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The Application of the Soft Modeling Method to Evaluate Changes in Customer Behavior towards e-Commerce in the Time of the Global COVID-19 Pandemic

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Abstract: As a result of the COVID-19 pandemic, business and consumer behavior towards online consumption and digital payments has changed. This trend, although significant, may be observed, to a varying extent, among customers across the European Union. This study aims to investigate if, and to what extent, the COVID-19 pandemic has had a powerful impact on online consumer behavior in EU (European Union) countries. The empirical research using a soft modeling method supplements theoretical deliberations based on critical literature review. A conceptual model was adopted. Three first-order latent variables were selected for the analysis: "online customer behavior", "online activity" and "willingness to spend online", to which all analyzed indicators (14) were classified. The analysis of the loadings of latent variables for 2019 and 2020 allowed the impact of the pandemic on customer behavior to be observed, although this was not the same across all EU countries. Clustering performed with the hit map enabled the identification of four groups of countries. Significant changes in behavior were observed in countries such as Poland, Ireland, Romania, Hungary, Slovenia, Spain, and Finland. The results of the classification based on the values of three latent variables indicate that only the composition of one group (Bulgaria and Romania) remained unchanged during the study period. Research discussion was presented, and further fields of study were identified.

Keywords: online customer behavior; current trends during COVID-19 pandemics; soft modeling method

Citation: Dewalska-Opitek, Anna, Katarzyna Bilińska, and Marek Cierpiał-Wolan. 2022. The Application of the Soft Modeling Method to Evaluate Changes in Customer Behavior towards e-Commerce in the Time of the Global COVID-19 Pandemic. *Risks* 10: 62. https://doi.org/10.3390/risks10030062

Academic Editor: Salvador Cruz Rambaud

Received: 29 November 2021
Accepted: 2 March 2022
Published: 10 March 2022

1. Introduction

It was in December 2019 when the COVID-19 started in Wuhan, China. It spread across the world within a few months after its outbreak. On 30 January 2020, the World Health Organization declared that the outbreak was a Public Health Emergency of International Concern (WHO Coronavirus Disease Dashboard 2020). Considering the fact that the world is strongly connected and integrated, the impacts of the disease are tremendous. They brought changes in consumption patterns, as well as interruptions to production and sales. Overall, the functioning of the global economy was disrupted, affecting customers (and businesses) across the globe (Fernandes 2020).

Market and consumer behavior have been affected by the coronavirus on a massive scale. The pandemic has left its mark virtually on all aspects of our lives. Some changes, including social distancing, wearing masks, restrictions on travel, etc. have been sudden and involuntary, whereas others have merely accelerated the adoption of behaviors already gaining traction, such as the digitalization of shopping, banking, and more (Puttaiah et al. 2020).

In terms of customer behavior, a shift to online shopping is probably one of the most important and potentially longest-lasting changes resulting from pandemic. The phenomenon was initially forced by closing stores, but the newly developed habits will keep the momentum going. During lockdowns, brick-and-mortar stores (and other businesses, such as restaurants) started to offer online purchases, convenient click-and-collect service, or free delivery service. This trend was followed by increasing customer inclination for digital payments (Crispel 2021; Santosa et al. 2021, p. 3; Pandey and Pal 2020, pp. 3–4).

The new trend in customer behavior to purchase and pay online, although growing significantly, may present specified differences.

The main purpose of the study is to investigate if, and to what extent, the COVID-19 pandemic has had a powerful impact on online consumer behavior in EU countries. It was hypothesized that: H1, The COVID-19 pandemic has had a significant impact on online customer behavior in EU countries, and H2, There was slight change among EU countries within country groups in online consumer behavior.

Empirical research based on a soft modeling method supplements the theoretical deliberations, based on critical literature review.

In academic terms, the research investigates the interrelationships occurring between the variable "online customer behavior", which consists of "online activity" and "willingness to spend online". A conceptual model is suggested. It adopts a deductive approach, which assumes that latent variables (theoretical concepts) are the starting points for the search for observable variables (indicators). The research model contains a set of 14 indicators, while each of the unobservable variables (latent variable) is defined based on an aggregate of detailed indicators.

2. Theoretical Background

2.1. Customer Behavior

Consumer behavior refers to all activities related to the purchase, use, and disposal of goods and services, ideas, or experiences to satisfy needs and desires, including the consumer's emotional, mental, and behavioral responses that precede or follow these activities (Solomon 2006, p. 6; Kardes et al. 2011, p. 9; Sassatelli 2007, p. 10).

The pandemic created a new crisis situation that led to people reassessing their priorities and needs. The impact of COVID-19 raises serious concerns among consumers from the perspective of health and an economy. People have responded in a variety of ways, with different attitudes, behaviors, and purchasing habits. One of the most significant changes was to shop online (Steggals 2021). The Accenture Report (2020) indicated the transformation of consumers into e-consumers as one of the pivotal trends that is expected to be continued in future.

The notion of the e–consumer represents the consumer as one that mainly purchases and uses goods through the use of electronic devices. The necessary condition for the existence of the e-consumer is his/her use of the Internet (Jaciow et al. 2013, p.10). e-Consumer activity may be manifested in all or in only one stage of shopping, for example, gathering information, comparing offers, producing posts about products, or writing comments.

During the COVID-19 pandemic, consumers spent more time on the Internet, therefore, the number of e-consumers has grown and become an interesting subject of scientific research. Definitely, the incident of a global pandemic is an event that poses vast challenges for world economies. It undoubtedly is a global crisis situation (Sahin et al. 2020).

Consumer behavior concerns "the study of individuals or groups who are in the process of searching to purchase, use, evaluate, and dispose of products and services to satisfy their needs" (Rajagopal 2020, pp. 163–94). Furthermore, it also includes studying the consumer's emotional, mental, and behavioral responses observed before or after these processes (Kardes et al. 2011). We can also define customer's behavior as "all activities associated with the purchase, use and disposal of goods and services, including the consumer's emotional, mental and behavioral responses that precede or follow these activities" (Kardes et al. 2011, p. 6).

In addition, customer purchase behaviors have changed rapidly in the era of the global pandemic. The COVID-19 pandemic is perceived as more than a health crisis; it has undoubtfully changed customers' lifestyles. This tragic scenario has also had a serious impact on the level of people's spending (Di Crosta et al. 2021).

Several criteria are applied for the classification of factors which determine the changes in the buying behavior in the times of crisis (Simon 2009). These variables certainly include:

a. Demographic factors (age, gender, education, and size of household);
b. Behavioral factors (buying habits—the frequency of shopping, preferred time and places of shopping, preferred form of payment, etc.);
c. economic factors (inflation and change in the purchase power of consumers);
d. psycho-social factors (lack of stability, feeling insecure, the financial situation, and the changes in the perception of this situation) (Lim et al. 2016, p. 404).

It should be emphasized that the way in which consumers of all ages socialize and shop will continuously be affected by the pandemic. This is particularly true for baby boomers, aged roughly 56 to 76. The categories in which customers changed their purchasing patterns the most, with buying mostly or entirely online as a direct result of COVID-19, include personal care, pet supplies, clothing, and groceries (Jordan 2020).

Transportation and accommodation representing two of the largest sectors of the sharing economy in terms of daily users and revenue have been most adversely affected as a result of lockdown restrictions.

Several reasons, including personal, economic, psychological, contextual, and social factors can lead to changes in consumer behavior. The process of consumer decision making is one of the basic models analyzed in the context of purchasing behavior (Darden and Ashton 1974; Westbrook and Black 1985; Lysonski et al. 1996). Transformations observed in sales and communication, especially access to equivalent online and offline offer, have converted consumer behavior.

2.2. New Trends in Consumer Purchasing Behaviors during a Global Pandemic

The lifestyles and motivations of many people, as well as their purchasing behaviors, have been affected by the COVID-19 pandemic. Firstly, popularity of online sales grew, reaching 30.1% of total sales in June 2020 (as compared with 18.6% in June 2019) (Dewalska-Opitek 2020, p. 90; Meyer 2020). Secondly, a considerable difference in sales volumes across product categories can be noticed. With most of the population forced to stay home, consumers tended to opt for essential products (food and beverage, hygiene, and sanitizing products) and those that could make time spent at home more pleasurable (including products such as gaming, videos, and software, as well as stationery and hobbies) (Fernandes 2020). The third dominant trend is growing customer inclination for online payments, which is a natural consequence of digital purchases. Online payments around the world accelerated in 2020, and it is predicted that their number will continue to increase between 2020 and 2025 with a CAGR of over 10%. The global value of expenditures on digital products is expected to nearly twin by 2025, while e-payments are forecasted to account for a half of total wallet spending by 2025 (Report, Research and Markets 2021).

Online purchases and e-commerce practices have enabled the identification of e-customers, who are in the sphere of interest for both researchers and the business community. There are questions regarding how e-customers behave when they make their purchasing decisions. The crucial questions are: "In what circumstances do they buy?", "What are the drivers leading them to buying decision?", "What expectations toward products do they have?", and "how do they want to pay?", etc. This set of questions constitute critical issues when evaluating behavioral changes in the time of a global pandemic. E-customers are:

(a) Interested more in availability rather than buying (Madhukalya 2020);
(b) The mobile phone is in first place amongst the ten most important devices they could not live without, which supports the development of online shops;

(c) Considering buying behaviors, e-customers look for the best price and opinions about the product;
(d) Exposed to the ROPO effect.

When characterizing trends in customer behaviors, an important phenomenon of the research online purchase offline (ROPO) effect must be highlighted. The reverse ROPO effect (Research Off-line Purchase On-line) is an important phenomenon. It is based on the fact, that customers order via Internet the products that they found earlier in brick-and-mortar stores. It is also noticed that older consumers have started using online shopping (Eger et al. 2021, p. 1).

When aware customers decide to buy a product, they check online and compare information about the product they have selected. Searching for information about offers is really common, and experts predict that it will be even more prevalent. They will more often look for opinions and recommendations located on the Internet (Bilińska-Reformat and Stefańska 2016).

Key behavioral patterns that will last beyond the pandemic include the following (https://www.thinkwithgoogle.com/intl/en-apac/consumer-insights/consumer-trends/consumer-behavior-psychology-post-pandemic/, accessed on 17 November 2021):

a. More people than before shop online;
b. New online skills are being learnt and developed;
c. Online and contactless payment are more desired;
d. Customers prefer omnichannel distribution;
e. People spend more time at home, and therefore both home entertainment and home office will remain lifestyle patterns.

We can state that customer behavior is influenced by several factors, both objective and subjective. The growth of COVID-19 cases and its consequences have affected not only the approach of people towards health but also their purchasing patterns (Loxton et al. 2020). During lockdown, online orders were more frequent than before. People also cut their optional costs, started to be more selective, and moved to local brands (Sumarliah et al. 2021). Demand for digital technologies has surged (Joia and Lorenzo 2021; Shestak et al. 2020).

Online customers are searching for experience, which is why brands should establish a closer relationship with them. Alibaba's livestream channel and Taobao Live, which gives brick-and-mortar retailers the possibility to link directly with customers, can be indicated here. The consumers can buy while watching online programs; the experience pretends the relationships that people have in physical malls and stores. E-consumers need to explore, research, assess their options, and purchase consistently. The customers are more active, they write more posts and comments regarding offers, and they give more recommendations to other customers (Zierlein et al. 2020).

Over the past two years, the number of people looking to learn new skills online has been rapidly growing. Because people stay at home, they more often are searching for information on how to do something (a 10% worldwide growth in searches for that phrase). Social media helps e-consumers learn new skills (Di Crosta et al. 2021).

Online (digital) payments have gained popularity due to the e-commerce shift caused by the COVID-19 pandemic. They include the use of a customer's phone's digital wallet to shop or typing credit card information into an app to order goods and services. They are easy and contactless, but also safe and secure.

Online payments have grown to become an essential service that every online retailer must offer. Nowadays, consumers are familiar with online payments. Their paying behaviors related to money and payment methods appeared a few years ago. The acceptance of online payments was highly supported by the coronavirus pandemic (Porto 2021; Kar 2020, p. 3; Zhong et al. 2020, p. 786).

The described changes in consumption patterns should be considered by companies that need to face and overcome new market challenges (Dewalska-Opitek 2020, p. 94).

3. Research Methods and Findings

3.1. Research Methods

The theoretical deliberations on customer online behavior were supplemented by desk research based on Eurostat data for the European Union member countries (N = 27). The time scope of the research was 2019 and 2020, which enabled comparisons of customer behavior before and during the COVID-19 pandemic.

The study aims to investigate if, and to what extent, the global pandemic has had a significant impact on changing online consumer behavior in EU countries. Literature studies that preceded empirical research allowed for formulating the following two hypotheses:

Hypothesis 1 (H1). *The COVID-19 pandemic has had a significant impact on changing online customer behavior in EU countries.*

Hypothesis 2 (H2). *There was slight change among EU countries within country groups in online consumer behavior.*

In the social sciences, there are complex concepts whose definitions are not clear, such as social capital, quality of life, or customer behavior model, among others. In our model, online customer behavior becomes such a concept. Therefore, in the case when the examined phenomenon does not have unambiguous counterparts among measurable variables, a useful tool is soft modeling, which makes it possible to investigate relations between unobservable variables.

Soft modeling (PLS-PM) is used by an increasing number of researchers in different disciplines including strategic management (Hulland 1999), e-business (Pavlou and Chai 2002), marketing (Reinartz et al. 2004), and consumer behavior (Fornell and Robinson 1983). The extensive capabilities of soft modeling in estimating complex models containing many latent and explicit variables makes this method increasingly applicable in e-commerce research for selected products (Morard and Simonin 2016).

The soft model, presented in this paper, is universal and allows a synthetic evaluation of consumer behavior. In addition, it should be stated that the market of EU countries is diverse both culturally, financially, and in terms of consumer sentiment. Therefore, the presented study of behaviors on e-commerce market using soft modeling can be applied to any country.

As a result of modeling, we obtain an estimate of the value of a latent variable, which can be perceived as a synthetic measure and used to classify objects (e.g., countries and regions). In our case, we used synthetic measures to study changes in online customer behavior in EU countries.

Soft modeling was used to verify the hypothesis and to investigate the interrelationships occurring between the variable "online customer behavior", which consists of "online activity" and "willingness to spend money online" (Wold 1980; Rogowski 1990). The soft model comprises two parts: an internal and an external model. The parts are used simultaneously in the parameter estimation process. The soft model is estimated using the partial least squares (PLS) method.

The soft model of online customer behavior is shown in Figure 1. Unobservable variables are placed in ellipses, while observable variables are placed in rectangular areas.

Three first-order latent variables were selected for the analysis: "online customer behavior", "online activity" and "willingness to spend online" to which all analyzed indicators were classified. The variable "online customer behavior" is determined by "online activity" and "willingness to spend online".

According to the methodology of soft modeling, the latent variables in the model can be defined in a formative way or reflective way. The researched model adopts a reflective way, which assumes that latent variables (theoretical concepts) are the starting points for the search for observable variables (indicators).

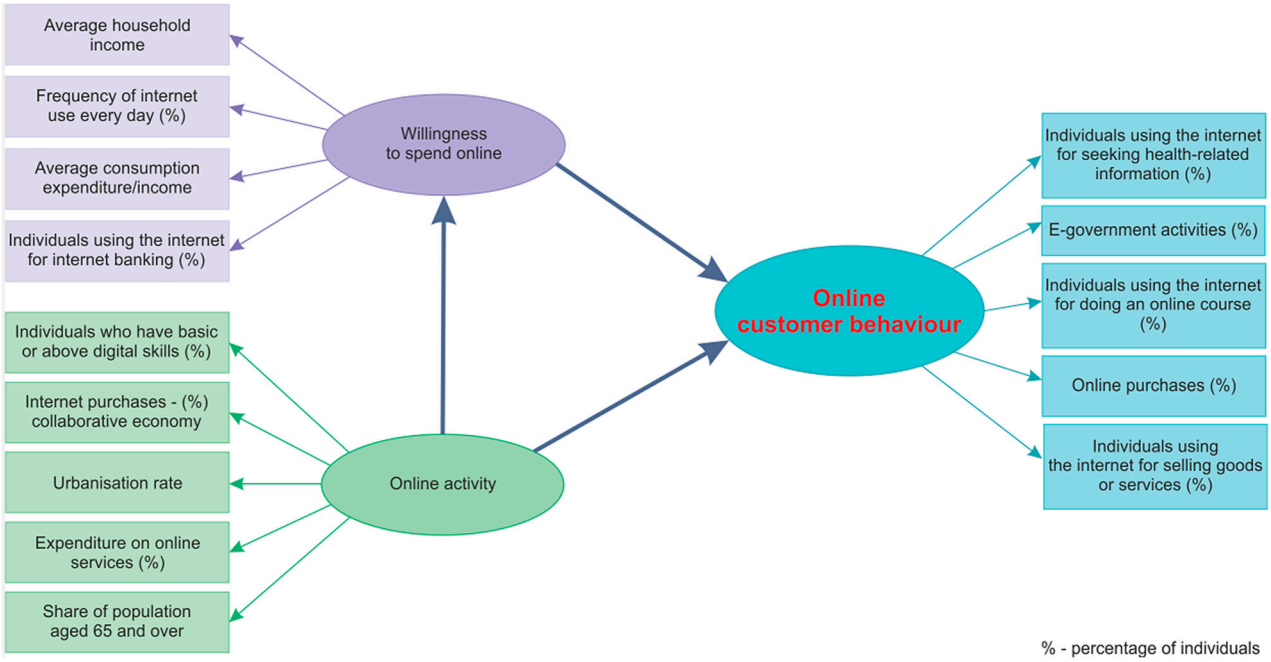

Figure 1. Scheme of a soft model showing online consumer behavior, in 2019–2020, for EU countries, with the directions of internal and external relationships indicated. Source, own study.

The research model contains a set of 14 indicators, while each of the unobservable variables (latent variable) is defined based on an aggregate of detailed indicators. The estimation of the parameters of the relationship of the latent variables, the estimation of the weights, and the load factor are performed in the "R" environment. The load factor is the correlation coefficient between the latent variable estimate and its indicator. It, therefore, indicates the strength and direction in which the variability of a given indicator reflects the variability of an unobservable concept (Perło 2014).

3.2. Research Findings

On the one hand, the latent variable "online activity", presented in Figure 1, is defined by five indicators, four of which are stimulants, i.e., variables whose higher values are desirable from the point of view of increasing the value of the variable "online customer behavior".

On the other hand, the variable "share of population aged 65 and over" is a destimulant, higher values of which led to lower values of the variable "online customer behavior". Considering the values of the load factor (see Table 1), it can be seen that the indicators "share of population aged 65 and over" and "urbanization rate" have the least amount of influence on the formation of the latent variable "online activity".

The latent variable "willingness to spend online" is determined by four indicators which are stimulants. Among this group, the stimulus describing the frequency of Internet use has the highest load factor. This is followed by the indicator describing individuals using the internet for internet banking. In contrast, household expenditure plays the smallest role.

The latent variable "online customer behavior" is determined by eight indicators describing broadly defined online behavior/activities, all of which act as stimulants. In this case, the high values of all load factors seem most surprising, with Internet shopping and health information search being the most significant.

The application of the soft model also allows for assessing the relationships between the latent variables. As Figure 1 shows, the latent variable "online activity" is highly correlated with the variable "willingness to spend money online" (the value of the load factor amounts to 0.87). In addition, the abovementioned variables are similarly correlated with the variable "online customer behavior".

Table 1. Load factor values for individual indicators.

Indicators	Latent Variables	Loading 2019	Loading 2020
Share of population aged 65 and over	Online activity	−0.15	−0.11
Individuals who have basic or better digital skills (%)	Online activity	0.92	0.90
Internet purchases—collaborative economy (%)	Online activity	0.74	0.79
Urbanization rate	Online activity	0.45	0.68
Expenditure on online services	Online activity	0.97	0.96
Individuals using the internet for internet banking (%)	Willingness to spend online	0.92	0.92
Frequency of internet use every day (percentage of individuals)	Willingness to spend online	0.98	0.96
Average household income	Willingness to spend online	0.87	0.86
Average consumption expenditure/income	Willingness to spend online	0.39	0.46
Individuals using the internet for selling goods or services (%)	Online customer behavior	0.85	0.79
Individuals using the internet for seeking health-related information (%)	Online customer behavior	0.84	0.90
Online purchases (percentage of individuals)	Online customer behavior	0.94	0.92
E-government activities (%)	Online customer behavior	0.87	0.87
Individuals using the internet for doing an online course (%)	Online customer behavior	0.83	0.73

Source: Own study.

Based on synthetic indicators describing the values of latent variables, clustering of EU countries with similar levels of synthetic measures was performed. In Figure 2, heat maps showing the grouped countries in the two examined years are presented.

The clustering done with the heat map indicates four groups of countries. The first of these includes: Germany, Luxembourg, Denmark, the Netherlands, Finland, and Sweden, which have the highest values for the synthetic indicator "online activity" in 2019. These countries also maintain high values of the synthetic indicators for the other latent variables.

In contrast, in 2020, this group decreases to four countries: Denmark, the Netherlands, Finland, and Sweden. The second group with the lowest values of synthetic indicators consists of only two countries: Bulgaria and Romania. In the case of these two groups, a clear division into the so-called "old" and "new" union countries can be observed. In the above comparison, two groups of countries showing values of hidden variables above and below the average values are observed, while their number increases slightly over the years.

To better illustrate the changes, the results of calculations for the latent variable "online customer behavior" for the two examined years have been aggregated in Figure 3.

As Figure 3 shows, most countries cluster around the mean value of the latent variable "online customer behavior". Despite slight decreases in values in 2020, the leaders are still countries such as: Finland, the Netherlands, Sweden, and Denmark. In the case of: France, Spain, Belgium, Hungary, and Slovenia, there is an increase in the value of the latent variable "online customer behavior". Interestingly, in this respect, a distinction between the countries of the so-called "new" and "old" union cannot be observed. Moreover, these are countries characterized by distinctly different values of GDP per capita.

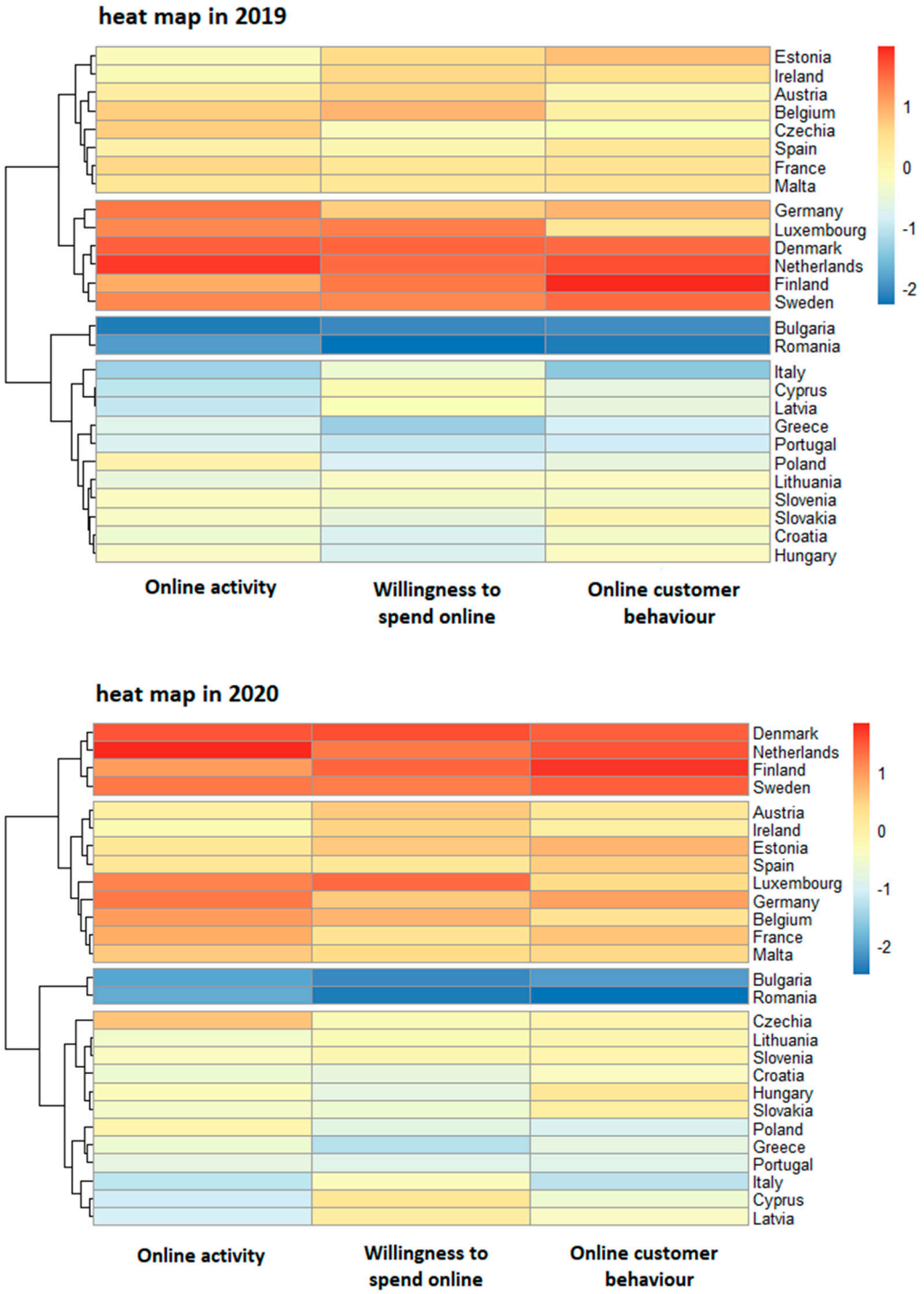

Figure 2. Clusters of EU countries performed for latent variables (colors indicate values of synthetic measures). Source, own study.

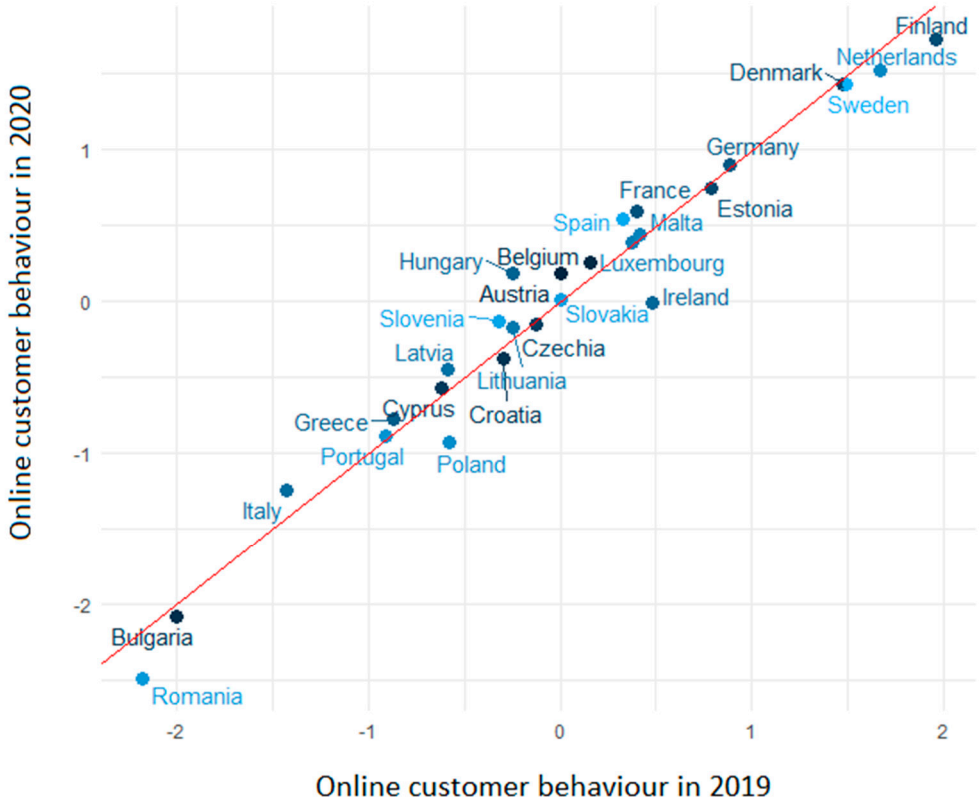

Figure 3. Comparison of EU countries made for the latent variable "online customer behavior". Source, own study.

4. Discussion and Conclusions

4.1. Discussion on Research Findings

Our research provides empirical evidence that shows there was a change in the consumer behaviors of EU residents and that it was a result of the COVID-19 pandemic. Our conceptualization of the soft model showing online customer behavior in 2019 and 2020, although original, is also grounded in the behavioral theory, approaches, and models.

Introduced by Davis (1989, pp. 318–39) and followed by Devkishin et al. (2013, p. 221) the technology acceptance model (TAM) explains and predicts user acceptance of IT and contends that behavioral intention is contingent on two salient beliefs including ease of use and perceived usefulness of online activity. The TAM model assumes the positive impact of online activity on the intention to use and accept other forms of online behavior, i.e., willingness to pay online.

Another theory used for the conceptualization of the model was the theory of buyer behavior (TBB) based on the research of Howard and Sheth (1969) and followed by Loudon and Della Bitta (1993) and Sheth (2021). According to the TBB model, there are various variables (stimuli) which affect customer behavior directly or indirectly: significative stimuli, variables that buyers confront (incomes, customer expenditures, frequency of internet use, etc.); symbolic stimuli, influencing customers indirectly (such as digital skills); and social stimuli, including the influence of various social groups (such as sharing economy or urbanization rate—the proximity to other consumers).

In our model, the share of the population aged 65 and over is a destimulant, which means that the higher the number of the population, which is over 65, the lower the value of the variable "online consumer behavior". It can also be noticed that the inclination for online activity decreases with age ranges. Mathur and Sharma (2014, pp. 23–28) and Devi et al. (2019, pp. 4–5) also recognized that the inclination of respondents choosing online shopping falls in the older age groups.

The analysis of the loadings of latent variables for 2019 and 2020 allow the impact of the pandemic on customer behavior to be noticed, although this impact is not the same across all EU countries. Clustering performed with the heat map enables the identification of four groups of countries:

1. Denmark, Netherlands, Finland, and Sweden;
2. Austria, Estonia, Spain, Luxemburg, Germany, Belgium, France, and Malta;
3. Czechia, Lithuania, Slovenia, Croatia, Hungary, Slovakia, Poland, Greece, Portugal, Italy, Cyprus, and Latvia;
4. Bulgaria and Romania.

Group 4 countries presented the lowest values of synthetic measures, both in 2019 and in 2020, while in the case of other countries the values changed.

Thus, the first research hypothesis was partially verified, i.e., significant changes in behavior were observed in countries such as Poland, Ireland, Romania, Hungary Slovenia, Spain, and Finland.

The second hypothesis was not confirmed, because the results of the classification based on the values of three latent variables indicate that only the composition of one group (Bulgaria and Romania) remained unchanged during the study period.

4.2. Conclusions

In conclusion, it is observed that the business landscape faced rapid transformations brought on by the COVID-19 pandemic. Consequently, the corona crisis accelerated the development of digital commerce. A new digitally immersed consumer has occurred. Among the identified trends of the past two years, it can be observed that there are more online buyers than ever before, new online skills are learnt and developed, online and contactless payments are more desired, and companies should follow customers' preferences by integrating various methods of shopping available to consumers (e.g., online, in a physical shop, or by phone), as omnichannel distribution is much preferred.

The theoretical deliberations on customer online behavior were supplemented by desk research based on Eurostat data for European Union member countries (N = 27). The time scope of the research was 2019 and 2020, which enabled comparisons of customer behavior before and during the COVID-19 pandemic. The study aims to investigate if, and to what extent, the COVID-19 pandemic has had a significant impact on online consumer behavior in EU countries.

The method applied was soft modeling. Synthetic measures were used to study changes in online customer behavior in EU countries. The soft model consists of two parts: an internal and an external model and both parts are used simultaneously in the parameter estimation process.

Three first-order latent variables were selected for analysis: "online customer behavior", "online activity" and "willingness to spend online", to which all analyzed indicators (14) were classified. Analysis of the loadings of latent variables for 2019 and 2020 allowed the impact of the pandemic on customer behavior to be observed, but this impact was not the same across the EU countries. Clustering performed with a heat map enabled the identification of four groups of countries. Significant changes in behavior were observed in countries such as Poland, Ireland, Romania, Hungary Slovenia, Spain, and Finland. The results of the classification based on the values of three latent variables indicated that only the composition of one group (Bulgaria and Romania) remained unchanged during the study period.

4.3. Theoretical and Practical Contribution of the Study

In academic terms, this study has contributed to the social sciences theory through presenting a conceptual model investigating the interrelationships occurring within the variable "online customer behavior", which consists of "online activity" and "willingness to spend online".

The research model adopts a deductive approach, which assumes that latent variables (theoretical concepts) are the starting points for the search for observable variables (indicators). The research model contains a set of 14 indicators, while each of the unobservable variables (latent variable) is defined based on an aggregate of detailed indicators.

From a managerial perspective, the presented study brings several contributions for marketing professionals. It especially gives examples of how customer online behavior changed in particular EU countries. This should be taken into consideration when adopting business practices and strategies to operate in the European market.

4.4. Limitations of the Study and Future Research Directions

The study findings have several limitations. Firstly, not all indicators are mentioned and studied. They were limited to only 14 indicators; the list is not comprehensive.

Secondly, other data collecting methods, such as web scraping (web harvesting, or web data extraction), were not applied. The list of indicators for latent variables presented in the soft model would be completed in the process of automatically mining data and collecting information from the World Wide Web.

Thirdly, the spatial scope of the research may be extended. European Union countries represent a certain (high) level of economic development, which would influence customer inclination to purchase and pay online. When analyzing the online behavior of European citizens, we find unambiguous evidence that the COVID-19 pandemic has had a serious impact on changing online customer behavior. Focusing our research on EU countries ensures data convergence and compatibility but may be also perceived as a limitation.

Fourthly, the COVID-19 pandemic is not over yet, the full impact may be estimated in a few years when it is over.

This all leaves room for prospective research. In the future, this study can constitute a framework for investigating other interrelationships occurring within the variable "online customer behavior", which consists of "online activity" and "willingness to spend online". Thus, future research can focus on observable variables indicated by data mining. The soft model can also be extended to other, non-EU countries.

Author Contributions: Conceptualization, A.D.-O., K.B. and M.C.-W.; methodology, M.C.-W.; software, M.C.-W.; validation, A.D.-O. and K.B.; formal analysis, K.B.; investigation, A.D.-O.; resources, M.C.-W.; data curation M.C.-W.; writing—original draft preparation, A.D.-O.; writing—review and editing, A.D.-O.; visualization, A.D.-O.; supervision, K.B.; project administration, K.B.; funding acquisition, A.D.-O., K.B. and M.C.-W. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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