

Article

Changes in Consumers' Purchase Patterns as a Consequence of the COVID-19 Pandemic

Katarina Valaskova ^{1,*} , Pavol Durana ¹  and Peter Adamko ² 

¹ Department of Economics, Faculty of Operation and Economics of Transport and Communications, University of Zilina, Univerzitna 1, 01026 Zilina, Slovakia; pavol.durana@fpedas.uniza.sk

² Department of Quantitative Methods and Economic Informatics, Faculty of Operation and Economics of Transport and Communications, University of Zilina, Univerzitna 1, 01026 Zilina, Slovakia; peter.adamko@fpedas.uniza.sk

* Correspondence: katarina.valaskova@fpedas.uniza.sk

Abstract: The current COVID-19 pandemic has affected every aspect of consumer behavior—their expenses, investments, and financial reserves, as well as their financial and social wellbeing. As a consequence of different restrictions, consumers and their shopping patterns have changed significantly; thus, the factors that influence new purchase patterns need to be identified to help traders, retailers, and marketers develop appropriate strategies to respond to crucial consumer changes in the market. A categorical analysis (Pearson's chi-square test) and correspondence analysis (simple and multivariate) were applied to a sample of 425 Slovak respondents to reveal the most important factors impacting consumers' financial situations, as well as the effects on the maintenance of new shopping habits established during the pandemic period. The results revealed that consumers' income, age, and sector of occupation play important roles in the context of new shopping patterns. These findings are in agreement with other global studies, confirming both the worldwide impact of the pandemic on consumer behavior and the importance of national studies on consumer shopping behavior in order for state authorities, traders, marketers, and entrepreneurs to be able to take necessary measures.

Keywords: COVID-19; pandemic; consumer behavior; purchase patterns; shopping habits



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1. Introduction

The current COVID-19 pandemic has slowed down the economy. The governments of all countries are looking for ways to help citizens, including deferring tax payments, paying benefits to help businesses, repaying wages, and making rent contributions in order to mitigate the negative impacts on consumer living standards. It is evident that these changes have affected consumer spending, real estate investment, financial provisioning, and many other areas of consumer life. Consumers, who include every natural person purchasing goods and services, have changed their shopping behavior as a result of the current situation. The fact that the situation regarding the new pandemic is uncertain and it is not known how quickly it will pass has drawn consumers' attention to expenditure, especially on health, hygiene, and food. Consumption has eased and sustainability and renewables have come to the fore again [1].

Traders and service companies have also had to adapt to this new era and offer consumers what they need. In recent months of operation, traders have not had many opportunities to welcome their customers. After reopening, however, they faced increased costs related to cleanliness and disinfection of their premises. Consumers are often afraid to visit shops due to possible infection, meaning they buy fast and only purchase necessary products. As a result, many retailers have opened online stores [2], pushing traditional 'brick and mortar' shops to the background [3]. They have also focused on the complexity and variety of products offered, intuitive purchasing, simplifying the shopping process, and shortening the consumer's decision-making time.

The prices of products and services have also undergone changes [4]; according to the Statistical Office of the Slovak Republic [5], consumer prices fell during 2020, and this trend should continue next year as well. According to the National Bank of Slovakia, there was a 10.3% downturn in the Slovak economy in 2020, caused by an increase in unemployment (from 5.3% in 2019 to 6.7% in 2020), a decrease in the average wage (the real wage index decreased to 101.9 in 2020 from 105.0 in 2019; the nominal wage index changed from 107.8 in 2019 to 103.8 in 2020), or job losses. The situation in Slovakia was further worsened by the parliamentary election and changes in leadership; thus the uncertainty caused by the pandemic was also intensified by political doubts. Despite the fact that the beginning of the pandemic was outrageous in every country around the world, the situation in Slovakia was also amplified by political instability. The aim of this paper is to analyze changes in consumer shopping behavior as a consequence of the changed economic situation in the country caused by the COVID-19 pandemic. The purpose of this paper is to identify the negative areas of consumer life that have been affected by the pandemic, including changes to their financial situations, their different purchasing preferences due to store and product availability, and the impacts on shopping patterns. This single-country study is important for several reasons: (i) as the economic conditions and the impacts of the pandemic are different from country to country, the measures adopted to achieve economic improvements also have to be implemented individually, considering the political, economic, and social background of each country; (ii) this is a pioneering study in Slovak conditions reflecting the changes in consumer shopping patterns, which could be a useful tool for marketers, entrepreneurs, and state authorities; (iii) due to the similar development of surrounding countries, the results of the study may be helpful when identifying new trends in consumer behavior. As declared by Valaskova and Klietnik [6], economic recessions always contribute to changes in consumer behavior; therefore, by analyzing a sample of 425 consumers, new behavioral patterns are determined.

The paper is divided into the following sections. The Literature Review highlights the latest studies on the impacts of the last recession caused by the COVID-19 pandemic on consumer behavior. The Materials and Methods section characterizes the sample of respondents and methodological steps of the categorical and correspondence analyses. The Results section shows the crucial findings and relevant dependences, which may be helpful when identifying significant changes in the shopping patterns of consumers. In the Discussion section, the current findings are compared with the studies performed by other authors worldwide.

2. Literature Review

COVID-19 has had enormous socioeconomic consequences. Donthu and Gustafsson [7] declared that this economic catastrophe has had severe consequences all over the world, affecting each country around the globe and leading to dramatic changes in the operations of business entities and the behavior of consumers, who mostly fear for their health and personal finances [8]. Analysts predict that the pandemic will lead to an estimated annual economic downturn of 2–3% of the global gross domestic product next year. The coronavirus pandemic is not only a global health crisis, it is also an economic crisis that is expected to overtake the major financial crisis of 2008 [9]; it also has enormous socioeconomic consequences. Schumacher [10] provides a different view on the negative impacts on the economy, as he claims that the economic downturn also has its pros, especially in the field of training and education, as declared by Zhong et al. [11]. The recession also has healing potential for the future, with a lower starting level. Falls and increases are a natural part of every national economy. Each country plays an important role, as underlined in the study by Kyurova and Koyundzhiyska-Davidkova [12], who discussed the effects of a new type of comparison, in which people compare the performance of their own government with that of other countries. They argued that the coronavirus has changed the political debate in the sense that it only depends on how individual governments have responded to the threat that the virus has posed to health care and the economy. Cheval et al. [13] confirmed the

views of other authors by claiming that the crisis caused by the coronavirus pandemic is a fundamental phenomenon, not only from epidemiological and medical points of view, but also because it is a factor that could change social and economic conditions for a very long time. Various authors believe that the biggest problem is not the stoppage of economic life, but rather the incorrect approaches taken by national governments and their steps to restart the economy, because governments do not respect the current economic principles in the form of sustainable finance, reasonable debt, tolerable inflation, and currency stability.

Today, consumers are exposed to an increasing range of products and information that have not been seen before. This leads to an increasing diversity of consumer demand and challenges retailers to supply the right products according to customer preferences [14]. A recommendation system is a tool to meet this challenge, especially the needs and expectations of customers. It helps keep loyal customers and attracts new ones. An unusual view of how to retain customers through databases and algorithms is given in a study by Rodrigues and Ferriera [15]. Their goal was to provide consumers with assertively tailored advertising recommendations and thus increase sales for retailers.

Research on marketing ethics and social responsibility has reached a turning point and requires a new direction. This led Ferrell and Ferrell [16] to the examination of marketing ethics and social responsibility, as well as the theoretical framework related to decision making. They argue that the current challenges and opportunities are based on the implementation of technologies and changes in marketing efforts aimed at building relationships and promoting consumer welfare. The COVID-19 pandemic has revealed ethical and social issues that require new strategies. In the future, marketing research needs to focus on specific issues related to the pandemic, the work environment, and technology. There are several challenges that society as a whole must face responsibly to reap the benefits of the changes brought to our lives by the COVID-19 pandemic [17]. Nash [18] assesses the impact of the first wave of the pandemic, pointing to the values, context, and challenges which are to be faced as a result of the pandemic.

The global crisis caused by the pandemic has affected the world economy and health care, inciting fear, panic, and insecurity among billions of people. A hitherto unknown panic purchase by consumers appeared and became a phenomenon, which is verified by the research of Laato et al. [19]. The study of Islam et al. [20] examined the panic shopping behavior of consumers during the COVID-19 crisis. Based on theoretical guidelines, they examined how external stimuli affect the impulsive and obsessive shopping behavior of consumers and provided their findings to managers or traders to understand this phenomenon. Another view of panic shopping during the COVID-19 pandemic is presented by Prentice et al. [21]. It follows the principle of scarcity, the psychology of the crowd, and the consequences of panic shopping. Government action plans, the influence of the media, society, and fear of scarcity have resulted in a change in consumer behavior and provoked panic shopping. The results of their study show that a consistent supply of goods creates a sense of security for consumers.

The research by Naeem [22] looks at the impact of social media on panic shopping during a pandemic. Real-time information about COVID-19 obtained through social media provides information that is needed for customers to make smart decisions, but it may also be concerning. Experts claim that this can lead to panic shopping or to the accumulation of products in households. The study tries to explain how social media creates and shapes consumer panic. At the same time, it provides guidance on how global logic is being built using these media and how the various social pieces of evidence were developed and influenced a panicked way of shopping. The consumer panic caused by the COVID-19 pandemic is a separate issue to be considered [23,24]. Ryder et al. [25] also focused their research on social media, and they explored the digital content implemented during the pandemic and its importance for consumers during the lockdown.

The specific impact of COVID-19 on consumer satisfaction in retail supply chains is addressed in a study by Brandtner et al. [26]. By collecting and analyzing ratings and comments on retailers' websites, they examined the impact of the pandemic on consumer

satisfaction in Austria's five largest retail chains. The results show that the pandemic led to a general and significant decline in customer satisfaction. The layout and equipment of the shops, as well as the availability and waiting time for the products, were evaluated negatively by consumers.

It is evident that COVID-19 has had a significant impact on daily lives, including what and how consumers buy. Consumers' needs are suddenly completely different. They started buying food and medical supplies for months ahead—their behavior and shopping patterns have changed. They are willing to stand in line in front of the store, grateful for the opportunity to purchase. Consumers do not stick with favorite brands, and they buy new brands which are offered under one roof [27]. The combination of a general decline in income and reduced consumer activity led to a reduction in demand. Expenditures were also reduced as a result of the quarantine measures taken, which significantly reduced the range of goods and services consumed. In addition, the fear of being infected with the disease led to a more cautious model of economic and social behavior. The return to the pre-crisis consumption pattern will be extremely slow [28]. Sheth [29] declares that new consumer behavior will be modified by new regulations and supported by technological advances.

Smart merchants have seized their chance and moved their sales to the online environment of the Internet and, thus, online shopping has experienced an incredible boom [30]. Pantano et al. [31] synthesized the challenges of traders during the pandemic era and offered a plethora of various intervention models. Consumers buy on the Internet what they used to buy exclusively in brick and mortar shops. The situation that forced people to stay isolated at home and rely on online shopping or services has become commonplace. The current situation shows that being an online trader is essential. It mitigates the impact of the crisis on businesses and generates profits. Tong et al. [32] declare that a quarter of people currently shop more online and 15% of the UK population say they spend a lot of time using streaming services. Hao et al. [33] focused on research of the impact of online commerce on shopping behavior and they revealed that these channels need to be improved efficiently to support pandemic policies. However, the managerial implications play an important role, especially the strategies focused on the brand loyalty of consumers during the pandemic [34]. Thus, it is necessary to suggest activities which enhance the brand's market share and provide a competitive advantage [35].

The brand has become a tool used by traders, which may help develop tactics based on consumer behavior [36]. The peak-end rule says that people evaluate the brand experience based on the feelings they had at the most intense moment, and they do not tend to evaluate the overall brand experience over the entire period of use. Gomez-Suarez and Yague [37] declared that if a brand provides an exceptionally positive experience during a pandemic that consumers remember, the intensity of that emotion will be linked to the brand in the long run, whether in the form of a positive or negative experience. While consumers always adapt to their rapidly changing environment, only those who act quickly to identify new needs and challenges and deeply understand the motivation behind consumer behavior will be the winners [38]. He and Harris [39] offered research describing the influence of the COVID-19 pandemic on the development of corporate social responsibility and marketing strategies, which could provide an opportunity to address new worldwide challenges.

This global trend can be observed in the conditions of the Slovak economy. The coronavirus has gradually changed the behavior of Slovak consumers, as they purchase less in stores, have changed their methods of payment, pay less in cash, and prefer payments by credit cards, watches, and phones [5]. The volume of card payments increased by up to 24% and purchases of groceries by up to 60%. The change in consumers' access to payments is also confirmed by a survey, according to which, 90% of banking services began to be carried out through electronic banking [40]. Thus far, only two studies have been published mapping the impact of the pandemic in Slovak conditions; they are focused on the influence of social media on purchasing [41] and health-conscious consumer behavior [42], claiming that health-consciousness increased significantly and sharply during the

pandemic. According to Ali Taha et al. [41], sales of retail stores decreased dramatically. Food chains that were open during the crisis increased their sales by 19% during the first three weeks of March 2020, mainly due to the purchase of food. This study also compares the changes in shopping behavior of Slovak and Italian consumers, and emphasis is given to the impact of social media. The results of the study confirm a relatively weak relationship between social media and purchases in both countries, which was also confirmed in the study by Amoah et al. [43]. However, the overall situation and general impact of COVID-19 on Slovak consumers have not been explored yet, which makes this study original in its theoretical and practical contributions.

3. Materials and Methods

The COVID-19 pandemic has created a new world that is more complex and completely different from what we have known to date. Consumer attitudes and behavior have undergone a major change. New habits and patterns of behavior have emerged, which are expected to become permanent even after the crisis. The purpose of the survey was to identify these changes in consumer behavior, which was realized by a structured questionnaire distributed mostly electronically in January and February 2021 via social networks and mail (Google Forms was used to write the questionnaire, which was distributed by Facebook and Instagram; a specific age group was addressed personally—the group over 62). Random sampling was used to select the respondents to ensure an unbiased representation of the group of consumers. To calculate the sample size, data from the Statistical Office of the Slovak Republic [5] were used. Accepting a significance level of 0.05, a confidence level of 0.95, and the inverse square root method [44], a minimum sample of 384 respondents was calculated. A total number of 425 consumers participated in the research, which can be considered a suitable sample size to generalize the research findings. There were 348 (81.9%) women out of the total number of respondents and 77 men (19.1%). Most women and men were aged 26–45, almost 70% in both categories. Table 1 summarizes the basic demographic features.

Table 1. Basic demographic information—age and gender.

Women	Frequency	%	Men	Frequency	%
Up to 25	34	9.8	Up to 25	8	10.4
26–45	242	69.5	26–45	51	66.2
46–62	52	14.9	46–62	12	15.6
Over 62	20	5.7	Over 62	6	7.8
Total	348	100.0	Up to 25	77	100.0

Analyzing the changes that affect consumer behavior, the monthly income is important given the assumption that consumers with a higher income experience a lower negative impact of the crisis. To compare, according to the Statistical Office of the Slovak Republic, the average monthly wage in 3Q/2020 was EUR 1113. As many as 70% of the respondents have a lower salary than the average (detailed information about the respondents' income is shown in Table 4, column 'Mass'). Another important measure was the identification of the respondents' occupation. Of all respondents, 71.5% were employed, 10.4% were on maternity or parental leave, 8% were retired, 6.6% were students (usually having a part-time job), and 3.5% were unemployed. Identification of the economic sector in which the respondents work is necessary to identify the sectors which were most affected by the regulations and measures taken to prevent the spread of COVID-19. To highlight the groups with the highest percentage—14.8% of respondents worked in the construction and industry sectors, the same percentage of respondents worked in the sectors of personal services, retail, gastronomy, and accommodation services, and 12.9% in the sector of education (percentages of respondents in each sector of occupation are summarized in Table 5, column 'Mass'). More than 21% of respondents belong to the category of unemployed people, which groups those who are students, retired, on maternity leave, or unemployed.

These demographic features were further analyzed in the context of the changed economic situation in the country caused by the COVID-19 pandemic. The analysis was carried out with the following methodological steps:

1. Formation of contingency tables to recognize the changes in consumer behavior based on different demographic features.
2. Pearson's chi-square test and Fisher's exact test were run at a significance level of 5% to reveal any dependence between the demographic features of respondents (age, gender, income, sector of occupation) and relevant measures of consumer behavior. Provided that the mutual dependence was proved, the contingency coefficient (Cramer's V) was calculated, and its significance was tested. Based on the previous studies summarized in the literature review, the following hypotheses were set:

Hypothesis 1 (H1). *There is a statistically significant dependence between the demographic features of respondents and the crucial problems of consumers (purchase re-evaluation, changes in the financial situation, changes in the private label preference, shopping patterns) as a consequence of the COVID-19 pandemic.*

Hypothesis 2 (H2). *There is a mutual correspondence between the demographic features and the financial situation of consumers (worsened, improved, no change in situation) as well as between the demographic features and the maintenance of new shopping patterns in the post-pandemic period.*

3. Correspondence analysis is applied to determine the relationships between categories of specified variables which are arranged in contingency tables. The purpose of this analysis is to assess the interrelationship between variables and explain the structure of the investigated dependence. The most important output of the analysis is a multi-dimensional correspondence map, which clearly shows the categories of analyzed variables, their mutual similarity and differences between them, or associations with categories of other variables. The input matrix of the analysis is a two-dimensional contingency table of the associated absolute frequencies n_{ij} . In the individual fields of the table, there are frequencies of occurrence of the variable X , which takes the values x_i , $i = 1, 2, \dots, r$ and the variable Y with the values y_j , $j = 1, 2, \dots, s$. The table is then used to calculate row marginal absolute frequencies n_{i+} of the variable X and column marginal absolute frequencies n_{+j} of the variable Y using the following formulas:

$$n_{i+} = \sum_j n_{ij} \quad n_{+j} = \sum_i n_{ij} \quad (1)$$

The calculated row and column marginal frequencies are then used in a correspondence matrix $\mathbf{P}$. Its elements form relative frequencies p_{ij} :

$$p_{ij} = \frac{n_{ij}}{n} \quad (2)$$

To ensure the comparability of row and column categories, their profiles are determined. The row profiles $p_{j/i}$ are conditioned relative frequencies representing the structure of the column variable in the case of the i -th category of the row variable. The column profiles $p_{i/j}$ are conditioned relative frequencies representing the structure of the row variable in the case of the j -th category of the column variable:

$$p_{j/i} = \frac{n_{ij}}{n_{i+}} = \frac{p_{ij}}{p_{i+}} \quad p_{i/j} = \frac{n_{ij}}{n_{+j}} = \frac{p_{ij}}{p_{+j}} \quad (3)$$

Changes in the structure of row and column profiles reflect the dependence of variables. The individual row and column profiles are used to calculate the coordinates of points in the multidimensional space, where the chi-square distance measure is used.

The closer the points in the correspondence map, the more similar the categories and the stronger their mutual dependence. The variability of the multidimensional points is determined by the success of the projection of multidimensional points into the correspondence map. The variability of multidimensional points is measured by total inertia:

$$I^2 = \sum_i p_{+j} d_j^2 \quad (4)$$

where I is the total inertia, p_{+j} is the marginal relative frequency of the column j , and d_j is the chi-square distance between column j 's profile. Analogically, the same procedure is applied to determine row categories.

4. Comparative analysis of other relevant data obtained in the survey on Slovak respondents, which are discussed and analyzed in the context of other studies and surveys published worldwide.

4. Results

Crucial changes in consumer shopping behavior as a consequence of the changing economic situation in the country caused by the COVID-19 pandemic were analyzed by categorical and correspondence analyses. Thus, it was necessary to test the statistically significant dependence between individual demographic features (gender, age, income, sector of occupation) and the different attitudes of consumers to the fundamental problems of consumers: a re-evaluation of a realized purchase, changes in financial situation, changes in the preference for private labels, and maintenance of new shopping habits in the post-pandemic period. The outcomes of the Pearson's chi-square tests (sig. values) are summarized in Table 2.

Table 2. Outputs of the Pearson's chi-square tests.

Consumer Problems	<i>p</i> -Value (Sig.) of Chi-Square Tests			
	Gender	Age	Income	Sector
Purchase re-evaluation	0.111	0.070	0.077	0.341
Changes in financial situation	0.222	0.045	0.001	0.017
Changes in private label preference	0.175	0.069	0.041	0.289
Shopping patterns	0.108	0.024	0.225	0.010

The first analyzed factor was the gender of respondents and its potential impact on changes in consumer behavior. Based on the results of the Pearson's chi-square test, it can be concluded that this factor does not have any significant contribution, which confirms the impact of this pandemic occurred irrespective of gender. Considering the age of respondents, the results indicate that this factor influences the changes in the financial situation of respondents (Cramer's V is 0.173) and the assumption that new shopping patterns will be maintained in the post-COVID era (Cramer's V is 0.131). In both cases, there is a weak but statistically significant dependence. However, this demographic factor does not have any effect on the different preferences of private labels purchased by consumers or the re-evaluation of shopping habits. With regard to the general statements and assumptions that crises worsen the financial situation of the population, the intent was to confirm this assumption by testing the dependence of income on the selected consumers' issues. The outcomes in Table 2 confirm that income is an important factor when assessing the changes in consumer behavior due to altered financial situations (value of Cramer's V is 0.251) and preferences in the purchase of private label products (Cramer's V is 0.192). The highest proportion of respondents who started to buy more private label products is in the category where the monthly income does not exceed EUR 1000 (16.23%). The impact of income on purchase re-evaluation and maintenance of new shopping habits caused by the pandemic was not confirmed. The restrictions placed during the pandemic meant that enterprises in some sectors of the economy were not able to do their business

as they did in the pre-pandemic period [45]. Thus, the influence of the economic sector needs to be verified. The results indicate that the sector of the economy is an important factor when explaining the changes in the financial situation of respondents as a reaction to the COVID-19 pandemic, as well as the preservation of new shopping patterns in the future. In both cases, the dependence of variables is weak (0.278 for changes in financial situation and 0.298 for shopping patterns) but statistically significant. The results of the Pearson's chi-square test confirm that age, sector of occupation, and income have a statistically significant impact on the changes in the financial situation of respondents. Age and the economic sector are also important when planning future business activities towards customers as they have relevant influence on the maintenance of new shopping habits in the post-pandemic era. The influence of age, gender, occupation, or monthly income of consumers on the purchase of cheaper or private label products shows only a weak dependence on the amount of monthly income of respondents. The gender of the respondents did not show any effect on the tested hypotheses. After the confirmation of the mutual dependence of analyzed variables, simple and multiple correspondence analyses were used to determine the relationship between the categories of both (more) variables at the same time; mutual relations between row and column categories were analyzed to find which demographic features most influence the changes in the financial situation and shopping patterns of respondents. As the outputs of the correspondence analysis are robust, only the results of the overview row points are explained (the results of the column points can be explained similarly).

As indicated in Tables 3–5, the highest proportion of respondents is in the age group 26–45, which is the most productive working age, having a monthly income of up to EUR 1000 and mostly working in the construction and industry sectors or services (personal, gastronomy, tourism), or unemployed.

Table 3. Overview of row and column points (categories of age).

Overview Row Points									
Age	Mass	Score in Dimension			Contribution				
		1	2	Inertia	Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		Total
					1	2	1	2	
<25	0.099	−0.165	0.413	0.002	0.019	0.167	0.181	0.819	1.000
26–45	0.689	−0.122	0.074	0.002	0.073	0.038	0.789	0.211	1.000
46–62	0.151	0.865	−0.156	0.016	0.804	0.036	0.977	0.023	1.000
>63	0.061	−0.487	−1.120	0.010	0.103	0.759	0.207	0.793	1.000
Active total	1.000			0.030	1.000	1.000			
Overview Column Points									
Financial Situation	Mass	Score in Dimension			Contribution				
		1	2	Inertia	Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		Total
					1	2	1	2	
Improvement	0.042	−0.922	1.293	0.012	0.257	0.701	0.413	0.587	1.000
No changes	0.621	−0.200	−0.181	0.006	0.177	0.201	0.629	0.371	1.000
Worsening	0.336	0.485	0.172	0.012	0.566	0.098	0.917	0.083	1.000
Active total	1.000			0.030	1.000	1.000			

Table 4. Overview of row points (categories of income).

Overview Row Points									
Income	Mass	Score in Dimension			Contribution				
		1	2	Inertia	Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
					1	2	1	2	Total
<500	0.207	−0.729	−0.090	0.025	0.483	0.016	0.993	0.007	1.000
501–999	0.494	−0.046	−0.034	0.000	0.005	0.005	0.796	0.204	1.000
1000–1499	0.219	0.441	0.414	0.014	0.187	0.357	0.710	0.290	1.000
1500–1999	0.028	0.991	−1.479	0.013	0.122	0.588	0.493	0.507	1.000
>2000	0.052	0.947	−0.262	0.011	0.204	0.034	0.966	0.034	1.000
Active total	1.000			0.063	1.000	1.000			

Table 5. Overview of row points (categories of occupation sector).

Overview Row Points									
Occupation Sector	Mass	Score in Dimension			Contribution				
		1	2	Inertia	Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
					1	2	1	2	Total
Construction and industry	0.148	0.070	0.508	0.005	0.003	0.285	0.035	0.965	1.000
Education	0.129	0.587	−0.524	0.016	0.174	0.265	0.705	0.295	1.000
Electricity, gas sector	0.016	1.507	−0.446	0.010	0.146	0.024	0.956	0.044	1.000
Finance, banking	0.085	0.454	0.218	0.005	0.068	0.030	0.892	0.108	1.000
Health care	0.066	0.454	0.434	0.005	0.053	0.092	0.677	0.323	1.000
Personal services, gastronomy/hotel industry	0.148	−0.801	0.003	0.024	0.370	0.000	1.000	0.000	1.000
Post and telecommunication	0.028	−0.424	0.520	0.002	0.020	0.057	0.559	0.441	1.000
Retail business	0.089	0.121	−0.207	0.001	0.005	0.029	0.393	0.607	1.000
State administration, public sector	0.045	−0.156	0.126	0.000	0.004	0.005	0.746	0.254	1.000
Unemployed (student, retired, maternal leave)	0.214	−0.346	−0.306	0.009	0.100	0.149	0.709	0.291	1.000
Wholesale	0.031	0.698	0.529	0.005	0.058	0.064	0.769	0.231	1.000
Active total	1.000			0.084	1.000	1.000			

The mass value of individual categories of variables estimates the proportion of each category in the total number of respondents. The values of the scores in dimension are the representatives of dimensional distance which are finally used in the correspondence map (Figure 1). Despite the fact that each value presents an interesting output, the column ‘Total’ is an important one, presenting the proportion of row points in the total inertia. The results portrayed in the map are relevant and significant, as the values of total inertia are equal to one in all cases. The overview of row points is displayed for each analyzed dependent variable specifying the demographic features of respondents (age, income, and sector of occupation). However, the overview of column points is displayed only once, as the values in the mass and total inertia columns have the same results for each variable (other parameters calculated in the correspondence analysis for column points are slightly different).

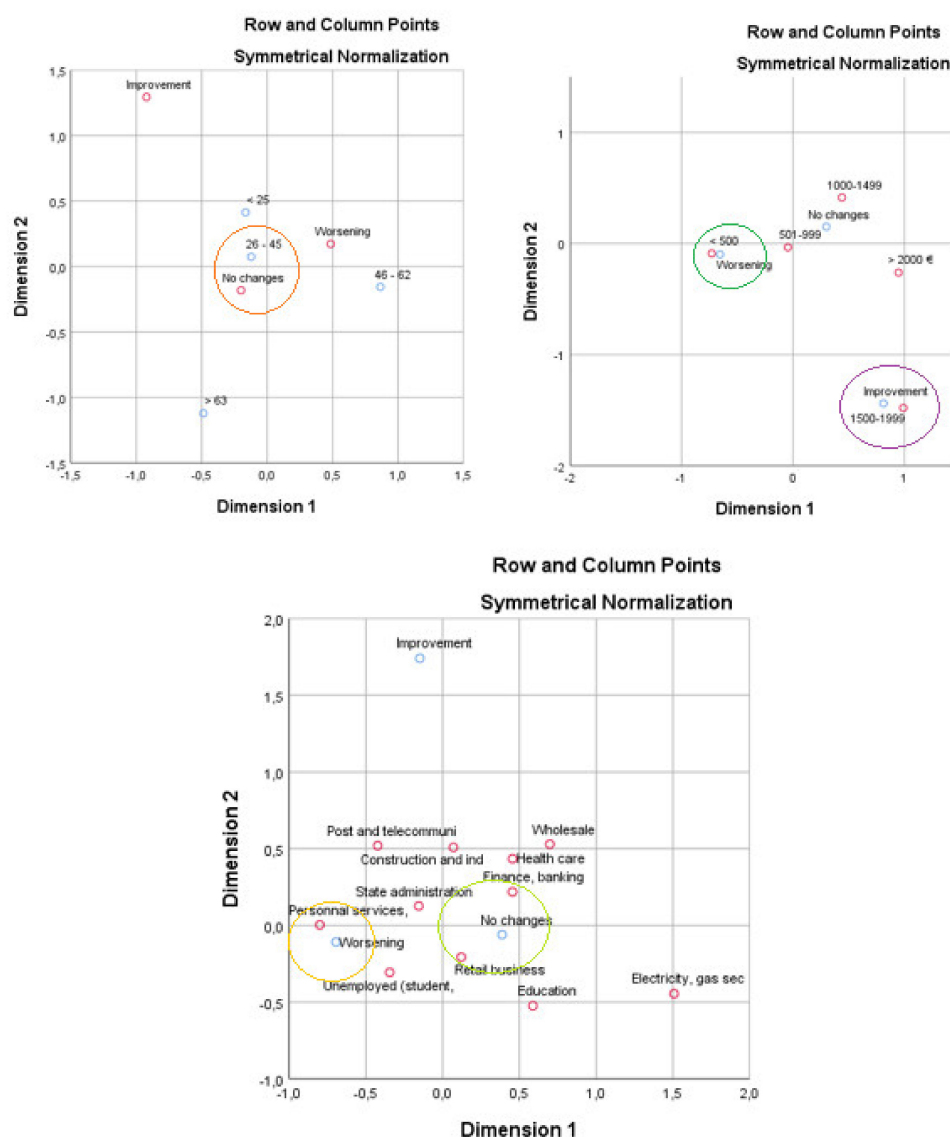


Figure 1. Individual correspondence maps between analyzed variables.

The outputs of the correspondence analysis reveal interesting results. The economic recession caused by the COVID-19 pandemic did not have any significant impact on the financial situation and thus on the shopping behavior of respondents aged 26–45. However, there is no age group whose financial situation improved during the pandemic period. Analyzing the income of respondents, the financial situation worsened for those respondents with a monthly income of less than EUR 500 and their purchase power was reduced, which also corresponds with the finding that there is a significant dependence between the income of respondents and changes in the preference of private label products purchased due to the worsened financial conditions of respondents during the pandemic period. The financial situation improved in the group of respondents earning in the range from EUR 1500 to 1999. Finally, considering the sector of occupation, it is evident that the sector of services (personal, gastronomy, and tourism) was most affected, which follows the data of the Central Office of Labour, Social Affairs and Family [46], considering the number of unemployed across the sectors. There are also some sectors of the economy that did not cause any changes in the financial situation of Slovak consumers—the sector of banking and finance, and retail business.

The overlay of the corresponding maps illustrates the final symmetric correspondence. However, when analyzing more than two variables, multiple correspondence analysis has

to be applied to identify associations between categories of the analyzed variables—age, sector of occupation, and maintenance of new shopping habits of consumers (Figure 2).

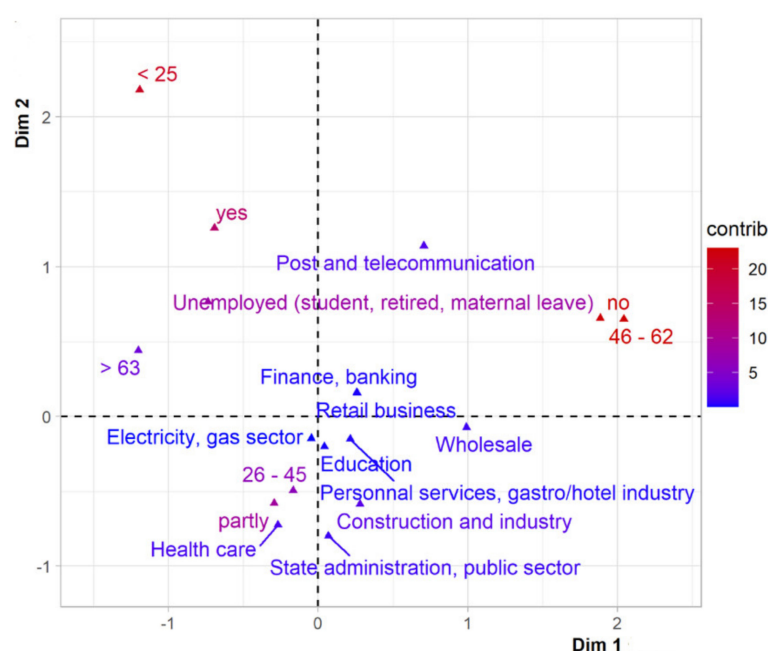


Figure 2. Multiple correspondence analysis factor map.

The results of the research could be helpful when planning marketing and product strategies for entrepreneurs and marketers in the upcoming period. The outputs in the correspondence map show that there is a significant association between some economic sectors (health care, personal services, education) and age categories (working age of 26 to 45—generation Y) and changes in consumer shopping behavior which will be partly maintained in the post-pandemic period. Furthermore, there are no new shopping patterns in the age group of 46–62 (generation X) remaining in the upcoming period, which could be linked to typical features of this generation—independence and self-reliance. These findings provide important and useful information for marketers, traders, and practitioners to design and implement appropriate strategies to respond to the specific needs, financial situations, and purchase power of consumers who were most affected by the COVID-19 pandemic.

5. Discussion

The results of our study can be discussed in the context of other relevant studies published worldwide, as the impact of the pandemic is of high interest to researchers and academicians around the world. A study by Shamin et al. [47] examined the changes in the frequency of purchases and the preferences of purchased product brands. The findings of the study confirmed that compared to the period before the crisis, people reduced the frequency of grocery shopping and tried to shop quickly and efficiently. They bought more packaged food and did not avoid buying new, not yet purchased brands. This corresponds with our findings slightly, mainly with the fact that consumers within the lowest-income category prefer (started to purchase) private label products which are managed solely by a retailer for sale in a specific chain of stores and are usually less expensive than national brands [48]. Eger et al. [49] mapped the impact of the COVID-19 pandemic on the behavior patterns of consumers in the Czech Republic using multiple regression analysis. The research focused on generations X and Y and Baby Boomers revealed significant differences in consumer behavior, and preferences during the pandemic period, which confirms the importance of the determined age groups of respondents in Slovak conditions. Research in Serbia [50] disclosed a statistically significant effect of risk perception and precautions related to coronavirus on consumers' grocery shopping behavior. Their research helped

identify changes in shopping habits, which may be used as a way to gain a competitive advantage in the market when following new shopping trends. The PCA method was used by Hesham et al. [51] to detect how behavioral variables influenced purchasing decisions during the pandemic. This research revealed a mutual relationship between gender and age versus the threat of COVID-19 and purchasing intention. Despite the fact that gender is an insignificant variable in this study of Slovak consumers, age was confirmed as an important factor again. However, Shamin et al. [47] also affirmed that as a result of the pandemic, new shopping patterns varied significantly with gender, age, and household income. In addition, the outcomes of Ortega-Vivanco [52] highlighted the relevance of social, psychological, and cultural factors which are associated with consumer behavior in times of crisis. It is apparent that, due to the economic recession, consumers have experienced a transformation in their shopping behavior, and it is not evident how much of this transformation will remain after the pandemic [53]. All these findings and trends have to be accepted as they have practical implications in the context of proper strategy development [54].

Additionally, several world-renowned companies conducted surveys on changing consumer behavior under the influence of COVID-19—McKinsey & Company [55], Netcomm Suisse eCommerce Association [56], and IBM Institute for Business Value [57].

Table 6 shows a comparison of the changes in consumer behavior from 13 countries around the world with the findings of our analysis. At least 65% of respondents around the world were determined to incorporate new shopping patterns and habits into their future purchases. The least significant impact of the crisis can be seen in countries with a moderate degree of economic shock, such as Germany and Japan. Surprisingly, Slovak consumers are almost at the same level as Germans. Eighty-one respondents (20%) confirmed that they plan to maintain new habits completely in the future, and as many as 264 plan to follow them partially (63%).

Table 6. Comparison of maintenance of shopping habits in the post-pandemic era.

Country	Approval	% of Respondents
India	96	69–78
Indonesia	92	77–88
China	86	72–81
Brazil	84	76–80
Mexico	81	79–87
South Africa	79	76–89
United States of America	73	75–83
Italy	69	72–83
Spain	66	76–88
United Kingdom	63	81–88
France	56	67–78
Germany	50	65–82
Japan	30	83–92
Slovakia	81	63–83

Source: according to [55].

Moreover, a study across three countries (Denmark, Germany, and Slovenia) by Janssen et al. [58] confirms that 15–42% of respondents changed their consumption and shopping frequency during the pandemic, which had a different impact on lifestyle and consumption patterns.

Changes in the financial situation of Slovak consumers forced them to cut their expenditure for luxury products or specific services. Thus, 15% of respondents agreed with the statement about the expected reduction in holiday and leisure expenses. Compared to the pre-pandemic year, consumers around the world also planned to reduce holiday spending, with China being the exception, as 4% more people planned to spend more

money on holidays [55]. Table 7 shows the differences (in %) in the number of respondents planning to reduce holiday expenditure as a consequence of pandemic restrictions.

Table 7. Comparison of planned reductions in expenses.

Country	% of Respondents
India	−11
Indonesia	−59
China	+4
Brazil	−54
Mexico	−57
South Africa	−52
United States of America	−25
Italy	−49
Spain	−48
United Kingdom	−34
Germany	−22
Japan	−15
Slovakia	−15

Source: according to [55].

A survey by UNCTAD and the Netcomm Suisse eCommerce Association [56] analyzed how the pandemic changed the way consumers use e-commerce (Figure 3) and the relevance of specific features influencing the satisfaction of e-commerce consumers is portrayed in the research by Dospinenscu et al. [59]. This study focused on consumers from Brazil, China, Germany, Italy, the Republic of Korea, the Russian Federation, South Africa, Switzerland, and Turkey. Due to the coronavirus crisis, more than half of survey respondents currently shop online more often than before the pandemic.

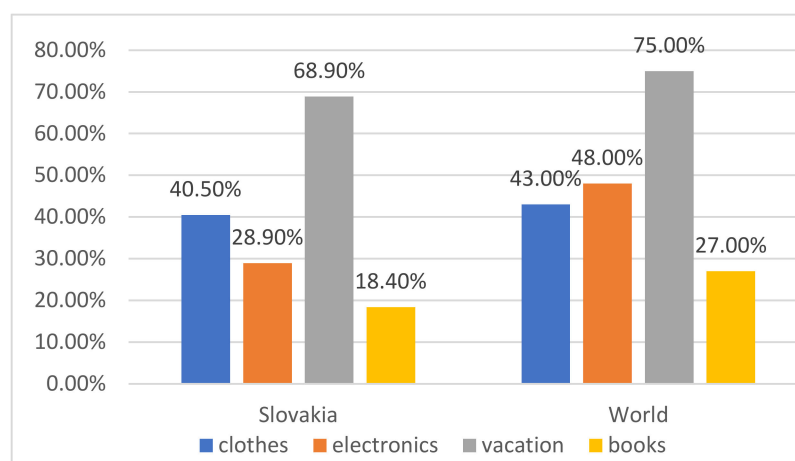


Figure 3. Illustration of increased purchases by product categories. Source: according to [56].

Based on the research, it can be claimed that Slovak consumers increased online purchases by 72%. The results show that online purchases increased by 6 to 10% in most product categories, with the largest increase in electronics, gardening tools, and at pharmacies and drugstores. To compare, the same categories were analyzed in the Slovak survey. As can be seen, respondents buy more pharmaceutical products and drugstore goods (but fewer electronics) than the participants in the compared survey. The same study also addressed the issue of declining purchases in some product categories. Figure 4 portrays the situation in both markets, the Slovak market and the world average, and it is obvious that the behavior of Slovak consumers copies the global trend.

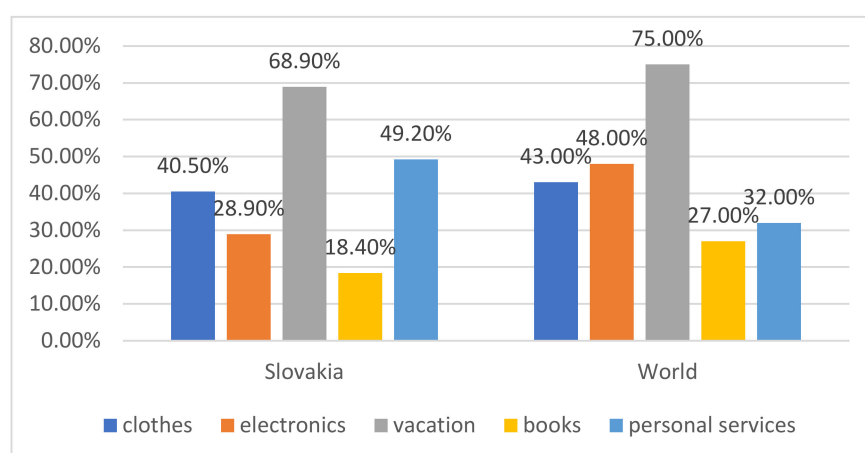


Figure 4. Illustration of decreased purchases by product categories. Source: according to [56].

It also verifies the finding that the most affected sectors are the sectors of personal services and gastronomy /accommodation, where consumers did not have many opportunities to buy these services and, vice versa, those employed in these sectors were significantly affected considering their earnings. The tourism sector recorded the strongest decline, with average spending falling by as much as 75%. A significant decrease is also evident in the categories of clothing, electronics, and personal services. Consumers try to eliminate monthly expenses and focus only on the purchase of essential goods. The importance of e-business practices is underlined in the study by Afridi et al. [60] who affirmed the significant impact of COVID-19 on the development of e-business and consumer behavior in Pakistani economic conditions.

In the survey, respondents claimed that the consequences of the pandemic may have a long-term effect, which was confirmed by more than 61% of Slovak consumers, who are afraid of another wave of the coronavirus pandemic influencing their financial stability, purchase power, and shopping behavior. To compare, the IBM Institute for Business Value [57] gathered insights into the perceptions of the economy, shopping, work, health and wellbeing, and travel and mobility from a sample of more than 13,500 adults in Brazil, China, Germany, India, Mexico, Spain, the United States, and the United Kingdom. In their study, 62% of respondents expressed their belief that a crisis similar to this would come again in the future. Ahmed et al. [35] confirmed that novel strategies should be developed to attain competitive advantages in similar pandemic situations in the upcoming period.

The McKinsey & Company [55] survey also looked at declining incomes. Of our consumers, 33% admitted a deteriorating financial situation, which is almost similar to that in France, the USA, and England. The most significant decrease in monthly income was felt by the inhabitants of Indonesia and South Africa, having a negative effect on savings, which is also described in the study by Dang and Cuong [61].

6. Conclusions

The behavior of today's consumers is mainly affected by the uncertainty caused by the global pandemic of COVID-19. The response to the crisis is a change in and an interruption of the normal behavior of consumers around the world. Restricted movement of the population and governments' restrictive regulations have moved trade into the world of digital technologies. Thus, there are several challenges that society as a whole must face responsibly to reap the benefits of the changes brought to our lives by the COVID-19 pandemic. According to the forecasts of the development of the pandemic, its end cannot be expected in the near future. However, the longer the restrictive measures, the worse the financial situation of consumers. The decisive factor in the purchase will be the price of goods and services.

It is therefore anticipated that in the future, without constant identification of changing needs of consumers, new innovative products, and expanding product lines and product groups, a company cannot become successful in the long run. The role of managers is to: (i) monitor trends in consumer behavior, purchase patterns, and requirements of specific groups of respondents—considering their age or income; (ii) be actively interested in consumer opinions and ideas and involve them in the creation of new products. The winners of this crisis are those traders who know how to adapt to changing consumer shopping patterns effectively and appropriately. Investments in new products, marketing, strengthening the product portfolio, and a positive customer experience are the elements companies must consider in the future—this is how they can meet the expectations of consumers.

Finally, research confirms that the COVID-19 pandemic has changed normal consumer behavior, created new shopping habits, and forced consumers to devote more time to the decision-making process, consider the need for shopping and focus only on purchases of essential consumer goods, and reduce the frequency of shopping. The results indicate that changes in consumer behavior as a consequence of the COVID-19 pandemic are mostly affected by age, income, and sector of occupation; the gender of respondents does not play a significant role. Income influences not only the changes in shopping patterns, but also the preference for private label products purchased by consumers. Moreover, the age categories of respondents, their generation profile, and the sector of occupation do affect the financial situation of respondents and, thus, their purchase power and overall shopping patterns. The consumer has become more modest and consumes less.

However, it would also be interesting to explore the impact of the pandemic on countries with similar economic and political situations (e.g., Visegrad countries) and compare the changes in consumer behavior and shopping patterns between the countries, not only in one country. Moreover, the analysis of the correlation and correspondence between other variables (nationality, different generations, new market segments, education) is a challenge for further research.

The direction of further research can be perceived in the context of research limitations—the changes in consumer behavior are analyzed in a one-country study (without prejudice to other regional, continental, or even world levels)—while other important demographic features of respondents may be used to measure the impact on consumers' shopping patterns, and the use of purposive sampling techniques could be applied to address specific groups of respondents.

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