impulsiveness for e-shopping had some similar characteristics as brick-and-mortar retailing. Collectively, this study utilised the short survey, established based on existing research on traditional physical retailing to search for the answer. Accordingly, content and designs play a crucial role in building customer's enjoyment, leading to a greater shopping desire. However, e-

navigation is prominent in lifting customer's impulsive shopping decisions. Since navigability helps customers browse e-store satisfactorily and fulfill their concerns without surfing on the Internet, it will leverage their enjoyment and higher buying decision. Although web-shopping will limit customers' experience through green screens, e-shopping surged rapidly due to the business's optimization of web-based designs and navigation. This study embedded that atmospheric cue such as designs and navigation leverage consumers' online shopping decisions, indicated as the following model.

2.3.3. Research model based on the SOR model by Islam et al. (2020)
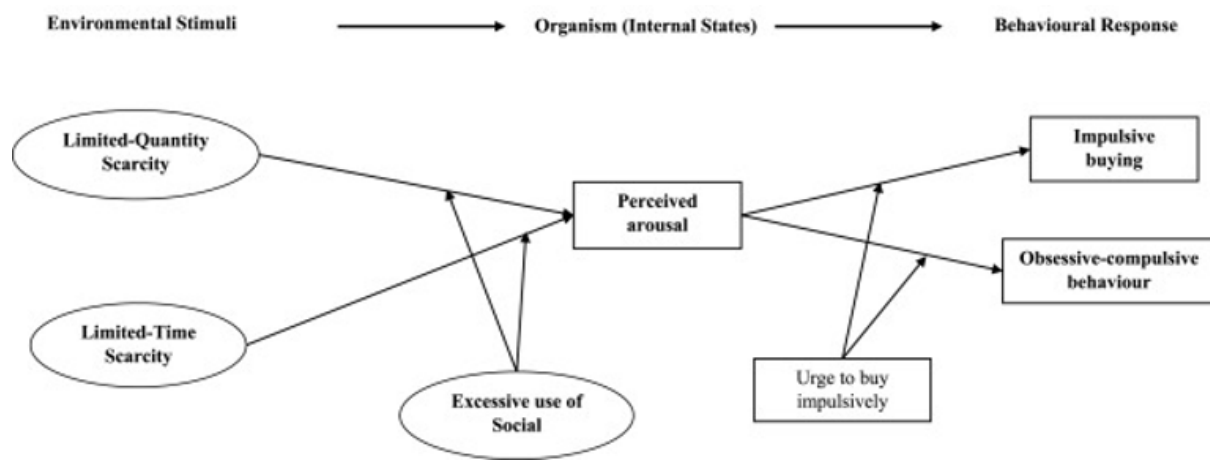
Figure 2.4.   Research model based on the SOR model (Islam et al. 2020)

It is well-acknowledged that COVID-19 pandemic influenced how people consume goods, especially online shopping (Islam et al., 2020). Islam et al. (2020) has a broader study population from the US, China, India and Pakistan. This research also leveraged the SOR model but combined with the Competitive Arousal model to have a more holistic view about issues under COVID19 situation. Specifically, certain characteristics of a competitive landscape can lead to Competitive Arousal because the setting increases physiological arousal and leads to a win-all mentality (Malhotra 2010). For example, in this case, when all food becomes scarce and time pressure increases the competitive stimulus of consumers, competitor motivation seems to shift away. The initial goal is to make the best decision and the new goal is to win at all costs. Also, this study utilised online surveys to collect data. The overall input was 151, 335, 334 and 261 from the USA, China, India and Pakistan respectively. Islam et al. (2020) agree that COVID-19 is a global crisis of the COVID-19 pandemic that has devastated the world economy and the health sector, causing a lot of fear, panic, and uncertainty for billions of people in the world. Therefore, consumer shopping behaviour has also become more changed than before the COVID-19 pandemic. Firstly,

consumption behaviour is stimulated by Limited Quantity Scarcity (LQS) and Limited Time Scarcity (LTS) (Islam et al. 2020). These two factors significantly increase the cognitive and emotional stimulation of consumers, leading to impulsive and obsessive buying behaviour of consumers. Islam et al. 2020 suggest that panic buying is a common consumer response before or after a disaster. Furthermore, LQS can be an effective external stimulus that creates head-to-head competition and promotes the purchase of a particular product. In addition, under high LQS conditions, an individual's cognitive competition with others is greatly increased, resulting in high levels of cognitive arousal. Moreover, when combined with LTS, consumer behavior occurs faster without time to evaluate and scrutinize product quality (Islam et al. 2020). Secondly, consumers are also influenced by social networks. Islam et al. (2020) states that social networks provide an opportunity for online users to obtain and share instant information as well as to build and maintain relationships. Thus, media contributes to increasing the influence of stimuli on cognitive arousal. In addition, this is also the cause of impulsive buying behaviour of consumers. Overall, competitive stimuli, time constraints, and media are the factors that affect consumer purchasing behaviour.

2.3.4. The model of factors affecting people's e-shopping during COVID19 pandemic (Ahmend et al. 2020)
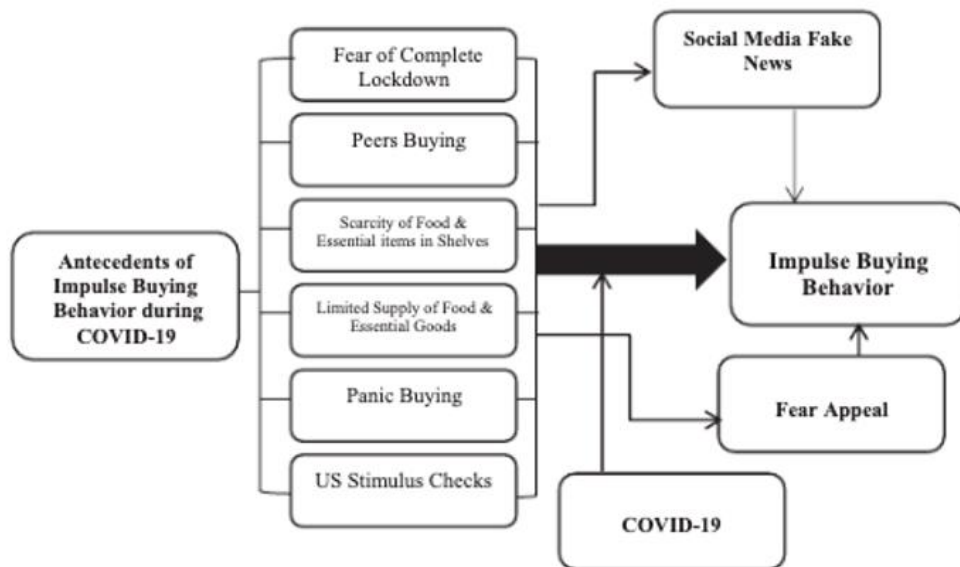
Figure 2.5. The model of factors affecting people's e-shopping during COVID19 pandemic (Ahmend et al. 2020)

Another report researched on consumer behavior during the COVID-19 pandemic by Ahmed et al. (2020). This study used the Conceptual and Theoretical Modified model based on

data from 889 US consumers during the COVID-19 pandemic, collected from the top US cities to assess the impulsive buying behaviour of consumers. The purpose of this methodology is to re-examine the conceptual structure table by designing a revised focus group to reflect contemporary social science theory (Lindsay & Hubley 2006). From this it can be pointed out that an important component has been missing from the usual conceptual structure, that is context dependence (Lindsay & Hubley 2006). This study utilised the SEM-based multivariate approach to test survey statistics. Accordingly, the COVID-19 pandemic is a prominent factor influencing customer's consumption behaviour since people could not go out during severe lockdown time while shopping is the essential need of people. As a result, virtual shopping seems to be the intelligent way to achieve their needs. Besides, the panic over city closures led to worries about the scarcity of daily food necessities, prompting consumers to shop to stock up on supplies. Therefore, consumers will buy more things than usual, sometimes double or triple the number of utensils and food in advance for a long time at home when stores and supermarkets are closed and difficult to buy food necessities. In this article, Ahmed et al. (2020) suggested that conflict makes consumer shopping behaviour faster without depending on the deep-thinking process about that product. In addition, people's purchasing behaviour is often influenced by other individuals in a peer-to-peer and fad society or bad news from social networks (Ahmed et al., 2020). Therefore, the COVID-19 pandemic created a similar peer-to-peer buying model in many countries worldwide. People are prone to impulsive and out-of-control buying behaviour due to negative and positive word of mouth from co-workers, neighbours, and peers. Thus, in this article, consumers are influenced by 2 factors: fear of lockdown and fake news about COVID-19 on social networks and below is the model set up by Ahmed et al. (2020).

2.3.5. A Conceptual Framework of COVID-19 Information and Impulsive Buying by Ali Mursid (2021).
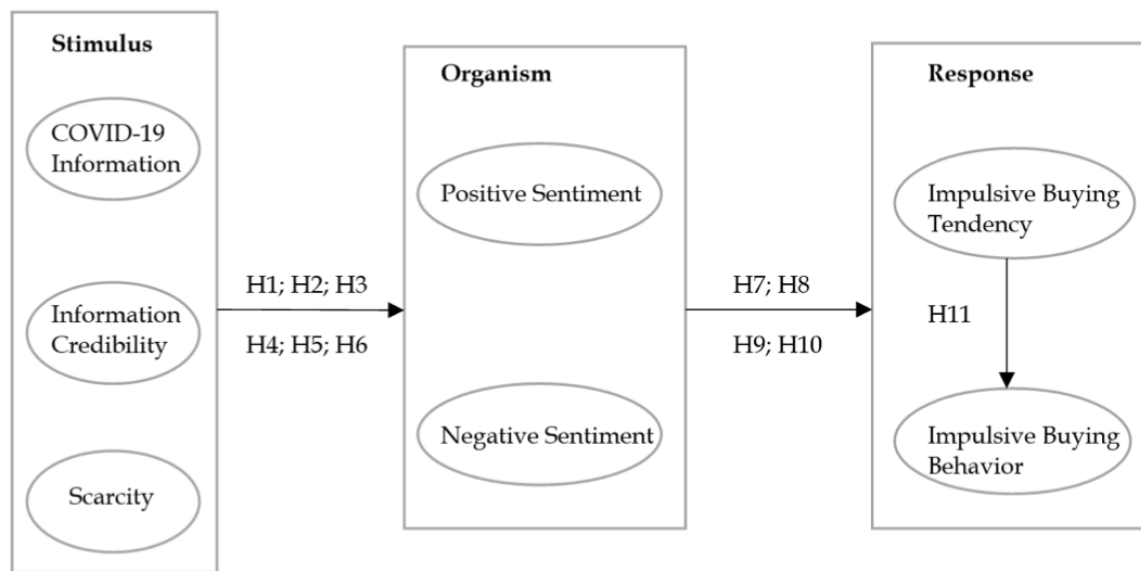
Figure 2.6. A Conceptual Framework of COVID-19 Information and Impulsive Buying by Mursid. (2021).

In 2021, Mursid also used the principle of stimulus organism response to examine the influences of 2 factors "positive and negative sentiment" on impulsive buying behavior based on 320 respondents from Indonesia in COVID-19 pandemic. After gathering the data, the author analyzed it using two methods: confirmatory factor analysis (CFA) and structural equation modeling (SEM). To begin with, the author discovered those two factors, "COVID-19 information and information credibility," had a favorable influence on "positive sentiment" but no impact on "negative sentiment."It explained that not almost all Indonesians have negative feelings about "COVID-19 information and information credibility"; this news does not make them unhappy, fearful, or depressed. Meanwhile, "scarcity" has a significant impact on "negative sentiment" but has no impact on "positive sentiment". Secondly, "positive and negative sentiment" all have a significant impact on "impulsive buying tendencies". According to the research, when customers have a "positive sentiment", it will also have a positive effect on "impulsive buying behavior". In contrast, negative sentiment has no effect. Consequently, impulsive buying tendencies influence impulsive buying behavior positively.

It can be seen that, most of the research papers use psycho-behavioural environmental models to analyse online shopping behaviours such as Concept and Theory Modification Model or SOR Model. In addition, the form of primary data collection through survey is also prioritized to optimize data accuracy. Through research, it can be seen that a variety of factors can affect

customer buying behaviours including external factors such as COVID-19, social media affecting consumer thinking and behaviour that leads to psychological factors such as impulses, obsessions, and fears about the COVID-19 pandemic. Accordingly, COVID-19 is the main factor leading to the change in online shopping behaviour of customers while COVID-19 occurs because of psychological effects for customers such as partial or complete closure of the city or fake news on social media. While psychological factors such as impulses, obsessions, and fear influence immature thoughts and behaviours before online shopping, making the buying process faster when not thoroughly evaluated the product because customers fear there will be shortages of food or needed products during the city lockdown. Finally, communication is an indirect factor, affecting the personal feelings and consumption behaviour of customers.

Variables influencing online shopping behavior	Li et al., 1999	Floh and Madlberger (2013)	Islam et al. (2020)	Ahmend et al. (2020)	Ali Mursid(2021)
COVID -19 Information				X	X
Demographic	X				
Convenience	X				
Social Media				X	
Impulsive Buying		X	X	X	X
Obsessive buying			X		
Perceived Arousal			X		
Fear of Complete Lockdown				X	
Pear Buying				X	
Scarcity				X	X

Figure 2.7: Synopsis of models predicting the determinant of online shopping behavior of consumers

2.4. Chapter summary

The content of the theoretical basis related to customer behavior in general and online purchase objective during the COVID-19 epidemic in particular in the Vietnamese market. All of the above theories talk about purchase intention, customer behavior, and related issues. Based on those theories, we developed a research model on factors having an influence on online buying decisions during the COVID-19 epidemic in Vietnam. The factors that are believed to influence customer purchase intention are fear of lockdown, peer buying, scarcity of goods, and perceived arousal.

III. THEORETICAL FOUNDATION AND HYPOTHESIS DEVELOPMENT

In this part, we will describe in detail the theories used as the theoretical basis of this study. Based on the foundation of such theories, there will be an analysis of how the hypotheses are developed.

3.1 Theory foundation

3.1.1 The theory of fear appeal

Although the term "the theory of fear appeal" is used in marketing research, it has not lately been employed (Witte & Allen, 2000). Fear appeals are convincing arguments created to convey the truth or to frighten individuals by emphasizing the dire results of ignoring a particular caution (Witte, 1992). Marketers apply this approach regularly to convince consumers to purchase their items (Mcdaniel & Zeithaml, 1984). Danger control and fear control are the two categories under which a fear appeal is controlled. While fear control results in emotional responses due to risk, danger control leads to adaptive behavior to deal with or keep away from danger (Przybylski et

al., 2013). People will have to deal with COVID-19 or act against it given the current study and the fact that there is definitely no evidence of controlling or treating it (Wegmann et al., 2017).

If the causal factor forewarns the receiver of danger, then increasing fear is associated with more enticement and compliance behavior. According to the parallel response paradigm based on fear appeals, people are more likely to take action to lessen danger if they perceive it to be greater (Laros & Steenkamp, 2005). People frequently use fear as a marketing tool in order to sell their products and services. Advertising for major issues like the COVID-19 pandemic and other diseases has repeatedly exploited the idea of fear appeals, according to Latour and Zahra (1988). Along with life insurance, politics, drug awareness campaigns, campaigns to prevent road accidents, and political activity are other causes for concern. In addition, other research has connected fear and impulsive shopping (Lin & Chen, 2012).

3.1.2 The Stimulus - Organism - Response model

Because it has been demonstrated both theoretically and practically that external stimuli have an impact on cognitive state, the SOR model is suitable for researching consumer behavior during the Coronavirus pandemic and person's emotions, which affects consumer behavior (Islam et al., 2018; Liu et al., 2016). The SOR model is used in this study to easily clarify the connections between environmental factors, internal biological processes, and particular outcomes. The SOR model has also been demonstrated to be a solid theoretical framework for studies examining impulsive purchasing behavior online. Personal direct messages and online users' over-reliance on social media are undoubtedly significant elements as social media usage expands dramatically across the world encouraging mental stimulation, which finally leads to panic buying. The application of the SOR model to our study will be covered in more detail below.

The Stimulus-Organism-Response (SOR) model, as defined by Mehrabian and Russell (1974), assumes that an individual's perception of the environment (background) influences experience, which in turn influences behavioral responses. The SOR model connects stimuli (such as external factors) that will affect organisms (such as people's cognition and emotion) and people's responses to the stimulus (such as behavior) (Jacoby, 2002; Mehrabian & Russell, 1974; Shen & Khalifa, 2012). Literature from the past has also demonstrated how different marketing tactics that use outside stimuli via SNSs affect online purchasing behavior. The huge rise in demand for food and other necessities during the COVID-19 era has turned into a major problem. The media is full with messages about scarcity, which may be very effective external stimulants for consumers. The "individual internal state" of an organism (O) was viewed by researchers as being dependent on the cognitive response to environmental inputs (Islam et al., 2017; Liu et al., 2016; Luqman et al., 2020). According to the SOR model, internal states act as a mediator between environmental

stimuli and user behavior (Organism). The organism has a crucial role in describing the overall link between external environmental conditions and personal behavior, according to previous research (Luqman et al., 2017).

The response of the SOR model is described as "the behavioral reaction reflects the behavior toward the stimulus created by the intervening organism response," by Mehrabian and Russell (1977). The reaction in the SOR model, which might be a continuation of a purchase intention or avoidance behavior, is the end result of the individual decision-making process, according to Chen and Yao (2018). While quitting use, hating brands, and switching brands are instances of negative behavioral outcomes, repeat purchases, intention to remain, impulsive buying, and obsessive buying are some examples of good behavioral outcomes. These outside influences raise one's perceived degree of arousal, which in turn increases one's behavioral goal (Wu et al., 2020). The competitive arousal model's impulsive and compulsive-compulsive buying behaviors are used in this study to examine panic buying in COVID-19.

Numerous researchers have used the SOR model to examine consumer behavior, including Jacoby (2002), Kim and Moon (2009), and Shen and Khalifa (2012). The SOR model has been used to investigate user behavior while interacting with information and communication technologies and online services, such as user auction behavior on mobile devices or consumer participation in online brand communities (Chen & Yao, 2018). (Islam & Rahman, 2017). Notably, Shen and Khalifa (2012) showed how the SOR model's direct stimulus, the Sense of Presence, influences users' impulsive purchase behavior during the experience. emotional encounter

3.2. Hypothesis development

Based on the two theories mentioned above, including the theory of fear appeal and the SOR model, we developed the research model of factors influencing buying behavior online in Vietnam during the COVID-19 pandemic onset. To be more specific, we have eight hypotheses below:

3.2.1. Fear of complete lockdown

COVID-19 originated in mainland China and then spread across the world. It is described as a dangerous pandemic by WHO. which leads many countries, including Vietnam, towards the final decision to close their borders and introduce complete social distancing in March of 2020 (Crabble, 2020; Iyer et al., 2020). According to Addo et al. (2020), the effect of COVID 19 is way more threatening than that of flu in terms of contagiousness. This causes a lot of countries, including Vietnam, to not only be forced to impose lockdowns but also cause people to quarantine themselves. According to Laura Knox et al. (2022). People who experience lockdown are more

likely to suffer from mental illness that can trigger people to feel stimulated and aroused. In fact, at the pandemic onset, people usually do not feel calm and relaxed but rather excited, stimulated, wide-awake, or something like that. Through the eyes of the S–O–R model, we expect that fear of complete lockdown acts as a stimulus and has a positively influential impact on the perception of arousal (Orgasim). As a result, we have a hypothesis:

H1: Fear of complete lockdown during COVID-19 increases consumers' perceived arousal.

3.2.2. Peer buyings

Peer buying is Peer-to-peer selling is a process where customers buy a product and share what they like about it with their peers, encouraging new sales. For instance, eating at a restaurant, staying at a hotel, or purchasing a new pair of shoes because you read a positive review online is peer-to-peer selling.When we buy something, other people are always our reference. In other words, customer buying behavior is the result of consulting other people's opinions, attitudes, in the form of trends and fashion (De Veirman et al., 2017). Peers are a source of change for ideas and emotional arousals, which result in attitude modification, according to (Haesun Park & Leslie Stoel, 2005). In fact, similar peer-buying patterns have been induced by the new coronavirus almost everywhere in the world, and Vietnam is not an exception (Suryaningsih, 2020). That means people's emotions have been influenced significantly by others' attitudes. Customers' emotional states are largely driven by other people around them (Crabble, 2020; Zhang et al., 2019). It is totally conceivable, because people have an inclination to look for advice from their friends and relatives or even neighbors. Especially during the pandemic, when people became more panicked, peers are important information sources for them from buying to emotion. Through the eyes of the S–O–R model, we expect that Peer buying acts as a stimulus, and has a positively influential impact on the perceived arousal (Orgasim). As a result, we have a hypothesis:

H2: Peer buying during the COVID-19 increases consumers' perceived arousal.

3.2.3 Scarcity of foods & essential items in shelves

The scarcity of food and essential items on shelves refers to the shortage of products. Scarcity of quantity is not a strange topic in marketing. Even so, during the pandemic, this story once again became a hot topic. According to Crabble (2020), and Kim & Su (2020), COVID-19 has created a wave of overflow of essential items. However, it could not exist for a long time because customers panicking to purchase grocery items like water, rice, and toilet paper caused the serious shortage of food and essential items. Besides, the images and videos of people flocking to supermarkets to stock up on items and long lines of customers are posted continuously on social media has an influential impact on people's arousal and their behavior (Iyer et al., 2020; Addo et al., 2020). Furthermore, when seeing others stock up items or "out of stock" signs both online and

offline, customers will have stimulated and arousing feelings. To be more specific, when walking into supermarkets and witnessing long counter-line in the early days of the COVID pandemic, people find themselves needing to buy the necessities immediately before it is too late, according to Crabble (2020) and Suryaningsih (2020). Thus, through the eyes of the S–O–R model, we expect that peer buying acts as a stimulus and has a positively influential impact on the perception of arousal (Orgasim). As a result, we have a hypothesis:

H3: The scarcity of essential products on shelves during the COVID-19 increases consumers' perceived arousal.

3.2.4. Limited supply of food & essential goods

Because of the fast rise of COVID-19 cases, which resulted in panic buying behavior, people started getting more involved in thinking about stock items than normal. As a result, the demand for essential goods and food was on the rise, and manufacturing was unable to meet the surge of consumers' demand, which led to a rise in customers' perceived arousal, as they were stimulated, wide awake, and aroused. Because of supply chain disruption and shortages of vital commodities in the market, people are further alarmed (Kim & Su, 2020; Rajan, 2020). More than that, according to Addo et al. (2020) and Kim (2020), the COVID-19 epidemic has caused supply and demand breaks throughout the world, and Vietnam is no exception. According to Guitton (2020) and Crabble (2020), misgivings regarding the feeling of limitation of the supply chain for food and other necessities have reached a critical point in terms of anxiety. The total supply chain for necessities was disrupted as a result of the abrupt rise in demand, which also caused people more arousal (CNN, 2020). As a result, consumers' anxiety increased under this circumstance, and they tended to engage in more impulse buying (Kim 2020). For all the reasons mentioned above and through the eyes of the S–O–R model, we expect that the limited supply of food & essential goods acts as a stimulus and has a positively influential impact on the perceived arousal (Orgasim) we have a hypothesis:

H4: Limited supply of food and essential goods during COVID-19 increases consumers' perceived arousal.

3.2.5. Panic buying

Limited supply of food and essential goods refers to the supply chain disruptions. Panic buying is an emotion when people are blamed for hoarding. The food shortages have been exacerbated by hoarding. According to the report of vnexpress (2021), the news of high infections, many industrial parks and residential areas were blocked, and rumors of city-wide closure made people aroused and continued to flock together to buy essential supplies during the outbreak of COVID-19 when the Vietnam government declared a state of emergency. Panic buying is

correlated with, negative emotion Lins and Aquino (2020). Guilt often develops when supply hoarders understand they are to blame for panic buying (Prentice et al., 2021). Outside of Vietnam, the panic to buy groceries and other necessities and non-necessities is also seen in Canadian cities as well as in American cities (Iyer et al., 2020). This kind of anxiety and impulsive shopping might exacerbate shortages (Zafar et al., 2019; Bergel & Brock, 2019). As a consequence, this is kind of a knock-on effect. That means, the more the shortage of goods, the more the arousal feeling. Hence, through the eyes of the S–O–R model, we expect that panic buying acts as a stimulus, and has a positively influential impact on the perceived arousal (Orgasim). Therefore, we have a hypothesis:

H5: Panic buying during the COVID-19 increases consumers' perceived arousal.

3.2.6. Vietnam stimulus check

On September 24, 2021, the Government issued Resolution to support employees and employers affected by the COVID-19 pandemic and to implement support for employees from October 1, 2021, and complete on December 31, 2021, at the latest (baohiemxahoi.gov.vn, 2021). Tax rebates had an impact on reducing stress and worry an increasing emotional well-being (Marta Lachowska, 2017), while according to the Cambridge dictionary tax rebate means an amount of money that is paid back to you if you have paid too much tax, which is money citizens do not expect to receive. We think that tax rebate is tantamount to COVID-19 stimulus checks because a stimulus check is also unexpected money that the government gives to people and manufacturers affected by COVID-19. Hence, through the eye of the S-O-R model, we expect that the Vietnamese stimulus check acts as a stimulus, and perceived arousal acts as an organism. Therefore, we have a hypothesis:

H6: Vietnam stimulus checks during the COVID-19 increase consumers' perceived arousal

3.2.7. Fear of covid 19

According to Kara Manning et al. (2021, an increase in anxious arousal symptom severity at greater levels of anxiety sensitivity was found to be associated with COVID-19 perceived stress. The fear of the COVID-19 pandemic has a detrimental effect on people's psychological health, such as anxiety symptoms in general Nelson C. Y. Yeung (2020). Besides, anxiety can cause changes in desire, energy, interests, and difficulty to sleep and concentrate according to the report of cdc.gov (2022). On the other hand, during the pandemic outbreak, people report having a greater positive effect, experiencing less perceived stress associated with COVID-19, and having better subjective health on days when they feel more appreciated than normal (Da Jiang, 2020). Indeed, consumers' perceived arousal rises or falls depending largely on how they feel about the danger of

COVID-19. Therefore, the feelings about COVID-19 act as an amplifier during the pandemic. Hence, we hypothesize the fear of Covid-19 moderates the relationship between the perceived arousal and all the stimuli aforementioned according to the S-O-R model.

H7a: The positive relationship between Fear of lockdown and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of COVID-19, the stronger the relationship.

H7b: The positive relationship between peer buying and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of COVID-19, the stronger the relationship.

H7c: The positive relationship between scarcity of food and essential items and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of Covid-19, the stronger the relationship.

H7d: The positive relationship between limited food and essential food and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of COVID-19, the stronger the relationship.

H7e: The positive relationship between panic and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of COVID-19, the stronger the relationship.

H7f: The positive relationship between Vietnam's stimulus check and perceived arousal is moderated by fear of COVID-19, in which the higher level of fear of COVID-19, the stronger the relationship.

3.2.8. Perceived arousal and buying behaviors

Emotion has long acted as a precursor for buying behavior. Indeed, Evgenia Gkintoni (2019) said that shopping addiction is a response to fear. Furthermore, the SOR model contends that certain marketing strategies or external stimuli raise the likelihood of consumers engaging in impulsive purchasing behavior. Previous studies imply that perceived arousal eventually influences purchasing decisions in the auction literature (Malhotra, 2010; Sneath et al., 2009). Besides, perceived lack of control and loss of possessions lead to stress, and event-induced stress impacts depression. Depressive states, in turn, lead to impulsive and obsessive-compulsive buying behaviors Sneath, J.Z. et al. (2009). In addition, negative and positive sentiment positively and significantly affect impulse buying behavior Ali Mursid (2021). For example, Adam et al. (2015) pointed out that scarcity in the number of items is associated with the perceived arousal of students in China in the online context. In the COVID-19 context, people's level of perceived arousal increases as the panic emerges from "out of stock" signs and quarantine times, which leads to the possibility of impulsive and obsessive-compulsive buying behaviors. Through the lens of S-O-R, we could expect that perceived arousal acts as Organism, while impulsive, obsessive-compulsive buying behaviors act as a response. Thus, we hypothesize

H8. During COVID-19, perceived arousal has a positive effect on impulse buying behavior.

H9. During COVID-19, perceived arousal has a positive effectt on obsessive-compulsive buying.

To conclude, we summarize all hypotheses in Figure 3.1 below.
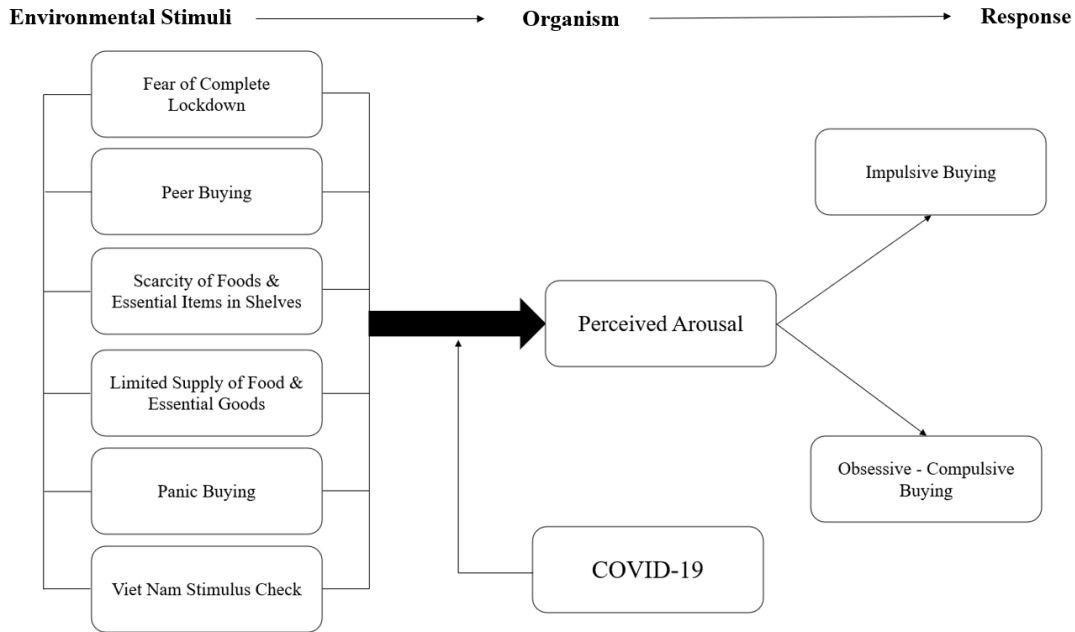
Figure 3.1: Model based on SOR model.

IV. METHODOLOGY

This chapter gives an explanation of the methodology used in this study, why this study was chosen, and how this study was developed. This chapter is classified into five sections: the introduction covers the research philosophy and research approach, research process, research methods, research design, and data sources. The best approach for the research is chosen based on the particular characteristics of each method.

4.1. Research Philosophy and Research Approach

4.1.1 Research Philosophy

According to Bajpai, N., philosophy is concerned with the beginnings, character, and development of knowledge (2011). A research philosophy is a body of principles that describe how information about a topic should be gathered, analyzed, and used. Even if it might not seem relevant, focus your thesis research on the concept of knowledge generation. As a consequence of your research topic, you will collect secondary and primary data, do data analysis, and generate new knowledge. You will gather secondary and primary data, do data analysis, and build new knowledge with the purpose of being able to react to this research question. In essence, assumptions must be recognized while discussing research philosophy in a thesis. There are four: pragmatism, hermeneutics, positivism, and realism.

- Realism: According to Saunders, Lewis, and Thornhill (2012), realism is a philosophical concept that is founded on the idea that reality is independent of the subconscious mind of a person. This is predicated on the notion that science advances human understanding. Direct and crucial causes of occurrences that we see with our senses may be separated into two categories.

- Positivism: Positivism is a scientific philosophy that bases its conclusions on factual knowledge and data gleaned from observations. As they are regarded as credible and representative, quantitative research methods include sociological surveys, favored positivists, structured questionnaires, government data, and more (Mackey and Gass, 2015).

- Hermeneutics: Interpretation theory describes methods that place a focus on the fundamentals of human nature as well as involvement in both cultural and social activities (Elster, 2007; Walsham, 1995). Additionally, it shows that human research approaches for discovering the truth are social constructs made by human beings, and as a result, expressly recommend the approaches used in the scientific method (Eliaeson, 2002; McIntosh, 1997).

- Pragmatism: As just a research methodology, pragmatism avoids debating contentious metaphysical ideas like reality and truth. Instead, it acknowledges that there could be one or more truths that are amenable to empirical research (Creswell and Clark 2011).

Conclusion

Overall, after examining four rationales, the research philosophy about determinants of online buying behavior during the COVID-19 epidemic in Vietnam is positivism. As previously indicated, by conducting surveys, occasionally observations, positivism keeps track of factual knowledge and information. It is advantageous to have research findings that are accurate and comprehensively applicable and compatible with research.

4.1.2 Research Approach

According to Saunders, Lewis, and Thornhill (2012), a study technique informs hypotheses and judgments about whether the results are valid or erroneous. Inductive, deductive, and abductive research methodologies are the three different categories.

A deductive method involves creating a hypothesis (or several hypotheses) based on the most recent theory, followed by a research strategy to evaluate the idea (Wilson, 2010). The process of reasoning deductively involves moving from the specific to the general. In many cases, a theory or case study that appears to suggest a causal relationship or correlation may be accurate. The validity of this relationship or link under more general circumstances might be investigated using a deductive approach (Gulati, 2009).

The inductive approach, also known as inductive reasoning, starts with observations and presents hypotheses as a result of those findings at the conclusion of the research process (Goddard and Melville, 2004). Inductive inquiry "involves the search for pattern from observation and the construction of explanations - theories - for those patterns" through a series of hypotheses (Bernard, 2011). Since no theories or hypotheses are necessary at the outset of an inductive inquiry, the researcher is free to change the course of the study once it has begun. It is crucial to emphasize that using an inductive method does not entail giving up on theories when developing research questions and objectives. The researcher can still formulate the research issue to be explored using current theory while still adopting the inductive technique. The inductive method looks for patterns and correlations in the data set that has been gathered in order to derive meaning from it and build a hypothesis. According to Saunders, Lewis, and Thornhill (2012). The foundation of inductive reasoning is the idea of learning via experience. To draw conclusions, patterns, resemblances, and regularities in experience (premises) are observed (or to generate theory).

Abductive methodology, in contrast to inductive and deductive approaches, enables the theoretical framework to be clarified, developed, or changed prior to, during, or after the research (Dubois and Gadde, 2002). As a matter of fact, abductive research alternates between more fictional and deductive attempts to test ideas, as well as inductive and open-ended study settings. In accordance with the theory of Dubois and Gadde, systematic combining, a method used in academic research, is a useful technique for advancing the social sciences.

Conclusion

Deductive technique is the most effective research methodology for this topic. Prior to making a choice, it is crucial to conduct a survey and critically evaluate the factors affecting the quality of the tourist experience and influencing customer satisfaction and propensity to return. The deduction procedures are used, and the result is absolutely accurate, assuming that all of the hypothesized propositions are true.

4.2. Research process

The research process used in this study is divided into 11 steps in 4 phases, according to Hair (2012), including Determine the research problem, choose the best research design, carry out the research design, and convey the research results. Below, each stage of the research process is detailed in great detail, with a special focus on how each stage was used for this research.

Phase 1: Determine the research problem	Step 1: Identify and clarify information needs
	Step 2: Define the research problem and questions
	Step 3: Specify the research objective and confirm the information value
Phase 2: Select the Research design	Step 4: Determine the research design and data sources
	Step 5: Develop the sampling design and sample size
	Step 6: Examine measurement issues and scales
	Step 7: Design and pretest the questionnaire
Phase 3: Execute the research design	Step 8: Collect the prepared data
	Step 9: Analyze data
	Step 10: Interpret data to create knowledge

Phase 4: Communicate the Research Results	Step 11: Prepare and present final report

Research process is the operation of collecting information, analyzing information, and interpreting information after analyzing and giving specific data.

4.3. Research Methodology

In this research, we used a quantitative research method.

- Definition

Quantitative research methods are used to collect data so that the information can be quantified and statistically processed (Creswell, 2003, p. 153). Besides, Creswell (2003) found that the quantitative method "employ strategies of inquiry, such as experimental and surveys, and collect data on predetermined instruments that yield statistical data" (p. 18).

- Characteristics of Quantitative Research

Henwood (1993) stated that since quantitative methods contain both quantity and numerical data, scientists find it less difficult to utilize than qualitative research. The goal of the quantitative method is to analyze the factors associated with the study purpose and investigate their relationship by turning data into mathematical and numerical statistics.

- Quantitative data format

Groups are categorized using the information gathered. such as quantities, figures, occurrences, and prevalence.

- Quantitative disadvantage

For studying individuals, and particularly human behavior, it is unproductive. Subjectivity results from the fact that many different factors affect how people react. There will be variations in how questions are perceived even when employing standardized measures. When participants interpret the researcher's questions differently than intended and give the proper answers, this happens.

- Quantitative advantage

According to the scientific method, quantitative research is a well-known and often utilized technique that many students have learned and employed. The primary advantage of this approach is that the results are valid, trustworthy, and generalizable to a larger population.

4.4. Research design

The methods used in research projects for collecting, analyzing, interpreting, and reporting data are known as research designs. It is a wide method for linking theoretical research concerns with essential (and potential) academic evidence. To put it another way, the study design details how the relevant data will be collected, evaluated, and used to address the research question (Grey, 2014).

- Step 1: The principal objective of this research is to identify the variables that influence changes in consumer online shopping behavior during the COVID-19 outbreak..

- Step 2: Literature review: identifying, synthesizing, and evaluating all scientific research around the problem or research question. It is the process of critically analyzing a relationship between different research results and relating all of them to the research.

- Step 3: Proposed model and hypotheses: Understanding the previous models in the above studies carefully, the research model for this paper develops and builds hypotheses on the previous models in the above studies carefully. Moreover, the research model also depends on specific case studies to suit the research process.

- Step 4: Quantitative Study: In order to confirm or reject a concept, quantitative research evaluates attitudes, actions, viewpoints, and other elements. This is done by collecting numerical data that may be easily measured and used to evaluate "statistical significance." To acquire "numerical data," closed-ended inquiries forms are employed. Following the distribution of the survey to your target population, the responses to each answer choice may be simply measured. Questions must be objective in order to collect and understand respondent data.

4.5. Data resource

There are various ways used in research to obtain information, which all fall into two categories: primary and secondary data (Douglas, 2015). In this research, we used both methods above to collect data

4.5.1. Primary data

Driscoll and Brize (2017) define primary data as information that has been obtained by a researcher from primary sources utilizing techniques like surveys, interviews, and testing...One of the important primary data sources is the survey method, which is used to collect quantitative information about things in the community. Surveys are used to collect data in a variety of settings, including the public and private sectors. The researcher can perform a field survey. Respondents were approached by the researcher in person, by phone, or by message. This method requires a large amount of time, effort, and money, but the data generated is very accurate, up-to-date, and

relevant to the problem. When questions are asked by a researcher, the survey is referred to as a structured interview or a researcher-managed survey. The survey was distributed to groups of online shopping enthusiasts in order to compile comments and determine the aspects that influence customer happiness and purchase intent.

The questionnaire consists of four sections. In the first section, people were asked to fill out demographic questions to determine the target respondents. The following section is a list of questions about their change in income, frequency of accessing online purchase applications, and online expenditure ratio during COVID-19.

Respondents were asked to rate their change. In section three, respondents will answer the question about their emotions during the time COVID-19 broke out. The last part, using the Likert scale, the respondents were asked to rate the degree to which they agree or disagree on the factors affecting online shopping behavior from 1 to 5 points with 1 (strongly disagree) and 5 (strongly agree).

4.5.2. Secondary data

Hakim (1982) defined secondary analysis as any extra analysis of an existing dataset that provides interpretations, conclusions, or information that is different from or additional to that which is offered in the initial report on the investigation as a whole and its primary results. Secondary data was chosen because of the efficiency and speed connected with the utilization of existing resources, as well as to expand the sample size of the research. Most research starts with a review of secondary sources and studies done by others in the precise area of interest in order to understand what is already known and what remains to be found about a topic. Given the growing availability of previously obtained data to researchers, it is necessary to clearly characterize secondary data analysis as a systematic research technique. They were asked to fill out demographic questions in the last section. Besides, we also use secondary data from websites, newspapers, or previous research.

4.6. Measurement Scales

Measurement model can be used in research to quantify the subject of the study. Which scale to choose will direct the researcher's analysis, and the questionnaire will be presented in a clearer manner. Nominal, ordinal, interval and ratio are the four main levels of measurement

(Stevens, 1946). This research uses a nominal scale, ordinal scale, and interval scale. Details of measurement for the variables used in our model are presented in the following part.

- **Nominal scales**

Since nominal scales are solely used for labeling or arbitrary categorization of variables, they are the weakest sort of measurement and the easiest to understand at the most fundamental level. People commonly use codes as a convention when discussing statistics, although these numbers have no mathematical significance and have no greater-than-or-less-than connection (Stevens, 1946). Only kind or type attributes like gender, race, and place of birth may be coded using nominal scales. Symbols that distinguish the groupings, such as numbers, symbols, colors, labels, or other images, are frequently employed as coding.

- **Ordinal Scales**

The ordinal scale, which expands on the nominal scale, is the second level of measurement. Despite the fact that both ordinal scales and nominal scales categorize data, the main distinction between the two is that ordinal data is ranked (that is, from highest to lowest), emphasizing how the data points relate to one another. The nominal scale employs non-numeric categories and groups the numbers according to the rank or worse convention, but we don't know how far off they are from one another (Stevens, 1946).

- **Interval scale**

Interval Scales, which expand upon the first two levels, go beyond categorization and sorting by specifying regular gaps, or intervals, between categories or data points. There are no absolute values on this scale, and their values may only be multiplied or divided by each other (Stevens, 1946). Like rating scales, interval scales provide a hierarchical relationship with ratings that are equal in value apart.

4.7. Measurement

4.7.1 Fear of a Complete Lockdown

Based on the study of (Zhang et al., 2019; Limaye et al. 2020), we choose a 4-item set of variable satisfaction in Table 4.7.1.

By referring to the empirical literature, we propose the following hypotheses:

Item code	Item	Reference
LOC_1	The fear of contiguous COVID-19 virus pushed me to buy and stock items	Limaye et al. (2020); Zhang et al., (2019)

LOC_2	The fear of shortages of items, and lockdown pushed me to buy plenty of essential items during COVID-19	
LOC_3	The fear appeal due to the COVID-19 pushed me towards buying essential & non-essential items	
LOC_4	The fear of lack of shipping makes me buy more items in each purchase	

Table 4.7.1. Measurement scale Fear of a Complete Lockdown

4.7.2. Peer Buying

We took a set of measurement questions from many researchers (Rajan, 2020; Zafar et al., 2019; De Veirman et al., 2017) with 3 items to measure for peer buying behavior in Table 4.7.2.

Item code	Item	Reference
PEE_1	I rushed for buying because of panic news spread by the peers, neighbors, & relatives.	Rajan, (2020); Zafar et al., (2019); De Veirman et al., (2017)
PEE_2	I was more involved in impulse purchases by seeing the plenty of buying of peers everyday.	
PEE_3	The peers buying has a significant impact on my daily grocery & other esvariable,sential & non-essential purchases.	

Table 4.7.2. Measurement scale of Peer Buying

4.7.3. Scarcity of foods & essential items in shelves

With 3 items to measure for the Scarcity Of Foods & Essential Items In Shelves, we combined a set of measurement questions from many studies (Addo et al., (2020); Allon & Bassamboo, 2011) in Table 4.7.3

Item code	Item	Reference
SCAR_1	The scarcity of essential items in shelves pushed me towards the impulse purchase	Addo et al., (2020); Allon& Bassamboo, 2011)

Item code	Item	Reference
SCAR_2	The scarcity of shelves has created a fear to purchase plenty of items	
SCAR_3	I involve more in purchases of essential & non-essential goods by watching the empty shelves	

Table 4.7.3. Measurement scale of Scarcity of foods & essential items in shelves

4.7.4. Limited supply of food & essential goods

Based on Addo et al., (2020); Zhang et al., (2019), individuals are making a lot of impulsive purchases and experiencing unanticipated panic purchasing. There are 3 items to measure the variable in Table 4.7.4.

Item code	Item	Reference
LIM_1	The limited supply of groceries and other essential items forced me to buy more & more goods	Addo et al., (2020); Zhang et al., 2019)
LIM_2	The shortages of supplies worried me, and I stocked items	
LIM_3	The limited supply of essential & non-essential goods motivate me to buy plenty of items and stock them	

Table 4.7.4. Measurement scale of Limited supply of food & essential goods

4.7.5. Panic buying

Based on Addo et al., (2020); Rajan, (2020); Zafar et al., (2019); Bergel & Brock, (2019), Panic buying is the main factor to study the shopping psychology of customers during the Covid-19 pandemic. There are 3 items to measure the variable in Table 4.7.5.

Item code	Item	Reference
PAN_1	I leaned the COVID-19 was spreading then I rushed to purchase grocery and other essential items	Addo et al., (2020); Rajan, (2020); Zafar et al.,(2019); Bergel & Brock, (2019)

Item code	Item	Reference
PAN_2	The panic buying of customers turn me towards the same attitude and I also buy in the same manner	
PAN_3	I was quite dominated by the panic buying and stocked plenty of essential & non-essential items during COVID-19 phenomenon	

Table 4.7.5. Measurement scale of Panic Buying

4.7.6. Vietnam stimulus checks

According to Addo et al., (2020); Rajan, (2020), the research shows that the majority of customers responded that they would pay their bills, buy groceries, and other necessities. But other middle-class buyers swore to set aside this cash for tough times. There are 3 items to measure the variable in Table 4.7.6

Item code	Item	Reference
STI_1	The stimulus checks I received unexpected money that further push me towards more purchases	
STI_2	Most of the money from stimulus checks was used in essential items	Addo et al., (2020); Rajan, (2020)
STI_3	I used stimulus checks in buying for both essential and non-essential items	

Table 4.7.6. Measurement scale for Vietnam Stimulus Checks

4.7.7. Covid-19

Beyond epidemiology, the deadly COVID-19 outbreak has wider ramifications that affect consumer purchasing behavior not just in the United States but also in other countries throughout the world (Addo et al., 2020). There are 3 items to measure the variable in Table 4.7.7

Item code	Item	Reference
COVID_1	COVID-19 is a deadly contiguous virus that changes the lives of every individual	Addo et al., (2020)
COVID_2	COVID-19 phenomenon has a significant impact that changes the daily purchase behavior of consumers	
COVID_3	COVID-19 was a factor that created fear, and ultimately responsible for the every incidence related for surviving an individual	

Table 4.7.7. Measurement scale for COVID-19

4.7.8. Impulsive Buying

External triggers have the power to trigger impulsive purchasing. However, Ridgway, Kukar-Kinney, and Monroe (2008)) contend that internal stimuli are also connected to personal emotions, in addition to exterior stimuli. According to Ridgway, Kukar-Kinney, and Monroe (2008), those who have poor confidence, unfavorable emotional states, or negative thoughts may find relief by engaging in impulsive purchasing. There are 2 items to measure the variable in Table 4.7.8

Item code	Item	Reference
IB_1	During the COVID-19 pandemic, my purchase was spontaneous.	Ridgway, Kukar-Kinney, and Monroe (2008)
IB_2	During the COVID-19 pandemic, I can't resist buying merchandise if I really like it.	

Table 4.7.8. Measurement scale for Impulsive Buying

4.7.9. Obsessive-Compulsive Buying

Obsessive-compulsive purchasing behavior, often known as shopping addiction, is a mental health issue marked by persistent, excessive, and uncontrolled activity despite warnings concerning its negative psychological, financial, and occupational effects. (Ridgway et al. 2008 & Monahan, Black, and Gabel. 1996). There are 4 items to measure the variable in Table 4.7.9.

Item code	Item	Reference
OB_1	During the COVID pandemic, I spent more money buying the merchandise than I expected	Ridgway et al. (2008)& Monahan, Black, and Gabel (1996)
OB_2	During the COVID pandemic, my kitchen closet has unopened shopping bags of these groceries in it.	
OB_3	During the COVID pandemic, Others might consider me a shopaholic to buy groceries.	
OB_4	During the COVID pandemic, much of my life centers around buying things from the supermarket.	

Table 4.7.9. Measurement scale for Obsessive-Compulsive Buying

4.7.10. Perceived Arousal

According to Mehrabian and Russell (1974), people's perceived arousal levels increase when panic attacks arise from "out of stock" signs and periods of isolation, leading to the possibility of emotions including both negative and positive. There are 4 items to measure the variable in Table 4.7.10.

Item code	Item	Reference
PER_1	Indicate to what extent you feel this way at the time, that is, during COVID pandemic moment: Relaxed-Stimulated.	Mehrabian and Russell (1974)
PER_2	Indicate to what extent you feel this way at the time, that is, during COVID pandemic moment: Calm-Excited.	

Item code	Item	Reference
PER_3	Indicate to what extent you feel this way at the time, that is, during COVID pandemic moment: Sleepy-Wide awake	
PER_4	Indicate to what extent you feel this way at the time that is, during COVID pandemic moment: Unaroused-Aroused	

Table 4.7.10. Measurement scale for Perceived Arousal

4.7.11. Control Variables

To evaluate more precisely the impact of the proposed hypotheses. We decided to use some control variables. Anything kept constant or constrained in a research study is referred to as a control variable. Despite not being relevant to the study's objectives, this variable is controlled because it might have an impact on the results. These variables were chosen because previous studies suggest that they have the potential to influence online purchase behavior.

- Age

Age is an important demographic aspect that has an influence on online shopping customer behavior since each type of age has different buying decisions (Gurmu & Etana, 2014). For example, younger buyers are more likely to make an online purchase since they have greater computer skills and a vast awareness of the internet. Older customers, on the other hand, consider a higher level of danger when shopping via the internet.

- Online buying experience

According to Vijayasarathy and Jones (2000), shopping online experiences were substantially related to attitudes about online purchasing and intent to buy online. Those who have proficient experience in online shopping will have more knowledge and skills than newbies and normal people.

- Marital Status

According to Kim and Kim (2004), marital status and family size were positively related to online shopping. Marital status includes single, divorced, married, and widowed.

- Gender

Each gender has different buying behaviors because they have different needs wants, and lifestyles (Oakley, 2016). Men's and women's purchasing habits differ significantly. Women may consider buying online to be riskier than men.

- Location

As for location, people living in urban areas will have many opportunities to be exposed to a variety of goods. Meanwhile, people living in rural areas with few stores will tend to shop online to save time visiting brick-and-mortar stores (Ren and Kwan, 2009).

- Standard

According to Burroughs and Sabherwal (2001), education affects internet buying acceptability and adoption. The more educated a person is, the more knowledge and skills they will have when shopping online. Therefore, they will be more likely to participate in online shopping than the rest of the groups.

- Occupation

Occupation is considered a variable in this study since it is argued that people with different occupations have varied needs and, as a result, have unique buying behaviors for specific items (Armstrong and Kotler, 2003).

Note: All control variables above are measured by a nominal scale. And, we use them with dummy variables. Besides, there are 3 control variables used: income, frequency of accessing online purchase applications, and online expenditure ratio. These variables use an interval scale (Likert) to rank the level of agreement on a scale from 1) Strongly disagree to 5) Strongly agree. The reason why we choose those is that they have an important influence on perceived arousal, which may result in impulsive buying and obsessive-compulsive buying.

- Change in frequency of accessing the online purchase application during and before the pandemic (Frequency)

Close and Kinney (2010) declared that the frequency of using online shopping baskets will influence customers' behavior. The more often people visit the shopping app, the more likely they are to engage in purchases with those who have less access.

- Change in Income during and before the pandemic (Income)

Income has a significant impact on internet purchasing behavior (Ryscavage, 2015). High income will affect arousal perception because people with high incomes will make purchasing decisions more quickly than people with low incomes.

- Change in Online expenditure ratio during and before the pandemic (Ratio)

According to Hi Po Bobo Lau (2013) pointed out that emotions (positive and negative) are associated with willingness to purchase. Hence, we think that each group with a different change in online expenditure ratio during the pandemic compared to the past will affect our perceived arousal, which may lead to buying decisions.

4.8. Target sample

The objective of the survey is to find out factors affecting satisfaction and intention buying to customers.

- Survey type: Online survey

- Age: All types of age

- Gender: Male/ Female and Others

- Expected number of respondents: 350

- Scope of the research: Vietnam

- Occupation: All

4.9. Data analysis method

We use SmartPLS Software to evaluate structural equation modeling (SEM) in this research. According to Anderson and Gerbing (1988), SEM could be used to examine and alter theoretical models. What's more, compared to multiple regression models, SEM seems to have greater levels of prediction (Lee et al., 2011). To be more specific, PlS-SEM was used instead of CB-SEM because our purpose was to find factors that significantly affect student happiness (Becker, Rai, and Rigdon, 2013). Moreover, PLS-SEM is superior to CB-SEM with regard to sample sizes. In other words, PLS-SEM can do well with small sample sizes (Hair et al., 2010). A total of about 300 observations were collected. Because of its small size, the PLS-SEM method is advised to use in this study. The reason is a specific link is more likely to be statistically significant when it is analyzed in the population when using PLS-SEM (Hair et al., 2010).

Our assessment is done in two different parts when using PLS-SEM to analyze results (Hair et all., 2010). Besides, control variables are added to the model for better performance. The first analysis is called measuring instruments (measurement scales), and the second one is analyzing the relationship between constructs.

4.9.1. Descriptive analysis

In general, descriptive statistics are statistics that summarize a population, which can represent the basic features of a data set. Descriptive statistics include concentration trends and volatility indicators. The mean, median, and mode are measures of data, while standard deviation, variance, min, and max are indicators of volatility. They serve as the foundation for almost all quantitative study of data, along with straightforward graphical analysis.

4.9.2. Test of measurement models

4.9.2.1 Outer loading

Outer loading is an indicator pointing to the extent of the relationship between the observed variable and latent variable. Hair et al. (2010), the outer loading value should be larger than or equal to 0.708 for the quality-related observed variable. Since $0.708^2 = 0.5$, meaning that the latent variable can explain 50% of the variation of the observed variable. However, we can round that number to 0.7 instead of the odd number 0.708. In conclusion, the outer loading value is required to be greater or equal to 0.7 (Hair et al., 2010).

4.9.2.2 Reliability test

- Cronbach's Alpha

Evaluating Cronbach's Alpha scale's dependability aids in determining the qualification and dependability of the latent factors observed variables. It demonstrates whether an observed variable has helped to measure the notion of the factor or not. The observed variables we provided are outstanding, displaying the traits of the latent factor, and having an excellent scale for this factor, according to the Cronbach Alpha results for the significant factor.

Cronbach's Alpha coefficient value level (Hoang Trong, Chu Nguyen Mong Ngoc (2008)):

- From 0.8 to close to 1: the scale is excellent.
- From 0.7 to close to 0.8: the scale is usable to use.
- From 0.6 and above: the scale is qualified.

In conclusion, we will use the standard Cronbach's Alpha ≥ 0.7 (DeVellis, 2012).

- Composite Reliability

However, many researchers choose Composite Reliability (CR) over Cronbach's Alpha because CR estimates reliability well while Cronbach's Alpha underestimates it. According to Chin (1998), the CR for exploratory research should be 0.6 or greater. The CR index should be set at the threshold of 0.7 in confirmatory investigations (Henseler and Sarstedt, 2013). According to Hair et al. (2010), Bagozzi and Yi (1988), said that a level of 0.7 is the acceptable value (1988). In conclusion, we will use the standard Composite Reliability $CR \geq 0.7$(Bagozzi and Yi, 1988)

4.9.2.3. Average Variance Extracted, Fornell Larker Criteria and Heterotrait-Monotrait Ratio

We will rely on the Average Variance Extracted (AVE) in order to assess the convergence on SMARTPLS. If the AVE is 0.5 or greater, a scale has reached convergence (Hock and Ringle, 2010). The average latent variable can explain at least 50% of the variation in each observable variable.

Average Variance Extracted $AVE \geq 0.5$ (Hock and Ringle, 2010)

We apply the heterotrait-monotrait ratio (HTMT) proposed by Henseler, Ringle, and Sarstedt (2015) as well as the Fornell and Larcker (1981) criteria to assess the discriminant validity of the notion.

When compared to other structures in the model, the structure's discriminant value shows how unique it is. According to Fornell and Larcker (1981), √(square root of the AVE) is the standard method for evaluating discriminant . Yet, this conventional approach has flaws and then it requires a more accurate evaluation technique. Henseler et al. (2015) introduced the HTMT index, which is a better tool for evaluating discriminant validity. Both of these discriminant measures are used by SMARTPLS, although we still prioritize HTMT more.

When the HTMT index is less than 1, according to Garson (2016), the discriminant value between the two latent variables is guaranteed. According to Henseler et al. (2015), if this value is lower than 0.9, it will definitely be discriminatory. While Kline (2015) and Clark and Watson (1995) have a stricter threshold of 0.85. In the evaluation, SMARTPLS prefers a 0.85 threshold choice.

In general, we use: $\sqrt{AVE} >$ Correlation between latent variables (Fornell and Larcker, 1981) HTMT ≤ 0.85 (Kline, 2015).

4.9.3 Test of structure model

4.9.2.1 Variance inflation factor

Evaluate multicollinearity among latent variables. This is the most important item, because multicollinearity between the independent latent variables is a serious problem. According to Hair et al. (2010), the authors' suggested criterion for measuring variance inflation factor (VIF) is as follows:

- VIF ≥ 5: The probability of multicollinearity appearing is very high.
- 3 ≤ VIF ≤ 5: Multicollinearity may be encountered
- VIF < 3: Possibly no multicollinearity

4.9.3.2. R square

The values range of R2 is from 0 to 1, with higher values indicating greater explanatory power. R2 values of 0.75, 0.50, and 0.25 might be categorized as being correspondingly substantial, moderate, and weak (Henseler, Ringle and Sinkovics, 2009; Hair, Ringle and Sarstedt, 2011).

The more independent variables are included, the more R2 will grow. It has also been demonstrated that the more independent variables involved, the better the coefficient R2.

The importance of modified R2 is equivalent to that of R2, which measures how well the model fits the data. Because adjusted R2 more accurately reflects the level of fit of the multivariable linear regression model, the adjusted R2 derived from R2 is utilized more commonly. As we increase the number of independent variables in the model, the adjusted R2 does not necessarily rise. It is safer to use the modified R2 value, which does not overstate the model's fit when compared to the R2 value, to assess the model's fit.

4.9.3.3. f square

The indicator used to assess each independent variable's impact on the dependent variable is called the effect size f2 (f Square). Effect size f2 can assess the relative importance of the independent and dependent variables when it comes to significance. Additionally, f2 proposed thresholds to assess the potency of factors. The SEM model's independent variables will each have a f2.

Cohen (1988) suggested the following thresholds for the f2 index to assess the significance of independent variables:

- f 2 < 0.02: the effect is extremely small or has no effect.
- $0.02 \leq$ f 2 < 0.15: small impact.
- $0.15 \leq$ f2 < 0.35: medium impact.
- f 2 $\geq$ 0.35: high impact.

4.9.3.4. Path coefficient and P-value

Original Sample and P Values are the two conditions that must be taken into account in this section. Original Sample refers to original data's normalized impact coefficient. The t-significance test's level is expressed as a P-value. P-values are compared to determine the level of significance using comparison thresholds like 0.05, 0.1, or 0.01. (Commonly 0.05).

4.9.3.5. IPMA (Importance-Performance Map Interpretation)

The importance-performance map analysis (IPMA) was completed after the suggested model was examined. The importance here is understood as the extent of the impact of that independent variable (unstandardized) on the dependent variable. The performance here is understood as the mean (mean) of that independent variable. A variable of high importance but low performance means that a variable has a strong effect but has a low mean. The researcher should consider increasing the mean score of that variable. Since it integrates the important analysis and performance components in PLS-SEM software, these new discoveries using IPMA have additional consequences for management actions (Ringle and Sarstedt, 2016). The research makes it possible to pinpoint the areas that require special attention (Shmueli et al., 2016). Additionally, IPMA may make suggestions regarding which constructions should be given priority

(Ringle and Sarstedt, 2016). Therefore, IPMA helps businesses identify high construct performance so that these constructs can receive attention in the future and low construct performance so that future performance can be improved ((Hock, Ringle and Sarstedt, 2010).

In the diagram, the grid has four quadrants: Quadrant I, Quadrant II, Quadrant III, and Quadrant IV.

- Quadrant I: High performance, low importance
- Quadrant II: High performance, high importance
- Quadrant III: Low performance, high importance (most concerned)
- Quadrant VI: Low performance, low importance
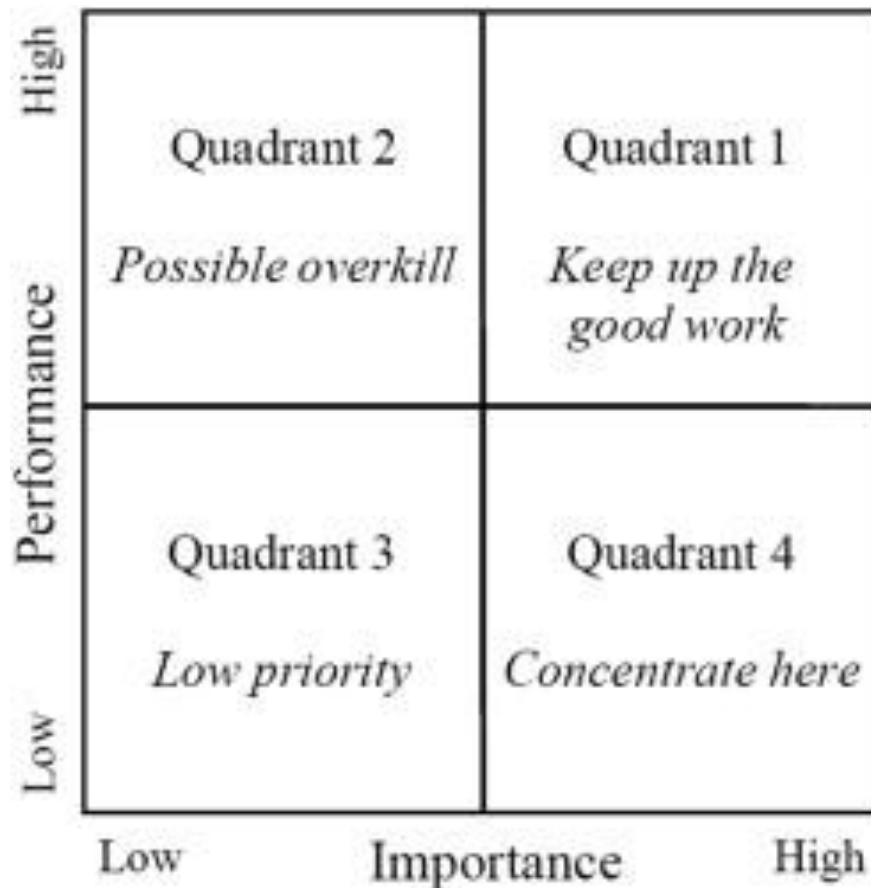
Figure 4.1: IPMA Theory Interpretation

4.9.4. Testing the mediating effect

According to Baron & Kenny (1986), a variable is determined to play a mediating role if it satisfies the following three conditions at the same time. However, we just need to use specific indirect effects and total indirect effects to judge mediating variables when using PLS-SEM. We also use a p-value to evaluate the effect (the threshold used is 0.05 and <0.1).

V. RESULTS

This chapter focused on the research context of the determinants that influence online buying behavior in Vietnam during the COVID-19 epidemic.

The analyses relevant to the research question, as well as the results of those analyses. First, descriptive analysis, which includes preliminary and demographic analysis. Second, PLS-SEM model evaluation in inferential analysis involves two steps: confirming the measuring model's reliability and validity, and analyzing the sign and significance of structural relationships between constructs. Finally, the analysis and findings of the Importance-Performance Map will be presented.

5.1. Descriptive statistics

The survey was collected over three weeks (from July 1 to July 31, 2022). The total of collected samples is 350 online survey samples. After rejecting invalid samples, a total of 338 samples are finally selected for further analysis of data.

5.1.1. Respondent profile

In the analysis connected to the frequencies we acquired, we can see that the obtained data is split by gender, age, job, marital status, location, and shopping level. The analysis reveals which set of objects occupy the majority of the gathered data. When the survey is published, it is clear that the percentage of males and females is distinct and uneven. Females accounted for 54% of the total, while males accounted for a smaller number at 46%.
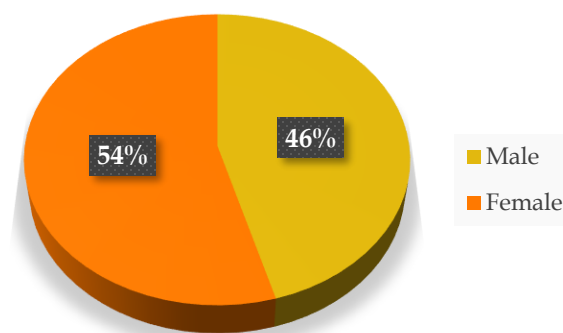
Figure 5.1: Gender of respondent profile.

As for age, we were divided into 5 main categories, which are 20 below, 21 to 30 years old, 31 to 40 years old, 41 to 50, and above 50. The largest proportion is in the group of 21–30 years old (accounted for 56%). The proportion of the group 41 to 50 years old was 9% and the percentage of the group 31 to 40 years old accounted for 17%, which fairly resembles the under 20 years old group (16%). The smallest number was 2%, which is the percentage of groups over 50 years old.
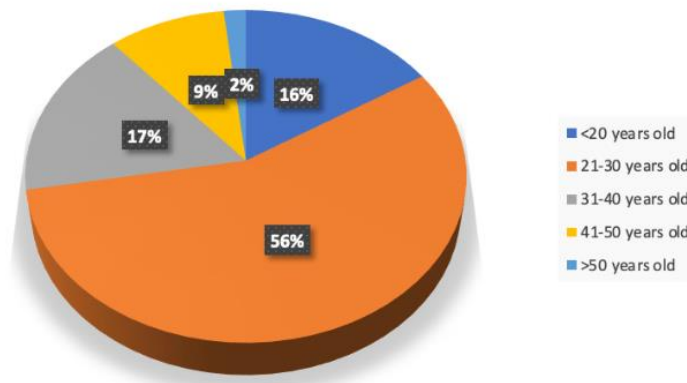
Figure 5.2: Age of the respondent profile.

There are four levels of education for respondents including High school, College degree, University Degree and Post-graduate. The largest percentage is group University Degree level at 66%. The number of people attending College degree and High school are the same and consisting of trivial proportions both account for 9%, which are not of great import as University Degree level. The rest of the level is Postgraduate only making up 16% of the total.
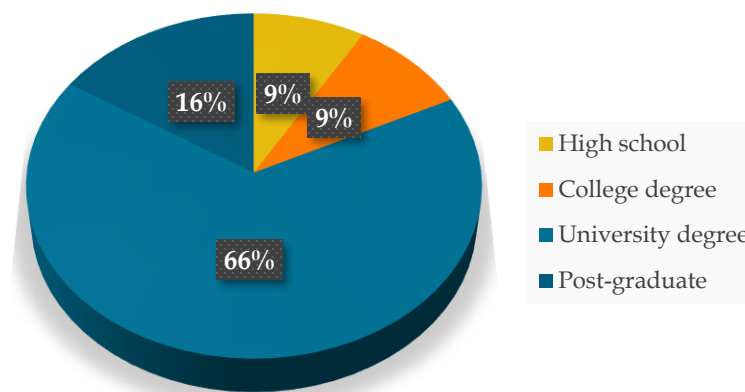
Figure 5.3: The level of standard of the respondent profile.
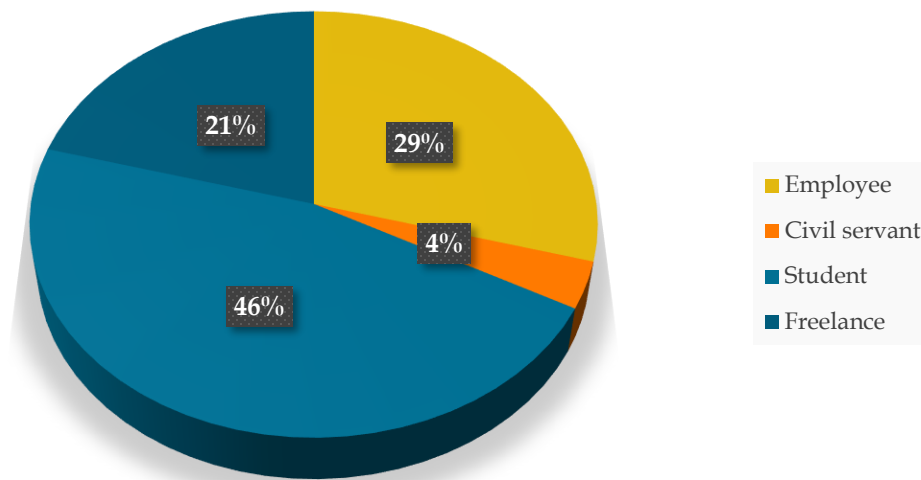
Figure 5.4: The occupation of respondent profile.

In this research, occupation also yields intriguing data. We have categorized occupations into four groups: employee, civil servant, student, and freelance. As can be seen in chart 5.4, the highest percentage of respondents' career percentages is students (46%). The figures for freelance and employee are slightly lower, at 21% and 29%, respectively. Meanwhile, only 4% of the total was generated by civil servants.
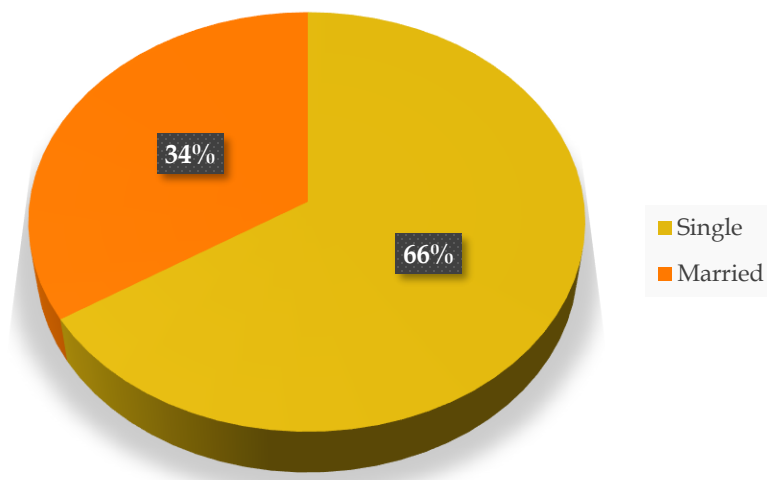
Figure 5.5: The marital status of the respondent profile.

The pie chart shows the proportion of marital status of people who answered the survey. We have categorized marital status into two categories: single and married. It is clear from the charts that the proportion of single people at the highest peak accounts for 66%. Meanwhile, only 34% of the total people are generated by married people.
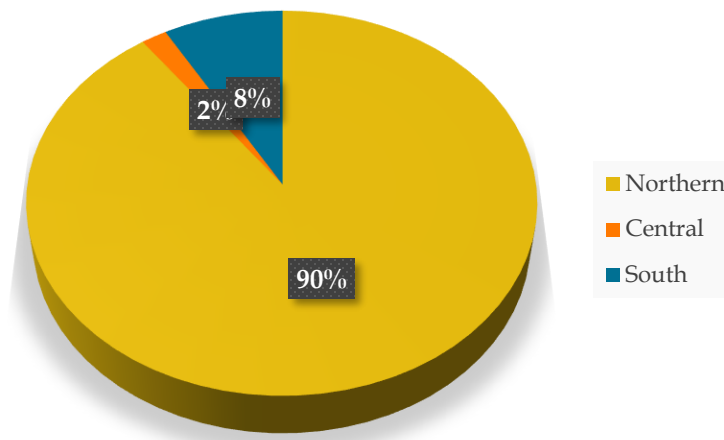
Figure 5.6: Regional respondent profile.

In the regional section, it was divided into 3 main regions, which are Northern, Central, and Southern. A very large majority are those living in the North, accounting for 90% of the total.

Besides, 8% was collected from people living in the South and the smallest proportion of people living in the Central region accounted for 2%.
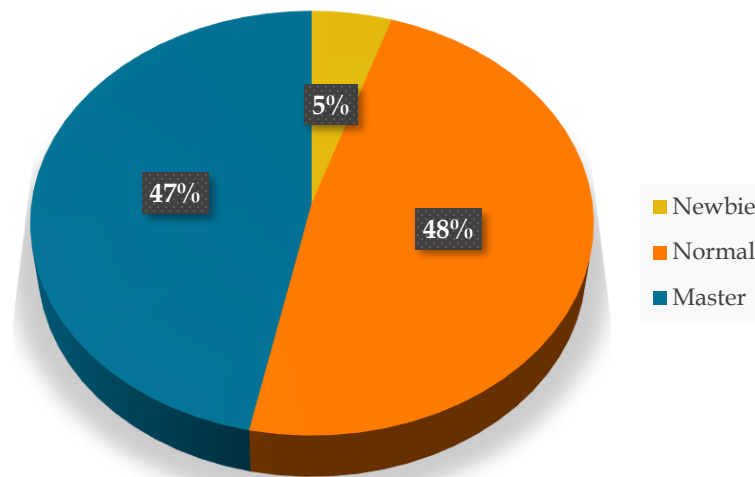
Figure 5.7: Shopping online experience of respondent profile.

This is further demonstrated by the question, "Have you ever shopped online?" According to the statistics, 48 percent of people participate in online shopping at a normal level. Chasing closely behind the peak is a group of people Master in shopping online, which account for 47%. The figure for the newbie group is insignificant, which made up only 5%.

5.1.2. Data summary

Table 5.1.2. Descriptive Statistics

	Mean	**Median**	**Min**	**Max**	**Standard Deviation**
PER1	3.503	4	1	5	1.167
PER2	3.207	3	1	5	1.135
PER3	3.121	3	1	5	1.131
PER4	3.272	3	1	5	1.173
LOC1	3.314	3	1	5	1.313
LOC2	3.331	3	1	5	1.198
LOC3	3.376	4	1	5	1.218
LOC4	3.29	3	1	5	1.213
PEE1	2.979	3	1	5	1.258
PEE2	3	3	1	5	1.209
PEE3	2.899	3	1	5	1.308
SCAR1	3.006	3	1	5	1.228
SCAR2	3.139	3	1	5	1.248
SCAR3	3.086	3	1	5	1.32
LIM1	3.163	3	1	5	1.231
LIM2	3.169	3	1	5	1.27

LIM3	3.121	3	1	5	1.236
PAN1	3.198	3	1	5	1.176
PAN2	3.068	3	1	5	1.289
PAN3	3.053	3	1	5	1.263
STI1	2.941	3	1	5	1.32
ST2	3.254	3	1	5	1.248
ST3	3.124	3	1	5	1.234
IB1	3.254	3	1	5	1.278
IB2	3.438	4	1	5	1.208
OB1	3.527	4	1	5	1.169
OB2	3.033	3	1	5	1.276
OB3	2.964	3	1	5	1.316
OB4	2.746	3	1	5	1.344
COVID1	3.802	4	1	5	1.104
COVID2	3.763	4	1	5	1.137
COVID3	3.811	4	1	5	1.174

From Table 5.1.2. Descriptive Statistics, generally, there are 6 independent variables, 1 moderator variable, 1 mediating variable, 3 dependent variables (including 1 mediating variable previously mentioned). In terms of independent variables, it is clear that almost all of these variables are higher than three, which means the customer is more likely to be content with questions - the observed variable. Moreover, fear of COVID is exactly the variable having the highest mean, which also means customers are more likely to think of COVID as a dangerous

pandemic (mean=3.8). What's more, the Peer buying variable (PEE) is the only independent variable having a mean below 3.

5.2. Measurement Model

5.2.1. Outer Loadings

Table 5.2.1.1. Outer loading (First time)

	COVID	IB	LIM	LOC_	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PAN	PEER	PER	SCAR	STI
COVID1	0.738													
COVID2	0.915													
COVID3	0.905													
IB1		0.814												
IB2		0.871												
LIM1			0.884											
LIM2			0.908											
LIM3			0.905											
LOC1				0.873										

LOC2				0.908									
LOC3				0.837									
LOC4				0.764									
LOC_ * COVID					1.166								
OB1									0.724				
OB2									0.903				
OB3									0.930				
OB4									0.801				
PAN1										0.854			
PAN2										0.903			
PAN3										0.895			
PEE1											0.887		
PEE2											0.890		
PEE3											0.866		

PEER * COVID					1.134								
PER1											0.831		
PER2											0.890		
PER3											- 0.219		
PER4											0.804		
SCAR * COVID					1.150								
SCAR1												0.874	
SCAR2												0.912	
SCAR3												0.882	
ST2													0.842
ST3													0.896
STI * COVID					1.189								
STI1													0.755

It can be seen from Table 5.2.1.1 that all the values of factor loadings of almost all the items are greater than the standard number 0.7, except for PER3 (<0.7). So, PER3 will be eliminated from the model and run the PLS algorithm again.

Table 5.2.1.2. Outer loading (Second time)

	COVID	IB	LIM	LOC_	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PAN	PEER	PER	SCAR	STI
COVID1	0.738													
COVID2	0.915													
COVID3	0.905													
IB1		0.815												
IB2		0.87												
LIM1			0.883											
LIM2			0.908											
LIM3			0.906											
LOC1				0.873										

LOC2				0.908										
LOC3				0.836										
LOC4				0.765										
LOC_ * COVID					1.166									
OB1									0.724					
OB2									0.903					
OB3									0.93					
OB4									0.801					
PAN1										0.855				
PAN2										0.903				
PAN3										0.895				
PEE1											0.887			
PEE2											0.89			

PEE3										0.866				
PEER * COVID					1.134									
PER1											0.832			
PER2											0.889			
PER4											0.806			
SCAR * COVID						1.15								
SCAR1												0.874		
SCAR2												0.912		
SCAR3												0.881		
ST2													0.842	
ST3													0.895	
STI * COVID							1.189							
STI1													0.756	

The second timetable 5.2.1.2 have outer loadings value threshold for each variable exceed 0.7 meets the requirement (Hair et al., 2010).

5.2.2. Reliability and Convergence

Table 5.2.2. Reliability and Convergence

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
COVID	0.816	0.846	0.891	0.734
IB	0.596	0.606	0.831	0.711
LIM	0.881	0.884	0.927	0.808
LOC_	0.869	0.892	0.91	0.718
MO COVID LOC	1	1	1	1
MO COVID PEER	1	1	1	1
MO COVID SCAR	1	1	1	1
MO COVID STI	1	1	1	1
OB	0.86	0.861	0.907	0.712
PAN	0.861	0.865	0.915	0.782
PEER	0.857	0.872	0.912	0.776
PER	0.798	0.829	0.88	0.711
SCAR	0.868	0.876	0.919	0.791
STI	0.778	0.792	0.871	0.694

The factor loadings for all the items and structures were provided by the rotated component matrix. With the use of factor loadings, we calculated the composite reliabilities and average variance extracted. According to Table 5.2.2, almost Cronbach's alpha values are greater than 0.7, except for Impulsive behavior (IB) equal = 0.596, so almost all variables satisfy the 0.7 minimum threshold value (Hair et al., 2010). The reason why we do not discard IB variables is because of IB's Composite Reliability value = 0.831, this number meets the requirement that Composite Reliability CR ≥ 0.7. The rest of Composite Reliability also meets that standard. Finally, for all of the constructs, the average variance extracted (AVE) values are more than 0.50. As a consequence, discriminant validities are pre-condition to use SEM based modeling techniques (Ahmed et al., 2020).

5.2.3. Discriminant Validity

Table 5.2.3.1 Fornell-Larcker Criterion

	COVID	IB	LIM	LOC_	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PAN	PEER	PER	SCAR	STI
COVID	0.856													
IB	0.420	0.843												
LIM	0.402	0.476	0.899											
LOC_	0.445	0.430	0.712	0.847										
MO COVID LOC	- 0.337	- 0.098	- 0.054	- 0.049	1.000									
MO COVID PEER	- 0.298	-0.017	0.018	- 0.037	0.770	1.000								
MO COVID SCAR	- 0.302	- 0.007	0.065	- 0.020	0.786	0.823	1.000							

MO COVID STI	- 0.251	- 0.039	- 0.081	- 0.118	0.606	0.595	0.550	1.000						
OB	0.374	0.695	0.547	0.526	-0.066	0.008	0.010	0.044	0.844					
PAN	0.399	0.533	0.837	0.688	-0.039	0.048	0.069	-0.035	0.640	0.885				
PEER	0.359	0.502	0.720	0.698	-0.036	0.062	0.041	-0.073	0.590	0.764	0.881			
PER	0.325	0.188	0.382	0.473	0.116	0.013	0.106	-0.036	0.237	0.376	0.352	0.738		
SCAR	0.362	0.474	0.859	0.701	-0.020	0.042	0.074	-0.053	0.580	0.817	0.761	0.423	0.889	
STI	0.356	0.502	0.529	0.457	-0.121	-0.077	-0.055	0.101	0.576	0.598	0.506	0.228	0.498	0.833

From Table 5.2.3.1, it is evident that the number at top of each column is higher than its other indices, demonstrating that the Fornell-Larcker Criterion condition meet the requirement for all factors, that $\sqrt{AVE} >$ Correlation between latent variables (Fornell and Larcker, 1981).

Table 5.2.3.2 Heterotrait-Monotrait Ratio (first time)

	COVID	IB	LIM	LOC	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PAN	PER	STI	PEE	SCAR
COVID														
IB	0.605													

LIM	0.485	0.663									
LOC_	0.537	0.601	0.818								
MO COVID LOC	0.378	0.121	0.058	0.058							
MO COVID PEER	0.331	0.059	0.021	0.042	0.77						
MO COVID SCAR	0.339	0.071	0.069	0.051	0.786	0.823					
MO COVID STI	0.28	0.05	0.086	0.131	0.606	0.595	0.55				
OB	0.462	0.973	0.628	0.616	0.072	0.062	0.062	0.069			
PAN	0.485	0.747	0.959	0.801	0.043	0.052	0.074	0.038	0.743		
PER	0.379	0.284	0.462	0.536	0.126	0.08	0.134	0.086	0.275	0.445	
STI	0.458	0.759	0.656	0.573	0.135	0.095	0.06	0.119	0.713	0.747	0.312

PEE	0.433	0.706	0.831	0.808	0.057	0.064	0.046	0.081	0.686	0.888	0.435	0.637	
SCAR	0.438	0.664	0.981	0.808	0.02	0.045	0.079	0.056	0.671	0.944	0.494	0.625	0.882

As can be seen from Table 5.2.3.2 that Limited food & essential goods (LIM) and Panic buying (PAN), which are greater than 0.9 do not satisfysatisfied HTMT Condition (Discriminant). HTMT condition has to satisfy the requirement that is less than 0.85 (Kline, 2015). It means we need to eliminate these 2 variables and run HTMT again for better performance.

Table 5.2.3.3. Heterotrait-Monotrait Ratio (HTMT) (second time)

	COVID	IB	LOC_	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PEER	PER	SCAR	STI
COVID												
IB	0.605											
LOC_	0.537	0.601										
MO COVID LOC	0.378	0.121	0.059									
MO COVID PEER	0.331	0.059	0.042	0.770								
MO COVID SCAR	0.339	0.071	0.051	0.786	0.823							

MO COVID STI	0.281	0.049	0.130	0.607	0.596	0.551					
OB	0.462	0.973	0.616	0.072	0.062	0.062	0.069				
PEER	0.433	0.706	0.808	0.057	0.064	0.046	0.081	0.686			
PER	0.399	0.250	0.554	0.128	0.047	0.118	0.054	0.272	0.410		
SCAR	0.438	0.664	0.808	0.021	0.045	0.079	0.056	0.671	0.882	0.498	
STI	0.458	0.759	0.573	0.135	0.095	0.060	0.119	0.713	0.637	0.279	0.625

N=338, * p <= .01(two-tailed)

Table 5.2.3.3 presents correlations of all latent variables. As shown in the table, perceived arousal was positively correlated with impulsive buying behavior (r = .207, p <= .01) and obsessive-compulsive buying behavior (r = .0.255, p <= .01). Furthermore, All latent variables were positively correlated with perceived arousal (p <= .01). These results were consistent with and provided initial support to our hypotheses

5.3. Structure model

5.3.1 Variance Inflation Factor

Table 5.3.1. Collinearity Statistics (VIF)

	COVID	IB	LOC_	MO COVID LOC	MO COVID PEER	MO COVID SCAR	MO COVID STI	OB	PEER	PER	SCAR	STI
COVID												

IB	0.605										
LOC_	0.537	0.601									
MO COVID LOC	0.378	0.121	0.059								
MO COVID PEER	0.331	0.059	0.042	0.77							
MO COVID SCAR	0.339	0.071	0.051	0.786	0.823						
MO COVID STI	0.281	0.049	0.13	0.607	0.596	0.551					
OB	0.462	0.973	0.616	0.072	0.062	0.062	0.069				
PEER	0.433	0.706	0.808	0.057	0.064	0.046	0.081	0.686			
PER	0.399	0.25	0.554	0.128	0.047	0.118	0.054	0.272	0.41		
SCAR	0.438	0.664	0.808	0.021	0.045	0.079	0.056	0.671	0.882	0.498	
STI	0.458	0.759	0.573	0.135	0.095	0.06	0.119	0.713	0.637	0.279	0.625

It is clear that almost all constructs already meet the HTMT condition when almost all numbers are less than 0.85 according to Table 5.2.3.3. Even though, HTMT value between peer and scar is equal to 0.882 is still accepted.

5.3.2 Coefficient of Determination $R2$ (R Square)

Table 5.3.2 Coefficient of Determination $R2$ (R Square)

	R Square	R Square Adjusted
IB	0.140	0.086
OB	0.176	0.127
PER	0.362	0.304

From Table 5.3.2, we can see that Perceived Arousal can be explained by 30.4% (R 2 Adjusted = 0.304), which is a quite high percentage. Moreover, Impulsive buying and Obsessive-compulsive buying behavior variables are explained by about 8.6% (R 2 Adjusted = 0.086) and 12.7% (R 2 Adjusted = 0.127) respectively by perceived arousal and some control variable (age, marital status, etc.). This is quite a weak representation, but conceivable because we just have only the Perceived Arousal variable as an independent variable predicting Obsessive-Compulsive buying and Impulsive buying behavior.

5.3.3. Effect size (f Square)

Table 5.3.3. Effect size (f Square)

	COVID	IB	Income	LOC_	OB	PEER	PER	SCAR	STI
COVID							0.051		
IB									
LOC_							0.041		
OB									
PEER							0.001		
PER		0.024			0.040				
SCAR							0.020		

STI						0.003		

Cohen (1988) said that f2 value is used to examine the importance of each independent variable on a dependent variable. With regard to the first regression model where Perceived arousal acts as the dependent variable, according to Cohen (1988), if $f 2 < 0.02$, then this variable has no effect on the dependent variable. we can see that there are two variables that have no effect on Perceived arousal (Stimulus and peer with $f 2$ of these two variables are 0.003 and 0.001, respectively) according to Figure 5.3.3. According to the next models where Obsessive-compulsive and impulsive buying behavior acts as dependent variables, Perceived arousal has a small effect on Impulsive and Obsessive-compulsive buying with $f 2 = 0.024$ and 0.051 respectively as shown in Table 5.3.3.

5.3.4. Hypotheses Testing

Table 5.3.4. Hypotheses Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
LOC_ -> PER	0.269	0.284	0.080	3.375	0.001
MO COVID LOC -> PER	0.247	0.246	0.084	2.951	0.003
MO COVID PEER -> PER	- 0.210	-0.210	0.084	2.495	0.013
MO COVID SCAR -> PER	0.144	0.141	0.091	1.575	0.116
MO COVID STI -> PER	- 0.050	-0.049	0.048	1.038	0.299

PEER -> PER	- 0.033	-0.051	0.091	0.365	0.715
PER -> IB	0.152	0.147	0.063	2.421	0.016
PER -> OB	0.193	0.192	0.057	3.370	0.001
SCAR -> PER	0.194	0.195	0.086	2.255	0.024
STI -> PER	- 0.053	-0.051	0.057	0.930	0.352

As shown in Table 5.3.4, the coefficients indicate the relationship between Fear of complete lockdown and perceived arousal is positive and statistically significant (BETA=0.269, p-value<0.05). Thus, hypothesis 1 (H1) is supported.

As shown in Table 5.3.4 the coefficients indicate the relationship between peer buying and perceived arousal is not statistically significant (p-value>0.1). Thus, hypothesis 2 (H2) is rejected.

As shown in Table 5.3.4, the coefficients indicate the relationship between "scarcity of foods and essential item" and perceived arousal is positive and statistically significant (BETA=0.194, p-value<0.05). Thus, hypothesis 3 (H3) is supported.

As shown in Table 5.3.4, the coefficients indicate the relationship between Vietnam's stimulus check and perceived arousal is not statistically significant (p-value>0.1). So hypothesis 6 (H6) is rejected.

As shown in Table 5.3.4, the coefficients indicate the relationship between MO COVID LOC and perceived arousal is positive and statistically significant (BETA=0.247, p-value<0.05). Thus, hypothesis 7a (H7a) is supported.

As shown in Table 5.3.4, the coefficients indicate the relationship between MO COVID peers and perceived arousal is positive and statistically significant (BETA=0.247, p-value<0.05). However, the main effect between peer buying and perceived arousal is not significant. Thus, hypothesis 7b (H7b) is rejected.

As shown in Table5.3.4, the coefficients indicate the relationship between MO COVID STI and perceived arousal is not statistically significant (p-value>0.1). Thus, hypothesis 7c (H7c) is rejected.

As shown in Table5.3.4, the coefficients indicate the relationship between MO COVID SCAR and perceived arousal is not statistically significant (p-value>0.1). Thus, hypothesis 7d (H7d) is rejected.

As shown in Table5.3.4, the coefficients indicate the relationship between perceived arousal and impulsive buying behavior is statistically significant (BETA=0.152, p-value<0.05). Thus, hypothesis 8 (H8) is supported.

As shown in Table5.3.4, the coefficients indicate the relationship between perceived arousal and obsessive-compulsive buying behavior is positive statistically significant (BETA=0.193, p-value<0.05). Thus, hypothesis 9 (H9) is supported.

5.3.5. Mediator analysis

Table 5.3.5. Indirect path analysis

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
LOC_ -> PER -> OB	0.052	0.055	0.023	2.246	0.025
PEER -> PER -> IB	- 0.005	-0.007	0.014	0.353	0.724
STI -> PER -> OB	- 0.010	-0.009	0.011	0.915	0.361
SCAR -> PER -> IB	0.030	0.029	0.018	1.629	0.100
LOC_ -> PER -> IB	0.041	0.042	0.022	1.869	0.062
PEER -> PER -> OB	- 0.006	-0.009	0.018	0.353	0.724

STI -> PER -> IB	- 0.008	-0.007	0.009	0.877	0.381
SCAR -> PER -> OB	0.037	0.037	0.020	1.859	0.063

The results of Table 5.3.5 illustrate the mediating influence of perceived arousal variable in the relationship of stimuli variables, such as LOC, PEE, SCAR, and STI of Vietnamese consumers. This result has been measured through bootstrapping and specific indirect effect (note: use total indirect effect instead if there is more than one moderator variable). We use confidence intervals of 90% and 95%. With regards to 95 %, we can say that there is a perfect mediator, while it is acceptable if the p-value is 90 %. As a result, the table establishes that the perceived arousal has had a good mediation between stimuli factors and the impulse buying and obsessive-compulsive behavior of Vietnamese citizens. To be more specific, there are 1 cases where p-value < 0.05 (LOC-PER-OB) and 2 cases where p-value < 0.1 (LOC-PER-IB and SCAR-PER-OB). Finally, we relized that some previous studies showed the same result with our result, that is perceived arousal has a postive effect on impulsive buying and obssesive-compulsive buying behavior as a moderator Tahir Islam et al., 2021; Wei Zhang et al., 2020).

5.3.6. Hypothesis conclusion

In general, we conclude the result in Figure 5.3.4, having 6 supported hypotheses and 4 rejected hypotheses.

Number of Hypothesis	Content	Beta	P-value	Result
1	Fear of complete lockdown has a positive effect on perceived arousal.	0.269	0.001	Support
2	Peer buying has a positive effect on perceived arousal.	-0.033	0.715	Reject
3	Scarcity of foods and essential items on shelves has a positive effect on perceived arousal.	0.194	0.024	Support

4	Vietnam's stimulus package has a positive on perceived arousal	-0.053	0.355	Reject
5	The positive relationship between fear of lockdown and perceived arousal is moderated by fear of COVID-19, in which the higher the level of fear of COVID-19, the stronger the relationship.	0.246	0.003	Support
6	The positive relationship between peer buying and perceived arousal is moderated by fear of COVID-19, in which the higher the level of fear of COVID-19, the stronger the relationship.	-0.210	0.013	Rejected
7	The positive relationship between Vietnam Stimulus Check and perceived arousal is moderated by fear of COVID-19, in which the higher the level of fear of COVID-19, the stronger the relationship	-0.049	0.299	Reject
8	The positive relationship between Scarcity of food & essential goods and perceived arousal is moderated by fear of COVID-19, in which the higher the level of fear of COVID-19, the stronger the relationship	0.141	0.116	Reject
9	During COVID-19, perceived arousal has a positive impact on impulse buying behavior	0.152	0.016	Support
10	During COVID-19, perceived arousal has a positive impact on obsessive-compulsive buying behavior.	0.193	0.001	Support

Figure 5.3.6 Hypothesis conclusion

5.3.7. Diagram SEM

Figure 5.3.7 summarise the Path Coefficient (β), P-values.
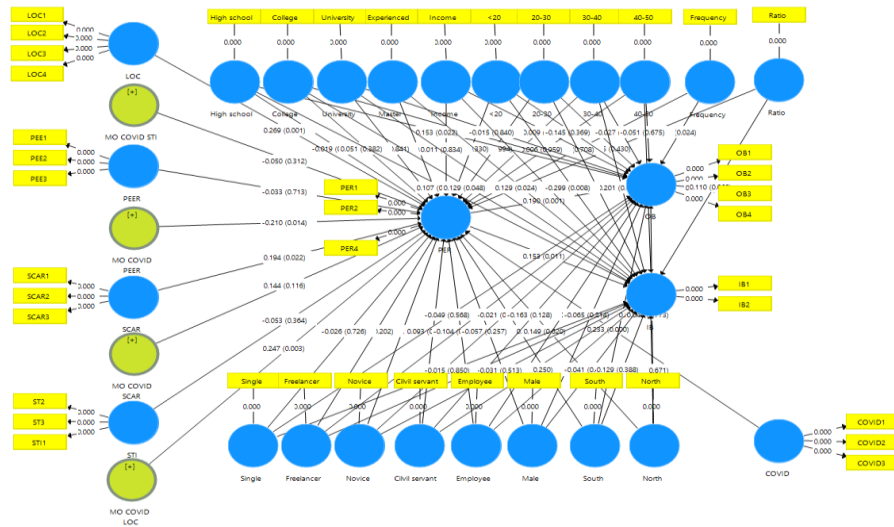
Figure 5.3.7. Diagram Smart-PLS included Path Coefficient (β), P-values

5.4. Importance-Performance Map

	Importance	Performances
20-30_	-0.003	56.213
30-40	-0.047	16.568
40-50	-0.019	9.467
<20	-0.377	15.976
COVID	0.231	69.761
Civil servant	0.493	3.55

College	0.171	9.172
Employee	-0.225	29.29
Freelancer	-0.214	17.751
Frequency	-0.06	59.541
High school	-0.065	8.58
Income	0.01	40.385
LOC_	0.249	58.236
Frequency	0.027	61.982
Male	-0.113	45.562
Master	0.011	46.746
North	0.429	86.686
Novice	0.39	5.03
PEER	-0.029	49.14
SCAR	0.168	52.01
STI	-0.049	52.99
Single	-0.053	65.976
South	0.375	8.58
University	0.029	66.272
Mean	0.055375	38.97766667

The IPMA map has been separated into 4 distinct segments, labeled I, II, III, and IV, as seen in the above diagram. The portions are separated by a blue-colored dashed line that is positioned both horizontally and vertically.

There are a lot of variables including control variables, so we just analyze 2 main independent variables that are statistically significant with perceived arousal (SCAR, LOC_).

As can be seen in *Figure 5.4.1.*, LOC_ and SCAR are located in quadrant II. That means the two variables have high importance as well as high performance on perceived arousal.
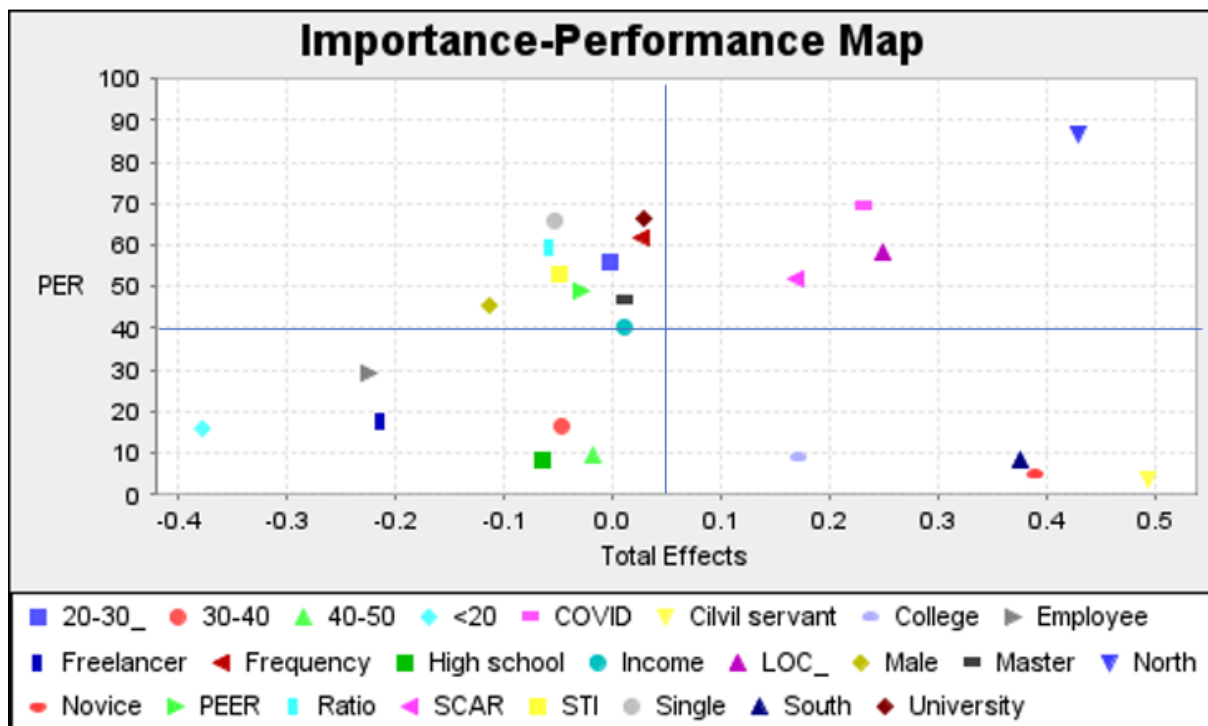
Figure 5.4.1. Importance-Performance Map (Perceived arousal)

	Importance	Performances
20-30_	-0.87	56.213
30-40	-0.575	16.568
40-50	-0.596	9.467
<20	-0.917	15.976
COVID	0.038	69.761

Civil servant	-0.6	3.55
College	0.495	9.172
Employee	-0.343	29.29
Freelancer	-0.523	17.751
Frequency	0.084	59.541
High school	0.388	8.58
Income	0.002	40.385
LOC_	0.041	58.236
Frequency	0.004	61.982
Male	-0.104	45.562
Master	0.274	46.746
North	0.291	86.686
Novice	-0.083	5.03
PEER	-0.005	49.14
PER	0.164	57.75
SCAR	0.028	52.01
STI	-0.008	52.99
Single	-0.043	65.976
South	0.544	8.58

University	0.128	66.272
Mean	-0.08744	39.72856

As can be seen in *Figure 5.4.2.*, PER is located in quadrant II. That means the variable has a high importance as well as high performance on impulsive buying behavior.

Figure 5.4.2. Importance-Performance Map (Impulsive buying behavior)

	Importance	Performances
20-30_	-0.23	56.213
30-40	-0.088	16.568
40-50	-0.189	9.467
<20	-0.503	15.976
COVID	0.048	69.761
Civil servant	-0.84	3.55
College	0.623	9.172

Employee	-0.341	29.29
Freelancer	-0.409	17.751
Frequency	-0.012	59.541
High school	0.572	8.58
Income	-0.007	40.385
LOC_	0.052	58.236
Frequency	0.124	61.982
Male	-0.164	45.562
Master	0.002	46.746
North	0.232	86.686
Novice	-0.019	5.03
PEER	-0.006	49.14
PER	0.208	57.75
SCAR	0.035	52.01
STI	-0.01	52.99
Single	-0.123	65.976
South	0.648	8.58
University	-0.029	66.272
Mean	-0.01704	39.72856

As can be seen in Figure 5.4.3, PER is located in quadrant II. That means the variable has a high importance as well as high performance on Obsessive-compulsive buying behavior.
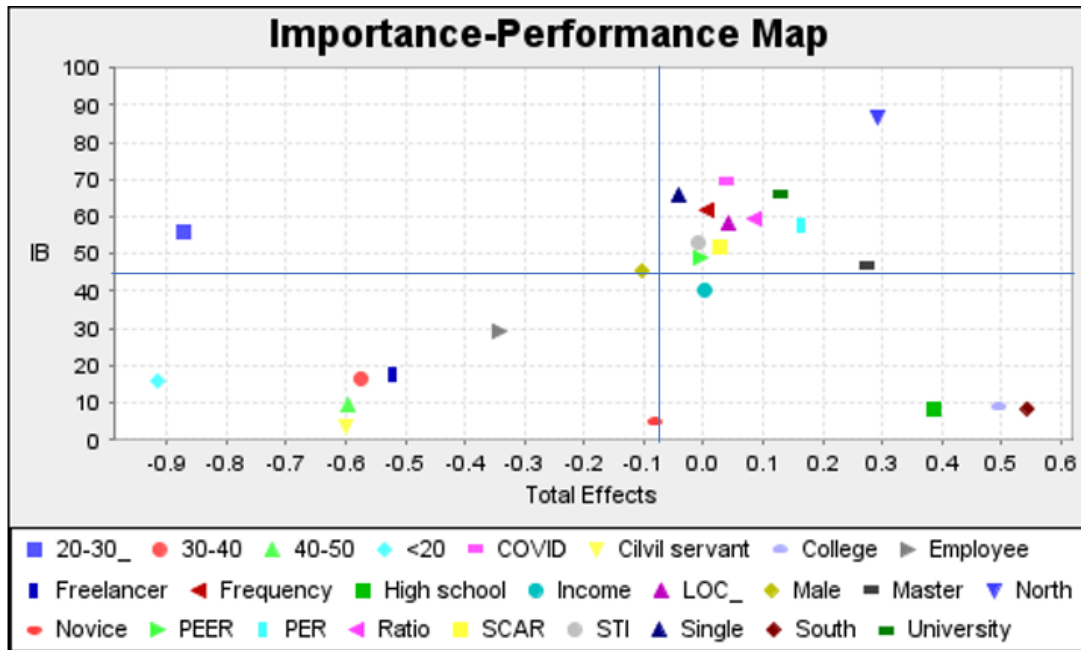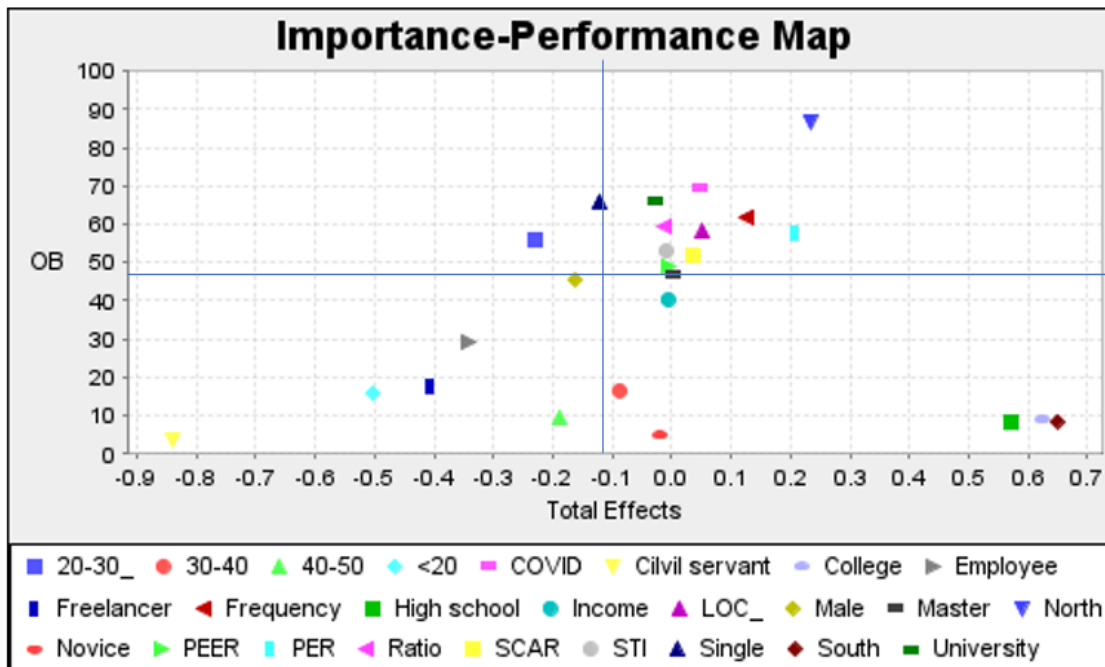

Figure 5.4.3. Importance-Performance Map (Obsessive-compulsive buying behavior)

VI. DISCUSSION AND CONCLUSION

6.1. Discussion

6.1.1 Fear of complete lockdown has a positive effect on perceived arousal.

From Figure 5.3.6, we realize that fear of lockdown has a positive effect on perceived arousal and is the variable with the greatest impact on perceived arousal in Vietnam. This result is totally consistent with some previous studies. First of all, our way of life has been altered by the COVID-19 pandemic. Since the beginning of the epidemic, these disturbances have resulted in mental health issues that are characterized by increased worry, and depression (e.g., Aknin et al., 2022). More than that, during the COVID-19 pandemic, changes in sleep patterns were caused by insomnia, and psychosocial factors (Tamar Basishvili et al.,2021). Second of all, according to Maurizio Gorgoni et al. (2021), pre-sleep arousal symptoms predominated in the Italian sample during the lockdown and that pre-sleep arousal and poor sleep quality are strongly correlated.

Throughout the findings and previous studies about the effect of lockdown on perceived arousal, we can see that when Vietnamese people are housebound for a long time, it is easy for them to raise their feelings of being stimulated, aroused, and wide-awake. These feelings are not necessarily negative, but just aroused in their feelings, which could result in impulsive or obsessive-compulsive buying.

6.1.2. Peer buying has no effect on perceived arousal.

At the hypothesis stage, we have already hypothesized that peer buying has a positive effect on perceived arousal. The reason is that we believe when people see their friends and colleagues engaging in buying behaviors, especially panic, or urgent buying during the pandemic outbreak, then people will be given the urge to do the same. However, according to Figure 5.3.6 peer buying has no effect on perceived arousal. This result is not in line with some previous studies as well as the hypothesis we proposed. Admittedly, from this result, we realized that peer buying is valid or not depends largely on what type of products are (they are necessities or luxurious products). In fact, according to Makgosa and Mohube (2007) products are divided into 4 types: public luxury, private luxury, public necessity, and private necessity. With regard to luxurious products, such products are much more influenced by peers such as golf clubs, while private products are unlikely to be influenced by peers (for example, toothpaste or table oil). Hence, it is understandable why peer buying has no effect on perceived arousal during COVID-19 onset. One reason is during COVID-19 most people buy private necessities during shortage of goods and lockdown time instead of luxurious buying. That thing is totally justified because private necessities seem more important than ever when the supply chain is disrupted.

> **Public luxuries:** Products that are publicly consumed and are not commonly used/ owned. Such products are prone to more peer influence. Example- Golf club
> **Private luxuries:** Products that are not consumed publicly and are not commonly used/ owned. Such products are more influenced by peers because they are important and involve more discretionary purchases. Example- Home theatre system
> **Public necessities:** Products that are publicly consumed and are commonly used/ owned. The decision to purchase such products attracts less peer influence because virtually everyone owns it. Example-Shoes
> **Private necessities:** Products that are not consumed publicly and are commonly used/ owned. Such products are not publicly important and are therefore not likely to be influenced by peers. Example - Mattresses

Source: Makgosa and Mohube (2007)

6.1.3. Scarcity of food and essential items on shelves has a positive effect on perceived arousal.

From Figure 5.3.6, we can clearly see that the scarcity of food and essential items on shelves has a positive effect on perceived arousal. This result is totally consistent with a lot of

previous studies. In fact, according to Tarhis Islam (2021) said that the higher level of scarcity of quantity or time, the higher level of perceived arousal customers have. Further, In Abraham Maslow (1943) theory about the hierarchy of needs, firstly, people always want to achieve basic physiological needs such as food, water, and sleep. Thus, when they heard about the disruption of the supply chain or the long line of people waiting in front of the supermarket made them more stimulated to stock necessities. Besides, the limited time and limited quantity scarcity acts as a precursor in rising spontaneous feelings toward a certain good or service, which accelerate the choice to buy Aggarwal et al. (2011). In addition, consumers will have a larger desire to own a goods if its scarcity restricts their ability to purchase it (Brehm & Brehm, 1981). Customers experience a positive feeling when they realize they can buy this rare product and a negative feeling if they can buy it. So people have more perceived arousal when receiving scarcity signals. What's more, customers really like to own scarce products since they are in a competitive market with few resources (Cialdini, 2008). During the COVID-19 outbreak in Vietnam, the increased demand for and purchase of food and other essential items has become a hot topic, coupled with a long line of customers having an urge to buy essential items in supermarkets and also on the internet. When the epidemic with many infections in the community caused many traditional markets to hardly control and localize the disease associated with the fear of a scarcity of goods, people rushed to the supermarket to stock up on food, causing many places to be overloaded. As a consequence, there is no doubt that the higher the psychological stress that individuals will feel, the more they will be alarmed or worried about the scarcity of items and having little time to buy products.

6.1.4. Vietnam's stimulus package has no impact on perceived arousal.

From Figure 5.3.6, the result of research illustrates that Vietnam's stimulus package has no impact on perceived arousal. This runs counter to the hypothesis made before as well as some previous studies. However, we think that there are some reasons why Vietnamese stimulus checks have no impact on perceived arousal, at least in this study. First of all, according to the report of baohiemxahoi.gov.vn (2021), the maximum number of Vietnamese stimulus checks that Vietnamese people can receive is 3.300.000 VND per person. This number is much lower compared with that of Americans. In fact, due to the unexpected benefit, in which the typical family got between $3,000 and $4,000, then American people were more inclined to make impulsive purchases (Crabble, 2020). Thus, we think this is a reason why Vietnam's stimulus checks do not have an effect on perceived arousal whereas American ones have. Therefore, there is no dispute that with little money subsidizing from the government, it can not have much effect on perceived arousal, let alone in Vietnam, which is always known for having cumbersome bureaucracy standing in the way of stimulus check delivery. In other words, to receive stimulus

checks, people in Vietnam have to wait a long time for inspection through papers. With regard to the next reason, we believe that our sample is another reason. While stimulus checks are only given to workers and manufacturers, 46% and 21% of our respondents are students and freelancers, who are not likely to be subsidized, respectively.

6.1.5. Moderator fear of COVID-19 (MO-LOC)

As can be seen from Figure 5.3.6 show that fear of COVID is exactly a moderator between the relationship between Fear of complete lockdown and perceived arousal (BETA = 0.246, p-value = 0.003). This result is consistent with some previous research. Iyer et al. (2020) have also given similar findings. An unprecedented global pandemic is currently affecting mental health, such as sadness, and anxiety, which leads to changes in customers' behavior (Petzold et al., 2020; Xiong et al., 2020). Besides, according to Antonia Ypsilanti et al. (2021), one study showed that COVID-related images significantly increased levels of alertness, negativity, fear, despair, and anger as compared to negative and neutral images. Indeed, the way people feel about covid-19 means a lot when they are in quarantine. Hence If they are afraid of the danger of the pandemic, they will have strong emotions when they are housebound.

6.1.6. Perceived arousal has a positive effect on impulsive buying and obsessive-compulsive buying behavior.

Finally, the result showed from Figure 5.3.6 that perceived arousal has a positive effect on impulsive buying and obsessive-compulsive buying (BETA= 0.152, p-value=0.016; BETA = 0.193, p-value = 0.001). Our findings demonstrate that consumers are more likely to make impulsive and obsessive-compulsive purchases during the COVID-19 epidemic if their perceived arousal state is higher. First, our results are totally consistent with a lot of previous studies. Based on Evgenia Gkintoni (2019) said that shopping addiction is a first response to negative even when they have a fear. This research enhances our understanding of impulsive buying and obsessive-compulsive buying behavior. Of course, We have to admit that there are more factors influencing impulsive buying, but in this study, we just estimated the power of perceived arousal on these two popular buying behaviors. As we mentioned above, perceived arousal includes stimulated feelings, excited feelings, and wide-awake arousal. Furthermore, our results are consistent with other studies. Tarhis Islam (2021) showed that perceived arousal has a positive effect on impulsive and obsessive-compulsive buying behavior. Besides, according to Grev R. et al. (1980), one type of positive emotional response to the product will occur when consumers are aroused and stimulated, and this arousal feeling will enable consumers to be more generous with rewards for themselves. Then they will generate an intense desire to purchase before making purchases, according to Isen AM, Levin PF (1972). According to Bellenger and Korgoankar (1980), environmental and

marketing stimuli are likely to activate and reinforce the buying driver. According to Beatty and Ferrell (1998), favorable emotions have a positive impact on impulsive purchase intention. Last but not least, this study, based on the SOR model, looked at the relationship from stimuli to organism to the response. This finding once again confirms the SOR model and helps us better understand impulsive buying behavior.

6.2. Implication

6.2.1. Theoretical Implication

Regarding this research issue, there have been many previous studies that have been studied but have not been in-depth and are mainly used for foreign markets or other regions. This study is a combination of previous studies and all the factors selected for the Vietnam area. That leads to improved research results and more objective opinions. This study creates a valuable foundation to help future research shorten time and effort, facilitate the development of further research in the field of analyzing Vietnamese people's online shopping behavior, and contribute together with relevant departments to point out the solution for their obligations and the business.

6.2.2. Practical implications

6.2.2.1 Fear of complete lockdown has a positive impact on perceived arousal

Starting with the first hypothesis, based on the above results, we can give some practical implications of the fear of complete lockdown:

- Ready for the next pandemic

Governments, manufacturers, and vendors need to prepare for future global pandemics. Nowadays, COVID-19 is not completely over yet, and it is showing signs of re-emergence with the number of cases still increasing daily. In addition, other diseases are still spreading, like monkeypox, and flu. Therefore, governments, manufacturers, and sellers need to prepare in advance for pandemic situations similar to or more dangerous than the COVID-19 pandemic to be able to supply goods when needed and supply chain disruptions like in the recent pandemic outbreak.

- Reassure the people

The government needs to take measures to reassure people about the pandemic. What could a brand possibly do to recover from this loss and remain present in the minds of their customers in such appalling circumstances, when leaving the house poses a risk to lives, businesses have come to a halt, our food supply chain is disrupted, and the entire world has been brought to its knees. The specific recommendation is to focus on awareness and reach: After a long time of being locked out, people are less likely to see billboards, metro entrances, bus stops, and other traditional

advertising. Companies can use this period to increase awareness, engagement, and reach via digital channels while they are saving a lot of money. According to a report by the Wall Street Journal (2020), online groceries and clothes have increased beyond 40% penetration of U.S adults compared to before the lockdown.

- Effective Marketing

With the results of this study, companies, and sellers can take advantage of the significant increase in the frequency of accessing online shopping applications and the ratio of online spending to total spending to be able to target digital marketing campaigns with fewer employees but more effectively to increase brand awareness and revenue for the company even during the pandemic. Besides, the time of lockdown during the COVID-19 pandemic is a significant opportunity for brands to test new products, services, or marketing models with customers who are willing to trust those brands. their products and services with digital marketing campaigns.

6.2.2.2 Scarcity of foods and essential items on shelves has a positive effect on perceived arousal

Our result also provided relevant indices to the effect of scarcity of food and essential commodities in the shelves to perceived arousal. The concept of scarcity marketing is to reduce the supply of a good, usually by reducing manufacturing or limiting availability to a specific period of time. Scarcity is an absolutely big aspect of marketing. It is applied in many areas of our lives, but sometimes we do not notice it. Scarcity can make products have more value as a feeling, which in turn results in customers making decisions quickly or being willing to pay more money for these limited products. Therefore, when realizing Scarcity also has a big positive effect on customers' perceived arousal, which leads to their impulsive and obsessive-compulsive buying, we advise manufacturers should know this motive to take advantage of it in the next pandemic and suppliers to operate supply chain systems effectively. However, we have to face the fact that Scarcity does not necessarily exist in pandemics like COVID or COVID-a like. As can be seen, scarcity is always applied in some luxurious brands such as Supreme and Richard Mille. To marketers for online brands, we can recommend that they apply scarcity in their brand to increase profit or brand awareness during new normal days. We will give some tactics below:

- Almost out of stock items

Showing that a product is almost sold out or has low stock is definitely one useful technique to employ scarcity marketing for an online store. Customers may always see when there aren't many units of a product available to purchase by using software that displays real-time warning of low stock on your company's website. This can persuade hesitant buyers to buy the goods before

it sells out, which is helpful for buyers who often wait to buy and end up forgetting about it as they go about their day.

- Early bird discount

Early access discounts are typically limited-time price reductions on product pre-orders or exclusive incentives for customers to obtain an item early. These reductions encourage buyers to purchase a product before the reduction ends and other people may obtain it, which could cause it to run out of stock more quickly. Sending emails to current customers with information about the promotion and posting a banner with the date the discount expires on your store's website or e-commerce shop are both effective ways to use this tactic.

- Limited-edition goods

Selling limited-edition or unique products, which definitely increase their value due to their low availability and strong demand, is another scarcity strategy that could be effective for your business. You may also think about partnering with other businesses or well-known individuals to create unique products that appeal to a variety of consumers and increase your potential market. Create anticipation for the release of the things in advance to guarantee that as many people as possible are aware of these products when they become available.

- Platform-exclusive sale

Discount only on specific platforms. Examples include discounts for purchases made through an app or sales that are only available on a website or on Facebook, or Instagram. These offers concentrate on the platform of a discount and the methods by which customers can access it, rather than restricting the number of products that can be purchased. A strategy like this could assist your business in gaining more users across various platforms, which is beneficial for your business in the long run.

- Seasonal goods

When you release new products, selling limited-season products can help your business increase sales during specific times of the year and generate excitement. Depending on the type of business you work for, you might sell seasonal goods like food and drink, clothes and accessories, or practical items to draw in clients' attention who require or desire them at certain points during the year. Customers that are enthusiastic about seasonal goods frequently tell their friends about them, which expands your clientele.

- Real-time data

Add features to online product descriptions that reveal how many buyers are interested in a product as another approach to employing scarcity marketing to boost sales. This could entail

showing the number of website visitors who have seen the item, added it to their cart, or loved it. Customers might want the product more because they see that it's popular and might sell out.

6.2.2.3. The positive relationship between fear of lockdown and perceived arousal is moderated by fear of COVID-19, in which the higher the level of fear of COVID-19, the stronger the relationship.

COVID-19 is a moderator of the positive relationship between fear lockdown and Perceived Arousal, which plays a critical role in mediating exogenous and outcome variables (OB and IB). In this study of the moderation between the exogenous and perceived arousal variables, COVID-19 acts as a moderator. Our results show that COVID-19 is a factor that affects the life and mental patterns of Vietnamese people. The tendency of Vietnamese people to make impulsive and obsessive-compulsive buying behaviors was studied in relation to both necessary and optional goods. The results of the research will provide some practical recommendations, particularly for policymakers, marketers, etc. on how to develop and implement unique methods to deal with unforeseen circumstances during the COVID-19 phenomena in particular and another upcoming pandemic in general. Marketers and brand managers can create innovative plans to increase the market share of their brand to get a competitive edge in COVID-19 or other future crisis situations.

6.2.2.4. Perceived arousal has a positive effect on impulsive buying behavior

Based on the table, the results show that perceived arousal positively affects impulsive buying. Accordingly, being unhappy also affects impulse buying behavior. When you're having a rough day, you'll want to buy something to lift your mood, like a dress or a watch. You tell yourself it's no big deal - you just want something nice to make yourself feel better. Making decisions based on Perceived arousal is a surefire way to make you shop impulsively. And marketers know this, they will rely on your emotions with their ads to hit the psychology that makes you buy. Emotions are the root source of consumers' impulse to buy impulsively. As a result, e-commerce websites need to include marketing initiatives that encourage customers to buy by suggesting things they might be interested in or suggesting products that complement their hobbies, professions, and personalities. Customers who are impulsive buyers will aid e-commerce businesses in boosting sales.

Today's online retailers should understand what customers want thanks to the large amount of data collected from users' behavior on the website. Through searched keywords, during the click process to view your products and purchase history, e-commerce platforms may install algorithms to recommend related products, advertisements or offers. Today's online retailers need to pay more attention to things that affect emotions when making impulse purchases such as promotions, special offers, bestsellers, seasonal specials, etc. displayed in the first positions on the homepage.

They make customers feel that they are comfortable. And this is one of the reasons why temptation becomes so hard to resist. Buyers are easier to make faster decisions and make more impulsive purchases.

6.2.2.5. Perceived arousal has a positive effect on obsessive-compulsive buying behavior

For the satisfaction variable, the result of research illustrates that perceived arousal has a significant positive effect on obsessive-compulsive buying. Obsessive-compulsive buying is often a potential cause of perceived arousal such as reactions of frustration, stress, anger, or anxiety due to shopping; a sense of breaking with personal and family control standards of living and spending habits, which causes tension or conflict in the family and other relationships; have a feeling of anxiety when shopping; experience with feelings of ignoring taboos in self-perception when shopping; have feelings of guilt or remorse after making a purchase by breaking one's promises; buying things that are sometimes never used and exceed spending limits because they are not intended for use; Worry about the finances of your family and yourself by spending a lot of money on shopping.

Obsessive-compulsive people are often driven by the feeling of having to buy items that are sometimes not really necessary for themselves and for those around them. The beginning of the shopping process is always the same, at first they are motivated by the thought of going to the supermarket, then they just think they come to see or buy one or two items with a clear purpose. However, when they leave, they often bring a lot of things they can buy that sometimes they don't know what to buy because they may never use them. Businesses and commerce sites should try to increase the impact of perceived arousal on obsessive-compulsive buying behavior by creating loyalty programs to attract shoppers in addition to rewards. continuously in the form of likes and comments on products on social networks. Besides, the trend of "gamification" also fulfills the need of many online shoppers to build relationships with their favorite brands, once attracted, those customers. proved particularly loyal.

6.2.2.6. Other recommendations

Actually, the COVID-19 pandemic has been changing our life a lot from attitude to behavior. From there, we are living in a "new normal" era, where marketers need to adopt and understand their customers to get the best. We have witnessed people buying online more than ever before. E-commerce actually is one of few industries that has a boom during the pandemic. Furthermore, there is no doubt that customers use their phones and laptops more than 3 years ago. For all these reasons, we think technology in marketing is something evitable and a must.

Therefore, we will give some recommendations for marketers can apply to post-pandemic time below:

- Data-driven approach

This trend of moving from traditional markets to online markets is likely to continue in large part because online buying is frequently more convenient, affordable, and secure for consumers than traditional brick-and-mortar retailers. For marketers, this means that they need to rethink how to engage with consumers. It is obvious that a bigger focus on e-commerce and digital channels is essential.

However, marketers must consider how to handle the new surge of data that has emerged today and how to use it to better personalize offers and messages to ever-narrower client categories. This data can assist businesses in crossing the digital-physical divide to offer consumers more practical and convenient purchasing experiences wherever they may be. We can use data science or machine learning to improve customer experience.

- E-service

Different levels of e-service adoption have been observed in the last few years. Along with media and entertainment, banking has had a considerably higher level of penetration. Other services have lagged behind for a variety of reasons, such as restricted options and poor client experiences. People intend to do more than only make purchases online during COVID-19; they also want to use e-service.

The number of telemedicine visits has significantly expanded; for instance, Teladoc Health, a large for-profit virtual healthcare provider, saw 1.7 million US visits in Q1 2020, which is twice as many as in Q3 2019 (Dan Murtagh, 2020).

For marketers, this rising consumer trust in using e-services brings a possible increase in demand and a chance to forge new relationships with customers. It will be crucial for marketers to consider how their brands can interconnect with service "platforms.". For instance, to cross-promote the advantages of each to a larger audience, food marketers can collaborate with e-health platforms or online fitness businesses. A "home-buyer platform," may combine real estate, mortgage, and travel into a single customer journey.

6.3. Limitation and recommendation for future research

This study brings certain results and contributions to the assessment of customers' online shopping behavior during the COVID-19 pandemic. However, like many other studies, this study still has some limitations.

The first limitation of this study is the time to do the research. The whole process, from building a model to making proposals, takes about 3 months, which we consider a relatively short period of time. Due to the lack of time, the data collection encountered some limitations such as the sample portion was not diversified, only young people aged (20-30 years old) and Hanoi city accounted for the majority in the survey. Obviously, for a project or topic to be of above average quality and to be quite good or better, there must be enough time to collect data and the construction process must be extensive.

The second limitation of this study is that the results are based on the perception of online consumers polled over a period of time and the actual experience after the end of social distancing is slightly different change. After Vietnam has well controlled the pandemic, the emotions and psychology of online shoppers will change. Consumer buying behavior and preferences tend to fluctuate in a rapidly changing environment.

This study can be used as a basis for future studies to assess the change in psychology and online purchasing behavior of consumers, as well as create new directions for companies, businesses, or e-commerce platforms to come up with marketing strategies to suit online shopping trends of Vietnamese people.

6.4. Conclusion

As the epidemic develops and spreads rapidly around the world, people's ability to cope with shopping problems during the pandemic becomes important. Almost everyone is dramatically changing their shopping behavior. The number of individuals shopping online is increasing in Vietnam. This study examined the factors affecting online shopping decisions during the COVID-19 epidemic in Vietnam. Fear of complete lockdown, Scarcity of food and essential items on shelves are the most important impacts. A quantitative technique was used in this investigation. The research process was specifically conducted based on the opinions of more than 338 consumers in Vietnam through social networks and the obtained data was comprehensively evaluated by SmartPLS software. In conclusion, the results of the study show that factors such as fear of complete lockdown, scarcity of food, and essential items on shelves have a direct impact on the dependent variable of purchase behavior, with fear of lockdown being the factor that has the strongest influence. We once again prove the power of the S-O-R model.

REFERENCE

Abbad, M., Abbad, R., & Saleh, M. (2011). Limitations of e-commerce in developing countries: Jordan case. *Education, Business and Society: Contemporary Middle Eastern Issues*, *4*(4), 280-291. Academic Press New York.

Adam, M.T., Krämer, J. and Müller, M.B., (2015). Auction fever! How time pressure and social competition affect bidders' arousal and bids in retail auctions. *Journal of Retailing*, *91*(3), pp.468-485.

Addo, P. C., Jiaming, F., Kulbo, N. B., & Liangqiang, L. (2020). COVID-19: Fear appeal favoring purchase behavior towards personal protective equipment. The Service Industries Journal, 40 (7–8), 471–490.

Adnan, H. (2014). An analysis of the factors affecting online purchasing behavior of Pakistani consumers. *International Journal of Marketing Studies*, *6*(5), 133.

Aggarwal, P., Jun, S.Y. and Huh, J.H. (2011). Scarcity messages. Journal of Advertising, 40 (3), 19-30.

Ahmed, R. R., Salman, F., Malik, S. A., Štreimikienė, D., Soomro, R. H., & Pahi, M. H. (2020). Smartphone use and Academic performance of University Students: A Mediation and Moderation Analysis. Sustainability, 12 (1), 439.

Ahmed, R.R., Streimikiene, D., Rolle, J.A. and Pham, A.D. (2020). The COVID-19 pandemic and the antecedants for the impulse buying behavior of US citizens. *Journal of Competitiveness,* 12(3), p.5.

Aknin, L. B., De Neve, J.-E., Dunn, E. W., Fancourt, D. E., Goldberg, E., Helliwell, J. F., Jones, S. P., Karam, E., Layard, R., Lyubomirsky, S., Rzepa, A., Saxena, S., Thornton, E. M., VanderWeele, T. J., Whillans, A. V., Zaki, J., Karadag, O., & Ben Amor, Y. (2022). Mental Health

During the First Year of the COVID-19 Pandemic: A Review and Recommendations for Moving Forward. Perspectives on Psychological Science,

Albesa, J. G. (2007). Interaction channel choice in a multichannel environment, an empirical study. *International journal of bank marketing*.

Armstrong, G. and Kotler, P. (2003) *Marketing: An Introduction*, Pearson Education International. Bagozzi, R.P. and Yi, Y., 1988. On the evaluation of structural equation models. Journal of the academy of marketing science, 16(1), pp.74-94.

Bajpai, N. (2011). Global financial crisis, its impact on India and the policy response.

Baron, R.M. and Kenny, D.A., 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of personality and social psychology, 51(6), p.1173.

Barratt, E. S. (1993). Impulsivity: Integrating cognitive, behavioral, biological, and environmental data.

Bashir, A. (2013). Consumer Behavior towards online shopping of electronics in Pakistan. Basishvili, T., Oniani, N., Sakhelashvili, I., Eliozishvili, M., Khizanashvili, M., Arabidze, M., Tsaava, M., Charekishvili, T., Tsertsvadze, N. and Darchia, N. (2021). Insomnia, pre-sleep arousal, psychosocial factors and changes in sleep pattern during the second wave lockdown of the COVID-19 pandemic in Georgia. *Brain sciences*, *12*(1), p.17.

Basishvili, T., Oniani, N., Sakhelashvili, I., Eliozishvili, M., Khizanashvili, M., Arabidze, M., Tsaava, M., Charekishvili, T., Tsertsvadze, N. and Darchia, N. (2021). Insomnia, pre-sleep arousal, psychosocial factors and changes in sleep pattern during the second wave lockdown of the COVID-19 pandemic in Georgia. Brain sciences, 12(1), p.17.

Beatty SE, Ferrell ME (1998) Impulse buying: modeling its precursors. J Retail 74(2):169–191

Bellenger DN, Korgaonkar PK (1980) Profiling the recreational shopper. J Retail 56(3):77–92

Bergel, M., & Brock, C. (2019). Visitors' loyalty and price perceptions: The role of customer engagement. Service Industries Journal, 39 (7–8), 575–589.

Blackwell, R., Miniard, P. and Engel, J. (2006) "Consumer Behavior", Mason: Thompson.

Brehm, S.S. and Brehm, J.W. (1981). Psychological reactance: A theory of freedom and control.

Bùi,T.K (2018), "Ảnh hưởng của rủi ro cảm nhận đến ý định mua hàng trực tuyến của khách hàng tại TP.Hồ Chí Minh" ,Tạp chí Khoa học và Công nghệ, 34 , 87-97.

Burroughs, R.E. and Sabherwal, (2001) 'Determinants of retail electronic purchasing: a multi-period investigation', *Journal of Information System Operation Research*, vol. 40, no. 1, pp. 35-56.

Burton, J. L., Gollins, J., McNeely, L. E., & Walls, D. M. (2019). Revisiting the relationship between ad frequency and purchase intentions: How affect and cognition mediate outcomes at different levels of advertising frequency. *Journal of Advertising Research*, *59*(1), 27-39.

Buxbaum, O. (2016). The sor-model. In *Key insights into basic mechanisms of mental activity* (pp. 7-9). Springer, Cham.

Caulfield, J. (2022) scribbr.com. Available at: https://www.scribbr.com/methodology/control-variable/ (Accessed: 15/8/2022).

Chen, C. C., & Yao, J. Y. (2018). What drives impulse buying behaviors in a mobile auction? The perspective of the Stimulus-Organism-Response model. Telematics and Informatics, 35(5), 1249–1262.

Chen, J., & Dibb, S. (2010). Consumer trust in the online retail context: Exploring the antecedents and consequences. *Psychology & Marketing*, *27*(4), 323-346.

Chen, L. (2009). *Online consumer behavior: An empirical study based on theory of planned behavior*. The University of Nebraska-Lincoln.

Chin, Y.H., Rahman, A., Haque, R., Pang, A. and Connie, G., 2011. Customer satisfaction in tourism service quality. Advance Science Lettets, 4, pp.3398-3402.

Chiu, Y.B., Lin, C.P. &Tang, L.L. (2005), "Gender diers: assessing a model of online purchase intentions in e-tail service", International Journal of Service Industry Management,16 (5), 416-435.

Choi, J., & Park, J. (2006). Multichannel retailing in Korea: Effects of shopping orientations and information seeking patterns on channel choice behavior. *International Journal of Retail & Distribution Management*, *34*(8), 577-596.

Cialdini, R.B. (2008). Influence: Science and practice, Prentice hall pages: 272 published.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. Psychological Assessment, 7(3), 309–319.

Claudia, I. (2012), "Perceived Risk when Buying online", Economics Series, 22(2), 63-73.

Claudia, I. (2012). The mediating role of perceived risk when buying online. *Acta Universitatis Danubius. Œconomica*, *8*(5).

CNN (2020). People receiving stimulus checks get a letter signed by President Donald Trump. CNN News. Retrieved April 29, 2020, from https://www.cnn.com/2020/04/26/politics/ stimulus-check-coronavirus-letter-donald-trump/index.html

Cobb, C. J., & Hoyer, W. D. (1986). Planned versus impulse purchase behavior. Journal of retailing.

Cohen, J.D., 1988. Noncentral chi-square: Some observations on recurrence. The American Statistician, 42(2), pp.120-122

Crabble, M. (2020). Research Your Way Out of a Crisis: Covid-19's Effect on Consumer Behaviour. Mintel Blog. Retrieved March 28, 2020, from https://www.mintel.com/blog/ consumer-market-news/research-your-way-out-of-a-crisis-covid-19s-effect-on-consumerbehaviour

Creswell, J. (2003). *Research design: Qualitative, quantitative and mixed methods approaches (2nd ed.).*

Cunningham MR, Steinberg J, Grev R (1980) Wanting to and having to help: separate motivations for positive mood and guilt-induced helping. J Pers Soc Psychol 38(2):181–192

CY Yeung, N., Huang, B., Lau, C.Y. and Lau, J.T., 2020. Feeling anxious amid the COVID-19 pandemic: Psychosocial correlates of anxiety symptoms among Filipina domestic helpers in Hong Kong. *International Journal of Environmental Research and Public Health*, *17*(21), p.8102.

CY Yeung, N., Huang, B., Lau, C.Y. and Lau, J.T., 2020. Feeling anxious amid the COVID-19 pandemic: Psychosocial correlates of anxiety symptoms among Filipina domestic helpers in Hong Kong. *International Journal of Environmental Research and Public Health*, *17*(21), p.8102.

Dan Murtagh, Zoe Schneeweiss, Bloomberg Economics, "This is how deeply the coronavirus changed our behavior," Bloomberg, June 1, 2020, bloomberg.com.

De Veirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through Instagram influencers: The impact of number of followers and product divergence on brand attitude. International Journal of Advertising, 36 (5), 798–828.

DeVellis, R.F. (2012) Scale development: theory and applications. Sage, Washington, D.C.

Doolin, B., Dillon, S., Thompson, F., & Corner, J. L. (2005). Perceived risk, the Internet shopping experience and online purchasing behavior: A New Zealand perspective. *Journal of Global Information Management (JGIM)*, *13*(2), 66-88.

Douglas, M. (2015). "Sources of data". Retrieved on 7th august, 2022 from http://www.onlineetymologydictionary/data

Dubois, A., & Gadde, L. E. (2002). Systematic combining: an abductive approach to case research. Journal of business research, 55(7), 553-560.

Dương,T.H.P.(2012)," Nghiên cứu các nhân tố ảnh Hưởng đến ý định mua sắm trực tuyến của khách hàng trên địa bàn thành phố Huế ",Tạp chí Khoa học Đại học Huế :Khoa học Xã hội và Nhân văn ,72B(3) ,263-274.

Elliot, S., & Fowell, S. (2000). Expectations versus reality: a snapshot of consumer experiences with Internet retailing.*International Journal of Information Management*, *20*(5), 323-333.

Faber, R. J., & O'Guinn, T. C. (1988). Compulsive consumption and credit abuse. *Journal of Consumer Policy*, *11*(1), 97-109.

Faber, R. J., &T. C. O'Guinn. 1992. "A Clinical Screener for Compulsive Buying." Journal of Consumer Research, 19(December): 459-469.

Floh, A., & Madlberger, M. (2013). The role of atmospheric cues in online impulse-buying behavior. *Electronic Commerce Research and Applications*, *12*(6), 425-439.

Fornell, C. and Larcker, D.F.,(1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), pp.39-50.

Goddard, W., & Melville, S. (2004). Research methodology: An introduction. Juta and Company Ltd.

Gorgoni, M., Scarpelli, S., Mangiaruga, A., Alfonsi, V., Bonsignore, M.R., Fanfulla, F., Ferini-Strambi, L., Nobili, L., Plazzi, G., De Gennaro, L. and Arnaldi, D., (2021). Pre-sleep arousal and sleep quality during the COVID-19 lockdown in Italy. *Sleep medicine*, *88*, pp.46-57.

Gorgoni, M., Scarpelli, S., Mangiaruga, A., Alfonsi, V., Bonsignore, M.R., Fanfulla, F., Ferini-Strambi, L., Nobili, L., Plazzi, G., De Gennaro, L. and Arnaldi, D., (2021). Pre-sleep arousal and sleep quality during the COVID-19 lockdown in Italy. Sleep medicine, 88, pp.46-57.

Greenfield, D. N. (1999). Psychological characteristics of compulsive Internet use: A preliminary analysis. *Cyberpsychology & behavior*, *2*(5), 403-412.Guitton, M. J. (2020). Cyberpsychology research and COVID-19. Computers in Human Behavior, 111, 106357.

Gurmu, E., & Etana, D. (2014). Age at first marriage and first birth interval in Ethiopia: Analysis of the roles of social and demographic factors. *African Population Studies*, *28*(3), 1332-1344.

Hà,N.T.&Nguyễn,T.Đ.(2016),“ Các yếu tố ảnh hưởng đến ý định mua sắm trực tuyến của người tiêu dùng Việt Nam :nghiên cứu mở rộng thuyết hành vi có hoạch định”, Tạp chí Khoa học Đại học Quốc gia Hà Nội :Kinh tế và Kinh doanh ,32(4) ,21-28

Hair, J. F., Black, W. C., Babin, B. J., &Anderson, R. E. (2010). Multivariate Data Analysis. 7th ed. New Jersey: Prentice Hall: Upper Saddle River.

Hair, J. F., Celsi, M., Ortinau, D. J., & Bush, R. P. (2010). Essentials of marketing research (Vol.2). New York, NY: McGraw-Hill/Irwin.

Hair, J.F., Ringle, C.M. and Sarstedt, M., 2011. PLS-SEM: Indeed a silver bullet. Journal of Marketing theory and Practice, 19(2), pp.139-152.

Hakim, C. (1982). Secondary analysis and the relationship between official and academic social research. *Sociology*, *16*(1), 12-28.

Häubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing science*, *19*(1), 4-21.

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, 43(1), pp.115-135.

Henwood, K. L., & Pidgeon, N. F. (1993). *Qualitative research and psychological theorizing**, in M. Hammersley (ed) Social Research: Philosophy, Politics and Practice. London: Sage Publications in association with The Open University.

Hoang Trong, Chu Nguyen Mong Ngoc (2008), Analysis of research data with SPSS Volume 2, Hong Duc Publishing House, page 24.

Hock, C., Ringle, C.M. and Sarstedt, M., 2010. Management of multi-purpose stadiums: Importance and performance measurement of service interfaces. International journal of services technology and management, 14(2-3), pp.188-207.

Hsu, C. L., Lin, J. C. C., & Chiang, H. S. (2013). The effects of blogger recommendations on customers' online shopping intentions. *Internet Research*, *23*(1), 69-88. Retrieve from: http://www.onlineetymologydictionary/data

Importance and performance measurement of service interfaces. International journal of services technology and management, 14(2-3), pp.188-207.

Isen AM, Levin PF (1972) Effect of feeling good on helping: cookies and kindness. J Pers Soc Psychol 21(3):384–388

Islam, J. U., & Rahman, Z. (2017). The impact of online brand community characteristics on customer engagement: An application of Stimulus-organism-response paradigm. Telematics and Informatics, 34(4), 96–109.

Islam, T., Pitafi, A.H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S. and Xiaobei, L., 2021. Panic buying in the COVID-19 pandemic: A multi-country examination. Journal of Retailing and Consumer Services, 59, p.102357.

Islam, T., Pitafi, A.H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S. and Xiaobei, L. (2021). Panic buying in the COVID-19 pandemic: A multi-country examination. *Journal of Retailing and Consumer Services*, 59, p.102357.

Iyer, G. R., Blut, M., Xiao, S. H., & Grewal, D. (2020). Impulse buying: a meta-analytic review. Journal of the Academy of Marketing Science, 48 (3), 384–404.

Jacoby, J. (2002). Stimulus-organism-response reconsidered: An evolutionary step in modeling (consumer) behavior. Journal of Consumer Psychology, 12(1), 51–57
.

Javadi, M. H. M., Dolatabadi, H. R., Nourbakhsh, M., Poursaeedi, A., & Asadollahi, A. R. (2012). An analysis of factors affecting on online shopping behavior of consumers. *International journal of marketing studies*, *4*(5), 81.

Javalgi, R. and Ramsey, R. (2001) 'Strategic issues of e-commerce as an alternative global distribution system', *International Marketing Review*, Vol. 18, No. 4, pp.376–391.

Jeffrey, S. A., & Hodge, R. (2007). Factors influencing impulse buying during an online purchase. *Electronic Commerce Research*, *7*(3), 367-379.

Jiang, D., 2022. Feeling gratitude is associated with better well-being across the life span: A daily diary study during the COVID-19 outbreak. *The Journals of Gerontology: Series B*, *77*(4), pp.e36-e45.

Kaur, G., & Quareshi, T. K. (2015). Factors obstructing intentions to trust and purchase products online. *Asia Pacific Journal of Marketing Logistics.*

Kim, E. Y., & Kim, Y. K. (2004). Predicting online purchase intentions for clothing products. *European journal of Marketing*, *38*(7), 883-897.

Kim, S. W., & Su, K. P. (2020). Using psychoneuroimmunity against COVID-19. Brain, Behavior, and Immunity, 87, 4–5.

Kim, W. G., & Moon, Y. J. (2009). Customers' cognitive, emotional, and actionable response to the servicescape: A test of the moderating effect of the restaurant type. International Journal of Hospitality Management, 28(1), 144–156.

Kline, R.B., 2015. Principles and practice of structural equation modeling. Guilford publications.

Knox, L., Karantzas, G.C., Romano, D., Feeney, J.A. and Simpson, J.A., 2022. One Year On: What We Have Learned about the Psychological Effects of COVID-19 Social Restrictions–A Meta-Analysis. *Current opinion in psychology*, p.101315.

Kolesar M. B., Galbraith, R. W. (2000), "A services-marketing perspective on eretailing: implications for e-retailers and directions for further research", Internet Research, 2000, Vol. 10 No. 5, pp. 424-438.

Kolesar, M. B., & Galbraith, R. W. (2000). A services-marketing perspective on e-retailing: implications for e-retailers and directions for further research. *Internet Research*.

Kotler, P. and Keller, K. (2011) "Marketing Management" (14th edition), London: Pearson Education

Koyuncu, C., & Bhattacharya, G. (2004). The impacts of quickness, price, payment risk, and delivery issues on on-line shopping. *The Journal of Socio-Economics*, *33*(2), 241-251.

Lachowska, M., 2017. The 2008 Economic Stimulus Payments Increased Emotional Well-Being. *Employment Research Newsletter*, *24*(4), p.2.

Ladhari, R., Gonthier, J., & Lajante, M. (2019). Generation Y and online fashion shopping: Orientations and profiles. *Journal of retailing and Consumer Services*, *48*, 113-121.

Laros, F. J. M., & Steenkamp, J. B. E. M. (2005). Emotions in consumer behavior: A hierarchical approach. *Journal of Business Research*, *58*(10), 1437–1445.

Latour, M. S., & Zahra, S. A. (1988). Fear appeals as advertising strategy: Should they be used? *Journal of Services Marketing*, *2*(4), 5–14.

Lau, H.P.B., White, M.P. and Schnall, S., 2013. Quantifying the value of emotions using a willingness to pay approach. *Journal of Happiness Studies*, *14*(5), pp.1543-1561.

Lau, H.P.B., White, M.P. and Schnall, S., 2013. Quantifying the value of emotions using a willingness to pay approach. *Journal of Happiness Studies*, *14*(5),.1543-1561.

Lepkowska-White, E. (2013). Are they listening? Designing online recommendations for today's consumers. *Journal of Research in Interactive Marketing*, *7*(3), 182-200.

Lester, D. H., Forman, A. M., & Loyd, D. (2005). Internet shopping and buying behavior of college students. *Services Marketing Quarterly*, *27*(2), 123-138.

Li, H., Kuo, C. and Rusell, M.G. (1999). The impact of perceived channel utilities, shopping orientations, and demographics on the consumer's online buying behavior. *Journal of computer-mediated communication*, *5*(2), p.JCMC521.

Liebermann, Y., & Stashevsky, S. (2002). Perceived risks as barriers to Internet and ecommerce usage. *Qualitative Market Research: An International Journal*.

Lin, Y. H., & Chen, C. Y. (2012). Adolescents' impulse buying: Susceptibility to interpersonal influence and fear of negative evaluation. *Social Behavior and Personality: an International Journal*, *40*(3), 353–358.

Lindsay, A.C. and Hubley, A.M. (2006). Conceptual reconstruction through a modified focus group methodology. *Social indicators research*, 79(3), pp.437-454. https://doi.org/10.1007/s11205-005-5075-9

Lins, S., & Aquino, S. (2020). Development and initial psychometric properties of a panic buying scale during COVID-19 pandemic. Heliyon, 6(9), e04746.
Lohse, G. L., & Spiller, P. (1998). Electronic shopping. *Communications of the ACM*, *41*(7), 81-87.

Mackey, A. J., & Gass, S. (2015). Interaction approaches.
Makgosa, R. and Mohube, K., 2007. Peer influence on young adults' products purchase decisions.

Malhotra, D. (2010). The desire to win: The effects of competitive arousal on motivation and behavior. *Organizational behavior and human decision processes*, 111(2), pp.139-146. https://www.hbs.edu/faculty/Pages/item.aspx?research=7290

Malhotra, D., 2010. The desire to win: the effects of competitive arousal on motivation and behavior. Organ. Behav. Hum. Decis. Process. 111, 139–146.

Manning, K., Eades, N.D., Kauffman, B.Y., Long, L.J., Richardson, A.L., Garey, L., Zvolensky, M.J. and Gallagher, M.W., 2021. Anxiety sensitivity moderates the impact of COVID-19 perceived stress on anxiety and functional impairment. *Cognitive Therapy and Research*, *45*(4), pp.689-696.

Masoud, E. Y. (2013). The effect of perceived risk on online shopping in Jordan. *European Journal of Business and Management*, *5*(6), 76-87.

Mcdaniel, S. W., & Zeithaml, V. A. (1984). The effect of fear on purchase intentions. *Psychology & Marketing*, *1*(3–4), 73–82.

Mehrabian, A., and Russel, J. (1974). An Approach to Environmental Psychology. Cambridge, MA: MIT Press.

Ministry of Industry and Trade. (2021), "White Book of E-commerce 2021", Department of E-Commerce and Digital Economy. Retrieved 1 July, 2022 from: https://moit.gov.vn/thong-bao-moi/ra-mat-sach-trang-thuong-mai-dien-tu-viet-nam-nam-2021.html

Moderation Analysis. Sustainability, 12 (1), 439.

Monsuwé, T. P., Dellaert, B. G., & De Ruyter, K. (2004). What drives consumers to shop online? A literature review. *International Journal of Service Industry Management*, *15*(1), 102-121.

Müller, A., Mitchell, J. E., & de Zwaan, M. (2015). Compulsive buying. *The American Journal on Addictions*, *24*(2), 132-137.

Mursid, A. (2021). Effects of Sentiment on Impulsive Buying Behavior: Evidence of COVID-19 in Indonesia. *Journal of Economics, Business, & Accountancy Ventura*, *23*(3), 452-465.

Nguyễn,T.H. & Hoàng,Đ.L.T.(2020),"Hành vi mua sắm trực tuyến của người tiêu dùng trên các website doanh nghiệp Việt Nam trong bối cảnh dịch COVID-19",Tạpchí Khoa học Đại học Quốc gia Hà Nội :Kinh tế và Kinh doanh,,36 (3),pp11-21.

Oakley, A. (2016). *Sex, gender and society*. Routledge.

O'Guinn, T. C., & Faber, R. J. (1989). Compulsive buying: A phenomenological exploration. Journal of consumer research, 147-157.

Park, H. and Stoel, L., 2005. A model of socially responsible buying/sourcing decision-making processes. *International Journal of Retail & Distribution Management*.

Petzold, M.B., Bendau, A., Plag, J., Pyrkosch, L., Mascarell Maricic, L., Betzler, F., ..., Strˉohle, A., 2020. Risk, resilience, psychological distress, and anxiety at the beginning of the COVID-19 pandemic in Germany. Brain Behav. 10 (9), 1–10.

Petzold, M.B., Bendau, A., Plag, J., Pyrkosch, L., Mascarell Maricic, L., Betzler, F., Rogoll, J., Große, J. and Ströhle, A., 2020. Risk, resilience, psychological distress, and anxiety at the beginning of the COVID-19 pandemic in Germany. Brain and behavior, 10(9), p.e 01745.

Predictive performance of PLS models. Journal of Business Research, 69(10), pp.4552-4564.

Prentice, C., Quach, S., & Thaichon, P. (2021). Antecedents and consequences of panic buying: The case of COVID-19. International Journal of Consumer Studies.

Przybylski, A. K., Murayama, K., De Haan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of Fear of missing out. Computers in Human Behavior, 29 (4), 1841–1848.

Rajan, K. A. (2020). Influence of hedonic and utilitarian motivation on impulse and rational buying behavior in online shopping. Journal of Statistics and Management Systems, 23 (2), 419–430.

Reisch, L. A., & Zhao, M. I. N. (2017). Behavioural economics, consumer behaviour and consumer policy: state of the art. *Behavioural Public Policy*, *1*(2), 190-206.

Ren, F., & Kwan, M. P. (2009). The impact of geographic context on e-shopping behavior. Environment and Planning B: Planning and Design, 36(2), 262-278.

Rook, D. W. (1987). The buying impulse. *Journal of consumer research*, *14*(2), 189-199.

Rook, D. W. and Gardner, M. P. (1993), "In the Mood: Impulse Buying's Affective Antecedents," Research in Consumer Behavior, 6, 1-28

Rook, D. W. and Hoch, S. J. (1985), "Consuming Impulses," Advances in Consumer Research, 12, 23-27.

Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying behavior. *Journal of consumer research*, *22*(3), 305-313.

Saunders, M., Lewis, P., & Thornhill, A. (2012). Research methods for business students (6. utg.). *Harlow: Pearson*.

Schiffman, G. and Kanuk, L. (2000) Consumer Behavior. Prentice Hall, Inc., Englewood Cliff.

Shafiee, M. M., & Bazargan, N. A. (2018). Behavioral customer loyalty in online shopping: The role of e-service quality and e-recovery. *Journal of theoretical and applied electronic commerce research*, *13*(1), 26-38.

Shen, N. K., & Khalifa, M. (2012). System design effects on online impulse buying. Internet Research, 22(4), 396–425.

Shmueli, G., Ray, S., Estrada, J.M.V. and Chatla, S.B., 2016. The elephant in the room: Predictive performance of PLS models. Journal of Business Research, 69(10), pp.4552-4564.

Sinha, J. (2010). *Factors affecting online shopping behavior of Indian consumers*. University of South Carolina.

Sneath, J.Z., Lacey, R. and Kennett-Hensel, P.A., 2009. Coping with a natural disaster: Losses, emotions, and impulsive and compulsive buying. *Marketing letters*, *20*(1), pp.45-60.

Sneath, J.Z., Lacey, R. and Kennett-Hensel, P.A., 2009. Coping with a natural disaster: Losses, emotions, and impulsive and compulsive buying. Marketing letters, 20(1), pp.45-60.

Solomon, M. (2011) "Consumer Behaviour" (seven editions), New Jersey: Prentice-Hall

Suryaningsih, I.B., 2020. Hedonic shopping mediation on impulse buying determinants. *Journal of Management and Business*, *19*(1).

Tạ,V.T.& Đặng,X.O.(2021),"Các nhân tố ảnh hưởng đến ý định mua sắm trực tuyến của người tiêu dùng Thế hệ Z tại Việt Nam" ,Tạp chí Khoa học & Đào tạo Ngân hàng, 229.27-35.
Thousand Oaks, CA: SAGE Publications.

Verhagen, T., & Van Dolen, W. (2011). The influence of online store beliefs on consumer online impulse buying: A model and empirical application. *Information & Management*, *48*(8), 320-327.

 Vijayasarathy, L. R., & Jones, J. M. (2000). Print and Internet catalog shopping: assessing attitudes and intentions. *Internet research*.

Walsh, J., & Godfrey, S. (2000). The Internet: a new era in customer service. *European Management Journal*, *18*(1), 85- 86.

Wegmann, E., Oberst, U., Stodt, B., & Brand, M. (2017). Online-specific Fear of missing out and Internet-use expectancies contribute to symptoms of Internet-communication disorder. Addictive Behaviors Reports, 5, 33–42.

Wen, H. J., Chen, H. G., & Hwang, H. G. (2001). E-commerce Web site design: strategies and models. *Information management & computer security*.

Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, *59*(4), 329–349

Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education and Behavior*, *27*(5), 591–615.

Yeniçeri, T., & Akin, E. (2013). Determining risk perception differences between online shoppers and non-shoppers in Turkey. *International Journal of Social Sciences*, *2*(3), 135-143.

Ypsilanti, A., Mullings, E., Hawkins, O. and Lazuras, L., 2021. Feelings of fear, sadness, and loneliness during the COVID-19 pandemic: findings from two studies in the UK. *Journal of affective disorders*, *295*, pp.1012-1023.

Ypsilanti, A., Mullings, E., Hawkins, O. and Lazuras, L., 2021. Feelings of fear, sadness, and loneliness during the COVID-19 pandemic: findings from two studies in the UK. Journal of affective disorders, 295, 1012-1023.

Zafar, A. U., Qiu, J., Li, Y., Wang, J., & Shahzad, M. (2019). The impact of social media celebrities' posts and contextual interactions on impulse buying in social commerce. Computers in Human Behavior. In press.

Zhang, W., Leng, X. and Liu, S., 2020. Research on mobile impulse purchase intention in the perspective of system users during COVID-19. *Personal and Ubiquitous Computing*, pp.1-9.

Zhu, B., Kowatthanakul, S. and Satanasavapak, P. (2019). Generation Y consumer online repurchase intention in Bangkok: Based on Stimulus-Organism-Response (SOR) model. *International Journal of Retail & Distribution Management*.

APPENDIX

Filter Question

Have you ever shopped online?

- Used to
- Never
- Other

Where do you live?

- Hanoi
- Ho Chi Minh
- Hai Duong
- Hai Phong
- Danang
- Other

	1. Totally not agree	2. Not agree	3. Moderate	4. Agree	5. Totally agree
The fear of contiguous covid 19 virus pushed me to buy and stock items					
The fear of shortages of items, and lockdown pushed me to buy plenty of essential items during COVID-19					

The fear appeal due to the COVID-19 pushed me towards buying essential & non-essential items					
Fear of lack of shipping service makes me buy more items with each purchase					
I rushed for buying because of panic news spread by the peers, neighbors, & relatives					
The peers buying has a significant impact on my daily grocery & other essential & non-essential purchases					
I was more involved in impulse purchases by seeing the plenty of buying of peers everyday					
The scarcity of essentials in stores and e-commerce platforms has pushed me towards the impulse purchases.					
The scarcity of goods makes me afraid and buy a lot of things					
I involve more in purchases of goods by watching the empty shelves					
The limited supply of grocery and other essential items forced me to buy more & more goods					
The shortages of supplies worried me, and I stocked items					
The limited supply of essential goods motivate me to buy plenty of items and stock them					

I leaned the COVID-19 was spreading then I rush to purchase grocery and other essential items					
The panic buying of customers turn me towards the same attitude and I also buy in the same manner					
I was quite dominated by the panic buying and stocked plenty of essential & non-essential items during COVID-19 phenomenon					
The stimulus checks I received an unexpected money that further push me towards more purchases					
The most of the money of stimulus checks was used in essential items					
I used stimulus checks in buying for both essential and non-essential items					
I use social networks to gather the latest information on the pandemic.					
I use social networks to maintain close social relationships with people.					
I use social networks to gather information about shopping during the pandemic.					
My purchased was unplanned.					
I cannot resist buying the goods if I really like it.					
I spent more money to buy the merchandise than I expected					

My kitchen closet has unopened shopping bags of these groceries in it.					
Others might consider me a shopaholic to buy groceries.					
Much of my life centers around buying things from the supermarket.					

Demographic questions

What is your gender?

- Male
- Female

How old are you?

- < 20 years old
- 20 - 30 years old
- 31 - 40 years old
- 41 - 50 years old
- > 50 years old

Academic standard

- High school
- College
- University
- Post-graduate

Marital status

- Married
- Single
- Other

What is your occupation ?

- Employee

- Student

- Civil servant

- Freelance

- Other

Online shopping experience?

- Master

- Nomal

- Newbie