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## **Lessons from the pandemic: an empirical study on consumer behavior changes and predicting its future evolution**

### **Ponaučenia z pandémie: empirická štúdia o zmenách spotrebiteľského správania a predikcii jeho budúceho vývoja**

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*Abstract: The COVID-19 outbreak caused that the consumers experienced the consequences of this changed environment and adapted their behaviour accordingly. This research aims to explore the pandemic consumer behavior changes and to outline development trends for the future. This research was based on a survey conducted on a representative sample of consumers from one country that included 1172 people over three years. Five hypotheses were formulated to direct the research process with the main one focused on exploring the possibility that some of the changes that occurred during the pandemic remained even after its conclusion. Statistical methods such as binominal test, chi-square test and Spearman's Rho were used to verify the hypotheses. The findings of this research indicate that very few consumer behavior changes that occurred during the pandemic remained after its conclusion. Even though some influences of reference groups and media decreased during the pandemic, afterwards they returned to their previous significance. Research proved that fear was a major factor during the pandemic. Consumers were concerned about their family members even more than they were worried about their own health. Age was proven to be a significant defining factor that changed consumer's habits.*

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## **Introduction**

It is already a well-known fact that the COVID-19 pandemic significantly altered consumer behavior. The situation in society during the pandemic years created an atmosphere of fear and even oppression as perceived by some consumers. People were no longer free to choose when to visit the shop or even which shop to visit since many countries introduced lockdown policies or containment areas. As a result, people visited shops less and focused more on stores located in areas close to their homes or workplaces. As many recent research findings show, this situation forced consumers to invest more into planning of their shopping and significant changes in consumer behavior occurred (Wells *et al.*, 2023; Tudoran *et al.*, 2024). Two different yet interactive influences caused these changes. The first set of factors was related to pandemic itself and actions taken by governments to mitigate its effects. The second group of factors was internal. These determinants were based on how individual consumer perceived the impacts of the pandemic on his or her life. These factors were related to levels of fear of health risks or economic risks related to pandemic negative impacts on economies worldwide. People feared for their health, health of their loved ones and often also their livelihoods since the pandemic significantly affected many sectors of economies such as tourism and other service industries. Therefore, people were both forced and motivated to change their shopping habits as shown by various indicators such as frequency of visiting shops or even their shop selection (Soon *et al.*, 2021; Bartková, 2019).

Research had already proven that consumers changed their behavior during the pandemic. Many authors focused their research on discovering how the consumers changed the number of products bought during the pandemic. It was ascertained that the expected decrease in the quantity purchased was not as radical as expected (Pappalardo *et al.*, 2022; Cevik, 2023). People even experienced negative phenomenon such as panic buying and hoarding, especially during the early stages of the pandemic (Wang and Hao, 2020; Omar *et al.*, 2021). A great research focus was on changes in income distribution between consumption and savings. The logical assumption would be that due to lockdowns people spend less time visiting shops and therefore, also spend less money shopping. However, Wang *et al.* (2022) and Said *et al.* (2023) proved the opposite. During the pandemic the rate of consumption did not decrease, on a contrary

people focuses less on creating savings (Khanna *et al.*, 2023; Jin *et al.*, 2021). In 2022, the UN published a preliminary report on how the pandemic affected the completion of Sustainable development goals. Their findings seem to align with those from researchers, especially in how humanity continuously fails to reduce consumption and thereby contributes to achieving sustainable consumption in terms of goal no. 12.

Nowadays, when the pandemic is already officially concluded, it is time to look into the future. Even though the COVID-19 pandemic was an unprecedented event that majorly affected the modern world, it would be prudent to assume that major disasters will again appear in the future. The lessons from the COVID-19 pandemic can serve as a guideline for predicting future changes in societies that may occur as a direct consequence of pandemic. This research strives to contribute to this currently small pool of knowledge by creating an image of how consumer behavior changes introduced by the pandemic have remained a significant influence even after the pandemic conclusion. Many authors focused on mapping the exact nature of the consumer behavior changes that occurred during the pandemic itself (Cai *et al.*, 2023; Wells *et al.*, 2023; Veselovská *et al.*, 2021; Veselovská *et al.*, 2022), so these changes were documented in detail. However, the pandemic has already begun to recede and in 2023 has virtually no major impacts on lives in societies, there is still little evidence on its consequences. Therefore, the information the societies currently lack is about how people behaved when the pandemic passed. Did they return to their pre-pandemic habits immediately or did they keep the habits they acquired during the pandemic period? This research study aims to answer these questions and provide new information on the post-pandemic development of consumer behavior, as well as draw major guidelines for consumer behavior changes during major adverse events in 21<sup>st</sup> century.

## **1 Literature review**

Consumption behavior is an incredibly complex phenomenon. It can be described as a set of actions and reactions related to the acquisition, use and disposal of products. Using the Stimulus-Organism-Reaction (S-O-R) model, Mehrabian and Russell (1974) explained how an individual (O) changes external stimuli (S) into own reactions (R) through individual processes. The internal environment of the consumer (Organism) is always unique, but in general we know the structure that affects it, which is made up of cultural, social, personal and psychological factors. The S-O-R model is based on the assumption that consumers make rational decisions based on legal and economic assumptions (Sultan, 2021). In practice, however, there are situations that are unpredictable and one cannot prepare for them.

Basic emotions influencing consumption behavior include fear (Siddiqi *et al.*, 2022). Fear is generally considered a negative emotion caused in a situation where a person feels threatened or out of control, which prompts the individual to take certain measures to limit the threat (Witte & Allen, 2000; Wen & Lee, 2019). Therefore, fear can have a motivational effect on consumers despite its negative consequences (Cain, 2019; Witte, 1992). According to the fear appeals model (FAM), a fear appeal is a persuasive message that identifies a threat and, ideally, a coping mechanism to mitigate the threat (Boss *et al.*, 2015). A Fear appeal messages usually lead to protective behavior (Wall & Warkentin, 2019). Fear is often associated with turning events that the individual cannot foresee, and which often have a negative impact on people's lives, and people therefore consider them as a threat. A breaking event is a situation that results in intense changes in the behavior of the analyzed object, whether (Dahlhamer, Tierney, 1998; Sanchis & Poler, 2014). A breaking event can be classified according to its nature, e.g. such as a pandemic, war, natural disaster, man-made disaster or human disaster (Chiu *et al.* 2020; Cruz-Cárdenas *et al.*, 2021; Gigliotti & Rizzi, 2023; Mahmoud *et al.* 2023). As research confirms, turning points on a personal level, following such unpleasant events as e.g. the death of a loved one, divorce or illness led consumers to get rid of products that remind them of difficult times and buy new ones (Cruz-Cárdenas & Arévalo-Chávez, 2018). Although these studies are interesting, they cannot sufficiently illuminate the changes in consumer behavior during the COVID-19 pandemic. On the other hand, other types of breaking events – such as previous pandemics, natural disasters, civil unrest or terrorism – can contribute to the understanding of consumer behavior during the COVID-19 pandemic because they affected a large number of consumers at the same time and in the same way. Natural disasters, e.g. earthquakes, floods, hurricanes and typhoons are quite common. They cause damage to infrastructure, the economy and human lives, so they are frequent objects of research and studies of their impact on consumer behavior. Some natural phenomena are carefully monitored and their arrival and intensity can be predicted (for example, a hurricane). Such a forecast can influence consumer behavior in advance, e.g. in favor of buying stocks of basic goods (Pan *et al.*, 2020). Other natural events cannot be predicted in advance (e.g. an earthquake). In both types of natural disasters, consumers can lose their property and loved ones. Feelings of loss can trigger impulse buying to compensate for the loss and can have a therapeutic effect (Delorme *et al.*, 2004; Sneath *et al.*, 2009). Extreme social violence and the so-called terrorism constitute another category of turning events that affect a country or region. Terrorism represents violent acts aimed at destabilizing a government or a dominant group (Bates & LaBrecque, 2019). Such acts of

violence often have an impact on people's lives and negatively affect the economy and infrastructure.

Moreover, their intensity and frequency in society are highly variable. Although acts of terrorism significantly affect the economy and infrastructure, their impact on consumer behavior is short-lived, and consumers prefer to look for other purchasing alternatives rather than abandon their consumer intentions (Crawford, 2012; Herzenstein *et al.*, 2015). The consumer's choice of individual purchase alternatives is then based on past events and projected threats in the near future (Baumert *et al.*, 2020). Based on this information, the hypothesis was formulated as follows:

H1: The pandemic caused higher levels of fear in consumers that significantly influenced their consumer behavior.

One of the most important factors influencing consumer behavior is people who they consider close such as family and friends (Yu *et al.*, 2023; Pavlović-Höck, 2022; Pelletier *et al.*, 2021; Zhao *et al.*, 2022). Information from family members is the main source of health care and health promotion, therefore it can influence consumer behavior during the pandemic (Park, 2022; Van Chan, *et al.* 2021). However, the current pool of knowledge does not provide credible evidence on how this influence can change during major adverse events such as the COVID-19 pandemic. Based on these assumptions the hypothesis was formulated as follows:

H2: The influence of close acquaintances on consumer behavior is more significant during a pandemic.

Other reference groups can also influence consumption behavior (Schiffman & Wisenblit, 2015). Neighbors can educate residents in a nearby location, colleagues influence others at work (Aksen *et al.*, 2009; Paillé *et al.*, 2020; Sheng *et al.*, 2023; Liu *et al.*, 2023). However, since there was a lockdown and social interactions were interrupted, it can be assumed that less close reference groups such as neighbors or colleagues at work did not have such a significant influence on consumer behavior as close people in the circle of family and friends. According to these opinions the hypothesis was formulated:

H3: The influence of reference groups on consumer behavior is not significant during a pandemic.

In general, knowledge of a cause of a treat has a significant impact on consumer behavior and sellers can influence it with the level of information provided (Kumar *et al.*, 2021; Luu *et al.*, 2023; Wang *et al.*, 2023). Currently, social media have a great influence on consumer behavior. Information shared through social media can incite fear and encourage unusual behavior during a crisis, such as panic buying or stockpiling (Naeem, 2021). The sharing of

photos of empty store shelves tagged with the hashtag “#toilet-paper-gate” spurred a multiple-fold increase in demand for toilet paper, sanitizers, and masks/respirators at the beginning of the crisis, causing temporary unavailability of these goods (Barr, 2020; Mao, 2020). Therefore, the hypothesis was formulated as follows:

H4: The information about the pandemic situation in country significantly influences consumer behavior during a pandemic.

It is clear that the immediate effects of the pandemic have been carefully documented. The major consumer behavior changes were examined in detail and immediate guidelines were drawn for the pandemic years. Only time will prove whether they were also documented sufficiently for the needs of all stakeholders. However, there is still little information on the long-term effects the COVID-19 pandemic has had. Therefore, the main hypothesis was formulated as follows:

H0: Some of the significant changes in consumer behavior that occur during the pandemic remained even after the influence of the pandemic diminished.

According to Sheth (2020) there are several reasons why consumers change their consumer behavior. They can result from the social context, as a result of the implementation of new technology, as a result of the introduction of new rules or as a result of a less predictable context. Several studies confirm that if a crisis arises, regardless of its origin, consumers adapt to the new conditions by changing their attitudes and habits (Vázquez-Martínez *et al.*, 2021). Some changes in consumer behavior tend to disappear after the end of the crisis, but some persist and become new consumer habits and lead to new preferences for products or brands (Arens & Hammilton, 2018). For example, after the financial crisis in 2008, new consumption habits arose such as the demand for simplicity, frugality, unpredictable consumption, green lifestyle and ethics in consumption (Flatters & Willmott, 2009). A similar case occurred in the case of the COVID-19 pandemic. Disruptions were reported from global supply chains and the general atmosphere of uncertainty deteriorated the possibilities of businesses to applied targeted market strategies incorporating the new needs, attitudes and perceptions of consumers (Banerjee and Verma, 2024; Fidlerová *et al.*, 2022; Striedinger-Melendez, 2022; Niros *et al.*, 2022). During the COVID-19 pandemic, the level of perceived risk increased, resulting in immediate changes in consumer behavior (Jones, 2020). Intensive presence of COVID-19 in the news generated fear and has increased individuals' worries about their present and future (Hoffman *et al.*, 2022). During the COVID-19 pandemic, consumers used panic buying and hoarding resulting in the stockpiling as a form of consumer behavior (Naeem, 2021, Bender *et al.*, 2022). Verification of the formulated hypotheses is a guide to the most important findings that this research will

focus on when formulating predictions of the future development of consumer behavior. In 2023, the worldwide COVID-19 pandemic has ended. However, its consequences persist. It is also possible to use the lessons of the pandemic to predict consumer behavior during similar negative events that may occur in the future.

## **2 Methodology**

The main aim of this research is to explore the pandemic consumer behavior changes and to outline development trends for the near future. Meeting this goal provides an opportunity to understand not only the effects of the pandemic, but also to create a foundation to be better prepared for similar major disruptions that may occur in the future. Since consumer behavior is a complex issue to characterize, its changes and development were divided into specific issues that this research focused on. Therefore, the main hypothesis and four additional hypotheses were formulated based on research findings and other available information. Hypothesis H0 focused on examining the overall persistence of changes that occurred during the pandemic. This hypothesis was verified using nonparametric binominal tests, Spearman's Rho and Chi Square tests. Hypothesis H1 targeted the emotional response of consumers to COVID-19 pandemic, specifically the influence of fear on consumer behavior changes, which manifested itself in a form of panic buying, hoarding and even excessive stockpiling. This hypothesis was verified using nonparametric Spearman's correlation in use of Spearman's Rho. Hypothesis H2 and hypothesis H3 focused on changes that occur in influence of specific people of groups on consumer behavior. These hypotheses were verified using several nonparametric binominal tests. Consequently, to identify possible correlations between household structure and close acquaintances, chi square tests and Cramer's V was used. Hypothesis H4 explored how consumers perceived the information about the pandemic and how much they considered this information when shopping. This hypothesis was verified using nonparametric binominal tests. Figure 1 presents the conceptual research model incorporating the main assumption that influenced this research and shows how the formulated hypotheses are interconnected.

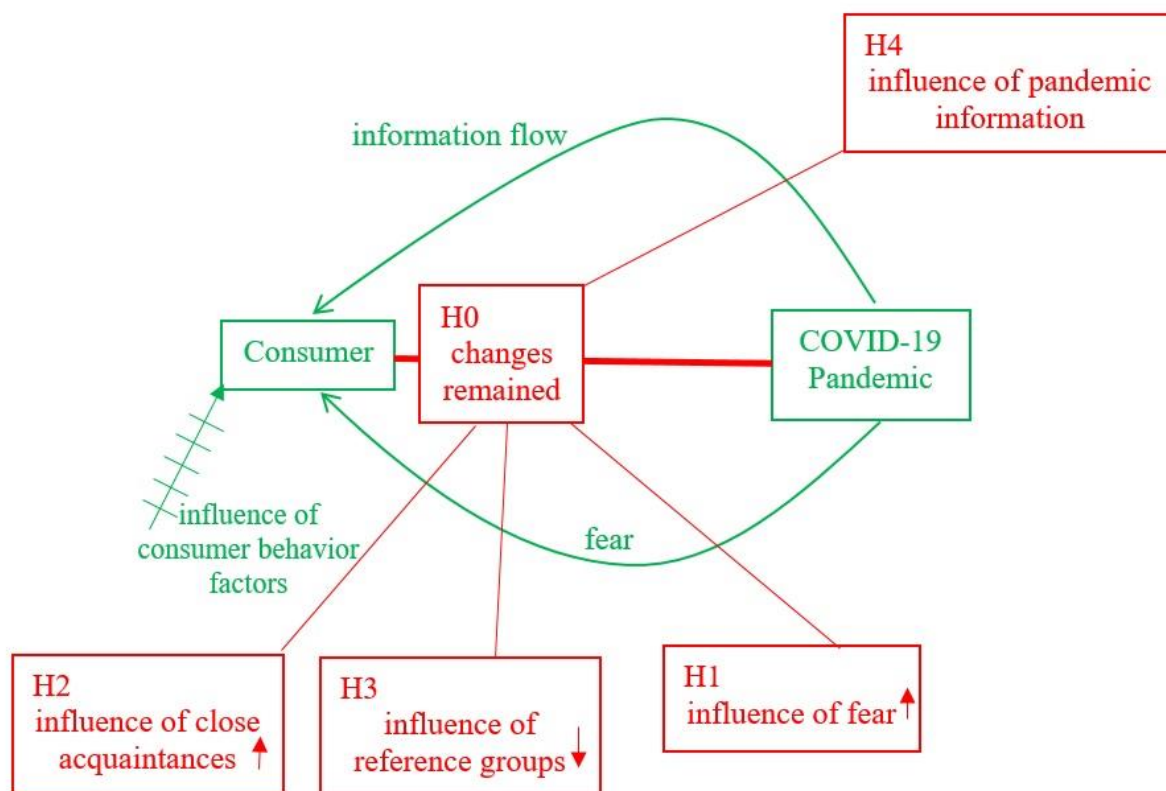


Figure 1 Conceptual research model

Source: Own processing

Data necessary for this research was collected through empirical research. The survey took place from early stages of the pandemic (July 2020) to its conclusion (March 2023). This long time period enabled the researchers to collect data from consumers during various different time period during which the influences of the pandemic on consumers and measures implemented by governments to mitigate the spread of the virus were vastly different. Therefore, it also allows a comparison. The sample file consisted of 1172 consumers, out of which 138 completed the survey in 2020 and 2021, 738 in 2022 and 296 in 2023. Since only people who were the main buyers of consumer goods for their households were asked to fill in the questionnaire, women and men are not represented equally in the research sample. The majority of consumers in the sample file were women (68.6%). In addition to gender, other socioeconomic characteristics were also ascertained from consumers in order to segment them in more detail while defining the findings and their consequences for society. This research investigated the age of consumers, highest level of education, household income and household structure. Table 1 shows the structure of sample file based on these characteristics of consumers.

Table1 Sample file and base file structure based on age

<b>Base file (population as of July 1) – absolute expression</b>				<b>Sample file - absolute expression</b>		
<b>Age</b>	<b>2023</b>	<b>2022</b>	<b>2021</b>	<b>2023</b>	<b>2022</b>	<b>2021</b>
<b>18 - 29</b>	856574	856586	878419	60	206	26
<b>30 - 39</b>	813904	815154	828026	53	135	26
<b>40 - 49</b>	877436	879998	872853	57	125	32
<b>50 - 59</b>	704709	705272	703452	44	118	18
<b>60 - 69</b>	682807	683376	689923	46	99	22
<b>70 and more</b>	620934	618244	599217	36	55	14
<b>Total</b>	<b>4556364</b>	<b>4558628</b>	<b>4571888</b>	<b>296</b>	<b>738</b>	<b>138</b>
<b>Base file (population as of July 1) - relative expression</b>				<b>Sample file - relative expression</b>		
<b>Age</b>	<b>2023</b>	<b>2022</b>	<b>2021</b>	<b>2023</b>	<b>2022</b>	<b>2021</b>
<b>18 - 29</b>	20.14%	18.79%	19.21%	19.96%	27.91%	18.84%
<b>30 - 39</b>	17.96%	17.88%	18.11%	18.75%	18.29%	18.84%
<b>40 - 49</b>	19.23%	19.30%	19.09%	19.63%	16.94%	23.19%
<b>50 - 59</b>	15.01%	15.47%	15.39%	14.63%	15.99%	13.04%
<b>60 - 69</b>	15.63%	14.99%	15.09%	15.58%	13.41%	15.94%
<b>70 and more</b>	12.03%	13.56%	13.11%	11.45%	7.45%	10.14%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: Own processing according to the data of the Statistical Office of the Slovak Republic

As the data shows the sample file were between was constructed to closely match the base file in order to make it its representative sample enabling the researchers to generalize the findings for whole population. To achieve the consistency of a measure and to generalize the results to the entire population, representativeness analysis was done. In use of SPSS statistics three non-parametric Chi-square tests were performed. The first test concerned the verification of representativeness with regard to the age groups of the respondents in 2021, the second one in 2022 and the last test was performed on sample from 2023. Results of the tests are displayed in Table 2. The results were evaluated according to two values, the p-value and the value of the Chi Square test statistic, which was compared to the table value. All the results of testing within the research were compared with the level of significance 0.05. As Table 2 shows, the p-value (Asymp.Sig.) in all three years is greater than the established level of significance, which means that the samples sets were representative in all three years with respect to the age groups of the Slovak nationals older than the legal age. This statement is also supported by the value of Chi square statistics, which is at level 2.75 in 2021, at level 7.66 in 2022 and at the level 5.45 in

2023. The critical value for 5 degrees of freedom and significance level of 0.05 is 11.07, which is more than the measured Chi square statistic which supports the previous claim on the representativeness of the sample.

Table 2 Verification of representativeness

Chi square tests			
	2021	2022	2023
Chi-Square	2.75	7.66	5.45
df	5	5	5
Asymp. Sig.	0.738	0.118	0.247

Source: Own research

Furthermore, other characteristics of consumers were recorded to enable their segmentations. Figure 2 shows the sample file structure based on highest achieved level of education of consumers. The data shows that the majority of consumers on sample file achieved higher education (51.45% in 2021; 53.93% in 2022; 52.36% in 2023). Consumers with elementary education accounted for less than 5% in each year. This structure of sample file corresponds to the educational structure of the population in Slovakia.

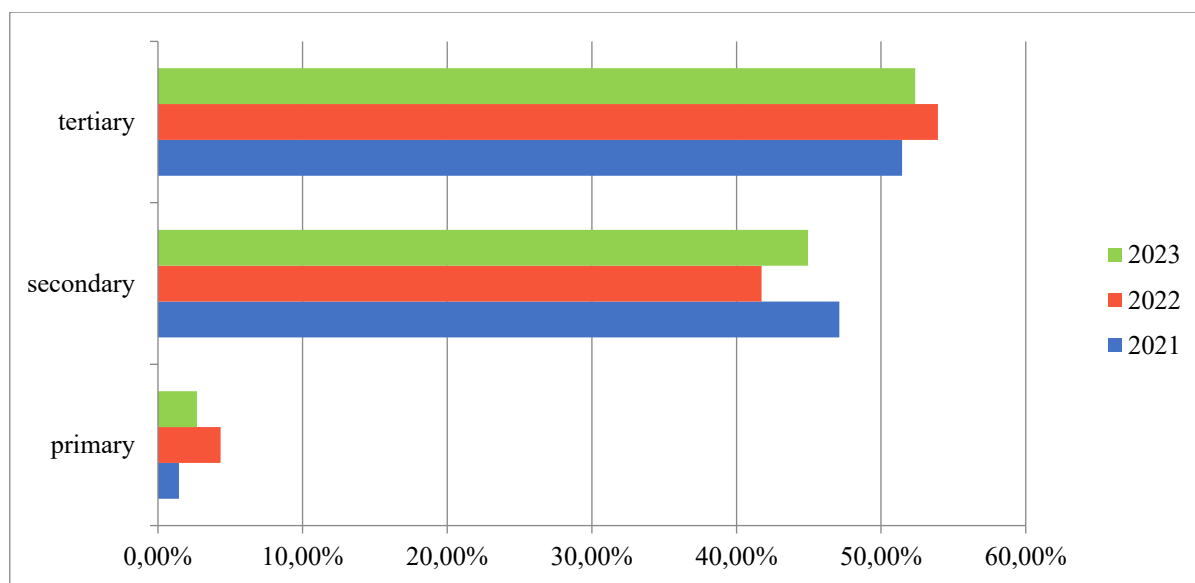


Figure 2 Sample files structure based on highest level of education

Source: Own elaboration.

As evidence constantly proves, household situation can significantly influence consumer behavior. Therefore, this research also collected and analyzed information on household income and household structure that is shown on Figure 4. According to the data the majority of Slovak consumers included in the sample were living with their partner and children and their household income was between 1001 and 1600 euro (15.02%). Only 6.31% of consumers had

an income of less than 400 euro which was close to the minimal wage at the time of research in Slovakia and this sum also represented an average pension assigned to Slovak seniors. This segment consisted mostly of older people living alone and young students living with their parents. Nearly a quarter of consumers included in the sample file had a household income higher than 1600 euro.

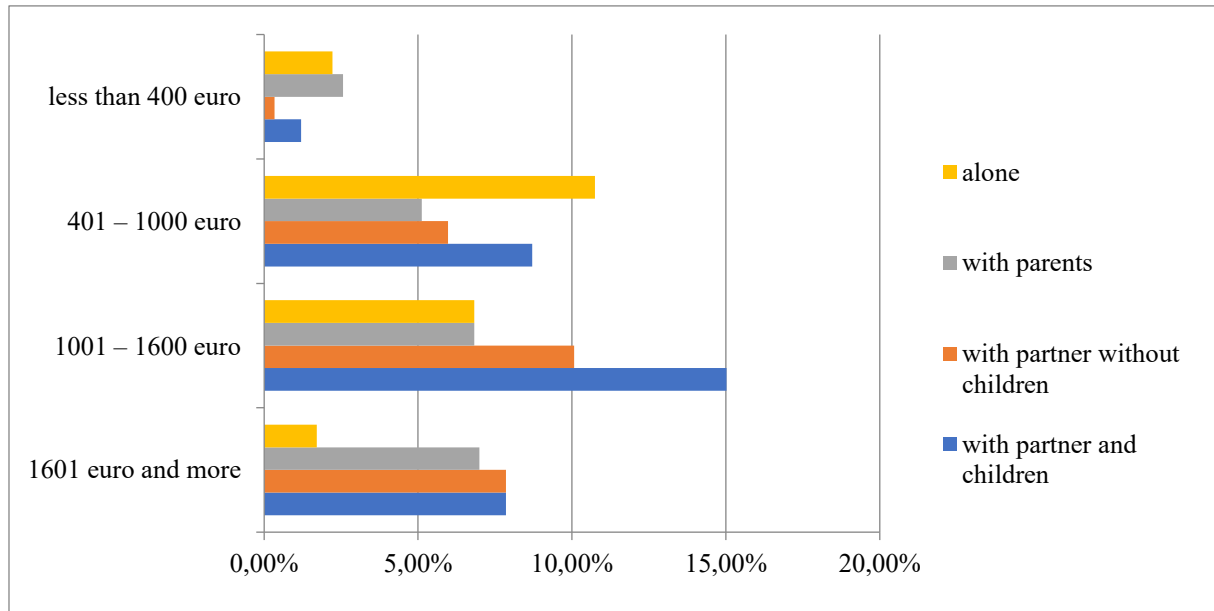


Figure 3 Sample file structure based on household income and household structure  
Source: Own elaboration.

### 3 Results

Documented consumer behavior changes indicate that a major shift in preferences and habits occurred during the COVID-19 pandemic. It was discovered that consumers significantly changed the amount of goods they bought during the pandemic. One of the major factors of influence was fear. Figure 4 shows how the fear of one's health influenced the changes in amount of daily consumption goods bought during the pandemic and the frequency of visiting shops. The results of the analysis show that the more intense the fear for one's health, the more intensively the frequency of visiting shops and the consumption of goods and services decreased.

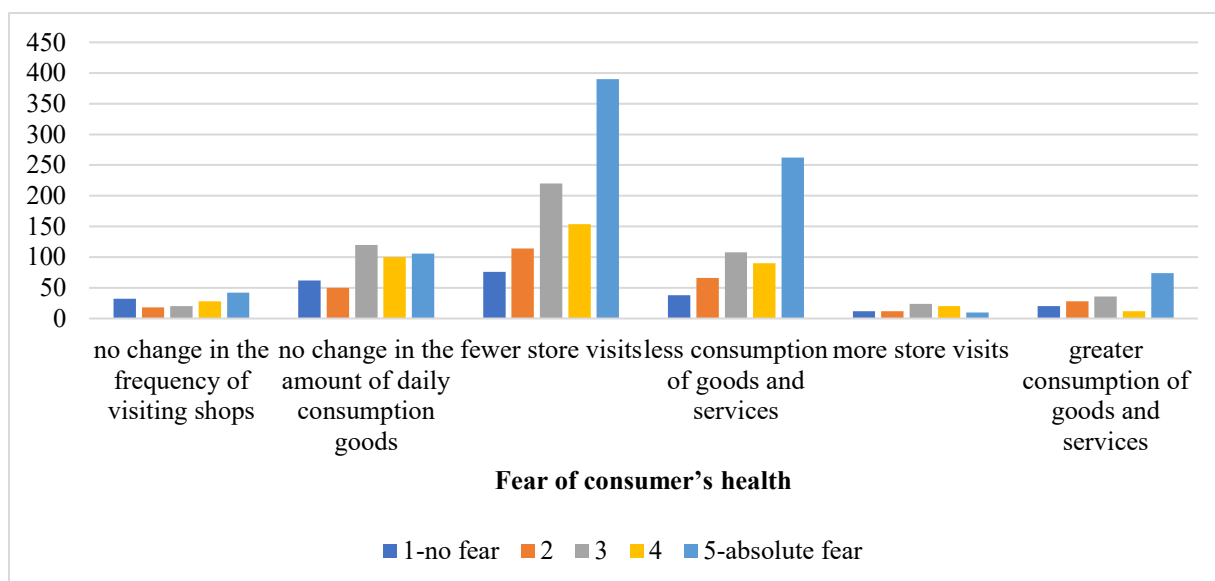


Figure 4 Changes in amount of products bought and frequency of visiting shops due to fear of consumer's health

Source: Own elaboration.

However, it is very interesting that during the pandemic, consumers felt more fear for the health of their loved ones than for their own. As many as 67.06% of consumers were affected by this fear. Figure 5 shows the changes in the amount of products bought and frequency of visiting shops due to fear for the health of a person close to the consumer.

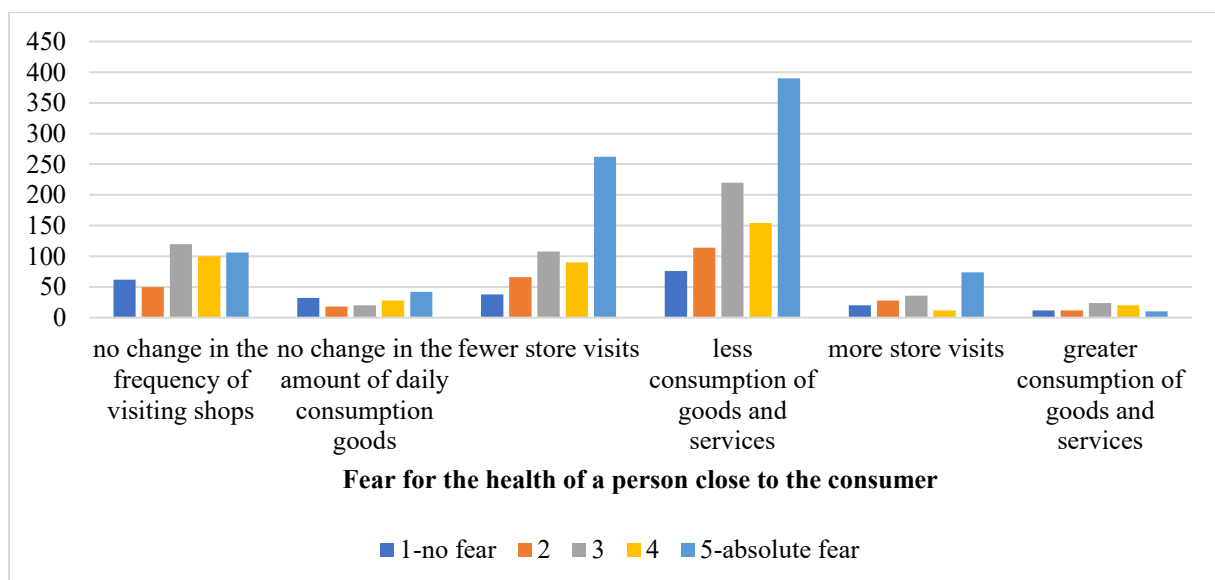


Figure 5 Changes in the amount of products bought and frequency of visiting shops due to fear for the health of a person close to the consumer

Source: Own elaboration.

Similarly, to the previous case, the fear for the health of person close to the consumer significantly influenced the frequency of store visits and the consumptions of goods and services. A negative trend was recorded in both monitored factors.

Table 3 shows how this fear affected the consumer behaviors during the pandemic. Hypothesis H1 assumed that during the pandemic there are higher levels of fear in consumers that significantly influenced their behavior. To verify this hypothesis nonparametric Spearman’s correlation coefficient (Spearman’s Rho) was used. The testing was provided in SPSS Statistics. The test was interpreted in use of comparison of significance level, alpha (0.05) and p-value (test result in SPSS). If the p-value was lower than determined significance level, tested variables were dependent on each other. To analyze the dependence, the Spearman’s Rho was used. Answers “I don't know” were excluded from testing, that is why the total number of respondents is 1169. According to these tests two interesting dependences were found. First of them is the weak to moderate dependence between the amount of bought goods and services and the fear of consumer’s health. It means the more intense the fear is the less amounts of purchases are made by consumers. The second is the weak to moderate dependence between the frequencies of purchases and the fear of consumer’s health. Negative correlation means that the more intense the fear of the consumer is the less often purchases are made.

Table 3 The consumer’s behaviors during the pandemic affected by fear

<b>During the pandemic, I felt worried about my health vs. Quantity purchased</b>	Correlation Coefficient	<b>-0.148</b>
	p-value	0.000
	N	1169
<b>During the pandemic, I felt worried about my health vs. Frequency of visiting shops</b>	Correlation Coefficient	<b>-0.202</b>
	p-value	0.000
	N	1169

Source: Own elaboration.

These findings indicate that the influence of close acquaintances on consumer behavior increased during the COVID-19 pandemic. It is not surprising since many people were forced to spend more time with their family members due to enforced lockdowns, work in a form of home office or restriction on leisure activities. To analyze this assumption, the nonparametric binominal tests were used. The answers of the consumers were divided into two groups depending of the impact rate. Answers “I do not know” were system missing. In use of p-value and frequencies it was identified that family or friends are significantly important acquaintances that effect on consumer behavior. It means that the second hypothesis H2, the influence of close acquaintances on consumer behavior is significant during a pandemic can be confirmed. Since it was discovered that friends and family have a significant influence on consumer behavior a deeper analysis was performed. An interesting discovery was made. The highest influence of the family was in age groups of consumers 22 – 26 years and 46 – 49 years. On

average, family has a higher influence on consumer behavior than friends. The highest influence of friends was observed in the age group 30 – 35 years. The distribution in this case was more even.

On the other hand, since people had limited contact with others outside of their family, it would be safe to assume that the influence of acquaintances such as colleagues and friends decreased. The results from the survey confirm this assumption since in use of nonparametric binominal tests and according to p-value, the influence of media, colleagues, neighbors and advertisement is not significant during a pandemic (p-value < significance level alpha). That means that the hypothesis H3 was confirmed.

A similar analysis was also performed considering the influence of media, colleagues, neighbors and advertising. In general, the distribution of the influence of these factors is very similar and even with regard to the age of consumers. The biggest changes in influence were recorded among the consumer age groups 22 – 26 years and 61 – 65 years. On the contrary, the greatest drop in influence of observed factors was recorded among consumers in age groups 42 – 46 years and 71 years and older. These factors had the greatest impact in 2022, when the COVID-19 pandemic was at its peak. An interesting discovery was also observed in a group of consumers aged 42 - 46 years. Their shopping behavior was not significantly influenced by close people (family, friends) or the media, colleagues, neighbors and advertising.

Major pandemic is a new and previously not explored factor influencing the consumer behavior. Since there was no information prior to the COVID-19 pandemic on historical examples of such pandemics influencing consumers, it is necessary to examine what impacts the pandemic could have on changes in consumer behavior. One of the interesting factors may be the degree to which consumers are influenced by information about the pandemic. During the COVID-19 pandemic, consumers were daily exposed to a large amount of news about the development of the pandemic and its consequences, which intensively affected life in society. This research also addressed the question to what extent consumers were influenced by such information about the pandemic situation in their purchasing decisions. According to the data provided by consumers, up to 66.38% of them actively checked the news on the development of pandemic situation in their region on daily basis. Furthermore, it was discovered that 51% of consumers found the pandemic information an important factor when deciding on visiting stores. On the other hand, 23.47% of consumers did not consider information about the pandemic to be a relevant factor that would influence their purchasing behavior or motivate them to change their habits. To verify the hypothesis H4 nonparametric binominal test was used. P-value of this test was at the level 0.003 (Exact Sig. divided by 2, since one-sided test)

that is lower than established level of significance alpha (0.05). It means that it is true that the information about the pandemic situation in country significantly influences consumer behavior during a pandemic.

Table 4 Binomial test of the influence of information on consumer behavior

	<b>Binominal Test</b>			
	Category	Observed Prop.	Test Prop.	ExactSig. (2-tailed)
Information influence consumer behavior	1	0.55	0.5	0.006
Information do not influence consumer behavior	0	0.45		
Total		1		

Source: Own elaboration

Overall, many changes in consumer behavior were documented during the COVID-19 pandemic in years 2021 – 2023. However, the question of whether these changes have persisted in the current post-pandemic period or whether the situation is gradually returning to its pre-pandemic state is also relevant and needs to be explored. It was discovered that consumers increasingly prefer to visit shops unaccompanied in 2023 as a result of the pandemic. As expected, up to 37% of consumers declared that in 2023 they visit stores unaccompanied more often than during the pandemic in 2021. Changes in forms of product distribution that occurred during the pandemic were necessary due to measures implemented by governments to stop the spread of the virus and even adopted by some people as a means of protections. Therefore, an increase in buying products through e-shops obviously occurred during the pandemic. However, it is questionable whether this trend of shopping via e-shops continued even after the aforementioned measures were no longer in force and the risk of virus infection almost completely disappeared. This research also incorporated the question of whether consumers still used e-shops to an increased extent in 2023 or returned to the model before the outbreak of the COVID-19 pandemic. Up to 20% of consumers declared that in 2023, they buy goods and services of daily consumption (e.g. food) more through e-shops than in brick-and-mortar stores. This percentage was slightly higher for durable goods and services (e.g. clothes, cosmetics, etc.) since 27% of consumers remained faithful to e-shops when buying such products. These findings indicate that the trend of online shopping remains strong even after the pandemic and entrepreneurs should incorporate it into their business strategies to meet the needs and desires of modern consumers.

In 2023, the consequences of the pandemic on the life of people significantly decreased. However, in 2022 other situations began to emerge that had the potential to have strong impact on consumer behavior. As part of this research, in 2023 we examined whether the ongoing impact of the consequences of the pandemic on consumer behavior remained significant, or whether new factors gained more importance. It was discovered that the majority of consumers considered the rising inflation rate in the country as the factor with the greatest impact on their lives. However, the pandemic remained significant as it was mentioned with the second most importance. This result clearly confirms the assumption about the long-term effects of the pandemic on people's lives.

Another interesting finding is that in 2023 there were still high levels of consumer fear that significantly influenced their behavior. Through Spearman's Rho, weak to moderate dependence between the amount of bought goods and services and the fear for consumer's health were identified (the more intense the fear, the lower amount of purchases are made by consumers).

Yet another interesting finding is the identified weak dependence between the fear for another's health and the frequency and amount of purchases. In view of these findings, it can be said that these consumer behavior changes, which occurred during the pandemic, remained. The influence of reference groups, such as media, colleges, neighbors or advertisement, on consumer behavior was still not insignificant in 2023 as consumers do not consider these groups to be the carriers of relevant information. These contradictory findings mean that the main hypothesis of this research was formulated correctly. Even though the situation in 2023 was completely free of pandemic restrictions and influences, this research confirmed that some of the significant changes in consumer behavior that occurred during the pandemic, remained even after the influence of the pandemic diminished. Figure 6 provides further evidence comparing several observed issues during the peak of pandemic in 2021 and at its conclusion in 2023.

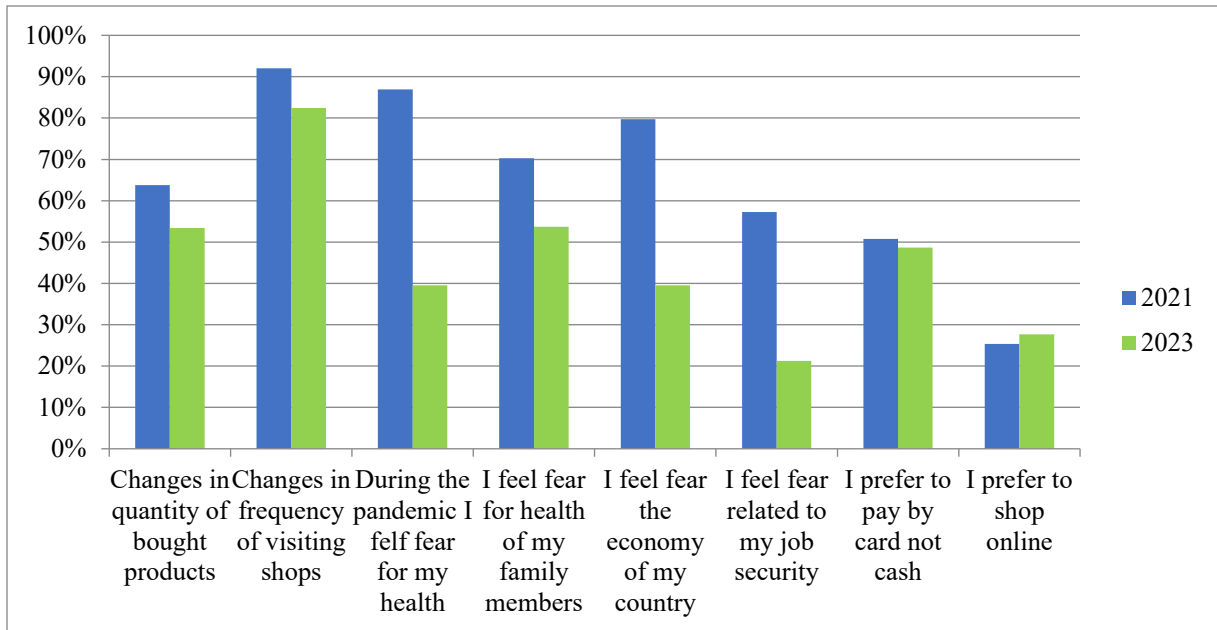


Figure 6 Pandemic and post-pandemic comparisons

Source: Own elaboration

These research findings can be incorporated into existing consumer behavior models. Since the S-O-R model had been used to formulate hypotheses of this research, it served as a main source of reference for understanding the influence of COVID-19 pandemic on consumers' purchase decisions. Figure 7 provides the extension of the S-O-R model in its actual state during the COVID-19 pandemic. Green colored arrows represent a stronger influence than under normal circumstances and the red one shows a weaker one. Understanding the stimuli that affect the consumer during the pandemic years can also serve as a foundation for understanding the consumer behavior change during any adverse event that may occur in the near future.

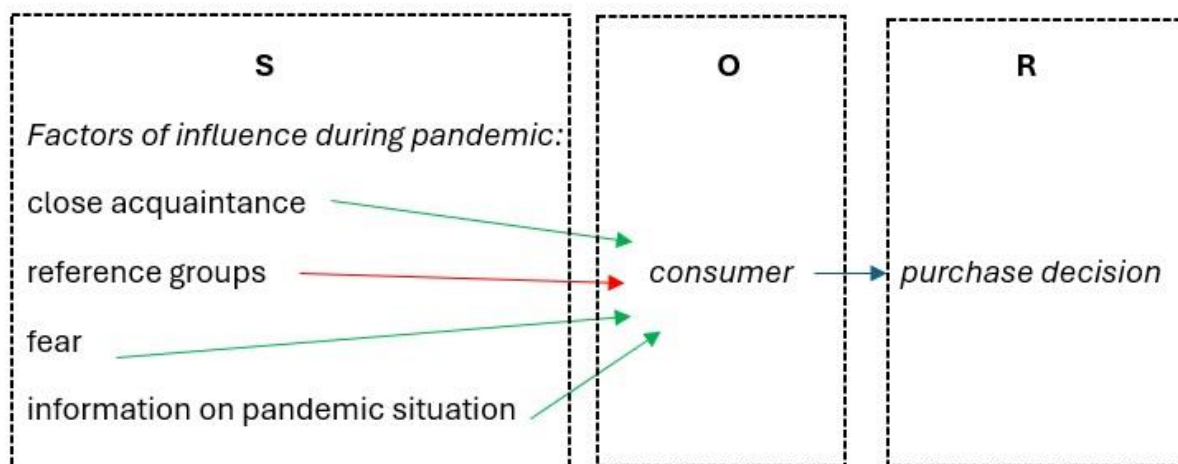


Figure 7 Extended S-O-R model during the COVID-19 pandemic

Source: Own elaboration.

## **Conclusions and discussion**

The findings of the research prove that during the pandemic people learned to manage their purchases. Consumers went shopping less frequently and bought more products to stockpile more often, which shows the increased need for planning. Furthermore, there were reported cases of panic shopping (Barr, 2020; Chua et al., 2021; Fidlerová and Makyšová, 2021); however, this research proved that this phenomenon only occurred at the initial stage of the pandemic when people had not yet had a clear picture of what to expect from that newly developed situation. Once they became accustomed to the new reality, the consumers learned to live with its restraints and managed the challenges.

It is obvious that the pandemic taught us to be more careful about the health risks to our family members and to our own. The continued trend of online shopping is just one of the proofs. Even though many consumers discovered the comforts and other benefits of shopping without leaving home, just as many of them were eager to return to classic brick-and-mortar shops. As Angula and Zulu (2021) or Pantano et al. (2021) mention, shopping is not just means to get what we need, but also a social outing that has long been rooted in modern society. It is precisely this aspect of shopping that consumers found most lacking during the pandemic and were eager to return to afterwards.

However, as this research shows, it has much to do with actual purchases. E-shopping has clearly become a major trend that will continue to develop in the near future. Should any new disaster strike again, consumers will already be ready to move the majority, if not all of their shopping online. These findings raise the need for all businesses to create an electronic platform for promotion, selling and other means of distribution of their products since there is a clear demand for these services already. Businesses with insufficient online presence will most likely struggle and when the disaster hits again, will most likely not be able to survive, as was proved by the research of Li *et al.* (2024) and Rangaswamy *et al.* (2022).

It was discovered that major events resulting in limited direct human contact also have a tendency to alter the strength of the influence which reference groups, acquaintances and even close family members have on consumer behavior, especially the decisions that people make. The influence of people not considered to be near and dear ones decreased. On the other hand, there is a tendency to pay more attention to needs and desires of those people that are considered as family or close friends. The influence and proximity are closely related since the decreased influence occurred mainly when faced with adversity. The attention of a person shifts towards those they consider close (in terms of a relationship), such as family, friends, and other loved ones. The influence of distant acquaintances or total strangers usually diminishes. Our research

proved that these assumptions were valid during the pandemic. Moreover, the emotional bonds were stronger during the period of increased fear, meaning that people prioritized the needs and desires of those they share emotional bonds with. Their well-being became paramount.

Another issue could be trust. Not all people automatically believed all presented information and not all information was accepted at face value. Skepticism was ever present, which prompted people to verify facts and scrutinize sources. Importance of information and media, as well as the development of current situation in society, also caused some significant changes during the COVID-19 pandemic. People clearly paid more attention to information on new development of situation and emerged risks during adverse events. However, they applied critical evaluation to the presented facts. It is known that people weigh the credibility of information, especially in the times of uncertainty. Trust is reserved for reliable sources. Furthermore, the pandemic intensified the focus on the news related to the virus. People sought updates on infection rates, preventive measures, and emerging risks. Social media platforms disseminated information rapidly, but misinformation also spread. Discernment became crucial (Chiu *et al.*, 2020; Bender *et al.*, 2022). These contradictory tendencies were at constant conflict over the dominance during the COVID-19 pandemic and in essence, the pandemic situation reshaped our attention, trust, and societal awareness. It highlighted the importance of reliable information, emotional bonds, and collective responsibility.

The lesson from this pandemic is that the rules of consumer behavior apply always and everywhere. Even if some unexpected event occurs and stops life in society, altering shopping and consumption patterns for a while, after the event passes, everything returns to normal and the same rules apply to consumers. If they deny themselves something for a while, then they will catch up as soon as possible. Such were the cases reported on traveling during the duration of COVID-19 pandemic. If consumers couldn't go anywhere, they accepted this reality and simply didn't go, but then they traveled as soon as possible, at least within the allowed borders of countries or regions and later also abroad. Evidence shows (Hajilo *et al.*, 2023; Iftimoaei *et al.*, 2023; Daglis, 2024) that currently the tourism industry has gradually been returning to normal and reports the results as if nothing had happened. If something is changing, it is not the factors of consumer behavior, as confirmed by the hypotheses in this research, but rather its methods, especially in relation to technology. Communication, dissemination of information and shopping via the Internet has been gradually developing and the pandemic only accelerated this process. These findings seem logical since people are inherently lazy and demanding creatures, as Adam Smith said (Dündar and Islamoglu, 2023). Still, thanks to this attribute of human nature society has developed to what it is today.

A different opinion is held by Di Crosta *et al.* (2021). They argue that consumer behavior has changed significantly due to psychological factors such as fear, anxiety, and depression. However, they did not monitor the trend of these factors over time, only examined purchasing behavior at the beginning of the pandemic.

Predicting the changes in consumer behavior has always been difficult. However, the recent COVID-19 pandemic not only brought significant alterations in usual patterns, it did so in a completely unexpected way. Due to lack of information, companies had no clear path to respond successfully to demands of consumers. Therefore, understanding the consumer behavior during the pandemic is a crucial opportunity to outline trends for the future. It is likely that modern society will again be forced to face a global crisis, and these findings provide a tool for businesses and governments to be better prepared. However, the findings of research indicate that the lesson that needs to be learnt from this major 21<sup>st</sup> century pandemic is that in the long term, there are no significant changes in consumption in general because the rules of consumer behavior apply universally.

If a situation like the pandemic occurs again in the near future, entrepreneurs should not worry about their future, they should rely on the fact that consumption will always continue. Consumers will look for options so the products they are interested in are delivered to them as quickly as possible and in a way that will suit them. This indicates the future trend of increased need for courier services, deliveries, delivery points, online ordering options and so on. They will need to be flexibly modified to constantly operate in compliance with safety regulations, and to meet the highest standards of hygienic and safety requirements under any conditions. Furthermore, the heightened media presence in such times would provide both an opportunity and necessity to apply new methods of advertisement. As our research findings prove, any kind of pandemic in the future would be both opportunity and crisis. Although changes are necessary and inevitable, businesses would be able to find new ways to create competitive advantages for themselves and thus overcome such challenges in the future. It is also important to emphasize that, even though consumer behavior changes monetarily as the crisis unfolds, after its conclusion the main factors influencing it return to their previous state.

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