

## AN ANALYTICAL VIEW OF CONSUMERS' PURCHASING BEHAVIOUR IN TERMS OF E-COMMERCE DURING COVID-19

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**Abstract:** Due to its numerous advantages, and largely also because of the COVID-19 pandemic, online shopping has become the easiest and most convenient way for consumers to shop. The main goal of the paper is to analyze the current state of online shopping behaviour of consumers in times of the COVID-19 pandemic. Data was collected using a questionnaire. The questionnaire examined selected factors affecting online shopping during the pandemic. A total of 546 respondents took part in the questionnaire survey. The results showed that respondents shopped online more often during the pandemic than they did before the pandemic. The findings also pointed to significant gender differences in terms of selected factors, specifically in the aspect of health, security, speed and time. It was found that women pay more attention to the aspects of health, speed and time, while for men, the security aspect proved to be the most important. The knowledge gained hereunder may help businesses determine marketing and business management strategies that could be implemented not only during the pandemic but also after the pandemic ends.

**Keywords:** online shopping, e-commerce, online consumer, COVID-19, purchasing behaviour.

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### Introduction

The rapid development of digital and web technologies in the 1950s contributed greatly to the boom in e-commerce we see today. Since its inception in the 1980s, e-commerce has become a global trend. It is currently one of the most popular online

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activities and has become an important part of the new digital economy in recent years (Hostler et al. 2012; Trong et al. 2014; Boboc 2020). With the increasing use of the Internet and digital technologies, online shopping is becoming increasingly popular and the number of consumers shopping online is constantly growing (Statista 2022).

As a large number of consumers are currently experiencing time pressure, which, combined with the limitation of social contacts due to COVID-19-related measures, shopping in brick-and-mortar stores is less enjoyable. The novelty virus COVID-19 has affected the daily lives of many people (Baker et al. 2020; Wang et al. 2020; Baryhnikova et al. 2021). The motivation for conducting this study was to examine the aspects that could have a potential impact on the online shopping of students as one of the segments that most often shop online and use digital technologies daily.

### **Literature Review**

When COVID-19 was declared a global pandemic, people changed not only their lifestyles but also their shopping habits in an effort to limit its spread (Baker et al. 2020; Wang et al. 2020; Baginska 2022). Recommendations by public health experts to limit social contact along with government measures such as curfews, travel restrictions, mandatory quarantine or closure of businesses had a significant impact not only on consumers but also on businesses and their suppliers. Consumers increased demand for certain types of products, thus subsequently causing their shortage in stores, while other products became virtually unsellable (WHO 2020; Laato et al. 2020). Changes in consumer behaviour were caused not only by government-imposed measures but also by fear of contagion and panic buying behaviour. It can be expected that these changes in shopping habits will persist (Akhtar 2020; Sheth 2020; Kot, 2022). During the pandemic, people reported choosing online shopping over shopping in brick-and-mortar supermarkets and pharmacies due to fear of contagion (Showrav et al. 2021; Corejova et al. 2022; Makiela et al., 2022).

Consumers realized that they should stay at home and minimize social interactions, including activities like eating out, using public transport, working from an office or travelling abroad (Baker et al. 2020; Lewis, Garbett 2020).

Pandemic-related measures, recommendations, restrictions and closures of retail establishments led people to shop online. At that time, online shopping became the only option for consumers that could satisfy their needs. The spread of the coronavirus increased the attractiveness of online shopping also because it allowed consumers to avoid personal contact when shopping. Consumers are aware of the fact that they risk infection when shopping in malls and stores. Thus, some consumers decided to reduce physical interactions and turned to online shopping as the safest shopping option (Pantano et al. 2020; Fihartini et al. 2021). A survey by the global marketing intelligence company SandP showed that although consumers expressed their intention to reduce spending during the COVID-19 pandemic, they were open to digital offers and thus shifted their demand to the online space (Bitter

2020). According to ACI Worldwide (2020), COVID-19 has led to a surge in e-commerce, with a 31% increase in online shopping reported in June 2020 when compared to the same month in 2019.

Due to the global pandemic and also partly to the digital revolution, consumers are more open to using technologies in various aspects of their lives and increasingly spend their free time online. Online shopping has become a preferred way of shopping for many thanks to the number of advantages it offers (Lacová et al. 2022; Junsavang et al. 2022; Ingaldi and Ulewicz 2019). Online shopping is more convenient than shopping in brick-and-mortar stores and is available 24/7. Another advantage is saving on transport costs as one does not have to go to the store physically. The Internet offers a wide range of different products and services at different prices. The Internet also makes it easier to compare the quality and price of searched products (Watanabe and Omori 2020). According to Kansra and Rajiv (2013), the important factors that influence online shopping include, in particular: payment security, privacy, product price, product quality, convenience, availability, advertising, delivery time, and company reputation. Nowadays, consumers also emphasize the aspect of health. Consumers who are concerned about their health consider online shopping to be a safer alternative (Fihartini et al. 2021). Information sources, especially the media, also played a very important role in changes in consumer purchasing behaviour during the COVID-19 pandemic (Laato et al. 2020). The rapid development of e-shops during COVID-19 fuelled research on consumer shopping behaviour, the majority of which was conducted in high-income countries (e.g. Germany (Koch 2020), USA (Grashius 2020), Qatar (Hassen 2020)) and in places where e-commerce was booming even before the pandemic hit (e.g. China (Gao 2020), India (Sharma 2020)). When examining gender differences in terms of online shopping, conflicting views were found, as some studies found that women shop online more than men (Maat 2018) and others found the opposite (Crocco et al. 2013). Equally contradictory opinions were also found in terms of education (Zhen 2016; Shi et al. 2019; Saphores 2020).

Based on the literature review, the following research questions (RQ) were formulated to achieve the main aim of the study:

RQ1: Are consumers shopping online more often since the outbreak of the COVID-19 pandemic?

RQ2: Is the factor structure of the measuring instrument significant?

RQ3: Are there statistically significant gender differences in terms of selected aspects affecting online shopping behaviour?

After taking the above-mentioned into account, the following research hypotheses were formulated:

H1: It is assumed that since the outbreak of the COVID-19 pandemic, consumers shop online more often.

H2: It is assumed that the factor structure of the measuring instrument is significant.

H3: It is assumed that there are statistically significant differences in selected aspects affecting online shopping in terms of gender.

### Research Methodology

The main aim of the paper is to analyze and evaluate the current state of online shopping behaviour of consumers (affected by the pandemic), to verify the factor structure of the used measurement tool and to point out significant gender differences found in the results.

Secondary data was obtained from research and statistical sources. Primary data were collected by means of a questionnaire. In a period when social contact was limited, data were collected using an online questionnaire. The questionnaire was created through Google Forms and distributed to respondents by e-mail and also through the social network Facebook. The research took place from September to December 2021. Filling out the questionnaire took approximately 10 to 15 minutes. At the beginning of the questionnaire, there were 5 socio-demographic items (gender, year of birth, education, place of residence and region of residence). Respondents were asked to state whether they shop online more since the outbreak of the pandemic. The questionnaire also included items that focused on the subjective perception of selected factors with a potential impact on consumer decisions when shopping online. The investigated factors are listed in Table 1, namely health (4 items), product and price (5 items), security (3 items), speed and time (2 items), and media (4 items). Respondents were given options ranging from strongly disagree (1) to strongly agree (5) (Likert scale).

**Table 1. Researched factors**

| Factor                   | Number of items | Source                              |
|--------------------------|-----------------|-------------------------------------|
| <i>Health aspect</i>     | 4               | Alam (2020)                         |
| <i>Product and price</i> | 5               | Negger and Udin (2020); Alam (2020) |
| <i>Security aspect</i>   | 3               | Negger and Udin (2020)              |
| <i>Speed and time</i>    | 2               | Negger and Udin (2020); Alam (2020) |
| <i>Media perception</i>  | 4               | UNCTAD (2020)                       |

**Source:** Author's own work based on available sources

The research sample is made up of students of Slovak universities (Table 2), of which 47.3% were men and 52.7% were women. In total, 613 students participated in the research. After excluding unsuitable or incomplete questionnaires, 546 questionnaires remained. The research sample chosen is a homogeneous group of respondents with comparable characteristics in terms of socio-demographic variables. This helped reduce the distortion of the results to the minimum. Students are considered to be a suitable target group for targeted marketing thanks to their ICT skills and the amount of time they spend online, either browsing the web or shopping.

Table 2. Frequency table of socio-demographic characteristics of respondents

| Variables                  | Values                            | Frequency | Percent |
|----------------------------|-----------------------------------|-----------|---------|
| <i>Gender</i>              | Man                               | 258       | 47.3    |
|                            | Woman                             | 288       | 52.7    |
| <i>Residence</i>           | City                              | 285       | 52.2    |
|                            | Countryside                       | 261       | 47.8    |
| <i>Education</i>           | Secondary education               | 263       | 48.2    |
|                            | University education - 1st degree | 217       | 39.7    |
|                            | University education - 2nd degree | 66        | 12.1    |
| <i>Region of residence</i> | Banská Bystrica                   | 59        | 10.8    |
|                            | Bratislava                        | 67        | 12.3    |
|                            | Košice                            | 68        | 12.5    |
|                            | Nitra                             | 68        | 12.5    |
|                            | Prešov                            | 115       | 21.1    |
|                            | Trenčín                           | 60        | 11.0    |
|                            | Trnava                            | 56        | 10.3    |
|                            | Žilina                            | 53        | 9.7     |
| <i>Year of birth</i>       | 1990                              | 6         | 1.1     |
|                            | 1991                              | 3         | 0.5     |
|                            | 1992                              | 5         | 0.9     |
|                            | 1993                              | 11        | 2.0     |
|                            | 1994                              | 29        | 5.3     |
|                            | 1995                              | 40        | 7.3     |
|                            | 1996                              | 65        | 11.9    |
|                            | 1997                              | 94        | 17.2    |
|                            | 1998                              | 93        | 17.0    |
|                            | 1999                              | 77        | 14.1    |
|                            | 2000                              | 79        | 14.5    |
|                            | 2001                              | 40        | 7.3     |
|                            | 2002                              | 3         | 0.5     |
|                            | 2003                              | 1         | 0.2     |

**Source:** Author's own work based on results of the questionnaire

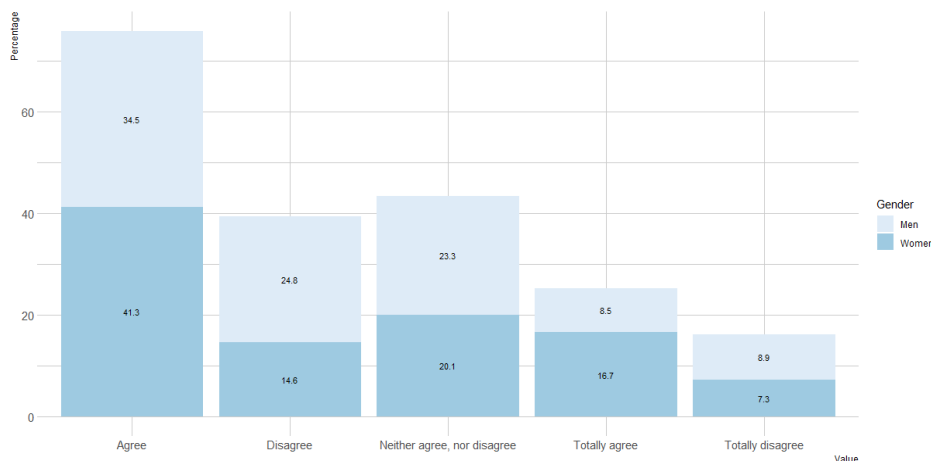
The Shapiro-Wilk normality test was used to verify the normality of the data. The non-parametric Mann-Whitney U test using IBM SPSS Statistics 26 program was used to investigate gender differences between respondents. A weighted least squares test with mean and variance adjustment (WLSMV) estimation was used in the confirmatory factor analysis (CFA) using R 4.0.2 software. Four fit indices were used: root mean square error of approximation (RMSEA) with 90% confidence intervals, where values below 0.06 indicate good fit; standardized root mean square residual (SRMR), where values below 0.08 indicate good fit; comparative fit index (CFI) and Tucker-Lewis index (TLI), where values exceeding 0.95 indicate good fit (Hu and Bentler 1999).

The internal consistency reliability analysis made use of Cronbach's Alpha coefficient. The internal consistency reliability analysis was extended by calculating

the 95% confidence intervals using the bias-corrected and accelerated percentile bootstrap method with 1,000 iterations (Efron and Tibshirani 1993). According to Kline (2011), critical values for reliability coefficients are as follows:  $\geq 0.7$  adequate internal consistency of answers;  $\geq 0.8$  very good internal consistency of answers;  $\geq 0.9$  excellent internal consistency of answers, or according to Hair et al. (2010), values  $> 0.7$  are considered adequate.

### Research Results and Discussion

The results of the questionnaire survey showed that more than half of the respondents have shopped online more often since the outbreak of the pandemic. Figure 1 shows the percentage of respondents in terms of gender who answered the question of whether they shopped online more often during the COVID-19 pandemic. Based on the answers, it can be stated that a higher frequency of positive answers was recorded in women (up to 58% in total), while in men, it was 43%. On the contrary, a negative answer was recorded only in 21.9% of women but in 33.7% of men. Given the data, it could be stated that consumers shop online more often since the outbreak of the COVID-19 pandemic. Similar findings are reported by Nguyen et al. (2021), whose research showed that almost 80% of respondents shopped online more often than before the outbreak of the pandemic, with women shopping online more often. On the contrary, Watanabe and Omori (2020) analyzed secondary data and found that after the outbreak of the COVID-19 pandemic, men shopped online more often than women.



**Figure 1: The percentage of respondents shopping online more frequently during the COVID-19 pandemic in terms of gender**

Source: Output from R 4.0.2 software

It is possible to consider the fit of the CFA model to be adequate, with RMSEA = 0.027,  $(0.017 < RMSEA < 0.036) = 0.90$ , SRMR = 0.051, CFI = 0.98, and TLI =

0.98, all meeting the standard cutoff values. The Chi-square test statistic reached the value of 290.893 at the p-value of 0.000. Overall, our results suggest that the factor structure describes our data reasonably well. Hair et al. (2014) state that with a sample size higher than 250 observations, the value of Factor loadings can be considered significant if it is higher than 0.35. All the factor loadings were significant as the  $p < 0.05$ . Also, all factor loadings were higher than 0.50 and are shown with p-values in Table 3. Cronbach's  $\alpha$  ranged from 0.733 (Health aspect) to 0.948 (Media perception) and are also shown in Table 3.

**Table 3. Results of exploratory factor analysis with factor loadings and Cronbach's  $\alpha$**

| Factor                   | Item                                 | p-value | Loading | Cronbach's $\alpha$<br>(95% CI) |
|--------------------------|--------------------------------------|---------|---------|---------------------------------|
| <i>Media perception</i>  | Television advertising.              | 0.000   | 0.825   | 0.948<br>(0.934-0.961)          |
|                          | Print advertising.                   | 0.000   | 0.955   |                                 |
|                          | Radio advertising.                   | 0.000   | 0.955   |                                 |
|                          | Billboard advertising.               | 0.000   | 0.895   |                                 |
| <i>Speed and time</i>    | Save time when shopping.             | 0.000   | 0.824   | 0.804<br>(0.773-0.811)          |
|                          | Access 24 hours a day.               | 0.000   | 0.816   |                                 |
| <i>Security aspect</i>   | Payment security.                    | 0.000   | 0.793   | 0.833<br>(0.815-0.851)          |
|                          | Website credibility.                 | 0.000   | 0.812   |                                 |
|                          | Privacy.                             | 0.000   | 0.765   |                                 |
| <i>Health aspect</i>     | Measures declared by the government. | 0.000   | 0.534   | 0.733<br>(0.704-0.766)          |
|                          | Restriction of social contact.       | 0.000   | 0.633   |                                 |
|                          | Will to stay at home.                | 0.000   | 0.648   |                                 |
|                          | Coronavirus protection.              | 0.000   | 0.739   |                                 |
| <i>Product and price</i> | Product quality.                     | 0.000   | 0.711   | 0.789<br>(0.777-0.832)          |
|                          | Wide range of products.              | 0.000   | 0.685   |                                 |
|                          | Cheaper price than in the store.     | 0.000   | 0.574   |                                 |
|                          | Quality product at a good price.     | 0.000   | 0.754   |                                 |
|                          | Reasonable delivery costs.           | 0.000   | 0.566   |                                 |

**Source:** Output from R 4.0.2 software; CI – confidence interval

The correlations of the latent factors are shown in Table 4. The factor of Media perception was not mutually correlated with the factors of Speed and time, Security aspect and also Product and price. The correlations within the latent factors were at the level  $p < 0.01$  and were from small to medium.

**Table 4. Latent factor correlations**

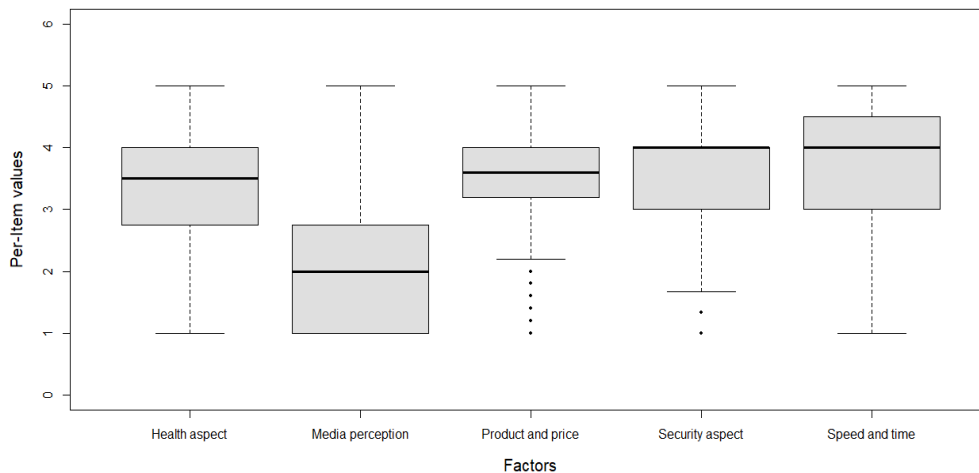
| <b>Factor</b>           | <i>Speed and time</i> | <i>Security aspect</i> | <i>Health aspect</i> | <i>Product and price</i> |
|-------------------------|-----------------------|------------------------|----------------------|--------------------------|
| <i>Media perception</i> | 0.063                 | 0.069                  | <b>0.191*</b>        | 0.012                    |
| <i>Speed and time</i>   |                       | <b>0.516*</b>          | <b>0.516*</b>        | <b>0.648*</b>            |
| <i>Security aspect</i>  |                       |                        | <b>0.495*</b>        | <b>0.651*</b>            |
| <i>Health aspect</i>    |                       |                        |                      | <b>0.292*</b>            |

**Source:** Output from R 4.0.2 software; \*p < 0.01

Negger and Uddin (2020) also investigated the factors that have an impact on the decision of consumers to shop online. They confirmed that the factors of product, time, payment, motivation and attitudes have a significant impact. Alam (2020) found that factors like health, product, price and location have a significant impact on the decision of consumers to shop online during the pandemic. Koch et al. (2020) confirmed a significant influence within the factors of hedonic motivation, perceived usefulness and internal subjective norms regarding health protection. The findings of Mican and Sitar-Tăut (2020) indicate that the most significant factors affecting online shopping are product features, online store credibility, product reviews, and product price. Research by Smaldone et al. (2021) showed that the perceived health risk of COVID-19 is a very strong factor influencing the decision to shop online. Their research also showed that during the pandemic, consumers would rather shop online not because they trust online retailers but because they wish to stay away from contagion, even though that means they might lose money to fraudulent online retailers. Similar findings were reported by Alheimer (2021), who confirms that the health factor or risk of contagion, significantly influences the purchasing behaviour of consumers and encourages them to shop online. All activities carried out in the process of e-commerce are inevitably related to uncertainty and risk. Horvath et al. (2021) investigated that this perceived uncertainty and risk have a negative impact on consumers' purchase intentions and are one of the main obstacles to making an online purchase.

The basic descriptive statistics of the per-item factor scores are provided in Figure 2. The results suggest that, within our research sample, it is possible to observe differences between the means, medians, and variability.





**Figure 2: Boxplot of per-item factors**  
Source: Output from R 4.0.2 software

The existence of significant gender differences between respondents was verified through the non-parametric Mann-Whitney U test. This test was chosen due to the fact that when verifying the normality of the data using the Shapiro-Wilk Test (Table 5), the significance was  $p < 0.05$  in all investigated cases, and the condition of normal data distribution, which would allow for the use of parametric tests, was not met.

**Table 5. Results of Shapiro-Wilk Test of normality**

| Factor                   | Gender | W     | p-value |
|--------------------------|--------|-------|---------|
| <i>Health aspect</i>     | Man    | 0.976 | 0.000   |
|                          | Woman  | 0.960 | 0.000   |
| <i>Product and price</i> | Man    | 0.947 | 0.000   |
|                          | Woman  | 0.968 | 0.000   |
| <i>Security aspect</i>   | Man    | 0.923 | 0.000   |
|                          | Woman  | 0.937 | 0.000   |
| <i>Speed and time</i>    | Man    | 0.952 | 0.000   |
|                          | Woman  | 0.845 | 0.000   |
| <i>Media perception</i>  | Man    | 0.888 | 0.000   |
|                          | Woman  | 0.897 | 0.000   |

Source: Output from IBM SPSS Statistics 26

The results of the Mann-Whitney U test, which show the existence of significant differences between men and women ( $p < 0.05$ ) are recorded in Table 6. Statistically significant gender differences were found in three factors, namely Health ( $p = 0.000$ ), Security ( $p = 0.013$ ) and Speed and time ( $p = 0.000$ ).

**Table 6. Results of Mann-Whitney U Test – Gender differences**

|                        | <i>Health aspect</i> | <i>Product and price</i> | <i>Security aspect</i> | <i>Speed and time</i> | <i>Media perception</i> |
|------------------------|----------------------|--------------------------|------------------------|-----------------------|-------------------------|
| <i>Mann-Whitney U</i>  | 30622.000            | 36645.000                | 32618.500              | 29498.000             | 34118.500               |
| <i>Asymp. Sig. (p)</i> | <b>0.000</b>         | 0.782                    | <b>0.013</b>           | <b>0.000</b>          | 0.092                   |

Source: Output from IBM SPSS Statistics 26

In order to find out whether there are statistically significant differences in selected aspects affecting online shopping between men and women, the Mann-Whitney U test was used. Table 7 shows the average and median values in terms of gender for the factors where significant differences between men and women were demonstrated.

**Table 7. Descriptive statistics in terms of gender for factors with significant differences**

| Factor                 | Gender | Mean  | Median | Standard deviation |
|------------------------|--------|-------|--------|--------------------|
| <i>Health aspect</i>   | Man    | 3.143 | 3.200  | 0.777              |
|                        | Woman  | 3.368 | 3.600  | 0.782              |
| <i>Security aspect</i> | Man    | 3.707 | 4.000  | 0.882              |
|                        | Woman  | 3.505 | 3.667  | 0.970              |
| <i>Speed and time</i>  | Man    | 3.633 | 3.667  | 0.936              |
|                        | Woman  | 3.898 | 4.000  | 0.951              |

Source: Output from IBM SPSS Statistics 26

Based on the average values of the individual factors, it is possible to claim that the factors of health and speed and time are the factors that influence women to a greater extent when shopping online, as the average or the median value was higher in women. Untaru and Han (2021) report similar findings. These findings confirm that the health factor, associated with COVID-19-related restrictions, plays a significant role for women more when shopping. On the contrary, the security factor affects more men when shopping online. Similar findings are reported by Oghazi et al. (2021), who confirmed that men pay more attention to the security factor (or Trust factor). The higher the confidence in the security factor, the more men than women are inclined to shop online. The findings arrived at under this research raise the question of what might be the reason for these gender differences. Future research will focus on finding the answer to this question.

Online shopping is quickly becoming an everyday part of consumers' lives. Every business entity aiming at long-term economic growth and profit should take this fact into account (Fedorko et al. 2017; Fedorko et al. 2018; Istianingsih et al. 2020). It is, therefore, essential for every business entity to monitor and analyze consumer behaviour, preferences and habits. The research results can give retailers a broader view of what factors are behind consumers' decisions to shop online during the COVID-19 pandemic. Research findings can also be useful for those working in the

field of marketing management, planning, decision-making and implementation of marketing strategies, customer relationship management and sales management, human resource management, inventory management and supply chain management. The findings could also help marketers improve their market segmentation strategies (focusing on gender differences).

### **Conclusion**

The world is currently facing the COVID-19 pandemic. The consequences and impact of this pandemic were also felt in the field of electronic commerce. Many consumers have changed their usual online shopping preferences and habits during the pandemic. It is possible to agree with Reddy (2020), Sharma and Jhamb (2020) and Shashidhar (2020) that not all behavioural changes will persist after the end of the pandemic, but it is possible to assume that consumers will continue to shop online. According to Kotler and Keller (2012), it is important to have a clear understanding of consumer behaviour to ensure that goods and services are marketed in the most productive way possible. Therefore, it is important to examine the online shopping behaviour of consumers in the context of COVID-19 in order to be able to target them properly and offer them relevant information, products and services based on their habits, preferences and requirements.

The main goal of the paper was to analyze and evaluate the current state of online shopping behaviour of consumers in the wake of the COVID-19 pandemic in terms of gender differences. The research addressed the three research questions. The results arrived under the first research question showed that respondents shop online more often during the pandemic than they did before the pandemic. The results arrived at under the second research question confirmed the significance of the factor structure of our research instrument. The results arrived at under the third research question pointed to significant gender differences in the factors that have an impact on respondents while shopping online, namely the factors of health, security, speed and time. It was found that women take into consideration the health factor and the speed and time factor, while men are more influenced by the security factor. Nowadays, customers are increasingly looking at the aspect of sustainability and environmental impact when shopping online. Businesses that take advantage of this opportunity and prepare for it have a greater chance of gaining a competitive advantage (Štefko and Steffek 2018; Rajnoha et al. 2019). This is an important incentive for future research to also focus on investigating the impact of environmental aspects on online shopping.

With regard to retail businesses, it is necessary to investigate and understand the processes and reasons that led to sudden changes in consumer behaviour. Once the reasons behind these changes are clear, retailers will be able to adapt their activities to the current situation and plan ahead once COVID-19-related restrictions and measures are lifted (Muangmee et al. 2021; Muangmee et al. 2021; Ebrahimi et al. 2021).

The results of the study are limited only to a certain specific sample of respondents and also to a specific form of shopping, therefore, caution should be exercised when generalizing the results to the general population, other forms of shopping or other countries. One of the limitations is the period over which the research was implemented, as it was too short. In the future, long-term research on the topic should be carried out.

In the future, research activities could focus on comparing specific preferred products in terms of gender or, if possible, on comparing results of the same research across several countries. Research aimed at investigating the causes of gender differences in online purchasing decisions could also bring interesting results.

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### References

- ACI Worldwide (2020). ACI Worldwide Research Reveals Increase in June ECommerce Sales—Largest Since the Start of COVID-19 Pandemic Restrictions, <https://www.aciworldwide.com/news-and-events/press-releases/2020/july/globalecommerce-sales-rise-28-percent-in-june-aci-worldwide-research-reveals> Accessed on: 20.7.2022.
- Akhtar N., Nadeem Akhtar M., Usman M., Ali M. and Iqbal Siddiqi U. (2020). Covid-19 Restrictions and Consumers' Psychological Reactance Toward Online Shopping Freedom Restoration. *The Service Industries Journal*, 40(10), 891-913.
- Alam J. (2020). Buying Behavior Under Coronavirus Disease (COVID-19) Pandemic Situation: A Online Perspective Case in Bangladeshi Shoppers. *Chinese Business Review*, 19(3), 82-90.
- Alhaimer R. (2021). Fluctuating Attitudes and Behaviors of Customers toward Online Shopping in Times of Emergency: The Case of Kuwait during the COVID-19 Pandemic. *Journal of Internet Commerce*, 21(1), 1-26.
- Bagińska I. (2022). Improvement and evaluation of the financial (accounting) services quality in the era of SARS-COV-2. *Production Engineering Archives*, 28(3), 283-288.
- Baker S.R.R., Farrokhnia R.A.A., Meyer S.S., Pagel M.M. and Yannelis C. (2020). How does household spending respond to an epidemic? consumption during the 2020 COVID-19 pandemic. *National Bureau of Economic Research*, 2020.
- Baryshnikova N., Kiriliuk O. and Klimecka-Tatar D. (2021). Enterprises' strategies transformation in the real sector of the economy in the context of the COVID-19 pandemic. *Production Engineering Archives*, 27(1), 8-15.

- Ben Hassen T., El Bilali H. and Allahyari M.S. (2020). Impact of COVID-19 on Food Behavior and Consumption in Qatar. *Sustainability*, 12, 6973.
- Bitter A. (2020). Consumers cut spending, but open to digital offerings during COVID-19 – Survey, <https://www.spglobal.com/marketintelligence/en/newsinsights/latest-news-headlines/consumers-cutspending-but-open-to-digital-offerings-during-covid-19-8211-survey-58188515>. Accesses on: 22.7.2022.
- Boboc P.C. (2020). VAT and E-Commerce. Current Legal Framework and the 2021 Changes. *Cluj Tax Forum Journal*, 6, 39-56.
- Corejova T., Jucha P., Padourova A., Strenitzerova M., Stalmachova K. and Valicova A. (2022). E-commerce and last mile delivery technologies in the European countries. *Production Engineering Archives*, 28(3), 217-224.
- Crocco F., Eboli L. and Mazzulla G. (2013). Individual Attitudes and Shopping Mode Characteristics Affecting the Use of E-Shopping and Related Travel. *Transport and Telecommunication Journal*, 14, 45-56.
- Ebrahimi P., Soleimani M., Kot S., Feket-Farkas M. and Alipour, H. (2021). COVID-19 crisis and online businesses resilience: A moderated mediation model. *European Journal of International Management*, 1(1).
- Efron B., Tibshirani R.J. (1993). *An introduction to the bootstrap*. New York, Chapman and Hall.
- Fedorko I., Bačík R. and Fedorko R. (2018). An analysis of online consumer shopping behaviour. *Polish Journal of management studies*, 18.
- Fedorko R., Bacik R. and Kerulova V. (2017). The analysis on the importance of the reputation management in relation to e-commerce subjects. *Polish Journal of Management Studies*, 15(1), 48-56.
- Fihartini Y., Helmi R.A., Hassan M. and Oesman, Y.M. (2021). Perceived health risk, online retail ethics, and consumer behavior within online shopping during the COVID-19 pandemic. *Innovative Marketing*, 17(3), 17-29.
- Gao X., Shi X., Guo H. and Liu Y. (2020). To Buy or Not Buy Food Online: The Impact of the COVID-19 Epidemic on the Adoption of e-Commerce in China. *PLOS ONE*, 15, e0237900.
- Grashuis J., Skevas T. and Segovia M.S. (2020). Grocery Shopping Preferences during the COVID-19 Pandemic. *Sustainability*, 12, 5369.
- Hair J.F., Anderson R.E., Babin B.J. and Black W.C. (2010). *Multivariate data analysis: A global perspective*, 7. New Jersey, Pearson.
- Hair J.F., Black W.C., Babin B.J. and Anderson R.E. (2014). *Multivariate Data Analysis*. Harlow, Pearson Education Limited.
- Horvath J., Gavurova B., Bacik R. and Fedorko R. (2021). Identification of Uncertainty Factors in the Consumer Behaviour of the New Generation of Customers at the E-commerce Level. *Journal of Tourism and Services*, 22(12), 168-183.
- Hostler R.E., Yoon V.Y. and Guimaraes T. (2012). Recommendation Agent Impact on Consumer Online Shopping: The Movie Magic Case Study. *Expert Systems with Applications*, 39, 2989-2999.
- Hu L., Bentler P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1-55.

- Ingaldi M., Ulewicz, R. (2019). How to Make E-Commerce More Successful by Use of Kano's Model to Assess Customer Satisfaction in Terms of Sustainable Development. *Sustainability*, 11, 4830.
- Istianingsih N., Masnun A. and Pratiwi W. (2020). Managerial performance models through decision making and emotional intelligence in public sector. *Administratie si Management Public*, 35, 153-166.
- Junsawang S., Chaiyasoonthorn W., Urbański M. and Chaveesuk, S. (2022). How to Shift Consumer Willingness to Use the Emerging Technologies on Omnichannel. *Montenegrin Journal of Economics*, 18(3), 183-196.
- Kansra P., Rajiva D. (2013). A Study of Perception of Young People towards Online Shopping in Punjab. *Elk Asia Pacific Journal of Marketing and Retail Management*, 4(1).
- Kline R.B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, Guilford Press.
- Koch J., Frommeyer B. and Schewe G. (2020). Online Shopping Motives during the COVID-19 Pandemic—Lessons from the Crisis. *Sustainability*, 12, 10247.
- Kot, M. (2022). The supply chains during pandemia - the perspective from Poland. *ACM International Conference Proceeding Series*, 127-133.
- Kotler P., Keller K.L. (2012). *Marketing management*. London, Pearson.
- Laato S., Islam A.N., Farooq A. and Dhir A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, 57, 102224.
- Lacová Ž., Kuráková I., Horeháková M. and Vallušová A. (2022). How is digital exclusion manifested in the labour market during the COVID-19 pandemic in Slovakia? *Forum Scientiae Oeconomia*, 10(2), 129-151.
- Lewis M., Garbett S. (2020). Impact of COVID-19 on the UK Consumer Sector. Squire Patton Boggs, <https://www.squirepattonboggs.com/en/insights/publications/2020/03/research-results-impact-of-covid-19-on-the-uk-consumer-sector>. Accessed on: 28.7.2022.
- Maat K., Konings R. (2018). Accessibility or Innovation? Store Shopping Trips versus Online Shopping. *Transportation Research Record: Journal of the Transportation Research Board*, 2672, 1-10.
- Makięła, Z.J., Stuss, M.M., Mucha-Kuś, K., Kinelski, G., Budziński, M., Michałek, J. (2022) Smart City 4.0: Sustainable Urban Development in the Metropolis GZM, *Sustainability* 14(6), 3516
- Mican D., Sitar-Tăut D.A. (2020). Analysis of the factors impacting the online shopping decision-making process. *Studia Universitatis Babeş Bolyai – Oeconomica*, 65(1), 54-66.
- Muangmee C., Kot S., Meekaewkunchorn N., Kassakorn N., Tiranawatananun S. and Khalid B. (2021). Students' Use Behavior towards E-Learning Tools during COVID- 19 Pandemics: Case Study of Higher Educational Institutions of Thailand. *International Journal of Evaluation and Research in Education (IJERE)*, 10(4), 1166-1175.
- Muangmee C., Kot S., Meekaewkunchorn N., Kassakorn N. and Khalid B. (2021). Factors Determining the Behavioral Intention of Using Food Delivery Apps during COVID-19 Pandemics. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(5), 1297-1310.
- Neger M., Uddin B. (2020). Factors affecting consumers' internet shopping behavior during the COVID-19 pandemic: Evidence from Bangladesh. *Chinese Business Review*, 19(3), 91-104.

- Nguyen M.H., Armoogum J. and Nguyen Thi B. (2021). Factors affecting the growth of e-shopping over the covid-19 era in Hanoi, Vietnam. *Sustainability*, 13(16), 9205.
- Oghazi P., Karlsson S., Hellström D., Mostaghel R. and Sattari, S. (2020). From Mars to Venus: Alteration of trust and reputation in online shopping. *Journal of Innovation and Knowledge*, 6(4), 197-202.
- Pantano E., Pizzi G., Scarpi D. and Dennis C. (2020). Competing During a Pandemic? Retailers' Ups and Downs During the COVID-19 Outbreak. *Journal of Business Research*, 116(8), 209-213.
- Rajnoha R., Lesnikova P., Štefko R., Schmidtova J. and Formanek I. (2019). Transformations in Strategic Business Planning in the Context of Sustainability and Business Goals Setting. *Transformations in Business and Economics*, 18(2), 44-66.
- Reddy A. (2020). Covid-19 Impact: Consumers Move More towards Digital, [www.thehindubusinessline.com/opinion/covid-19-impact-consumers-move-more-towards-digital/article31337127.ece](http://www.thehindubusinessline.com/opinion/covid-19-impact-consumers-move-more-towards-digital/article31337127.ece). Accessed on. 02.07.2022.
- Saphores J.D., Xu, L. (2020). E-Shopping Changes and the State of E-Grocery Shopping in the US—Evidence from National Travel and Time Use Surveys. *Research in Transportation Economics*, 87, 100864.
- Sharma A., Jhamb D. (2020). Changing Consumer Behaviours towards Online Shopping—An Impact of COVID-19. *Academy of Marketing Studies Journal*, 24(3), 1-10.
- Shashidhar A. (2020). Coronavirus Crisis: Snapdeal Goes 'Local' to Ensure Faster Deliveries amid Lockdown. *Business Today*, 2020(4).
- Sheth J. (2020). Impact of Covid-19 on Consumer Behavior: Will the Old Habits Return or Die? *Journal of Business Research*, 117(1), 280-283.
- Shi K., De Vos J., Yang Y. and Witlox, F. (2019). Does E-Shopping Replace Shopping Trips? Empirical Evidence from Chengdu, China. *Transportation Research Part A: Policy and Practice*, 122, 21-33.
- Showrav D.G.Y., Hassan M.A., Anam,S. and Chakrabarty A.K. (2021). Factors influencing the rapid growth of online shopping during covid-19 pandemic time in Dhaka City, Bangladesh. *Academy of Strategic Management Journal*, 20, 1-13.
- Smaldone F., D'Arco M., Marino V. and Pellicano, M. (2021). Brave Consumers for a New Digital World: Exploring Online Shopping Motives During Covid-19. In: A. Visvizi, O. Troisi, K. Saeedi (Eds.). *Research and Innovation Forum 2021*, Cham, Springer.
- Statista (2022). Retail e-commerce sales worldwide from 2014 to 2023, <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>. Accessed on: 2.7.2022
- Štefko R., Steffek V. (2018). Key Issues in Slow Fashion: Current Challenges and Future Perspectives. *Sustainability*, 10, 2270.
- Trong V., Vu Khanh N. and Gim G. (2014). Evaluating Factors Influencing Consumer Satisfaction towards Online Shopping in Vietnam. *Journal of Emerging Trends in Computing and Information Sciences*, 5, 67-71.
- UNCTAD (2020). Covid-19 and E-commerce, [https://unctad.org/system/files/non-official-document/dtl\\_ecommerce\\_covid19\\_p01\\_AVitale\\_en.pdf](https://unctad.org/system/files/non-official-document/dtl_ecommerce_covid19_p01_AVitale_en.pdf). Accessed on: 28.7.2022.
- Untaru E.N., Han H. (2021). Protective measures against COVID-19 and the business strategies of the retail enterprises: Differences in gender, age, education, and income among shoppers. *Journal of Retailing and Consumer Services*, 60, 102446.

- Wang C., Pan R., Wan X., Tan Y., Xu L., McIntyre R.S. et al. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, behavior, and immunity*, 87, 40-48.
- Watanabe T., Omori Y. (2020). Online consumption during the COVID-19 crisis: Evidence from Japan. *Covid Economics*, 38(16), 218-252.
- World Health Organization (WHO) (2020). Coronavirus disease (COVID-19) pandemic, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. Accessed on: 20.7.2022.
- Zhen F., Cao X., Mokhtarian, P.L. and Xi, G. (2016). Associations Between Online Purchasing and Store Purchasing for Four Types of Products in Nanjing, China. *Transportation Research Record: Journal of the Transportation Research Board*, 2566, 93-101.

## ANALITYCZNE SPOJRZENIE NA ZACHOWANIA ZAKUPOWE KONSUMENTÓW W ZAKRESIE E-COMMERCE PODCZAS COVID-19

**Streszczenie:** Z uwagi na swoje liczne zalety, a także w dużej mierze ze względu na pandemię COVID-19, zakupy online stały się dla konsumentów najłatwiejszym i najwygodniejszym sposobem robienia zakupów. Głównym celem artykułu jest analiza aktualnego stanu zachowań zakupowych konsumentów w Internecie w dobie pandemii COVID-19. Dane zebrano za pomocą kwestionariusza ankiety. W ankiecie zbadano wybrane czynniki wpływające na zakupy online w czasie pandemii. W ankiecie wzięło udział łącznie 546 respondentów. Wyniki pokazały, że respondenci częściej robili zakupy online w czasie pandemii niż przed pandemią. Wyniki wskazały również na istotne różnice między płciami w zakresie wybranych czynników, szczególnie w aspekcie zdrowia, bezpieczeństwa, szybkości i czasu. Stwierdzono, że kobiety zwracają większą uwagę na kwestie związane ze zdrowiem, szybkością i czasem, podczas gdy dla mężczyzn najważniejszy okazał się aspekt bezpieczeństwa. Zdobyta tutaj wiedza może pomóc firmom w określeniu strategii marketingowych i zarządzania biznesem, które można wdrożyć nie tylko w czasie pandemii, ale także po jej zakończeniu.

**Słowa kluczowe:** zakupy online, e-commerce, konsument online, COVID-19, zachowania zakupowe.

## COVID-19 期间消费者在电子商务方面的购买行为分析

**摘要:** 由于其众多优势，而且很大程度上也是因为 COVID-19 大流行，在线购物已成为消费者最简单、最方便的购物方式。本文的主要目标是分析 COVID-19 大流行期间消费者在线购物行为的现状。使用问卷收集数据。调查问卷检查了大流行期间



影响在线购物的选定因素。共有546名受访者参与了问卷调查。结果显示，与大流行之前相比，受访者在流行期间更频繁地在线购物。调查结果还指出，在选定因素方面存在显著的性别差异，特别是在健康、安全、速度和时间方面。结果发现，女性更注重健康、速度和时间等方面，而对于男性来说，安全方面被证明是最重要的。在此获得的知识可以帮助企业确定不仅可以在大流行期间而且可以在大流行结束后实施的营销和业务管理策略

**关键词：**网上购物、电子商务、网上消费者、COVID-19、购买行为