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Customers' Online Purchase Intentions and Customer Segmentation During the Period of COVID-19 Pandemic

Ezgi Akar

Department of Information Systems, The University of Wisconsin-Eau Claire, Eau Claire, WI, USA

Abstract

Researchers have investigated the impact of various factors on customers' online shopping behaviors. What is not yet clear is the influence of customers' pandemic concerns on their purchase intentions and purchasing behaviors. This study, based on a survey of 520 online customers in Turkey, aimed to investigate pandemic-related concerns on customers' purchase intentions. We analyzed its role on customer segmentation. We extended the theory of planned behavior by introducing the impact customers' pandemic concerns. Testing the hypotheses with partial least squares, the results indicated that customers' pandemic concerns had an impact on their purchase intentions. We also discovered three customer segments by using psychographic variables obtained from hypotheses testing. Pandemic-related concerns were revealed a determinant in customer segmentation. We provided an exciting opportunity to advance our knowledge of customer segmentation and customers' online shopping manners.

Keywords: customer segmentation, purchase intention, online consumer, COVID-19, Coronavirus

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1. Introduction

Emerging trends in e-commerce have enabled various stores to appear online frequently due to increasing demand by customers (Hong & Kim, 2012). The statistics estimate that global e-commerce will increase by 17.1% in 2021 to $4.027 trillion, and it will grow by 15.6% in 2022 and 14.9% in 2023 (Lipsman, 2019).

This rapid growth of e-commerce has also led a severe competition in the market (Puspitasari, Pramono, Rinawati, & Fidiyanti, 2020). Thus, establishing good customer relationships has become crucial for businesses to gain more customers and retain existing ones, so to improve their financial performance (Gregory, Xu, Cheng, Turney, n.d.). They should understand customers' different preferences and behaviors and segment them to develop specific strategies to better serve them.

Notably, purchasing preferences and behaviors can vary according to different occasions, trends, and emergent situations such as holiday seasons, online shopping festivals, nuclear incidents, sustainability, and earthquake waves (Hoang, 2017; Hyun & Choi, 2018; Menozzi, Finardi, & Davoli, 2013; Yang & Zhang, 2018). Under these circumstances, understanding customers' online purchase intentions is even more crucial for businesses to adapt their strategies to changing market demands.

This study addresses the question of how customers' online purchase intentions are influenced during a pandemic and how these behavioral aspects determine different customer segments. In this regard, the study investigates customers' online purchase intentions and customers' segmentation based on the theory of planned behavior (TPB) during the COVID-19 pandemic.

We organized the remainder of this paper as follows. The theoretical background and conceptual framework section present the current literature on customer segmentation and online

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purchase intentions. It then introduces the TPB and the conceptual framework of the study. The methodology section introduces the study's context, followed by the questionnaire development, data analysis, and procedures. Then, the results are presented, and the discussion provides theoretical and practical implications. Lastly, the conclusion section summarizes the study context and results and addresses the study limitations.

2. Theoretical Background and Conceptual Framework

2.1. Customer Segmentation

Technological developments created a new type of marketplace where businesses utilize the internet to connect to and communicate with their potential and existing customers (Lee, Kim, & Kim, 2008; Prashar, Vijay, & Parsad, 2016). Customers who prefer online shopping behave differently than customers who prefer traditional shopping channels. Online shoppers can comprehensively compare and purchase products. Hence, a segmentation analysis for online marketers has become necessary to understand those customers' unique characteristics. It enables them to not only give a response to customers' changing needs but also allocate their marketing expenses efficiently.

Customer segmentation is a significant area of interest in the field of multiple disciplines, such as marketing and information systems. It refers to a process of dividing customers into different groups, which might require distinct service mixes (Chan, Cheng, & Hsien, 2011). In the current literature, studies investigated various factors to profile customers across different perspectives.

Most studies in the literature explored online shopping at a general level. For example, in one study, researchers emphasized the use of web portal attributes (Prashar et al., 2016; Puspitasari et al., 2020). They investigated transaction convenience, cognitive stimulus, personalized assurance, augmented benefits, and web atmosphere (Prashar et al., 2016). They also analyzed the website's design and quality, security and privacy, reliability and trust,

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popularity, accessibility, compatibility with social media, and search engine optimization (Puspitasari et al., 2020). Another study focused only on customers' internet use patterns for segmentation (Aljukhadar & Senecal, 2011). They analyzed internet use, internet experience, psychological characteristics, and user experience.

In the current literature, studies also investigated psychological factors in addition to economic and demographic ones. They proved the importance of psychographic data because it exists in customers' minds and is not stored in a database like demographics (Hong & Kim, 2012). These studies blended all these factors to profile customers regarding their reactions to social network marketing (Campbell, Ferraro, & Sands, 2014) and introduced additional factors including the information quality, system quality, and service quality concerning purchases from online stores (Hong & Kim, 2012). Another study investigated perceived ease of use, perceived usefulness, perceived enjoyment, perceived compatibility, perceived information security, perceived social pressure, and attitude toward online shopping to profile customers (Huseynov & Özkan Yıldırım, 2019). These studies at the general level discovered how online marketers could employ demographics and psychographics to determine customer segments and their characteristics to develop effective targeting strategies.

In addition to these general studies, some investigated a specialized type of customer or specialized purchasing area. One study concentrated on only auction customers due to significant online auction retailing growth (Lee et al., 2008). The researchers profiled customers based on their demographics, compulsive and impulsive buying behavior, variety-seeking tendency, price sensitivity, and risk consciousness to create more tailored strategies for targeted customer groups. Furthermore, another study segmented online banking customers by applying a list of customers' demographics, geographic, behavioral, and psychographic characteristics (Seret, Bejinaru, & Baesens, 2015). Hotel guests were also segmented by considering their demographic and psychographic aspects (Nica, Gajanova, & Kicova, 2019). All these studies mainly revealed the importance of the segmentation of a particular type of customer to influence them towards

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purchasing a product or service, which in return will increase the sales of products and services and brand awareness.

Recent consumption trends have led researchers to focus on a different customer type who prefers to purchase organic products. For example, some studies focused on organic food and organic wine purchases and customer segmentation (Chen, Lobo, & Rajendran, 2014; Sarabia-Andreu & Sarabia-Sánchez, 2018). The study on organic food purchase intentions suggested three customer segments, including safety conscious, gastronomes, and skeptics, based on customer demographics, attitudes, pre-purchase evaluations, and purchase intentions (Chen et al., 2014). The study on organic wine purchase intentions used customers' implicit and explicit attitudes to cluster them (Sarabia-Andreu & Sarabia-Sánchez, 2018). The results found two distinct segments involving moderate pro-organic and apathetic.

In addition to these studies in the context of online shopping, there are other studies focused on customer segmentation in a different context. For example, customers were segmented based on their engagements on social media platforms (Triverdi, Asamoah, & Doran, 2018). In another study, researchers developed a customer online behavior analysis tool to segment high-value customers (Wong & Wei, 2018). They predicted future purchases from an online air travel corporation.

Although together the studies mentioned above provided essential insights into the current literature, little is known about customer segmentation in a changing world due to a pandemic. It indicates a need to understand the different perceptions of customer segmentation.

2.2. Online Purchase Intention

An extensive body of current research focused on investigating consumers' online purchase intentions in various contexts (see Table 1).

The growth of online shopping increased the level of competition in the online marketplace (Akroush & Al-Debei, 2015) and changed the retail landscape for consumers and retailers (Kühn

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& Petzer, 2018). Customers had better shopping convenience, and retailers gained opportunities for greater customer reach and interaction. Some studies focused on the factors toward online retailer websites and online store characteristics. Factors studied included perception of web design, perception of reliability, perception of customer service, perception of privacy based on adoption theory (Dang & Pham, 2018); aesthetic appeal, layout, and functionality, financial security, trust on the website, attitudes towards the website based on the TPB and the stimulus-organism-response framework (Wu, Quyen, & Rivas, 2017). Additional factors researched were visual appeal, website trust, flow, and perceived usability based on a stimulus-organism-response framework (Kühn & Petzer, 2018); store brand knowledge, store reputation, perceived store size, perceived store risk, and interpersonal, organizational trust (Dutta & Bhat, 2016). These current studies presented guidance for online retailers and stores to increase their consumers' favorable attitudes toward their stores and websites to increase sales. Additionally, the research provided web designers, software architects, and all other related practitioners with tips to optimize their online website or store designs' effectiveness. In summary, this previous research revealed that a successful online business operation requires a deep understanding of these various factors' impact on customers' online purchase intentions.

Prior research also concentrated on the exploration of customers' online shopping intentions from cognitive and behavioral perspectives. Many studies adopted the TPB or the theory of reasoned action (TRA) to understand which factors decisively affect customers' online purchasing behaviors. These studies mainly investigated the effects of subjective norms, attitude, purchase intention, actual purchase behavior, and perceived behavioral control (Singh & Srivastava, 2018; Chiu, Kim, & Won, 2018; Ha, Nguyen, Nguyen, & Nguyen, 2019; Lim, Osman, Salahuddin, Romle, & Abdullah, 2016; Akar & Dalgic, 2018; Redda, 2019; Rehman, Bhatti, Mohamed, & Ayoup, 2019; Hsu, Yen, Chiu, & Chang, 2006). The studies found out that these factors were essential to enhancing online businesses' long-run shopping sales in the whole online marketplace. Some of these earlier studies also extended the TPB. For example, they measured the impacts of perceived usefulness,

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perceived self-efficacy, trust, perceived risk, or positive and negative anticipated emotions (Ha et al., 2019; Singh & Srivastava, 2018; Lim et al., 2016; Redda, 2019; Rehman et al., 2019; Chiu et al., 2018). This prior research pointed out all stakeholders, including consumers, sellers, marketers, managers, developers, etc., should be involved in the service or product development to succeed in an online business ecosystem.

In the existing literature, a few studies focused on consumers' shopping behavior in the context of emergent situations. For example, in a study, researchers investigated food purchase sales after the 2012 earthquake waves by utilizing the TPB (Menozzi et al., 2013). Moreover, a study analyzed consumers' purchase intentions of a cosmetic product after the Fukushima nuclear incident (Hyun & Choi, 2018). Another study investigated the role of online shopping and fulfillment during the SARS crisis (Forster & Tang, 2005). Another prior study also analyzed the impact of an epidemic outbreak (MERS) on consumers' expenditures (Jung, Park, Hong, & Hyun, 2016). However, these studies were not in the context of online shopping or they introduced only consumer-related statistics.

Specifically, in the context of the COVID-19 pandemic, a few studies focused on online shopping behaviors. For example, Öztürk (2020) analyzed the impacts of hedonic and utilitarian values and a death threat. Eti, Horaira, and Bari (2021) investigated the influence of social media. Aityoussef, Jaafari, and Belhcen (2020) explored the effects of perceived ease of use, perceived usefulness, structural assurance, and social influence. And Addo, Jiaming, Kulbo, and Liangqiang (2020) focused on fear appeal, social presence, and e-loyalty in online shopping during the pandemic. In addition to empirical research, Zwanka and Buff (2021) presented a framework of the consumer behavioral shifts, and Sheth (2020) introduced how COVID-19 influenced consumers' habits. Of the existing studies of online shopping in the context of COVID-19, some have focused on specific product types or industries. However, no previous

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study has investigated the pandemic concern as an antecedent of attitude, intention, perceived behavioral control, and subjective norms based on the TPB.

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Table 1. Summary of Studies

Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Agag & El-Masry (2016)	Online travel community	• Innovation diffusion theory • Technology acceptance model	• Relative advantage • Compatibility • Perceived ease of use • Perceived usefulness • Trust • Intention to participate • Attitude • Religiosity • Positive WOM • Intention to purchase	495 members of the travel online communities in Egypt	PLS
Akar & Dalgic (2018)	Purchase intention	• Theory of planned behavior • Social network theory	• Behavioral attitude • Subjective norms • Perceived behavioral control • Online purchase intention • Actual online purchasing behavior • in-degree & our-degree centralities • in-closeness & out-closeness centralities • Eigenvector centrality • Betweenness centrality	558 shoppers from Turkey	• PLS • Correlation
Akroush & Al-Debei (2015)	Online retailer	• Not mentioned	• Relative advantage • Perceived website reputation • Trust • Attitude towards online shopping	273 online shoppers from Jordan	Structural path analysis

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Chin Goh (2017)	Online grocery shopping	• Theory of reasoned action • Technology acceptance model	• Trust • Financial risk • Time risk • Privacy risk • Security risk • Perceived benefit • Perceived enjoyment • Perceived ease of use • Perceived usefulness • Online purchasing experience • Attitude • Purchase intention	297 shoppers from Malaysia	PLS-SEM
Chiu, Kim, & Won (2018)	Sporting goods	• Goal-directed behavior model	• Attitude • Subjective norm • Perceived behavioral control • Positive anticipated emotion • Negative anticipated emotion • Desire • Behavioral intention • Frequency of past behavior	317 shoppers from Korea	SEM
Dang & Pham (2018)	Online shopping in an emerging economy	• Adoption theory • Technology acceptance model	• Perception of web design • Perception of reliability • Perception of privacy • Perception of customer service • Purchase intention	221 consumers from Vietnam	SEM

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Dutta & Bhat (2016)	Store characteristics	• Exchange theory • Theory of reasoned action • Theory of planned behavior	• Store brand knowledge • Store reputation • Perceived store size • Perceived store risk • Interpersonal organizational trust • Store attitude • Intention to purchase	424 students from India	PLS
Escobar-Rodríguez & Bonson-Fernandez (2017)	Fashion e-commerce	• Theory of planned behavior • Theory of reasoned action • Technology acceptance model • Unified theory of acceptance and use of technology	• Perceived security • Information quality • Cost saving • Time saving • Fashion • innovativeness • Electronic • innovativeness • Trust • Perceived value • Online purchase • Intention of fashion	433 consumers from Spain	PLS
Ha et al. (2019)	Online shopping	• Theory of planned behavior • Technology acceptance model	• Perceived usefulness • Perceived ease of use • Attitude • Subjective norms • Trust • Online shopping intention	423 shoppers from Vietnam	Multiple regression

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Hsu et al. (2006)	Online shopping	• Theory of planned behavior • Expectation disconfirmation theory	• Interpersonal influence • External influence • Perceived behavioral control • Disconfirmation • Satisfaction • Attitude • Continuance intention	201 shoppers from Taiwan	SEM
Jordan, Leskovar, & Maric (2018)	Online shopping	• Not mentioned	• Fear of identity theft • Perceived risk • Online purchase intention	190 shoppers from Slovenia	SEM
Kühn & Petzer (2018)	Online retailer website	• Stimulus-organism-response framework	• Visual appeal • Perceived usability • Website trust • Flow • Purchase intention	165 shoppers from South Africa	SEM
Küster, Vila, & Canales (2016)	Online services level	• Not mentioned	• Billing & payment mechanism • Delivery arrangements • Security & privacy • Product pricing • Web appearance • Support of product • Research & evaluation • Pre-purchase services • Transaction-related services • Navigation experience • Attitude to the web • Purchase intention	370 responses	PLS

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Lee et al. (2016)	Online sellers' website quality	• Theory of planned behavior	• Website design • Website reliability & fulfillment • Website security & privacy & trust • Website customer service • Online purchase intention	240 consumers from Malaysia	• Regression • Correlation • Principal Component analysis
Li et al. (2018)	Online purchase intention	• Not mentioned	• Perceived control • Self-efficacy • Purchase intention	263 students from China	• SEM • ANOVA • Correlation
Lim et al. (2016)	Online shopping behavior	• Theory of planned behavior • Technology acceptance model	• Subjective norm • Perceived usefulness • Purchase intention	662 students from Malaysia	SEM
Ramayah et al. (2018)	Online purchase intention among school leavers	• The consumption value model • Theory of reasoned action • Technology acceptance model • Unified theory of acceptance and use of technology	• Perceived functional value • Perceived social value • Perceived emotional value • Perceived epistemic value of the internet. • Perceived conditional value of the internet	127 students from Malaysia	PLS
Redda (2019)	Online shopping	• Theory of planned behavior	• Attitude • Subjective norms • Perceived behavioral control • Behavioral intention	215 consumers from South Africa	SEM

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Rehman et al. (2019)	Purchase intention and online shopping behavior	• Theory of planned behavior • Technology acceptance model	• Perceived ease of use • Perceived usefulness • Attitude • Subjective norms • Perceived behavioral control • Consumer purchase intention • Commitment • Trust • Online shopping behavior	187 students and faculty from Pakistan	PLS-SEM
Sign & Srivastava (2018)	Moderating effect of product type on online shopping behavior	• Theory of planned behavior • Theory of reasoned action • Technology acceptance model	• Attitude • Subjective norms • Perceived usefulness • Perceived self-efficacy • Trust • Perceived risk • Product type • Purchase intention • Actual purchase	344 shoppers from India	SEM
Wang et al. (2017)	Quality dimensions in online communities	• Not mentioned	• Information quality • Relationship quality • Uncertainty reduction • Involvement • Purchase intention	235 shoppers from China	Path analysis
Verhagen & Bloemers (2018)	Cognitive and affective bases of online purchase intentions	• Hierarchies of effects	• Online store beliefs • Positive affect • Online purchase intention • Recommended value	198 shoppers	SEM

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Akar & Dalgic (2018)	Purchase intention	• Theory of planned behavior • Social network theory	• Behavioral attitude • Subjective norms • Perceived behavioral control • Online purchase intention • Actual online purchasing behavior • in-degree & our-degree centralities • in-closeness & out-closeness centralities • Eigenvector centrality • Betweenness centrality	558 shoppers from Turkey	• PLS • Correlation
Wu et al. (2017)	The effect of e-services capes	• Theory of planned behavior • Stimulus-organism-response	• Aesthetic appeal • Layout & Functionality • Financial Security • Trust in website • Attitudes towards website • Attitude towards brand • eWOM intention • Purchase intention	290 shoppers from Taiwan	PLS
Öztürk (2020)	Purchase intention in food industry	• Theory of planned behavior • Terror management theory • Means-end chain theory	• Hedonic shopping value • Utilitarian shopping value • Online purchase intention • Death threat	556 consumers from Turkey	PLS
Eti et al. (2021)	Purchase intention	• Not mentioned	• Social media • Purchase intention	240 shoppers from Bangladesh	SEM

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Study	Focus	Theory/Model/Approach	Constructs	Sample	Methodology
Aityoussef et al. (2020)	Purchase intention	• Theory of planned behavior • Technology acceptance model	• Perceived ease of use • Perceived usefulness • Structural assurance • Social influence • Purchase intention	302 shoppers from Morocco	• Spearman correlation • Multiple regression
Addo et al. (2020)	Purchase intention toward personal protective equipment	• Theory of fear appeal	• Fear appeal • Social presence • E-loyalty • Purchase behavior	Collected published statistics\the exact number is not mentioned	• Mediated analysis

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2.3. Theory of Planned Behavior

TPB and the TRA are two of the social-psychological theories widely used in prior research to predict individuals' intentions and actual behaviors in various research contexts (Azjen, 1991; Fishbein & Azjen, 1975). The TRA explained that attitude and subjective norms determined individuals' intentions to perform a specific behavior. However, this theory had some limitations in dealing with individuals' voluntary behaviors. This theory was extended by the TPB to enhance the usefulness of the TRA. The TPB included a new construct, perceived behavioral control, to predict individuals' intentions to perform the actual behaviors. The TPB highlighted that individuals' actual behaviors were not dependent only on subjective norms and attitudes (Chiu et al., 2018). Perceived behavioral control also played an essential role in understanding the reflection of individuals' confidence and ability to participate in the behaviors. In other words, if an individual has a positive attitude, subjective norm, perceived behavioral control, and intention toward a behavior, this individual is more likely to perform the actual behavior (Azjen, 1991).

In summary, the TPB provides a better explanation of the behavioral model compared to the TRA. An individual performs a behavior if they have actual control over the behavior. Therefore, researchers widely recognize the TPB as more able to predict individuals' intentions and behaviors in contrast to the TRA (Chiu et al., 2018; Rehman et al., 2019).

2.4. Conceptual Framework

2.4.1. Attitude

Attitude, which is one of the significant constructs of individual voluntary behavior, was first proposed in the TRA. We can define the attitude as the degree to which an individual has a favorable or unfavorable assessment of interest behavior (Azjen, 1991). This evaluation can

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result in a positive or negative outcome. If an individual positively evaluates the outcome, they tend to have a stronger attitude to perform this behavior (Azjen, 1991). Individuals' certain beliefs and past experiences influence their attitudes toward a particular behavior. Therefore, an attitude impacts any decision in the process of decision making (Rehman et al., 2019). The literature suggested a positive relationship between attitude and customers' online purchase intentions (Chin & Goh, 2017; Dutta & Bhat, 2016; Ha et al., 2019; Hsu et al., 2006; Küster et al., 2016; Menozzi et al., 2013; Rehman et al., 2019; Singh & Srivastava, 2018; Wu et al., 2017; Yang & Zhang, 2018). If customers have favorable feelings to perform an online purchasing behavior, they tend to perform this behavior. Concerning the context of the study, all consumers across the world experienced a shift in their purchasing behaviors because of health concerns, anxiety, and lockdown (Öztürk, 2020). Consumers' perceptions of online shopping led to attitudes that impacted their intentions to purchase products or services during the pandemic. Therefore, we define attitude as customers' evaluation of the desirability of purchasing products or services online with the occurrence and spread of COVID-19 and hypothesize that:

H1: *Behavioral attitude affects customers' online purchase intentions.*

2.4.2. Subjective Norms

Subjective norms are vital antecedents to an individual's intention to perform a particular behavior (Azjen, 1991). Subjective norms depend on individuals' perceptions of normative norms and the motivation to comply with a particular behavior (Redda, 2019). We can define subjective norms as an individual's perception that depends on his or her friends, family, and relatives to engage or not to engage in a particular behavior (Rehman et al., 2019). These influential people demonstrate social pressure on individuals to perform or not to perform the behavior (Chiu et al., 2018). In the study context, we address subjective norms as customers' perceptions of whether online purchasing is recognized, encouraged, and implemented by the customer's circle of influence (Pavlou & Fygenson, 2006). The opinions of social groups or

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those of other important people positively influence customers' online purchase intentions. Family or friends, who share the same health concerns and anxiety so to follow the COVID-19 preventative strategies in shopping, might impact a customer's online purchase intentions with the occurrence and spread of COVID-19 (Chan, Zhang, Weman-Josefsson, 2020). We acknowledge the current literature (Ha et al., 2019; Hsu et al., 2006; Menozzi et al., 2013; Lim et al., 2016; Rehman et al., 2019; Redda, 2019; Singh & Srivastava, 2018; Yang & Zhang, 2018) and propose the following hypothesis:

H2: *Subjective norms affect customers' online purchase intentions.*

2.4.3. Perceived Behavioral Control

Perceived behavioral control refers to an individual's perception of how easy or difficult it would be to perform a particular behavior (Azjen, 1991). Moreover, it explains an individual's belief regarding his or her capabilities to perform a specific behavior and the availability of resources or opportunities necessary for exhibiting the behavior (Rehman et al., 2019; Hsu et al., 2006). Perceived behavioral control determines an individual's intentions and actual behaviors (Azjen, 1991). We explain perceived behavioral control as customers' perceived ease or difficulty in purchasing products or services online (Pavlou & Fygenson, 2006). Perceived behavioral control plays two roles. It is one of the determinants of intentions. If a customer has stronger beliefs about his or her capabilities, then the customer is more likely to have an intention to purchase online. It also determines actual behavior. (Hsu et al., 2006; Rehman et al., 2019; Redda, 2019; Menozzi et al., 2013; Yang & Zhang, 2018). If a customer perceives online purchasing as easy, then the customer tends to engage in actual online purchasing behavior (Pavlou & Fygenson, 2006). With the occurrence and spread of COVID-19, customers perceived online shopping as an easy to stay away from physical stores and places to avoid crowds to decrease the possibility of virus infection (Öztürk, 2020). Therefore, we hypothesize that:

H3: *Perceived behavioral control affects customers' online purchase intentions.*

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H4: *Perceived behavioral control affects customers' actual behavior toward online purchases.*

2.4.4. Behavioral Intention

Behavioral intention to perform a particular behavior is one of the antecedents of the actual behavior. If an individual has a stronger intention of performing a particular task, they are more likely to perform this task (Azjen, 1985). In the context of the study, if a customer has a stronger intention to make an online purchase, then the customer will more likely make an online purchase (Lim et al., 2016; Rehman et al., 2019; Singh & Srivastava, 2018). Hence, we propose that with the occurrence and spread of COVID-19:

H5: *Behavioral intention affects customers' actual behavior toward online shopping*.

2.4.5. Pandemic Concern

COVID-19 has changed everything across the world. It has already created instabilities in many various parts of society (Good, 2020). Notably, it is "a time of crisis and change" (Penny, 2020). People use their emotions to evaluate any crisis or change in their lives (Long & Khoi, 2020). The quality of the emotions impacts people's judgment (Peters, Lipkus, & Diefenbach, 2006). For example, if people's negative emotions increase during the pandemic, those people might find negative information about the pandemic more than others.

Additionally, people's emotions are a source of motivation for their behaviors, such as social distancing, hand sanitizing, mask-wearing, and online shopping to avoid pandemic risks (Frijda, 1986; Long & Khoi, 2020). We define customers' pandemic concerns as the degree to which customers perceive changes in their lives relating to the pandemic that determine their judgment. Customers having pandemic concerns had to prevent, cope with, or respond to those changes (Öztürk, 2020).

When customers have an intention to purchase a product or service, their behaviors could be impacted by the level of damage perception and the level of perceived profit or benefit achieved after the transaction (Long & Khoi, 2020). In addition to customers' understanding,

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their emotions also play an important role in risk assessment and judgment. With the occurrence and spread of the COVID-19 pandemic, lockdowns and peoples' concerns of disease infection impact their online purchasing attitudes and intentions. Therefore, we propose the following hypotheses:

H6: *Customers' pandemic concerns affect behavioral attitude.*

H7: *Customers' pandemic concerns affect customers' online purchase intentions.*

Whereas perceived behavioral control describes a person's confidence in his or her ability to perform a particular behavior as well as the availability of resources or opportunities required to perform the behaviors, subjective norms explain how influential people demonstrate social pressure on individuals to perform or not to perform a behavior (Chiu et al., 2018; Hsu et al., 2006; Rehman et al., 2019). Customers' various concerns such as stress, the risk for loved ones, product shortage, price increases, possible quota buying impositions, or nervousness about their monetary limit might impact their perceived behavioral control and other people's influence on them (Addo et al., 2020; Long & Khoi, 2020). Therefore, we hypothesize that:

H8: *Customers' pandemic concerns affect subjective norms.*

H9: *Customers' pandemic concerns affect perceived behavioral control.*

In summary, Figure 1 displays the conceptual framework and hypotheses of the study.

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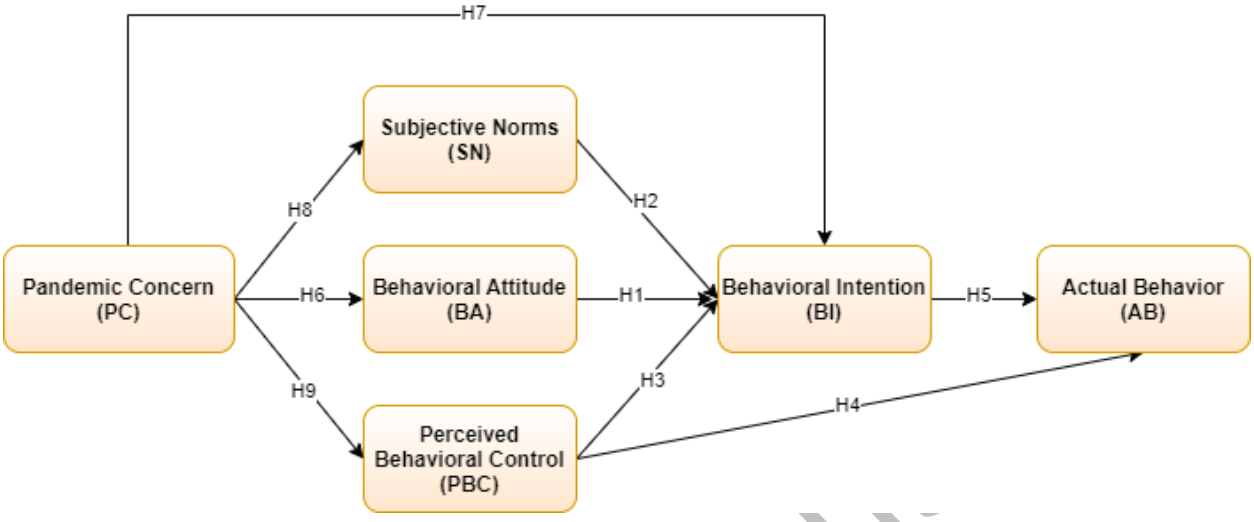

Figure 1. Conceptual Model

3. Methodology

3.1. Context of the Study

Coronaviruses might cause illness, especially respiratory infections, in animals or humans (World Health Organization, 2020a). COVID-19, which is a contagious disease, is the most recently found coronavirus. This new coronavirus and disease began to appear in Wuhan, China, in December 2019 in a Chinese seafood and poultry market. It has spread to at least 171 countries, and an outbreak has started (Taylor, 2020). The World Health Organization announced COVID-19 as a pandemic on March 11, 2020 (World Health Organization, 2020b). COVID-19 was the first pandemic caused by a coronavirus. Then, Europe started to report more cases and deaths than the rest of the world apart from China, and Europe became the center of the pandemic on March 13, 2020. When we wrote this article, there were 104,956,439 confirmed cases and 2,290,488 confirmed deaths worldwide (World Health Organization, 2020c). There are 223 countries, areas, or territories with COVID-19 cases.

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3.2. Questionnaire Development

We prepared a web-based questionnaire. The questionnaire mainly included two sections. The first section consisted of questions asking participants' demographics, including age, gender, income level, educational level, occupation, participants' working status, and online purchase frequency during the COVID-19 pandemic. In this section, we also asked the participants to select product categories from which they made an online purchase. We identified these product categories based on a popular online platform in the country of Turkey.

The second section involved questions asking participants' online purchase intentions during the pandemic (see Appendix). George (2004) investigated the impacts of behavioral attitude, subjective norms, and perceived behavioral control within the context of the TPB and internet purchases. Due to the context similarity, we adapted items for behavioral attitude, subjective norms, and perceived behavioral control from the study of George (2004). We measured these three constructs with three items for each. We adjusted items for behavioral intention and actual behavior from Turan's (2011) study in a similar context. While we measured behavioral intention with three items, we assessed actual behavior with two items.

We created items to measure the pandemic concern within the study's context, and it included six items. We prepared a five-point (1: Strongly Disagree to 5: Strongly Agree) multi-item Likert scale for each item. We developed the questionnaire in Turkish. Two Ph.D. students checked the wording and language of the questions before the distribution. We made revisions based on their recommendations before the distribution of the questionnaire.

While we assessed item reliability with Cronbach's alpha (Cronbach, 1971), we evaluated the internal consistency among items with composite item reliability (Hair, Anderson, Babin, & Black, 2010). Furthermore, we assessed construct validity and convergent validity by evaluating factor loadings and average variance extracted (AVE), respectively, to validate the measurement model (Hair et al., 2010). We also evaluated discriminant validity to confirm that the questionnaire items that were not supposed to be related were unrelated (Fornell & Larcker,

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1987). In addition to reliability and validity assessments, we also conducted a full collinearity test to investigate if there were multicollinearity among the constructs. This test relied on the variance inflation factors (VIFs) calculated for each construct about the other constructs (Kline, 2016).

Furthermore, we assessed the robustness of the research model by investigating various quality indices, including average path coefficients (APC), average R squared (ARS), average adjusted R-squared (AARS), average block VIF (AVIF), average full collinearity VIF (AFVIF), and Tanenhaus goodness-of-fit (GOF) (Kock, 2011).

3.3. Data Collection and Analysis

We generated a web-based questionnaire through Google Forms and targeted participants in Turkey who shopped online at least once during the pandemic. We selected a convenience sampling strategy and distributed the online questionnaire through various social media platforms, including Twitter, Facebook, and LinkedIn. Tweets, Facebook, and LinkedIn posts included the study's topic and a link to complete the questionnaire.

We collected data between April 3, 2020, and April 10, 2020, after the first occurrence of the COVID-19 case on March 11, 2020. We used our social media accounts to disseminate the questionnaire. Additionally, we requested a few influencer accounts to retweet and repost the questionnaire to increase the response rate. These tweets and posts were shared four times during the data collection week.

We analyzed data with the approach of Partial Least Squares (PLS). PLS allows researchers to work with non-normal data, minimizes the effect of measurement error, and tests and validates exploratory models (Goodhue, Thompsun, & Lewis, 2013; Moqbel, 2012). We added demographics including age, gender, income level, education level, occupation, and participants' working status and shopping frequency during the pandemic as control variables to remove any possible bias. Lastly, we segmented customers by applying the k-means algorithm.

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Then we applied the ANOVA test to confirm the homogeneity across identified customer segments.

4. Results

4.1. Demographics

873 individuals responded to the online questionnaire. We eliminated the participants who did not make an online purchase and did not remember whether they made an online purchase during the COVID-19 pandemic. After this process, we were left with 578 responses. Then, we excluded invalid responses, and we obtained 520 responses as a result.

Table 2 shows the demographics of the study participants. The participants are primarily between 25 and 34 years old (56.73%), male (70.96%), have a college degree (63.85%), earn greater than or equal to 5,000 Turkish Liras, and have a full-time job (68.27%).

Table 2. Descriptive Statistics

Demographics		**Frequency (n=520)**	**Percentage**
Age			
	<= 24	131	25.19%
	25-34	295	56.73%
	>= 35	94	18.08%
Gender			
	Female	151	29.04%
	Male	369	70.96%
Educational Level			
	Middle school graduate	2	0.38%
	High school graduate	99	19.04%
	University graduate	332	63.85%
	Master/Ph.D. graduate	87	16.73%
Income Level (in Turkish Liras)			
	< 1,000 TL	77	14..81%
	1,000 – 1,999 TL	38	7.31%
	2,000 – 2,999 TL	46	8.85%

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	3,000 – 3,999 TL	81	15.58%
	4,000 – 4,999 TL	63	12.12%
	>= 5,000 TL	215	41.35%
Occupation			
	Student	99	19.04%
	Full-time job	355	68.27%
	Part-time job	18	3.46%
	Unemployed	48	9.23%
Work Status during COVID-19			
	I started to work from home	155	29.81%
	I had already been working from home	21	4.04%
	I was fired by my employer	3	0.58%
	My employer requested unpaid leave	58	11.16%
	I kept going to my work	153	29.42%
	I had been already unemployed	130	25%
Shopping frequency during COVID-19			
	Never	0	0%
	Rarely	201	38.65%
	Sometimes	171	32.88%
	Usually	129	24.81%
	Always	19	3.65%

Some of the participants' work status changed because of the COVID-19 pandemic. Although 29.81% of the participants started to work from their homes, 29.42% of them were still going to work. 11.16% of the participants reported that they were requested to take unpaid leave, and 0.58% were fired. Furthermore, the participants said that 38.65% of them rarely did online shopping during the COVID-19 pandemic. On the other hand, 32.88% of the participants sometimes made an online purchase, and 24.81% of them usually preferred online shopping during this period.

Prior research stated that consumers are primarily concerned about covering their basic needs like rent, groceries, and medications during a crisis (Wilson, 2020). Consumers preferred to shop for their existential needs instead of purchasing expensive wants. In another article, the

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statistics showed that consumers' expenditures on groceries, health, cosmetics, books, and stationery rapidly increased in Turkey during the pandemic (Muradoğlu, 2020). Figure 2 shows the distribution of product categories that the participants most preferred to purchase online during the pandemic. The participants mostly purchased products from the category of home, life, entertainment, and pet (32.9%). This category mainly includes products such as books, magazines, stationery, sports, outdoor, home decoration, kitchen utensils, pet shops, hardware, lightbulb, automobile accessories, and many more. The category of household essentials and beauty (29.0%) and the category of clothes, shoes, and accessories (29.0%) follow the most preferred product category. The category of household essentials and beauty involves toilet paper, wet wipes, towels, napkins, cosmetics, cologne, personal care, and many more. Figure 2 shows that the participants preferred to make online purchases from the categories of electronics (28.5%), food and candy (e.g., pasta, oil, soup, bakery, frozen meals, canned goods, candies, snacks) (23.3%), cleaning (23.1%), and healthcare (e.g., vitamins, medical masks, hand sanitizers) (22.9%). These categories are followed by milk and dairy products, fruit and vegetables, meat and seafood, beverage, baby and toys, and online services (e.g., online bill payment).

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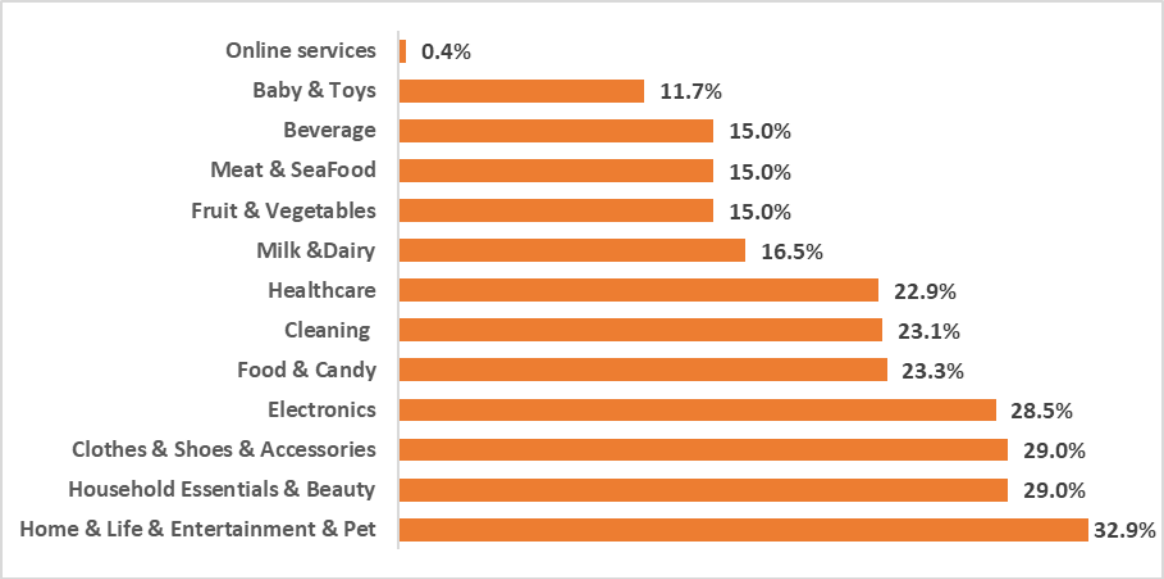

Figure 2. Consumer Expenditures

4.2. Online Purchase Intention

Table 3 presents the statistics to evaluate the reliability and validity of the conceptual model. Cronbach's alpha values ranged from 0.890 to 0.971. We assessed that all Cronbach's alpha coefficients were greater than 0.7 (Cronbach, 1971), so we accepted that all scale items were reliable. Composite reliability statistics were between 0.898 and 0.981. In other words, we found that composite reliabilities were at least 0.7 for each construct (Hair et al., 2010), so we assessed that there was a high internal consistency of scales.

Furthermore, we found that factor loadings were higher than 0.7 for each item, and AVE values were higher than 0.5 for each construct. Hence, we assessed that the conceptual model had construct validity and convergent validity. Additionally, Table 4 includes discriminant validity results. We evaluated the discriminant validity by checking the AVE statistics of two constructs, which should be higher than the square of the correlation between these two constructs. We found that the values above the diagonal were less than the AVE statistics of any two constructs. In this sense, we stated that the model had discriminant validity.

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We also conducted a full collinearity test. We revealed that VIFs statistics were less than the threshold of 5.0 for each construct, indicating no multicollinearity (Hair et al., 2010).

Table 3. The Assessment of the Measurement Model

Construct	Item	Factor Loading	AVE	Item Reliability (Cronbach's α)	Composite Reliability	VIFs
BA	BA1	0.953	0.945	0.971	0.981	2.949
	BA2	0.997				
	BA3	0.965				
SN	SN1	0.917	0.917	0.955	0.971	2.073
	SN2	0.981				
	SN3	0.974				
PBC	PBC1	0.887	0.838	0.903	0.939	1.641
	PBC2	0.940				
	PBC3	0.919				
BI	BI1	0.953	0.850	0.911	0.944	3.489
	BI2	0.864				
	BI3	0.950				
AB	AB1	0.946	0.839	0.809	0.913	2.757
	AB2	0.886				
PC	APC1	0.735	0.596	0.864	0.898	1.397
	APC2	0.746				
	APC3	0.828				
	APC4	0.778				
	APC5	0.771				
	APC6	0.781				

Table 4. Discriminant Validity

Construct	BA	SN	PBC	BI	AB	PC
BA	***1.000***	0.438	0.286	0.578	0.388	0.132
SN	0.662***	***1.000***	0.189	0.406	0.310	0.096
PBC	0.535***	0.435***	***1.000***	0.225	0.124	0.222
BI	0.760***	0.637***	0.474***	***1.000***	0.557	0.148
AB	0.623***	0.557***	0.352***	0.746***	***1.000***	0.103
PC	0.363***	0.309***	0.471***	0.385***	0.320***	***1.000***

*** p<= 0.001

Note: Values below the diagonal are correlation estimates among constructs. Diagonal elements are construct variances. Values above diagonal show the squared correlations

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Table 5 displays the statistics to assess the robustness of the conceptual model. We found that APC, ARS, and AARS indices were significant. The value of GOF was 0.581, so we concluded that the model's explanatory power was large. Also, the values of AVIF and AFVIF were ideally less than 3.3. All quality indices indicated that the conceptual model of the study was robust.

Table 5. The Robustness of the Conceptual Model

Quality Index	Value	p-Value	Threshold (Kock, 2011)
APC	0.204	<0.001	
ARS	0.366	<0.001	
AARS	0.363	<0.001	
GOF	0.581		small >= 0.1 medium >= 0.25 large >= 0.36
AVIF	1.374		acceptable if <= 5 ideally <= 3.3
AFVIF	1.891		acceptable if <= 5 ideally <= 3.3

After the assessment of the measurement model, we tested the research hypotheses. Figure 3 shows the hypothesis test results. We found that behavioral attitude (β=0.569), subjective norms (β=0.231), and the pandemic concern (β=0.076) positively and significantly impacted behavioral intention.

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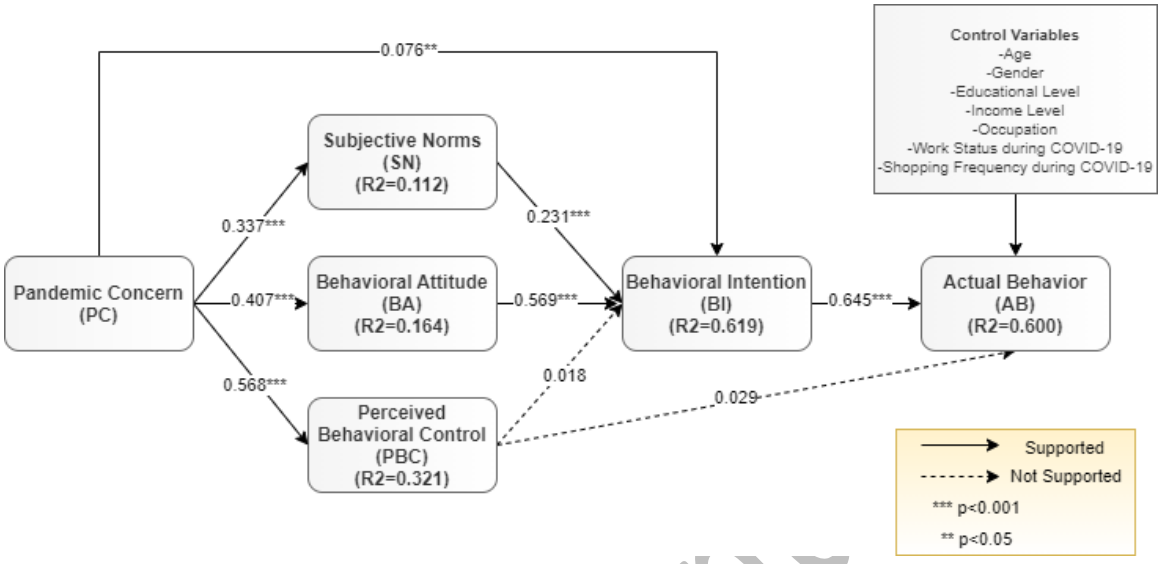

Figure 3. Hypotheses Testing

Also, we discovered that the pandemic concern positively and significantly affected subjective norms (β=0.337), behavioral attitude (β=0.407), and perceived behavioral control (β= 0.568). The results also indicated a positive and significant impact of behavioral intention (β=0.645) on actual behavior. However, we could not find a significant impact of perceived behavioral control on behavioral intention and actual behavior. In summary, we supported hypotheses H1, H2, H5, H6, H7, H8, and H9, but not hypotheses H3 and H4. Additionally, we could say that these path estimations were positively and significantly associated with actual behavior regardless of control variables involving the participants' demographics.

4.3. Customer Segmentation

We performed a cluster analysis with the k-means algorithm. We averaged the values of behavioral intention, pandemic concern, subjective norms, and behavioral attitude to be used in cluster analysis. We excluded perceived behavioral control, which was not supported in the path analysis. We discovered three clusters. Table 6 shows the means of each construct concerning

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each cluster. Segment A has a tremendous behavioral attitude and intention to make online purchases and makes online purchases more than other segments.

Moreover, segment B does not have a behavioral intention and is not impacted by influential people. These customers make fewer online purchases than the customers in segments A and C. However, they have a great behavioral attitude and pandemic concern. On the other hand, segment C has a serious pandemic concern along with behavioral attitude.

Table 6. Customer Segmentation

Segment	**Number of Customers**	**Constructs Used in Segmentation**				
		Behavioral Intention	**Pandemic Concern**	**Subjective Norms**	**Behavioral Attitude**	**Actual Behavior**
A	223	4.34	4.26	4.14	4.49	3.95
B	82	1.74	3.10	1.87	3.08	1.99
C	215	3.09	3.94	3.08	3.43	2.76

We also applied an ANOVA test to confirm the homogeneity across segmented groups. According to Table 7, we found that our segmented groups differ significantly from each other.

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Table 7. ANOVA

Construct		Sum of Squares	df	Mean Square	F	Sig
Behavioral Intention	Between Groups	442.540	2	221.270	644.511	0.000
	Within Groups	177.494	517	0.343		
	Total	620.034	519			
Pandemic Concern	Between Groups	80.862	2	40.431	58.557	0.000
	Within Groups	356.966	517	0.690		
	Total	437.827	519			
Subjective Norms	Between Groups	334.474	2	167.237	341.568	0.000
	Within Groups	253.131	517	0.490		
	Total	587.605	519			
Behavioral Attitude	Between Groups	439.118	2	219.559	590.693	0.000
	Within Groups	192.168	517	0.372		
	Total	631.285	519			

5. Discussion

The diffusion of the COVID-19 epidemic has influenced customers' purchasing behaviors and led to increased online shopping due to the lockdown of brick and mortar stores and restrictions on face-to-face contacts and social interaction (Addo et al., 2020). Thus, it has become essential to understand the dynamics in customers' online shopping behaviors during the COVID-19 pandemic. First, we confirmed the significant associations between subjective norms, behavioral attitude, and customers' online purchase intentions (Akar & Dalgic, 2018; Ha et al., 2019; Rehman, 2019; Redda, 2019; Sign & Srivastava, 2018). Consumers' perceptions of online shopping led attitude and subjective norms to impact their online purchase intentions with the occurrence and spread of COVID-19. Second, we also confirmed that behavioral intention

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positively impacted customers' actual purchasing behavior (Akar & Dalgic, 2018; Lim et al., 2016). It implied that customers having a strong intention to make an online purchase during the pandemic made an online purchase (Lim et al., 2016; Rehman et al., 2019; Singh & Srivastava, 2018).

Although prior research confirmed the influence of perceived behavioral control on online shopping intentions, they found that perceived behavioral control was usually less effective than attitudes and social norms (Adiyoso et al., 2020; Akar &Dalgic, 2018; Redda, 2019; Rehman, 2019). However, in this study, we could not demonstrate the impact of perceived behavioral control on purchase intention and actual purchasing behavior. It might imply that customers neglected whether they had online shopping skills and complete control during the pandemic. Because they usually had no choice other than online shopping to stay away from physical stores and places to avoid crowds so to decrease the possibility of virus infection (Öztürk, 2020).

Previous studies confirmed that growth in online shopping during epidemics or crises influenced customers' behaviors and expenditures (Forster & Tang, 2005; Jung et al., 2016). The COVID-19 pandemic led to fear, anxiety, and depression among individuals (Brewer & Sebby, 2021). People have become worried for themselves and their loved ones because of the high infection rathes and death. In this regard, this study questioned the effect of customers' pandemic-related concerns on perceived behavioral control, subjective norms, attitude, and intention. We confirmed that pandemic-related concerns about social life, economy, healthcare, and future life considerably influenced their online shopping behaviors.

Businesses' main goal is to increase consumption to gain higher profits (Kotler, 2020). They use marketing to reach more customers and motivate and promote their purchase-related activities. In addition to the main goal, businesses should adjust their strategies when it is necessary. Forbes stated that retailers started to shrink their physical presence due to the shift toward online shopping (Loeb, 2020). Thus, understanding customer segments could drive more price targeting, positioning, and strategy adjusting for marketers (Campbell et al., 2014). We

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included different psychographic variables other than prior research to segment customers (Chen et al., 2014; Hong & Kim, 2012; Lee et al., 2008; Puspitasari et al., 2020; Nica et al., 2019). We found that the three segments differ from each other significantly. Customers in segment A, who preferred online shopping during the pandemic, were determined by behavioral attitude, intention, and pandemic concern. On the other hand, although customers in segment B and segment C did not prefer online shopping frequently, they were highly motivated by the pandemic concern.

6. Conclusion

This study investigated customers' online purchase intentions in the context of a pandemic and then segmented customers based on their intentions. We extended the TPB by introducing the variable pandemic concern as an influencer on perceived behavioral control, subjective norms, behavioral attitude, and behavioral intention. We collected data from 520 online customers who purchased a product or service during the pandemic in Turkey. We applied a path analysis and discovered that the COVID-19 pandemic influenced customers' online shopping intentions. We found the significant impact of customers' pandemic-related concerns on their intentions, attitudes, perceived behavioral control, and subjective norms. After that, we segmented customers' by using psychographic variables identified by the path analysis. We identified three different customer segments and found that customers' pandemic concerns played a determinant in customer segmentation.

7. Study Limitations and Future Research Directions

We addressed some study limitations within the extent of the study. First, our sample was geographically constrained. Thus, we encourage future studies to conduct a similar study with a different sample to investigate the influence of customers' pandemic-related concerns on their online purchasing intentions from a different cultural perspective. Second, we extended the TPB by introducing only one variable, the pandemic concern. We recommend future research to

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analyze the direct, indirect, and moderating impacts of additional variables and demographics within the same context. The addition of new variables could increase the explained variance.

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Appendix

Online Questionnaire

Constructs	Items	Questions	Reference
Behavioral Attitude		*With the occurrence and spread of COVID-19...*	George (2004)
	BA1	I think that online shopping is a good idea.	
	BA2	I think that online shopping is a smart move.	
	BA3	I think online shopping is a more beneficial move.	
Subjective Norms		*With the occurrence and spread of COVID-19...*	George (2004)
	SN1	The people who are important to me think that I need to shop online.	
	SN2	The people who are important to me approve of my online shopping.	
	SN2	The people who are important to me think online shopping is a good idea.	
Perceived Behavioral Control		*With the occurrence and spread of COVID-19...*	George (2004)
	PBC1	I have the knowledge and skills to shop online.	
	PBC2	It is easy for me to shop online when I consider my online shopping experience.	
	PBC3	I have complete control and decision during online shopping.	
Pandemic Concern		*To prevent and stop the spread of COVID-19...*	
	PC1	I think that the relevant laws and rules should be enforced more strongly.	
	PC2	I think that significant changes are necessary for social life.	
	PC3	I think that a major policy change in the economic field is required.	
	PC4	I think that a major policy change in healthcare is required.	
		With the occurrence and spread of COVID-19...	
	PC5	I am concerned about my future.	
	PC6	I am concerned about the future of my family and loved ones.	
Behavioral Intention		*With the occurrence and spread of COVID-19...*	Turan (2011)
	BI1	I intend to shop online in the near future.	
	BI2	I plan to shop online more frequently.	
	BI3	I think I would prefer to shop online rather than traditional shopping.	
Actual Behavior		*With the occurrence and spread of COVID-19...*	Turan (2011)
	AB1	I prefer to shop online.	
	AB2	I started to shop online frequently.	

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