

**THE INFLUENCE OF PERCEIVED USEFULNESS,  
PERCEIVED EASE OF USE AND PERCEIVED  
HEALTH RISK ON CONSUMERS' ONLINE SHOPPING  
BEHAVIORS AND THEIR CONTINUANCE INTENTION  
– A STUDY IN POST COVID-19 PANDEMIC**

Master's Thesis  
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Abstract

This thesis examines the impact of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behaviors and continuance intention in the post-pandemic era, with a specific focus on the context of online food delivery services. The research adopts a survey methodology, utilizing data collected from 181 respondents through online communities on social platforms and direct messages. The findings reveal that perceived usefulness positively influences consumers' attitudes and continuance intention towards online shopping. Additionally, perceived ease of use is found to have a positive influence on consumers' attitudes, perceived behavioral control, and continuance intention towards online shopping. Furthermore, perceived health risk is identified as a significant factor positively influencing consumers' attitudes, subjective norms, and continuance intention towards online shopping. These findings contribute to a deeper understanding of consumer behavior in the post-pandemic landscape and provide valuable insights for businesses operating in the online food delivery industry. The study underscores the importance of perceived usefulness, perceived ease of use, and perceived health risk in shaping consumers' online shopping behaviors and their intentions to continue using online platforms.

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**Keywords** perceived usefulness, perceived ease of use, perceived health risk, continuance intention, online shopping, covid-19

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# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Background and motivation .....	1
1.2	Scope and research question.....	2
1.3	Structure of the thesis.....	4
<b>2</b>	<b>Literature review and theoretical foundation.....</b>	<b>5</b>
2.1	Behavioral intention theories.....	5
2.1.1	Theory of reasoned action .....	5
2.1.2	Theory of planned behavior.....	8
2.2	Online shopping .....	11
2.2.1	Driving factors of online shopping.....	13
<b>3</b>	<b>Hypotheses development and research framework.....</b>	<b>14</b>
<b>4</b>	<b>Methodology.....</b>	<b>20</b>
4.1	Data collection method .....	21
4.2	Instrument development .....	21
4.3	Sample.....	23
4.4	Data analysis and hypothesis testing.....	24
4.4.1	Respondents' demographic .....	24
4.4.2	Reliability and validity test.....	25
4.4.3	Hypothesis testing .....	27
<b>5</b>	<b>Discussion and implications.....</b>	<b>29</b>
5.1	Discussion of the research findings .....	29
5.2	Implications .....	30
5.3	Contributions, limitations and suggestions for further research .....	33
<b>6</b>	<b>Conclusion .....</b>	<b>34</b>
	<b>References.....</b>	<b>36</b>
	<b>Appendix A: Survey questions .....</b>	<b>46</b>

## List of Tables

Table 1: Instrument measures.....	22
Table 2: Respondents' demographic profile.....	25
Table 3: Reliability and validity test of measures .....	26
Table 4: Discriminant validity based on Fornell-Larcker Criterion .....	27
Table 5: Hypothesis testing .....	28

## List of Figures

Figure 1. Online retail sales of selected economies during 2018-2020 (UNCTAD, 2021) ..	1
Figure 2 Food delivery growths in selected countries during 2018-2021 (McKinsey & Company, 2020) .....	4
Figure 3: Base elements of theory of reasoned action model (Madden et al., 1992, p. 4) ....	6
Figure 4: Theory of planned behavior model (Madden et al., 1992, p.4).....	9
Figure 5 Research conceptual framework .....	20

# 1 Introduction

This first chapter provides the background and motivation for conducting the thesis. The scope and research question are also declared to narrow down and highlight the focus of the study. Lastly, in order to present an overview, the structure of the thesis is briefly presented.

## 1.1 Background and motivation

In the year 2020, a global outbreak of coronavirus (COVID-19) caused a massive impact on the world, infecting millions of people and resulting in a considerable loss of lives. To prevent the virus's spread, most countries implemented national lockdowns, significantly affecting individuals' daily lives. The pandemic's contagious nature and severe consequences led to increased concern among individuals about contracting the disease, defined as the coercive effect of COVID-19 (Prasad & Srivastava, 2021). In response, people have been increasingly resorting to online platforms for shopping, a trend previously reported by Arora et al. (2020), Galhotra & Dewan (2020), and Baarsma & Groenewegen (2020). Notably, even individuals who had previously been hesitant to perform online shopping have turned to online services for their shopping needs due to limited alternatives.

Economy	Online retail sales (\$ billions)			Retail sales (\$ billions)			Online share (% of retail sales)		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Australia	13.5	14.4	22.9	239	229	242	5.6	6.3	9.4
Canada	13.9	16.5	28.1	467	462	452	3.0	3.6	6.2
China	1,060.4	1,233.6	1,414.3	5,755	5,957	5,681	18.4	20.7	24.9
Korea (Rep.)	76.8	84.3	104.4	423	406	403	18.2	20.8	25.9
Singapore	1.6	1.9	3.2	34	32	27	4.7	5.9	11.7
United Kingdom	84.0	89.0	130.6	565	564	560	14.9	15.8	23.3
United States	519.6	598.0	791.7	5,269	5,452	5,638	9.9	11.0	14.0
<b>Economies above</b>	<b>1,770</b>	<b>2,038</b>	<b>2,495</b>	<b>12,752</b>	<b>13,102</b>	<b>13,003</b>	<b>14</b>	<b>16</b>	<b>19</b>

Source: UNCTAD, based on national statistics offices.

Figure 1. Online retail sales of selected economies during 2018-2020 (UNCTAD, 2021)

In recent times, mobile devices have enabled online shopping to become a pivotal aspect of individuals' lives. This has offered consumers an alternative to physical stores,

enabling them to make purchases with ease, from any location with Internet access, through a few clicks. As a result, online shopping has witnessed unprecedented growth and has been contributing to the surge in online retail sales annually. Furthermore, the onset of the COVID-19 pandemic has resulted in an even more substantial surge in online retail sales, as seen from Figure 1. Notably, top economies such as Canada have experienced the highest growth in online retail sales, a staggering 70% increase from the previous year, whereas conventional retail sales have significantly reduced in most of the countries in Figure 1 due to restrictions on movement and opening time during the pandemic. Therefore, it is crucial to explore the underlying reasons for this massive surge in online retail sales. Also, understanding consumers' continuance intention to do online shopping after the pandemic becomes essential for e-commerce businesses.

## 1.2 Scope and research question

The COVID-19 pandemic has exerted a substantial situational impact on the surge in the adoption of e-commerce, and it is expected to have a long-lasting impact on consumer behavior. The pandemic has created a new reality where consumers rely on online shopping as a primary alternative to traditional brick-and-mortar stores. This shift in consumer behavior has resulted in a significant surge in online retail sales worldwide. The situational factors that have influenced this adoption of online shopping during the pandemic include the availability of delivery services, consumer trust, and perceived risk. For instance, many consumers who were hesitant to shop online before the pandemic have been forced to adopt this new shopping behavior due to the closure of physical stores and concerns about infection risk (Chen et al., 2021; Yang et al., 2021). With the impacts from the pandemic during the restrictions, it is essential to understand how the situational effects of COVID-19 will affect consumer behavior in the long run and what implications it may have for the future of retail.

A plethora of driving factors for online purchase intention have been investigated in previous research. However, due to the recent outbreak of COVID-19, there has been a paucity of studies that have taken into account the pandemic's effects on online shopping behaviors. Therefore, the aim of this thesis is to examine how COVID-19 has influenced people's online purchase behaviors, which have experienced a substantial increase since the outbreak of the pandemic. As the pandemic has expedited the adoption of online shopping, understanding its perceived usefulness is crucial for businesses to tailor their offerings and marketing strategies effectively. In addition, with the rapid shift to digital channels during the pandemic, investigating perceived ease of use helps identify barriers or facilitators that



can enhance consumers' online shopping experiences. Lastly, perceived health risk addresses consumers' concerns regarding potential exposure to infectious diseases through in-person shopping. Exploring the influence of perceived health risk provides insights into consumers' risk perceptions and how these perceptions shape their attitudes and behaviors towards online shopping as a safer alternative. Hence, while many driving factors for online shopping have been scrutinized in previous research, this thesis seeks to investigate the effect of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behaviors post pandemic. Understanding the impact of these factors is crucial for e-commerce firms as it would help them better prepare strategies to retain their consumers after the influence of the pandemic. Additionally, as of the time of writing, three years have elapsed since the emergence of COVID-19, and restrictions have been lifted in most countries. Therefore, it is crucial to investigate the impacts of those three factors on people's intention to continue online shopping in the post-pandemic period.

The research question is:

1. *What are the determinants that influence consumers' continuance intention to do online shopping in the post-pandemic period?*

In order to address the above research question, this thesis will review the prevailing studies with the same theme. By doing so, it will help gather different viewpoints on the topic and identify important factors driving people's online shopping behaviors. Then, quantitative research under the form of survey will be adopted. The empirical data will be collected and analyzed to test the proposed hypotheses. Depending on the empirical findings, this thesis will either reinforce the existing views or add new insights regarding the influence of perceived usefulness, perceived ease of use and perceived health risk on consumers' online purchase intention. The COVID-19 pandemic has resulted in a significant shift towards online shopping behavior, particularly for essential goods and services. One such service is online food delivery, which has seen a surge in demand due to social distancing measures and lockdowns. Based on the data presented in Figure 2, it is evident that there has been a substantial growth in the food delivery sector across mature markets since 2018, with Canada experiencing the highest growth rate, seven times larger than its 2018 figure. This increase in demand for online food delivery services is a clear indication of the significant growth in online sales across industries during the COVID-19 pandemic. Also, food delivery services have become an essential part of people's lives, and their usage is likely to continue

even after the pandemic. Therefore, using online food delivery as a context for this study's research survey can provide relevant and valuable insights. The results of the study can be useful for businesses to adapt their online food delivery services and for policymakers to understand the carry-on impact of the pandemic on online shopping behavior through three factors: perceived usefulness, perceived ease of use and perceived health risk.

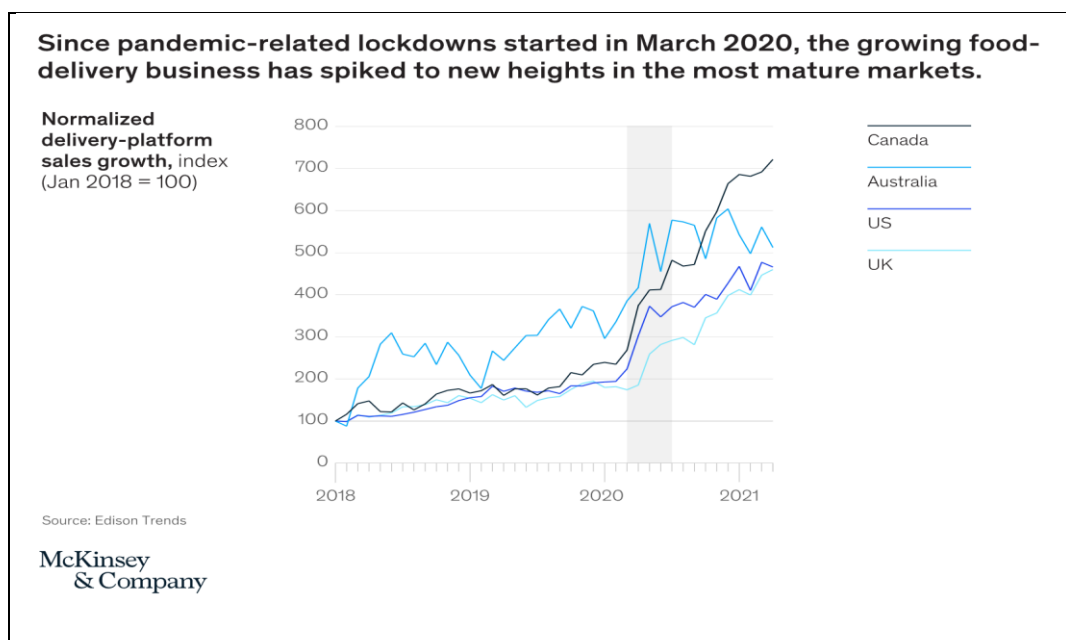


Figure 2 Food delivery growths in selected countries during 2018-2021 (McKinsey & Company, 2020)

The recent surge in e-commerce has been a boon for some business owners, while others have struggled to adapt and have suffered losses. As previous research has suggested, it is more cost-effective for businesses to focus on retaining existing consumers rather than solely attracting new ones (Bhat & Darzi, 2016). This is due, in part, to the fact that existing consumers have a higher tendency to re-engage with the business and make repeat purchases. Given the situational effect of COVID-19, it is important for business owners to understand how consumers are making decisions about engaging in online shopping and whether they will continue to do so in the future. Therefore, this thesis aims to provide insights into consumers' continuance intention in online shopping post-pandemic.

### 1.3 Structure of the thesis

The thesis comprises six chapters, along with a list of references and appendices. The first chapter serves to provide the thesis background and outline the study's purpose. The second chapter introduces relevant theoretical frameworks, such as the Theory of Reasoned Action

(TRA) and the Theory of Planned Behavior (TPB). Additionally, the chapter presents current perspectives from existing research on the factors driving online shopping, with a particular focus on the effects of perceived usefulness, perceived ease of use and perceived health risk on consumers' online shopping behaviors. Chapter Three of this study comprehensively examines those factors influencing consumers' online shopping behavior and their continuance intention, with specific emphasis on the context of COVID-19 pandemic. This chapter aims to develop hypotheses and construct the study's theoretical framework.

In addition, the fourth chapter of this thesis expounds on the research methodology employed for this study. This section also introduces the research context and displays the analyzed results. Subsequently, the fifth chapter discusses the empirical findings derived from the research and presents its implications. Also, it highlights the academic and business contributions as well as suggestions for further research. Finally, the last chapter provides a conclusion to the thesis which summarizes the main findings and restates the research objectives.

## **2 Literature review and theoretical foundation**

The present chapter introduces and discusses relevant theoretical frameworks and contemporary views on the driving factors that influence individuals' online shopping behavior. The theoretical frameworks examined include the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior, developed by Fishbein and Ajzen. Subsequently, the chapter presents an overview of the key driving factors of online shopping, which have been extensively studied in the past. Lastly, perceived usefulness, perceived ease of use and perceived health risk are discussed under the context of COVID-19 to develop hypotheses and construct the research framework.

### **2.1 Behavioral intention theories**

#### **2.1.1 Theory of reasoned action**

The Theory of Reasoned Action (TRA) is a widely accepted model for predicting an individual's behavioral intentions and/or behaviors. Developed by Fishbein and Ajzen in 1975, the theory posits that specific beliefs influence behavior intentions and actual behaviors (Yu & Wu, 2007). The immediate antecedents of a particular behavior are referred to as behavior intentions (Yu & Wu, 2007). These intentions are determined by either behavioral influence or normative influence. Behavioral influence refers to an individual's

attitudes towards a particular behavior, which usually stems from their belief that performing the action will lead to specific outcomes (Madden et al., 1992). For example, an individual may decide to purchase a car because they believe it will make their daily commute easier. On the other hand, normative influence refers to an individual's perception of whether a behavior is acceptable in their relevant groups, such as family and friends, and is often referred to as subjective norms. For example, an individual may consider whether their family members would approve of their decision to purchase a new car. Figure 3 demonstrates that a person's behavior intentions and subsequent behaviors are influenced by either their attitude or subjective norms (Madden et al., 1992).

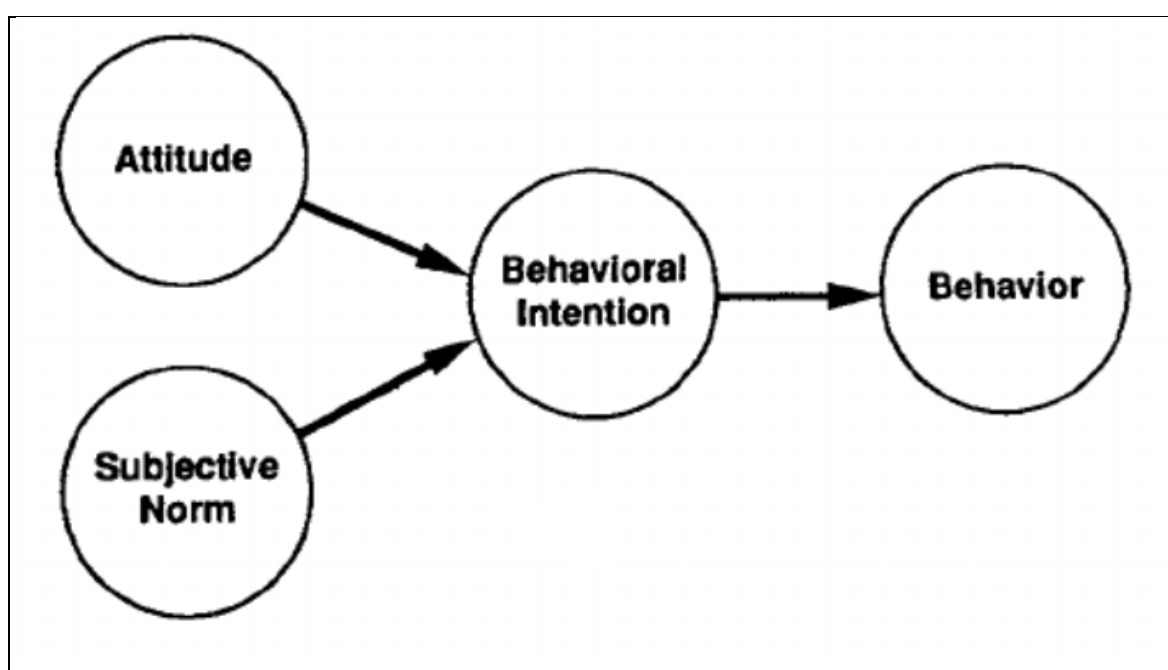


Figure 3: Base elements of theory of reasoned action model (Madden et al., 1992, p. 4)

Previous studies have identified several determinants of attitude and subjective norms in addition to the base components of TRA, as illustrated in Figure 3. Hale et al. (2002) proposed that a person's attitude toward a behavior is influenced by belief strength and belief evaluation. These concepts were derived from Fishbein's Summative Model of Attitude (1967a, 1967b), which measures an individual's attitude toward a behavior. Belief strength refers to the degree of certainty an individual has about their belief, such as the certainty that buying a new car will add value to their daily commute. Additionally, depending on how an individual perceives the outcomes, attitudes can fall into two categories: positive or negative evaluation. For instance, someone may consider the outcome of buying a car as positive

because it adds value to their daily commute. Furthermore, subjective norms are shaped by normative beliefs and the motivation to comply (Hale et al., 2002). Normative belief is the perceived expectations from an individual's relevant groups regarding a specific behavior, such as the belief that buying a new car is the right thing to do. Motivation to comply refers to the individual's own pressure to perform a behavior in accordance with perceived expectations from their salient groups. Moreover, other factors beyond the base components of TRA were found to influence behavioral intentions. For example, moral obligations were found to significantly affect intention in the context of job termination among nurses (Prestholdt et al., 1980), and self-identity was shown to positively affect behavioral intention (Terry et al., 1999). Previous occurrence of the behavior was also found to influence future behavior, and an individual's mood was found to moderate the components of TRA, with a positive mood having more impact on the relationship between subjective norms and intention (Hale et al., 2002).

The application of TRA has been the subject of various opposing views. Sutton (1998) suggested that intentions could be provisional when examining the predictability and explanation of TRA. Sutton's study found that some participants had similar intentions to those that occurred in their real life, while others had hypothetical intentions because they had never experienced such situations. The researchers concluded that there was a stronger intention-behavior relationship among those who had prior experience or once possessed salient behavior intentions. Additionally, Sutton (1998) found that the intention-behavior relationship was stronger when individuals were faced with a real situation with consequences.

Another important factor to consider in the application of TRA is the time interval between the formation of intention and the occurrence of the behavior. Ajzen and Fishbein (as cited in Hale et al., 2002) argued that measuring the intention close to the behavior would increase the accuracy of TRA's prediction. However, many studies have shown that there is often a long interval between the intention and the behavior, which can lead to changes in intentions. Sutton (1998), however, claimed that longer intervals can provide individuals with more time and opportunities to execute the behavior.

It is important to note that TRA only applies to volitional behaviors that individuals have complete control over and do not require any special skills or cooperation from others (Hale et al., 2002; Hansen et al., 2004; Liska, 1984; Madden et al., 1992). Lack of certain skills can prevent individuals from carrying out a behavior, which is not because of their voluntary decision not to do it. Additionally, several studies have identified a weak impact

of subjective norms on behavioral intention in certain contexts, such as online search and purchase intentions (Shim et al., 2001) and food choice (Sapp & Harrod, 1989; Thompson et al., 1994). For example, reference groups were found to have an insignificant influence on online search and purchase intentions because these behaviors are more personal and invisible to the public. Similarly, for most food choice situations, people tend to consider this kind of activity as habitual and routine, which reduces the motivation to seek or be affected by references (Thompson et al., 1994). In a study on online grocery shopping intention, Hansen et al. (2004) highlighted one important factor that undermined the importance of subjective norms, which is the extent to which an individual is involved in the behavior.

### 2.1.2 Theory of planned behavior

In the pursuit of extending the reach of TRA, Ajzen (1985) proposed the theory of planned behavior (TPB), which integrates all of TRA's existing components with the addition of perceived behavioral control (Figure 4). Perceived behavioral control pertains to an individual's subjective conviction regarding their possession of the requisite resources, capabilities, or opportunities to enact a specific behavior. Essentially, it reflects the individual's self-assessment of whether a particular behavior is challenging to perform (Hansen et al., 2004). There are two links between perceived behavioral control and behavior, namely a direct and indirect influence on behavior via behavioral intention. Madden et al. (1992) defined the direct link as an individual's actual control over the behavior in question without being mediated by intention. The impact of perceived control is considered stronger when an individual lacks volitional control over some aspects of the behavior, and the perceived control is accurate. With regards to the indirect link, perceived behavioral control serves as a motivational factor for behavioral intentions. Bandurra et al. (1980) reported empirical evidence that confidence in one's ability to carry out a behavior has a substantial influence on that behavior. Specifically, if an individual has a strong belief that they possess enough resources to perform a particular behavior, the intention to carry out that behavior is heightened, despite having an unfavorable attitude or subjective norms. Consequently, the likelihood of the behavior being executed is high. This reflects the motivational aspect of perceived control, which has an indirect influence on behavior via intentions.

Hale et al. (2002) have posited two determinants of perceived behavioral control, namely control beliefs and perceived power, that are akin to attitude and subjective norms.

Control beliefs refer to an individual's self-efficacy beliefs, or confidence in their ability to carry out a specific behavior. When individuals believe that they are capable of performing a behavior, their perceived behavioral control is heightened. Conversely, perceived power encompasses an individual's cognizance of their capacity to exert control over a given situation, thereby engendering an enhanced sense of agency over their own behavior. However, these determinants have been given scant attention in the literature, as most studies have tended to treat perceived behavioral control as a broad construct without delving into its underlying components.

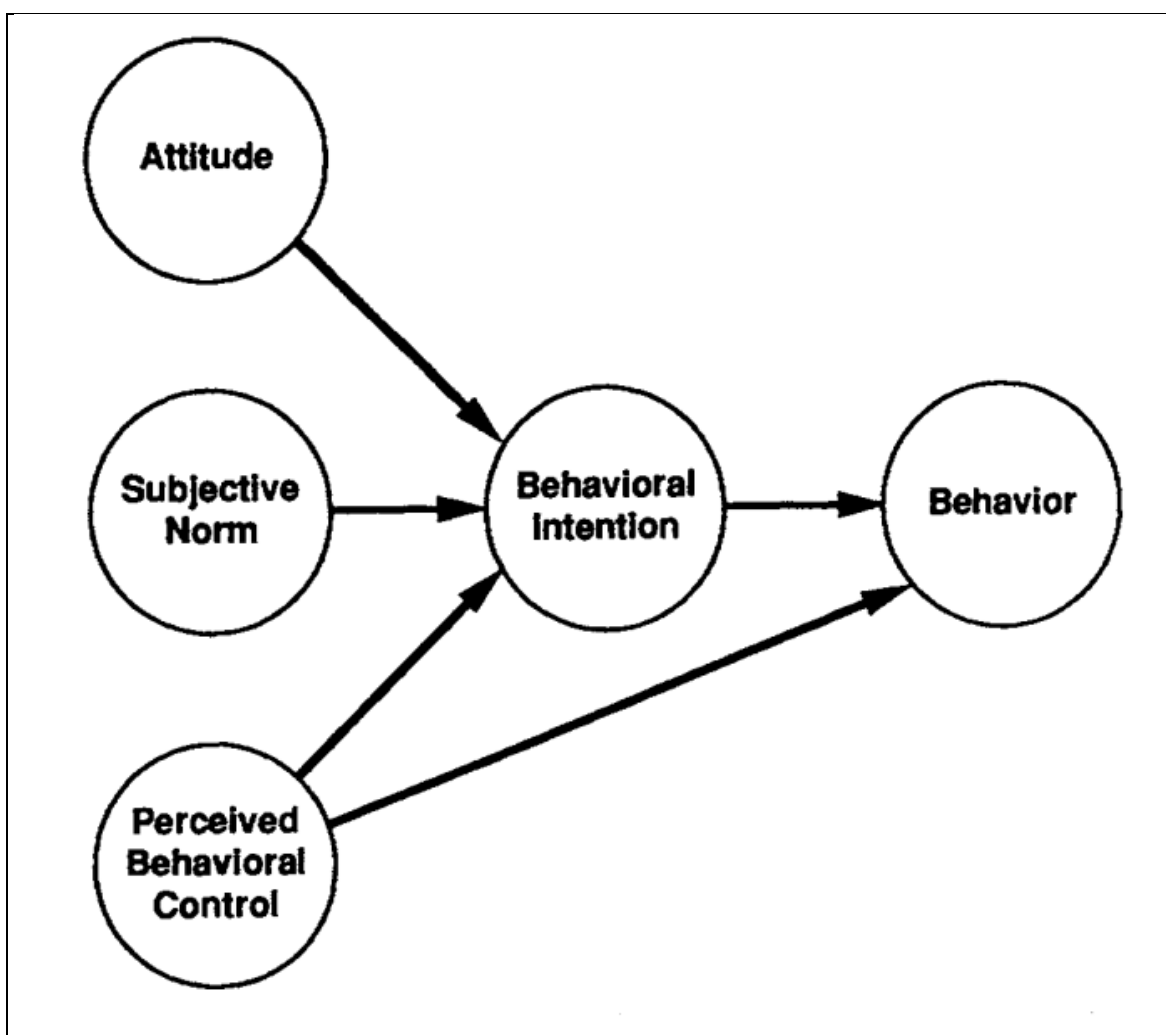


Figure 4: Theory of planned behavior model (Madden et al., 1992, p.4)

Numerous studies have examined the validity and accuracy of the Theory of Planned Behavior (TPB). For instance, Ajzen and Madden (1986) employed TPB as the framework for two experiments. The first experiment focused on students' class attendance, and the results revealed that perceived behavior control had a significant association with behavioral intentions. However, there was an insignificant direct relationship between perceived

behavior control and actual behavior. The authors concluded that the level of control over class attendance was too high, rendering the inclusion of perceived control redundant. Ajzen and Madden (1986) subsequently conducted a second experiment on students' attitudes toward receiving an A in a course, where the final course grade served as the goal. This time, the experiment collected data at two separate moments: the beginning and the end of the course. The results from the beginning of the course were similar to the first experiment. However, the results from the end of the course revealed a significant relationship between perceived behavior control and actual behavior. When the students became accustomed to the context, their perceived control began to align with their actual level of control. Thus, as the perception of control became more accurate, perceived behavioral control could predict actual behavior. In a different context, Madden et al. (1992) conducted a study on undergraduate business students' control of their daily activities. The empirical findings indicated that TPB was a more accurate predictor and encompassed more variations than the Theory of Reasoned Action (TRA). They also found that the relationship between perceived behavioral control and behavior is negatively influenced by the level of control over that behavior. In cases where an individual has high control over the behavior, the impact of perceived behavior control is insignificant. Conversely, when the individual has low control over the behavior, the impact of perceived behavior control is significant and unaffected by behavioral intentions. Consequently, in agreement with Ajzen and Madden's (1986) findings, Madden et al. (1992) postulated that the predictive validity of perceived behavioral control is contingent upon the accuracy of perceived control and the degree to which the behavior in question is subject to volitional control.

Several studies have raised concerns regarding certain aspects of the Theory of Planned Behavior (TPB). Ajzen (1985), the proponent of TPB, posited that perceived behavioral control influences behavioral intentions. Eagly and Chaiken (1993) considered this relationship to be causal, with perceptions of behavioral control contributing to the formation of behavioral intentions. The valence of the relationship can vary depending on an individual's disposition towards actual behavior. Similarly, Hale et al. (2002) argued that the positive relationship between these two elements is only valid when the behavior in question is considered to have positive valence. In situations where the behavior is viewed as negative, the relationship is deemed irrelevant. For instance, if an individual is against plastic use, they would not intend to use a plastic bag when shopping, even if they believe that using a plastic bag is easy to perform. Eagly and Chaiken (1993) suggested that future studies should examine the interactions of perceived behavioral control with other elements,



as these may moderate the relationship between perceived behavioral control and intentions. Hale et al. (2002) expressed skepticism regarding TPB as the sole sufficient predictor of behavior, arguing that other important elements such as habit, prior behaviors, and affect should be considered. Lastly, Eagly and Chaiken (1993) pointed out that TPB lacks the inclusion of "plan" despite being about "planned behavior." Particularly, in situations where individuals do not have full control over a behavior, the process of forming, evaluating, and selecting the optimal plan would be valuable in predicting the execution of the behavior.

In summary, while TRA remains one of the most frequently used frameworks for understanding human behavior, it is not the most appropriate model for the context studied in this thesis. Online shopping and food delivery services require individuals to possess a certain level of technical expertise and have been relied upon more heavily since the outbreak of COVID-19. In some cases, these services are the only available option for individuals. TRA is limited to volitional behaviors where individuals have complete control and does not account for external factors beyond a person's control that may influence behavior, as noted by Sheppard et al. (1988). Therefore, TPB offers a more comprehensive theoretical framework for investigating individuals' attitudes and behavioral intentions towards online shopping. Some key constructs in the TPB model (as shown in Figure 4) are employed to form the conceptual framework for this study, which is presented in the following section.

## **2.2 Online shopping**

The Internet has become a crucial aspect of daily life owing to its emergence and continuous growth. Its removal of geographical limitations has made it easier for people to connect and interact with each other. Furthermore, online platforms such as search engines and online groups offer access to information and knowledge with just a few clicks. As a result, 24/7 connectivity and information availability have become two key factors that have prompted many companies to establish their e-commerce businesses. Online shopping has provided businesses with an alternative method of interacting with their existing consumers and reaching out to potential consumers. For consumers, online shopping has provided a way to purchase products or services without physically visiting a store. This mode of shopping, known as online shopping, is accessible to individuals with Internet access via web browsers or mobile applications. Consumers may purchase goods or services using the merchant's official website or an e-commerce marketplace such as Amazon or eBay. The entire purchase

process, including information such as product descriptions, images, videos, feedback, etc., is accessible to the consumers online. Online shopping is similar to "shopping through a paper catalog" in that consumers can only view products without touching or smelling them, and products are shipped via mail delivery, as noted by Park and Kim (2003). Butler and Peppard (1998), Chen et al. (2002), and Park and Jun (2003) have identified several advantages of online shopping compared to traditional shopping. Kim (2002) suggested that factors such as 24/7 availability, accessibility, transaction speed, and the ability to make purchases from anywhere are essential determinants of convenience in online shopping. Traditional shopping, on the other hand, requires people to physically visit brick-and-mortar stores, and most physical stores have set opening and closing times, making it less convenient and less accessible than online shopping. Thus, by eliminating these limitations, online shopping provides more convenience, which is considered a significant benefit, as noted by Jarvenpaa and Todd (1996).

The value of online shopping is a subject of debate in academic literature. Early research by Park and Jun (2003) characterized online shopping as an impersonal and functional experience primarily suited for repeat purchases. However, subsequent research by Kim (2002) has challenged this notion, positing that online shopping provides a good combination of hedonic and utilitarian values due to the ever-increasing growth of the Internet across multiple dimensions. For instance, the number of Internet users has significantly increased over time via virtual community groups that connect people with similar interests and facilitate communication, regardless of geographical constraints. Additionally, multimedia presentation enables Internet users to enjoy a wide range of customized and interactive content. Online users can also access information about their desired products or services from search engines or online reference groups. Online shopping, therefore, brings both convenience and an enjoyable experience to consumers (Jarvenpaa and Todd, 1996).

Similarly, Korgaonkar and Wolin (1999) argued that consumers use online shopping for social escapism motivation to compensate for loneliness, boredom, and pressure. Additionally, online shopping provides economic benefits such as time and money savings. The literature shows that consumers have diverse motivations for engaging in online shopping, and these motivations influence their shopping behavior. Thus, understanding these motivations is crucial for e-commerce marketers and managers to develop effective strategies that cater to consumers' needs and preferences.

### 2.2.1 Driving factors of online shopping

Online shopping has become an increasingly popular method of purchasing goods and services. There are several driving factors that contribute to this phenomenon. Among the paramount determinants, the convenience associated with home-based shopping emerges as a salient factor, affording consumers the opportunity to circumvent the inconveniences entailed in visiting brick-and-mortar establishments. Additionally, online shopping offers a wider variety of products, and often provides consumers with the ability to easily compare prices and reviews. Moreover, online shopping can offer lower prices, which can attract budget-conscious consumers. Despite these advantages, consumers also perceive some risks and uncertainties associated with online shopping, such as fraud, product quality, and delivery issues. Thus, several driving factors are present below with different views from past studies.

One of the key driving factors of online shopping's widespread adoption is perceived usefulness. Perceived usefulness pertains to an individual's conviction that the utilization of an application or technology would enhance their performance in a specific task or activity (Davis, 1989). Within the realm of online shopping, this performance is primarily focused on the advantages derived from acquiring a product through internet retailing, while circumventing the need to visit a physical store. A number of studies have examined the relationship between perceived usefulness and online shopping. For instance, Koufaris (2002) found that perceived usefulness had a positive influence on the intention of potential internet shoppers. Similarly, Alreck et al. (2009) posited that online merchants who effectively highlight both time-saving and expedited task completion are more likely to attract a larger pool of buyers compared to those who solely emphasize either one of these benefits. Additionally, Luarn and Lin (2005) suggested that greater perceived usefulness is associated with a higher number of transactions. Overall, the research indicates that perceived usefulness is a key factor in driving consumers' adoption of online shopping.

Another important factor in online shopping context is perceived ease of use, which is a significant driving factor that influences consumer behavior in online shopping. It is defined as the degree to which a consumer believes that using an online shopping platform is easy and requires little effort (Davis, 1989). Previous research has shown that perceived ease of use has a positive impact on consumers' attitudes and intentions towards online shopping (Koufaris, 2002). Consumers who perceive an online shopping platform as easy to use are more likely to feel confident in their ability to complete a transaction, and therefore,

are more likely to engage in online shopping activities. Moreover, when consumers have a positive experience with an online shopping platform, they are more likely to become loyal consumers and recommend the platform to others. Therefore, it is crucial for online retailers to prioritize user-friendliness and simplify the online shopping process to enhance consumers' perceived ease of use and ultimately increase their satisfaction and loyalty.

Despite the perceived benefits of online shopping, it is often associated with increased levels of uncertainty and risk for consumers, as compared to traditional retail formats (Lee & Tan, 2003). Perceived risk in the context of online shopping can be defined as the potential for loss while engaging in a purchase process, which is a combination of uncertainty and the possibility of serious outcomes (Ko et al., 2004). Consequently, the presence of perceived risk has been found to exert a substantial influence on the propensity of consumers to engage in online purchase behaviors (Barnes et al., 2007). Nevertheless, it is crucial to acknowledge that the perception of risks and costs associated with online shopping may exhibit variations among diverse consumer segments. While certain individuals may perceive e-commerce as a fraught and financially burdensome avenue for making purchases, others may place a high value on the advantages offered by online shopping, including streamlined information retrieval and convenient product comparisons (San Martin & Camarero, 2009). Nevertheless, it is expected that perceived risk will influence consumers' attitudes and feelings towards a website, leading them to consider different signals before making a purchase decision.

The COVID-19 pandemic has had a profound impact on various aspects of our lives, including the way we shop. With the rise of online shopping, it has become increasingly important to understand the factors that influence consumers' behavior in this context. Three critical factors in this regard are perceived usefulness, perceived ease of use, and perceived health risk, which will be the focal of this thesis. Thus, with the help of TPB, the subsequent chapter delves deeper into how COVID-19 has affected the aforementioned factors and postulates the corresponding hypotheses in the post-pandemic period.

### **3 Hypotheses development and research framework**

According to Forbes (2020), in 2019, only 81% of consumers in the United States had participated in online grocery shopping. However, the COVID-19 pandemic brought about a considerable surge in online shopping, with 79% of U.S. shoppers turning to e-commerce platforms for their grocery needs. Moreover, McKinsey (2020) reported that 15% of

European consumers utilized new online shopping websites during the pandemic. The pandemic gave rise to various situational factors that had a direct or indirect impact on consumers' attitudes and behaviors towards online shopping. In this thesis, situational factors are defined as any intervention that arose during the COVID-19 pandemic that had not previously occurred or significantly impacted online shopping (Tyrväinen & Karjaluo, 2022).

The COVID-19 pandemic led to the closure of physical businesses, causing many individuals who were required to be physically present at their jobs to either lose employment or take unpaid or partially paid leaves. This resulted in a decrease in overall income, causing consumers to limit their spending to only necessary items and become more cost-conscious, opting for more affordable products. Additionally, bulk purchasing of essential items became common due to concerns about potential supply shortages and price increases (Wang & Gao, 2021). As a result, individuals became less willing to shop at physical stores and explore new brands, leading to a shift in consumer behavior (Akhtar et al., 2020). Businesses that relied on consumers loyalty suffered, as disruptions in supply chains made it difficult for consumers to access preferred or favorite brands (Arora et al., 2020).

The nature of online shopping services, which are available 24/7 and require no physical contact, made it a more convenient option for consumers, particularly during the pandemic. Online shopping allowed individuals to save on travel and search costs, which was especially important when they were more concerned about their spending. As posited by the Technology Acceptance Model (TAM), the construct of perceived usefulness, denoting an individual's conviction regarding the potential enhancement of their performance through the utilization of an application, serves as a fundamental determinant influencing the adoption of technology (Davis, 1989). This concept is closely related to one of the constructs of the theory of planned behavior (TPB), attitude, which refers to an individual's beliefs about the outcomes of performing a particular behavior (Madden et al., 1992). TPB suggests that belief evaluation, which refers to an individual's assessment of whether a particular behavior is good or bad, is a determinant of attitude (Hale et al., 2002). Thus, perceived usefulness can be considered as a positive evaluation from an individual's perspective, which in turn affects their attitude towards online shopping.

Several studies have found that perceived usefulness has a positive effect on online shopping behavior, particularly during the pandemic (Singh et al., 2016; Nguyen et al., 2020; Ha & Stole, 2009). However, Iriani and Andjarwati (2020) refuted this claim, stating that

the effect was not significant as there was still an increase in the number of retailers or minimarkets. Given the lack of research on how the pandemic has affected online shopping behavior, this thesis aims to investigate how perceived usefulness affects consumer's online shopping behavior with the presence of COVID-19. As a result, the thesis posits the following hypothesis:

**H1:** Perceived usefulness has positive influence on consumers' attitude towards online shopping in the post-pandemic period.

Furthermore, perceived ease of use is a critical determinant in the adoption of online shopping. Perceived ease of use pertains to an individual's conviction regarding the inherent simplicity and usability of a specific technological system (Davis, 1989). This belief is influenced by the individual's experience with technology, with systems that are used more frequently considered easier to operate (Davis, 1989). Hence, individuals who find online shopping easy to use are more likely to develop positive attitudes toward it. Regarding the context of the study, it is important to investigate whether perceived ease of use would positively affect consumers' attitudes towards online shopping. In addition, perceived ease of use can also have a direct effect on perceived behavior control, another construct in the TPB, refers to an individual's belief that they have the necessary resources and abilities to perform a behavior (Ajzen, 1991). Within the domain of online shopping, when individuals experience a heightened sense of control over their online shopping behavior, they display a greater propensity to participate in online shopping activities. Employing TAM to find factors which influences consumers' intention to engage in e-commerce, Johar and Awalluddin, (2011) found that perceived ease of use has positive relationship with consumers' purchase intention. This also aligns with findings from several past studies about the impact of perceived ease of use on online shopping (Çelik, 2011; Kim & Forsythe, 2011; Singh et al., 2016). In addition, individuals with limited internet exposure may find it difficult to add online shopping to their routine activities. However, due to pandemic-related restrictions, many consumers were compelled to use online services, which accelerated the adoption of online shopping. Hence, it is essential to examine the influence of perceived ease of use on consumers' perceived behavioral control. Two hypotheses are proposed as follows:

**H2:** Perceived ease of use has positive influence on consumers' attitudes towards online shopping in the post-pandemic period.

**H3:** Perceived ease of use has positive influence on consumers' perceived behavioral control of online shopping in the post-pandemic period.

Online shopping has become increasingly popular in recent years, bringing with it numerous benefits. However, it is not without its drawbacks, and negative aspects can cause problems for consumers. Lee and Tan (2003) found that consumers perceive online shopping to be more risky than traditional shopping. Perceived risk, as defined by Ko et al. (2004), is the degree of uncertainty and anxiety that individuals associate with a particular decision or action. It refers to the subjective evaluation of the potential negative consequences of a particular choice or behavior. In the context of online shopping, perceived risk is the potential negative outcomes that consumers associate with purchasing products or services online, and it can discourage them from engaging in this activity (Barnes et al., 2007). Some common perceived risks associated with online shopping include concerns about the security of personal information, the quality of products, the reliability of online retailers, and the possibility of fraud (Lee & Turban, 2011). Perceived risk is subjective and can vary between individuals and situations. It is also important to note that perceived risk does not always align with actual risk, as individuals may overestimate or underestimate the likelihood or severity of potential negative outcomes.

During the COVID-19 pandemic, perceptions of different risks related to online shopping were likely to have been affected in terms of their order of importance. Additionally, a new situational risk was introduced during the pandemic. Iriani and Andjarwati (2020) found that people tend to prioritize psychological and physical risks, including concerns about contracting COVID-19. This unprecedented concern introduced a new health risk factor that has become one of the most important factors affecting people's confidence in doing online shopping. According to Accenture's report on consumer behavioral shifts during the pandemic (2020), 64% of respondents expressed concern for their health and 82% were concerned about the health of others. In light of the COVID-19 occurrence, the contraction of the virus posed a great peril to society. Hence, the objective of this thesis revolves around health as an independent variable in relation to perceived health risk. Perceived health risk is commonly denoted as the subjective estimation of an individual's susceptibility to falling ill or encountering the severity of a certain disease (Brewer et al., 2004). In the context of COVID-19, perceived health risk was considered as the level of perceived danger associated with contracting the virus while visiting malls and shops (Salem & Nor, 2020).

Moreover, based on the results from Brewer et al.'s (2020) study, individuals who initially held higher risk perceptions were significantly more inclined to pursue vaccination against Lyme disease compared to those who possessed lower risk perceptions. Thus, individuals tend to inherently prioritize options associated with lower risks. As a proactive measure to minimize the potential transmission of the virus within the societies during the pandemic, social distancing and staying at home have been identified as deliberate actions that entail minimizing close physical contact with individuals in crowded locations like physical stores. Thus, this implies that the perception of health risk related to shopping in physical stores would encourage people to use online shopping more frequently. Furthermore, in the context of the Theory of Planned Behavior (TPB), perceived health risk has a direct effect on both attitudes and subjective norms. Individuals who perceive high health risks associated with in-person shopping are more likely to develop positive attitudes toward online shopping. Moreover, they perceive online shopping as a socially desirable behavior, which increases the influence of subjective norms. For instance, individuals may believe that their relatives and friends expect them to be more mindful of health risks during the pandemic. Therefore, it is essential to examine the influence of health risk on consumers' attitude and subjective norms towards online shopping. Thus, the study proposes the following hypothesis:

**H4:** Perceived health risk has positive influence on consumers' attitudes towards online shopping in the post-pandemic period.

**H5:** Perceived health risk has positive influence on subjective norms towards online shopping in the post-pandemic period.

In the three years since the COVID-19 pandemic began, there have been significant changes in consumer behavior. With restrictions lifted in many regions, people are returning to their normal lives. However, there are emerging trends that have developed as a result of the pandemic. Skeldon (2022) found that 70.6% of respondents were less likely to engage in physical shopping compared to pre-pandemic times. Furthermore, baby boomers were reported to be spending more on online shopping, despite having predominantly shopped in physical stores before the pandemic (Lesonsky, 2023). This trend may be attributed to the fact that older adults are faced with more technical challenges when using online services, but due to the pandemic, they had to become more familiar with online shopping, leading to the establishment of a new habit (Bhattarai, 2021). Additionally, Lesonsky (2023) noted that



consumers searched the internet for information about new products and that the "click-and-collect" service was more popular. These trends suggest that consumers are becoming more comfortable with online shopping and recognizing its benefits.

Although the pandemic has become less of a health threat due to widespread vaccination, some individuals may still feel uncomfortable being in public places due to concerns for their health, particularly those with pre-existing conditions (Charumilind et al., 2021; Prasad & Srivastava, 2021). Therefore, investigating how perceived usefulness, perceived ease of use, and perceived health risk may affect consumers' online shopping continuance intention. Based on this, the study proposes the following hypotheses:

**H6:** Perceived usefulness has positive influence on consumers' continuance intention to do online shopping in the post-pandemic period.

**H7:** Perceived ease of use has positive influence on consumers' continuance intention to do online shopping in the post-pandemic period.

**H8:** Perceived health risk has positive influence on consumers' continuance intention to do online shopping in the post-pandemic period.

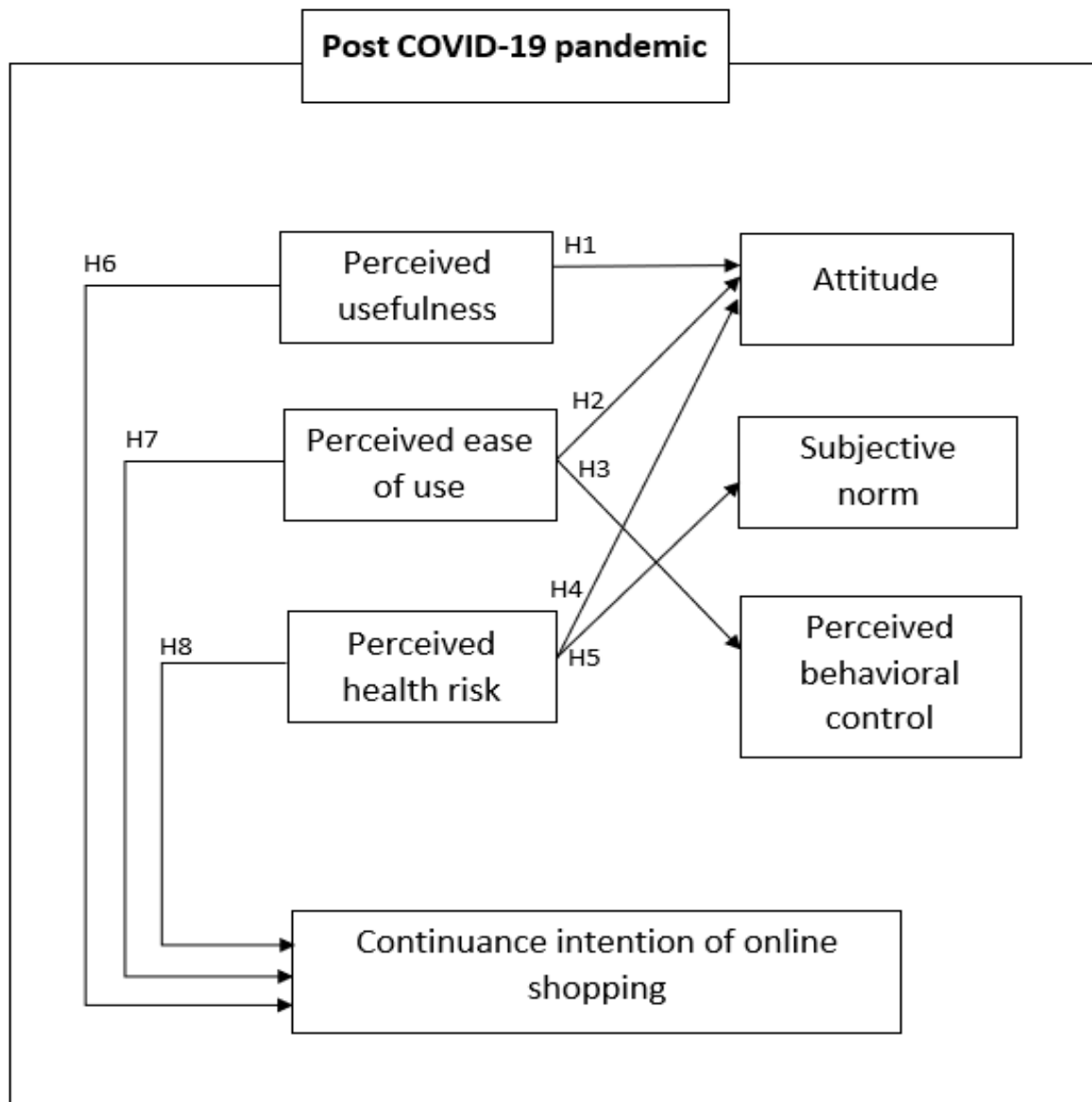


Figure 5 Research conceptual framework

## 4 Methodology

The selection of an appropriate research approach is paramount in facilitating the achievement of study objectives. The present thesis aims to investigate the influence of perceived usefulness, perceived ease of use and perceived health risk on consumers' online shopping and their continuance intention to do online shopping post-pandemic. To fulfill this objective, a conceptual framework is proposed, and through a comprehensive literature review, eight hypotheses have been formulated and will be subjected to empirical validation. Researchers often opt for either inductive or deductive approaches in their investigations. Regarding deductive approach, it involves the utilization of collected data to test hypotheses

(Saunders et al., 2012). Therefore, this thesis utilizes the deductive approach to address the study objectives.

## 4.1 Data collection method

Surveys are a widely used research method for studying the influences of various factors on consumer behavior, including perceived usefulness, perceived health risk, perceived ease of use, and continuance intention in online shopping. Surveys allow for the collection of large amounts of data from a diverse population in a relatively short amount of time, making it an efficient and cost-effective method. Additionally, surveys offer the ability to ask direct questions related to the variables of interest and provide a structured approach to data collection, which facilitates the analysis and interpretation of the results. By using a survey, researchers can obtain quantitative data that can be analyzed using statistical methods to identify patterns and associations between variables, and to draw conclusions that are generalizable to the population of interest. Overall, surveys are a suitable method for studying the influences of perceived usefulness, perceived health risk, perceived ease of use, and continuance intention on online shopping post pandemic.

The utilization of a questionnaire as a data collection method presents several merits, rendering it a suitable approach for the present study. Questionnaires offer a cost-effective and time-efficient means of data collection. By administering questionnaires, researchers can reach a large number of respondents simultaneously, reducing the need for extensive resources and time-consuming individual interviews. Furthermore, questionnaires allow for a degree of anonymity, potentially promoting honest and uninhibited responses from participants. Overall, the self-administered questionnaire method demonstrates suitability in terms of standardization, efficiency, anonymity, and flexibility, making it an advantageous approach for the current study's data collection purposes. The following section will focus on the development of the questionnaire instrument.

## 4.2 Instrument development

Using measures from existing studies is considered essential in research as established scales have already undergone testing. However, the context or the objectives were different. For instance, Iriani and Andjarwati (2020) targeted 35–65-year-old housewives in Indonesia to study the influence of perceived usefulness, perceived ease of use and perceived risk towards online shopping during the pandemic. Shin and Kang (2020) focused on perceived health risk within hospitality and tourism. Nguyen et al., 2020 did their study on online book

shopping in Vietnam. Therefore, the author considers the content of previously employed research methods and modifies them to create measures that align with the proposed objectives of the current study.

To ensure the research's validity and reliability, multiple items were utilized to measure each construct. Most items are adopted from existing studies with minor modifications to fit the context of the study. Table 1 presents a comprehensive inventory of constructs, including their respective items and sources. The items were assessed using a five-point Likert scale, with response options ranging from 1 = not likely to 5 = very likely. Prior to administering the questionnaire to the target participants, a pre-test was conducted with a sample of eight individuals. This pre-testing phase involved evaluating the clarity and effectiveness of the items, leading to revisions and modifications of certain items. The final version of the questionnaire is provided in Appendix 1.

*Table 1: Instrument measures*

<b>Construct</b>	<b>Measure items</b>	<b>Source</b>
Perceived usefulness	PU1: I find online food delivery services to be time-saving.	(Iriani and Andjarwati, 2020)
	PU2: I find online food delivery services to be convenient.	(Self-developed)
	PU3: I save money by using online food delivery service.	(Self-developed)
Perceived ease of use	PE1: It is easy to order food over the Internet.	(Iriani and Andjarwati, 2020)
	PE2: It is easy to learn how to order food on the Internet.	(Self-developed)
	PE3: My interaction with online food delivery websites/apps is clear and understandable.	(Phetnoi et al., 2021)
Perceived health risk	PH1: The COVID-19 pandemic has heightened my awareness of the risk of catching infectious diseases like flu when visiting physical stores.	(Self-developed)
	PH2: As a result of the COVID-19 pandemic, I have developed a greater aversion to visiting	(Self-developed)

	physical stores due to concerns about infection.	
	PH3: The COVID-19 pandemic has reinforced my belief that ordering food online can help reduce the risk of catching infectious diseases like the flu.	(Self-developed)
Subjective norms	SN1: People who are important to me would prefer me to use online food delivery service.	(Taylor and Todd, 1995)
	SN2: People who influence my behavior would prefer me to use online food delivery service.	(Taylor and Todd, 1995)
Attitude	AT1: Using online food delivery service is a good idea.	(Taylor and Todd, 1995)
	AT2: I enjoy using online food delivery service.	(Taylor and Todd, 1995)
Perceived behavioral control	PB1: I am capable of using online food delivery service.	(Taylor and Todd, 1995)
	PB2: I have enough knowledge and resources to order food over the Internet.	(Taylor and Todd, 1995)
Continuance intention	CI1: I plan to continue using online food delivery services in the long term.	(Self-developed)
	CI2: Based on my experience using online food delivery services, I am likely to continue ordering food online in the near future.	(Self-developed)
	CI3: I will use online food delivery services more frequently.	(Self-developed)

### 4.3 Sample

The primary aim of this thesis is to examine consumers' perceptions regarding the perceived usefulness, ease of use, health risk, and continuance intention associated with online shopping in the post-COVID-19 context. Consequently, the sample selection process was not restricted. The questionnaires were developed using the online survey tool Webropol,

and a survey link was distributed across various online communities on social platforms, as well as through direct messages. Over a period of two weeks, a total of 194 questionnaires were collected from participants. Questionnaires that contained inadequate responses were excluded and considered ineligible for statistical analysis. Ultimately, 181 fully completed questionnaires met the criteria and were deemed suitable for the analytical phase of this study.

## 4.4 Data analysis and hypothesis testing

The survey data in this study underwent analysis employing SPSS and Smart-PLS (Partial Least Squares) as the principal analytical tools. The initial phase of analysis entailed the generation of descriptive statistics using SPSS to delineate the demographic profiles of the respondents. To evaluate the internal consistency and reliability of the measures, Cronbach's alpha and composite reliability (CR) were employed. Additionally, the convergent validity of the measures was assessed using average variance extracted (AVE). Outer loading was utilized to gauge the strength and significance of the measures' items. Furthermore, Fornell's discriminant validity was employed to ascertain the distinctiveness of the measures. In relation to hypothesis testing, bootstrapping from Smart-PLS was utilized to compute the path coefficients between the aforementioned variables in each hypothesis.

### 4.4.1 Respondents' demographic

Table 2 provides a comprehensive overview of the demographic characteristics of the participants, based on a sample size of 181 responses. The gender distribution among the respondents indicated that 57.22% identified as male, 41.66% as female, 0.56% identified with other gender categories, and 0.56% preferred not to disclose their gender. The age range of the participants encompassed individuals aged 18 years and above, with the largest proportion (72.22%) falling within the 18 to 29 years age group. Regarding the duration of Internet usage, a substantial majority (96.14%) reported using the Internet for a minimum of five years, while only a small fraction disclosed a usage duration between 1 year and less than 5 years. Lastly, concerning the frequency of online food delivery service usage, the majority of respondents (31.5%) reported utilizing such services a few times a month. Notably, other frequency categories, such as once a week and once a month, also garnered significant proportions (27.62% and 23.76% respectively).

Table 2: Respondents' demographic profile

Attribute	Value	Frequency	%
Gender	Male	103	57.22
	Female	75	41.66
	Others	1	0.56
	Prefer not to say	1	0.56
Age	18-29 years	130	72.22
	30-39 years	33	18.33
	40-49 years	11	6.11
	50-59 years	6	3.34
	60 years or more	0	0
Internet usage duration	1 year to less than 3 years	1	0.55
	3 years to less than 5 years	6	3.31
	5 years or more	174	96.14
Frequency of using online food delivery services	Multiple times a week	13	7.18
	Once a week	50	27.62
	A few times a month	57	31.50
	Once a month	43	23.76
	Rarely, only a few times a year	18	9.94

#### 4.4.2 Reliability and validity test

To assess the strength and significance of the relationship between the observed variables and their respective measures, initial calculations were performed to determine the outer loadings. As indicated in Table 3, all items exhibited positive outer loadings, suggesting favorable relationships with their corresponding measures. In essence, an increase in an item's measure would correspondingly result in an increase in that particular measure. Furthermore, the outer loadings were close to 1, signifying a robust association between the items and measures.

Additionally, the internal consistency and reliability of the measures were evaluated through the computation of Cronbach's alpha. The findings revealed that all measures yielded Cronbach's alpha values exceeding 0.7, which Tabert (2018) categorizes as "fairly high". Furthermore, the assessment of composite reliability, measured through average reliability ( $\rho_a$ ) and composite reliability ( $\rho_c$ ), substantiated the internal consistency and reliability of the latent measures, with all values surpassing 0.7.

Convergent validity of each measure was also assessed through the calculation of average variance extracted (AVE). This involved determining the average of the squared factor loadings of the measure's items in relation to that specific measure, and subsequently dividing it by the sum of the variances of the items and their measurement errors. Based on the findings presented in Table 3, the AVE values for all measures exceeded 0.5, which is considered an acceptable threshold. Hence, it can be concluded that all items adequately measured the corresponding constructs.

Table 3: Reliability and validity test of measures

Variables	Items	Outer loadings	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Perceived usefulness	PU1	0.834	0.721	0.740	0.842	0.641
	PU2	0.723				
	PU3	0.839				
Perceived ease of use	PE1	0.855	0.801	0.820	0.883	0.716
	PE2	0.781				
	PE3	0.898				
Perceived health risk	PH1	0.686	0.757	0.811	0.858	0.671
	PH2	0.880				
	PH3	0.877				
Subjective norms	SN1	0.961	0.923	0.925	0.963	0.928
	SN2	0.966				
Attitude	AT1	0.908	0.810	0.817	0.913	0.840
	AT2	0.926				
Perceived behavioral control	PB1	0.853	0.772	0.877	0.893	0.808
	PB2	0.942				
Continuance intention	CI1	0.890	0.854	0.857	0.911	0.774
	CI2	0.888				
	CI3	0.860				

Furthermore, the Fornell-Larcker Criterion was utilized to assess the distinctiveness of each item within a given measure in comparison to the other items in the same measure. This criterion involved comparing the square root of the average variance extracted (AVE) for each measure (highlighted in bold) with the correlations between the measures. The findings, as presented in Table 4, indicated that the square root of the AVE for each measure



exceeded its correlations with other measures. Consequently, it can be inferred that all measures exhibited distinctiveness from one another.

*Table 4: Discriminant validity based on Fornell-Larcker Criterion*

	Attitude	Continuance intention	Perceived behavioral control	Perceived ease of use	Perceived health risk	Perceived usefulness	Subjective norms
Attitude	<b>0.917</b>						
Continuance intention	0.717	<b>0.880</b>					
Perceived behavioral control	0.304	0.260	<b>0.899</b>				
Perceived ease of use	0.574	0.547	0.277	<b>0.846</b>			
Perceived health risk	0.539	0.571	0.126	0.361	<b>0.819</b>		
Perceived usefulness	0.578	0.611	0.229	0.619	0.500	<b>0.801</b>	
Subjective norms	0.611	0.599	0.097	0.312	0.770	0.538	<b>0.963</b>

#### 4.4.3 Hypothesis testing

In order to assess the validity of the eight hypotheses formulated in this study, bootstrapping was employed using a sample of 5000 from Smart-PLS. The bootstrapping technique involves resampling the data multiple times, which effectively accounts for data variability and uncertainty. By performing this resampling process, beta coefficients ( $\beta$ ), means, standard deviation, T-values, and p-values were computed and recorded in Table 5. This analytical approach facilitated the examination of the significance and directionality of the identified relationships. Subsequently, the statistical outcomes derived from the bootstrapping procedure, as presented in Table 5, were utilized to evaluate the validity of each hypothesis.

Table 5: Hypothesis testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
H1: Perceived usefulness -> Attitude	0.220	0.223	0.080	2.738	0.006
H2: Perceived ease of use -> Attitude	0.326	0.325	0.068	4.766	0.000
H3: Perceived ease of use -> Perceived behavioral control	0.277	0.281	0.078	3.530	0.000
H4: Perceived health risk -> Attitude	0.311	0.311	0.074	4.191	0.000
H5: Perceived health risk -> Subjective norms	0.770	0.771	0.031	24.658	0.000
H6: Perceived usefulness -> Continuance intention	0.291	0.295	0.074	3.946	0.000
H7: Perceived ease of use -> Continuance intention	0.245	0.245	0.088	2.782	0.005
H8: Perceived health risk -> Continuance intention	0.337	0.337	0.074	4.567	0.000

Based on the empirical findings presented in Table 4, a statistically significant positive relationship was observed between perceived usefulness and attitude ( $\beta = 0.22$ ,  $p$ -value  $< 0.05$ ), providing support for H1. This indicates that perceived usefulness significantly influences consumers' attitude towards online shopping in the post-COVID-19 context. Similarly, the investigation into the association between perceived ease of use and attitude, as outlined in H2, revealed a positive relationship ( $\beta = 0.326$ ,  $p$ -value  $< 0.05$ ). Consequently, perceived ease of use positively impacts consumers' attitudes towards online shopping after COVID-19, confirming H2. Moreover, the examination of the relationship between perceived ease of use and perceived behavioral control demonstrated a positive association ( $\beta = 0.277$ ,  $p$ -value  $< 0.05$ ). This finding supports H3, suggesting that perceived ease of use has a positive influence on consumers' perceived behavioral control of online shopping. Additionally, in relation to H4, which explores the relationship between perceived health risk and attitude, the analysis revealed a positive relationship ( $\beta = 0.311$ ,  $p$ -value  $< 0.05$ ). This indicates that perceived health risk positively influences consumers' attitudes towards online shopping, thereby substantiating H4.

Furthermore, an investigation into H5, which examined the relationship between perceived health risk and subjective norms, revealed a positive correlation ( $\beta = 0.77$ ). The statistical analysis ( $p$ -value  $< 0.05$ ) indicated that perceived health risk significantly

influences subjective norms towards online shopping, thus confirming H5. Similarly, the examination of H6, which focused on the association between perceived usefulness and continuance intention, uncovered a positive linkage between these variables ( $\beta = 0.291$ ). The statistical analysis ( $p\text{-value} < 0.05$ ) confirmed H6, suggesting that perceived usefulness positively impacts consumers' continuance intention to engage in online shopping. Therefore, H6 was validated. Likewise, H7, which explored the relationship between perceived ease of use and continuance intention, exhibited a positive relationship ( $\beta = 0.245$ ). The statistical significance ( $p\text{-value} < 0.05$ ) affirmed that perceived ease of use has a positive influence on consumers' continuance intention to engage in online shopping, thereby supporting H7. Lastly, H8, which investigated the association between perceived health risk and continuance intention, demonstrated a positive relationship between these variables ( $\beta = 0.337$ ). The statistical analysis ( $p\text{-value} < 0.05$ ) indicated that perceived health risk positively influences consumers' continuance intention to engage in online shopping, thereby affirming H8.

## 5 Discussion and implications

### 5.1 Discussion of the research findings

Respondents came from diverse backgrounds. The age group was from 18 years and above with the majority being between 18 and 29 years of age. Respondents reported having experience using the Internet for at least 1 year with the majority using it for more than 5 years. Most of them reported ordering food via online services from once a week to once a month. Respondents were well aware of the restrictions during the pandemic. This background information is essential for the purpose of this study which aims to examine the impact of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behavior and their intention to continue shopping online after the pandemic. The results of all eight hypotheses are discussed more in-depth below.

Hypothesis testing in the preceding section indicates that perceived usefulness has a positive influence on consumers' attitude towards online shopping. This finding is consistent with several other studies (Singh et al., 2016; Nguyen et al., 2020; Ha & Stole, 2009) that have found perceived usefulness to have a positive effect on online shopping behavior during the pandemic. This then encourages potential online shoppers to make purchase decisions (Koufaris, 2002).

Furthermore, the hypothesis testing results provide statistical evidence that perceived ease of use has a positive impact on consumers' attitude towards online shopping. This finding supports previous studies that found perceived ease of use to have positive influence on online shopping (Çelik, 2011; Johar & Awalluddin, 2011; Kim & Forsythe, 2011; Singh et al., 2016). In addition, test results found that perceived ease of use positively influences consumers' perceived behavioral control over online shopping. Especially, a significant majority of respondents either "somewhat" or strongly agreed with statements indicating their adequate level of using online services.

Moreover, results from the hypothesis testing showed that perceived health risk has a statistically significant and positive influence on consumers' attitudes towards online shopping. This finding supports Iriani and Andjarwati's (2020) study, which suggests that consumers prioritize health risks when engaging in online shopping. Additionally, perceived health risk is found to have a positive impact on consumers' subjective norms towards online shopping, as indicated by the hypothesis testing results. This finding is consistent with Accenture's report (2020), which highlights a shift in consumer behavior during the pandemic, with consumers expressing greater concern about their own and others' health.

The present study conducted hypothesis testing to examine the impact of perceived usefulness, perceived ease of use, and perceived health risk on consumers' intention to continue engaging in online shopping. The results revealed that all three factors had a positive influence on consumers' continuance intention. These findings align with the outcomes reported in Skeldon's (2022) study, which indicated a decrease in consumers' physical store engagement compared to pre-pandemic periods.

## 5.2 Implications

Perceived usefulness plays a significant role in shaping consumers' attitudes towards online shopping, especially in the post-pandemic era. As the world faced unprecedented challenges during the global health crisis, consumers increasingly turned to e-commerce platforms to meet their shopping needs. The perceived usefulness of online shopping, which encompasses factors such as convenience, accessibility, and time-saving, has positively influenced consumers' attitudes towards this mode of shopping. Having experienced the convenience and benefits of online shopping during the pandemic, consumers have developed a greater appreciation for the efficiency and ease it offers. Consequently, their positive attitudes towards online shopping have strengthened, as they recognize it as a practical and effective means of obtaining products and services. This increased perception of usefulness serves as

a driving force behind continued consumer engagement with online shopping in the post-pandemic landscape.

Moreover, perceived ease of use plays a vital role in shaping consumers' attitudes towards online shopping, particularly in the post-pandemic context. As individuals adapted to the challenges of social distancing and limited physical access to stores, the ease with which they could navigate and utilize online shopping platforms became a crucial factor. Consumers who found online shopping to be intuitive, user-friendly, and straightforward during the pandemic developed a positive attitude towards it. The perceived ease of use encompasses elements such as website design, clear product descriptions, simple checkout processes, and responsive consumer support. When consumers find online shopping platforms easy to navigate and interact with, they are more likely to embrace this mode of shopping in the post-pandemic world. The positive experiences and increased comfort levels achieved during the pandemic have instilled confidence and trust in online shopping, leading to a sustained positive attitude towards this convenient and accessible alternative.

Furthermore, perceived ease of use has a significant positive influence on consumers' perceived behavioral control towards online shopping in the post-pandemic era. As consumers become more familiar with e-commerce platforms and their functionalities, they develop a sense of confidence and mastery over the online shopping process. When individuals perceive online shopping as easy and effortless, it enhances their perceived control over the behavior of engaging in online purchases. They feel more capable of navigating websites, searching for products, comparing options, and completing transactions successfully. This increased perceived behavioral control leads to a greater willingness to engage in online shopping activities in the post-pandemic landscape. Consumers feel empowered and in control of their online shopping experiences, which further strengthens their positive attitudes and likelihood of continued adoption of this mode of shopping.

Besides, perceived health risk has had a positive influence on consumers' attitudes towards online shopping in the post-pandemic period. The global health crisis brought about a heightened awareness and concern for personal health and safety. As a result, consumers became more cautious about physical interactions and crowded spaces, including traditional brick-and-mortar stores. Perceiving online shopping as a safer alternative, free from potential exposure to infectious diseases, consumers have developed a more positive attitude towards this mode of shopping. The perceived health risk associated with in-person shopping experiences has shifted consumers' preferences towards the convenience and safety of online platforms. This change in attitude is likely to persist even as the pandemic recedes, as

consumers prioritize their health and continue to value the reduced risk that online shopping offers.

Additionally, perceived health risk has a positive influence on consumers' subjective norms towards online shopping in the post-pandemic era. The global health crisis has reshaped social norms and expectations regarding behavior and safety. As individuals prioritize their health and the well-being of their communities, the perceived health risk associated with in-person activities, including shopping, has led to a shift in subjective norms. Consumers perceive online shopping as a responsible and socially acceptable choice in the context of reducing potential exposure to infectious diseases. This shift in subjective norms is reinforced by societal messages promoting the importance of social distancing and minimizing physical contact. As a result, consumers feel a sense of validation and support for their decision to engage in online shopping, which strengthens their positive attitudes towards this mode of shopping and further encourages its adoption in the post-pandemic landscape.

Importantly, COVID-19 created a situation where consumers were forced to use online services during pandemic (Prasad & Srivastava, 2021). Perceived usefulness, perceived ease of use, and perceived health risk emerge as critical determinants in shaping consumers' ongoing engagement with online shopping. Perceived usefulness encompasses the convenience, accessibility, and time-saving benefits associated with online shopping. Consumers recognize the practicality and effectiveness of this mode of shopping, leading to positive attitudes and a desire to continue utilizing online platforms. Additionally, perceived ease of use, characterized by user-friendly interfaces, straightforward processes, and responsive consumer support, enhances consumers' comfort and confidence in online shopping. The ease with which consumers can navigate and interact with online platforms contributes to their intention to persist with this mode of shopping. Furthermore, the continued perception of health risks post-pandemic reinforces consumers' motivation to maintain their engagement with online shopping. Concerns about potential exposure to infectious diseases drive consumers to perceive online shopping as a safer alternative, thereby solidifying their intention to continue using this mode of shopping. The combined influence of perceived usefulness, perceived ease of use, and perceived health risk highlights their pivotal role in sustaining consumers' continuance intention of online shopping in the post-pandemic era.

### **5.3 Contributions, limitations and suggestions for further research**

The findings from this study reinforce and extend theoretical understanding of the driving factors of online shopping behavior. Previously studied relationships such as perceived usefulness and consumer's online shopping behavior, perceived ease of use and consumer's online shopping behavior were revisited and supported. However, this study focuses on the impacts of those factors on the main constructs in TPB model such as attitude, subjective norms and perceived behavioral controls. Moreover, this study contributes to the understanding of consumers' online shopping behavior in the post-pandemic context by investigating the influence of perceived usefulness, perceived ease of use, and perceived health risk. This research addresses a gap in the literature by exploring how these factors collectively impact consumers' online shopping intentions following the global health crisis. The findings shed light on the importance of perceived usefulness, as it captures the practicality, convenience, and efficiency of online shopping in meeting consumers' needs. Additionally, the study examines the influence of perceived ease of use, which reflects consumers' perceptions of the usability and accessibility of online shopping platforms. Lastly, the investigation of perceived health risk recognizes the ongoing concerns related to potential exposure to infectious diseases and how this risk perception shapes consumers' attitudes and intentions towards online shopping. The integration of these three factors provides a comprehensive understanding of the post-pandemic online shopping landscape and offers valuable insights for businesses and marketers seeking to adapt their strategies to meet evolving consumer preferences.

Moreover, the findings of this study hold practical implications for businesses operating in the post-pandemic environment. Understanding the influence of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behavior allows businesses to tailor their strategies and offerings accordingly. By emphasizing the convenience, efficiency, and practicality of their online platforms, businesses can enhance consumers' perceived usefulness and promote continued engagement with their online shopping services. Moreover, focusing on improving the user-friendliness and accessibility of their websites or apps can boost consumers' perceived ease of use, further encouraging their intention to continue shopping online. Additionally, businesses can address consumers' concerns regarding health risks by implementing and communicating robust safety measures, thereby alleviating apprehensions and enhancing

consumers' confidence in online shopping. By incorporating these insights into their marketing and operational strategies, businesses can position themselves to effectively cater to the evolving needs and preferences of consumers in the post-pandemic landscape, fostering consumers loyalty and long-term success.

Besides, it is important to acknowledge the limitations of this research and suggest potential avenues for further investigation. One limitation of this study is its reliance on a survey research method, which may be prone to common biases such as response bias and self-reporting inaccuracies. Future research could incorporate additional methodologies, such as experimental designs or qualitative interviews, to complement and strengthen the findings. Another limitation is the specific focus on online food delivery services, which may limit the generalizability of the findings to other online shopping contexts. Therefore, future studies could explore the influence of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behavior in various industries or product categories. Furthermore, considering the dynamic nature of technology and consumer preferences, longitudinal studies could be conducted to assess how these factors evolve over time and their long-term impact on consumers' continuance intentions. Overall, addressing these limitations and conducting further research will contribute to a more robust and nuanced understanding of the factors influencing consumers' online shopping behavior in the post-pandemic era.

## 6 Conclusion

In conclusion, this study aimed to examine the influence of perceived usefulness, perceived ease of use, and perceived health risk on consumers' online shopping behavior and continuance intention in the post-pandemic context. The analysis of the collected data provided insightful findings pertaining to the research question. Firstly, the results indicated that perceived usefulness positively influenced consumers' attitudes and continuance intention towards online shopping post-pandemic. This suggests that consumers perceive online shopping as a valuable and practical option for meeting their needs, leading to a positive outlook and a desire to continue engaging in this mode of shopping. Secondly, perceived ease of use emerged as a significant factor, with a positive influence on consumers' attitudes, perceived behavioral control, and continuance intention towards online shopping. The ease with which consumers can navigate and interact with online platforms enhances their overall experience and motivates them to continue using these services. Lastly,



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perceived health risk was found to have a positive impact on consumers' attitudes, subjective norms, and continuance intention towards online shopping. The ongoing concerns regarding health risks associated with in-person shopping experiences have shifted consumer preferences towards the perceived safety and convenience of online shopping. These findings collectively highlight the importance of perceived usefulness, perceived ease of use, and perceived health risk in shaping consumers' online shopping behavior and their intentions to continue using online platforms post-pandemic. By understanding and addressing these factors, businesses can effectively tailor their strategies to meet the evolving needs and preferences of consumers in the digital marketplace.

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## Appendix A: Survey questions

**What gender do you identify as?**

- Male
- Female
- Others
- Prefer not to say

**What is your age?**

- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60 years or more
- Prefer not to say

**How long have you been using the Internet?**

- Less than 1 year
- 1 year to less than 3 years
- 3 years to less than 5 years
- 5 years or more

**How often do you use online food delivery services?**

- Multiple times a week  
 Once a week  
 A few times a month  
 Once a month  
 Rarely, only a few times a year  
 Never used before

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
During COVID-19 pandemic, many restaurants were closed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There were restrictions in moving around during COVID-19 pandemic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
I find online food delivery services to be time-saving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find online food delivery services to be convenient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I save money by using online food delivery service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
It is easy to order food over the Internet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to learn how to order food on the Internet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My interaction with online food delivery websites/apps is clear and understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
The COVID-19 pandemic has heightened my awareness of the risk of catching infectious diseases like flu when visiting physical stores.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a result of the COVID-19 pandemic, I have developed a greater aversion to visiting physical stores due to concerns about infection.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The COVID-19 pandemic has reinforced my belief that ordering food online can help reduce the risk of catching infectious diseases like the flu.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
People who are important to me would prefer me to use online food delivery service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who influence my behavior would prefer me to use online food delivery service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
Using online food delivery service is a good idea.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy using online food delivery service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
I am capable of using online food delivery service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enough knowledge and resources to order food over the Internet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Based on your own experience, please indicate your level of agreement with the following statements.**

Please use the following scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree.

	1	2	3	4	5
I plan to continue using online food delivery services in the long term.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on my experience using online food delivery services, I am likely to continue ordering food online in the near future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use online food delivery services more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>