


# How Shopping was Transformed from Offline to Online Space - A Case Study within the Slovak Republic

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**Abstract:** The prognosis and determination of consumer behavior is not an easy process. As part of the development of consumer behavior as the last member of the B2C market in the distribution channel, one can observe the gradual decline of brick-and-mortar stores and the rise of online shopping for several decades, especially the enormous growth of online shopping over the last two years caused by the COVID-19 pandemic. However, it should be noted that many retailers offer their products simultaneously in brick-and-mortar stores and also through the e-shop. The main purpose of the article is to determine the dependence of spent funds on the basis of individual criteria. The primary data were obtained by conducting a questionnaire survey, in which we determined the amount of spent funds for traditional and online retail shopping. Data were analyzed using the Shapiro-Wilk normality test, followed by an analysis of the dependencies of the variables using the Kruskal-Wallis's test and one-way ANOVA. The results show that, apart from gender, the other factors examined do not affect the amount of spent money. Due to the absence of published academic literature and empirical findings concerning the behavior of retail trade format selection in the Slovak market, this study may serve as a starting point for future studies in this area of interest. The survey is also relevant for retailers in terms of format development and reorientation of marketing strategies.

**Keywords:** consumer behavior; online purchasing; brick and mortar store; the impact of consumer characteristics.

## Introduction

Retail is generally considered to be one of the most rapidly transforming sectors of the economy, but despite this claim, insufficient attention is paid to this topic in Slovak professional literature. The pace and character of the transformation of the retail trade can be related to the political and economic situation of the state. In general, it is possible to state that the most significant changes in Slovak retail took place after 1989, after the transition to a market economy, while globalization trends had and currently still have a significant impact (Bilková & Križan, 2013). The retail sector is the fastest-changing sector for most post-communist economies. The transformation of the retail sector was accelerated by the influence of multinational business corporations, and it is the changes taking place in this sector that, in the current perception, are associated with the scientific and technical progress that Industry 4.0 introduced in 2010, when technologies such as artificial intelligence, IoT, cloud computing and big data augmented reality were gradually implemented and revolutionized in the retail sector (Har et al., 2022), but also with concerns about climate change and new demands from governments and customers for ethical and sustainable products (Mostaghel & Chirumalla, 2021). Digitization and advances in related technologies are driving significant innovation in retail. The pace of change accelerated significantly during the COVID-19 crisis (Mostaghel et al., 2022). A sharp increase in innovation in retail business models to address rising customer expectations (Sorescu et al., 2011), technology adoption, supply chain integration, logistics challenges and digital marketing (Gavrila & Ancillo, 2021). Those retailers who

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were ready and adopted advanced digital business models before the pandemic dramatically widened the gap between leaders and lagging retailers by increasing their market value (Bradley et al., 2021). In addition to digitization and modernization of business models, it is necessary for retail stores to focus primarily on the customer and his satisfaction, which is the main pillar of retail success. The world of commerce consists of both physical and online sales and their combinations. They have the greatest perspective when they are properly connected and complement each other appropriately. Both forms of purchase are popular as long as they can bring an experience to the customer. Since both formats of retail are used nowadays, we decided to analyze the amount of spent money in traditional and online retail based on the characteristics of the consumer. So, we are interested in whether gender, regular income, region in which the consumer lives and economic status have an impact on the amount of money he is willing to spend in a physical store and also in an online environment.

### Literature review

Today's retail is characterized by the presence of information technology as a tool for the process of digitization of this sector. With changing consumer preferences and the growth of e-commerce, many retailers are shrinking their brick-and-mortar stores (Fay et al., 2022). In a modern environment, one of the biggest challenges is to provide the consumer with the most comfortable purchasing process and at the same time maximize their satisfaction (Krymov et al., 2019). Not only ICT, but also online marketing platforms and digital devices characterized by their sophistication are growing exponentially and serve as support for the growth of economic sectors (Tiejun, 2021). According to Kotler, e-commerce can be distinguished: pure online companies (pure-click companies), for which the website is the only way to serve the market. Brick-and-click companies have created their websites as a sales or information complement to existing offline activities (Kotler & Keller, 2013).

In addition to these two types of companies, O2O trading is currently referred to, which differs significantly from "pure click", "research online, purchase offline (ROPO)" and "brick and click". O2O commerce emphasizes the integration of online and offline channels, as well as cooperation in the use of e-commerce and traditional retail, which results in providing consumers with a tailored physical experience. In the case of the ROPO model, consumers view products and reviews online and then make an offline purchase; in this type, there is no communication between the online and offline stores (Yang et al., 2020). The statements in the study conducted by Jiang and Stylos (2021) reveal that the growth of e-commerce was also supported by the blockade during the COVID-19 crisis, when there were changes in consumer patterns and, on the other hand, retailers' offers also changed due to the shift in the use of various digital technologies. Retail companies that provided service innovations were also examined during this period. It is these innovations and their role that are important for research (Pilawa et al., 2022). The goal of implementing innovations in retail is to increase the relative attractiveness of the retail company. Research revealed that it is not important that the retail format (both online and offline space) is able to arouse strong emotions in the consumer during purchases and create a bond with this space (Horáková et al., 2022).

Concerning the consumer perceptions of multichannel retailing by retail type, Lim et al. (2022) found that department and hypermarket consumers have higher expectations of the services they provide, including consistent and reliable product and price information, sales support, flexible payments, and an efficient cross-channel distribution system. The advent of the Internet has brought a lot of challenges for brick-and-mortar stores, starting with the advent of digital online stores. Producers began using both channels (online and offline), forcing brick-and-mortar stores to sell online as well. On the other hand, online retailers have recognized the importance of brick-and-mortar stores in some types of products, such as food and clothing. Offline retailers are investing heavily in leveraging their existing physical retail network to promptly deliver and pick up online orders.

Looking at the competition between Amazon and Walmart, it was found that focusing on faster delivery is not the best strategy for offline retailers when opening online channels to compete with online retailers (Jindal et al., 2021). The Omni-channel model is also beginning to be used more widely in food shopping in Europe and the USA. Evidence suggests that, overall, each comfort property positively influences the response of consumers with different levels of intensity (Vyt et al., 2022). In order for companies to compete in today's multi-channel business context, it is essential that they coordinate their activities across channels and across different phases of the customer's journey and product flow. This requires companies to adopt an integrative approach and address every omnichannel decision from a dual perspective on the demand side, which represents marketing, and on the supply side, which represents traffic (Bijmolt et al., 2021).

According to the STATISTA platform, total sales of retail operations are increasing year on year. In 2020, total retail sales were \$ 23.74 trillion. Subsequently, this volume increased by 9.65% last year compared to 2020. Forecasts for the next years continue to represent a steady, but slightly more modest growth in the volume of spent cash in retail sales (5% growth in 2020, 4.75 in 4.52 4.75 % growth, in 2024 4.85% growth and in 2025 4.13% growth). From the data submitted by the Statista statistical platform, we also found an increase in the worldwide funds used in the field of retail e-commerce. The most significant year-on-year increases (above 25%) were recorded in 2017, 2018 and 2020. The last-mentioned year was marked by the outbreak of COVID-19 and the related pandemic situation, which significantly limited not only the mobility of the population worldwide, but also changed shopping habits. A number of physical outlets were temporarily closed due to the ongoing pandemic, with the exception of essential ones, which operated during all waves of the COVID-19 pandemic.

The COVID-19 pandemic has affected business operations in every industry and sector around the world (Grimmer, 2022). Subsequently, the shopping behavior of consumers who moved to the online space was transformed. If we were to monitor the development of countries' e-commerce revenues and their forecast until 2025, we would find that China has the largest share of e-commerce revenues and the forecast for e-market growth will increase by 8.2% by 2025; the USA ranked second in terms of revenue. The e-commerce growth forecast for this country will increase by 6.1%. European countries should see an increase in e-commerce revenue of 7.3% by 2020 compared to 2020 Year-on-year increases in e-commerce sales since 2021 continue to show an upward trend. In 2022, the volume of funds in the area should increase by more than 12%, in 2023, growth would be more modest, at 10.9%. The next two predicted years should see a slowdown in the growth of e-commerce funds.

According to the EUROSTAT report, the share of Slovak e-shoppers is 68%. The frequencies of their online purchases within the last quarter of 2020 were as follows: 22% of consumers made an online purchase 1 or 2 times, which was the largest share, 3 to 5 times 18%, and 6% or more were bought by 12% of Slovak consumers. In the case of the share with the largest share, it is the United Kingdom (92% of consumers buy online). Moldova was placed at the opposite end of the table, with the smallest share of online purchases (Lone et al., 2021).

## **Methods**

In the current article, the primary data we work with is collected by a questionnaire with 450 respondents from all over the Slovak Republic. We determined the sample size on the basis of a calculation using the Sample Size Calculator, which evaluated the sample size as sufficient at the level of 386 Slovak respondents. We contacted the participants in person, or on an online platform via social networks or e-mail communication. The aim of the questionnaire was to find out how many consumers spent in the offline store and how much in the online store. Based on the data obtained, we want to reveal the existing or

non-existent statistical dependencies between the amount of spent money in traditional retail/online retail and individual characteristics of consumers, such as gender, social status, level of education, regular income or the region in which they live. When using parametric methods falling under inductive statistics, the assumption of normality within the sample is required. We will verify this requirement by scanning the data. If the data did not come from a normal distribution, respectively we cannot verify the homoskedasticity, nonparametric methods are used (Tomšik, 2017).

Of the many methods, the Kolmogorov-Smirnov test is one of the most commonly used normality tests. In a study by Drezner and Turel (2011), mathematical evidence was used to develop normative guidelines for analyst data to assess whether a transformation to normality that satisfies a fairly conservative Kolmogorov-Smirnov test is feasible in the presence of too frequent values. With this decision-making tool, they can know from the outset whether "finding" a transformation to normality that meets the Kolmogorov-Smirnov test is plausible or meaningless, in which case use different statistical approaches or less restrictive assumptions of normality.

The Shapiro-Wilk test is recommended for small samples. This test allows for verifying the agreement of the empirical probability distribution with the normal distribution. Under the null hypothesis, we test whether the random sample comes from a normal distribution. The Shapiro-Wilk test was extended by Royston to large sample sizes (Markechová et al., 2011). We use parametric one-factor analysis of variance (ANOVA) and non-parametric Kruskal-Wallis's test, respectively, to demonstrate homoskedasticity or heteroskedasticity. Kruskal-Wallis is a nonparametric statistical test that evaluates differences between three or more independently selected groups on a single, abnormally distributed continuous variable. Abnormally distributed data (e.g., ordinal or value data) are suitable for the Kruskal-Wallis's test.

In contrast, one-way analysis of variance (ANOVA), which is a parametric test, can be used for a normally distributed continuous variable. The Kruskal-Wallis's test is an extension of the two-group Mann-Whitney U (Wilcoxon rank) test. The Kruskal-Wallis's test is thus a more general form of the Mann-Whitney U test and is a nonparametric version of one-way ANOVA (McKight & Najab, 2010). One-way ANOVA can provide inaccurate estimates of the p-value when data are not normally distributed at all. The Kruskal Wallis test is a nonparametric analog of one-way ANOVA, which does not make assumptions about normality. For asymmetric distributions, the nonparametric Kruskal Wallis test results in higher performance compared to classical one-way ANOVA. Simulation results (Hecke, 2012) show that data analysis is necessary before performing a test for differences in central trends. Although the literature and textbooks report that the F-test is robust to assumption violations, these results show that the power drops significantly. All tests performed were performed in IBM SPSS Statistics Data Editor.

## Results

The first step we had to start with was to automatically recode the quality variables to numeric codes. This was followed by statistical calculations of individual indicators, which included descriptive statistics, normality test and graphical data analysis including histograms and Q-Q plots. We calculated homoskedasticity in the SPSS program based on two tests: Kolmogorov-Smirnov and Shapiro-Wilk test. However, we present only the latter in the paper because the Kolmogorov-Smirnov test is an empirical distribution function in which the theoretical cumulative distribution function of the test distribution is characterized by contrast with the empirical distribution function of the data. The limitation of this test is also its high sensitivity to extreme values, it can have low performance, which is a reason why it should not be considered in the case of normality testing. On the other hand, the Shapiro-Wilk test is based on the correlation between the data and the corresponding normal scores, thus providing better strength. Strength is the most common measure of the value of a normality test, that is, the ability to determine

whether a sample comes from an abnormal distribution. Some academic and scientific authors recommend the Shapiro-Wilk test as the best option for testing data normality (Ghasemi & Zahediasl, 2012). As a null hypothesis, we determined that the individual data came from the normal distribution and the alternative hypothesis to the baseline ( $H_0$ ) was determined that the data did not come from the normal distribution. If the p-value was less than the significance level  $\alpha = 0.05$ ; we performed the One-way ANOVA test.

When verifying the null hypothesis, we actually find out whether the averages of individual groups differ from the overall average only due to chance and we can consider these differences to be negligible, or whether the differences between them are statistically significant and caused by the invalidity of the null hypothesis. If the p-values were greater or less than the specified level of significance, we rejected the null hypothesis, so the data did not come from the normal distribution, and we used Kruskal-Wallis's test. For better clarity and completeness of the results, we have grouped the normal distribution testing for individual factors into one table (Table 1).

In the case of gender, the values were less than the confidence level in both categories (offline store and online store), therefore we accepted  $H_0$  – the data come from a normal distribution. We can see the difference in the results of testing the normal distribution by region. If it is an offline store, the values are larger and smaller than the significance level, therefore we reject  $H_0$  and accept  $H_1$ , that is, the data does not come from a normal distribution. Within the online store, all values are less than 0.05, so we again choose One-way ANOVA.

The economic status factor is characterized by calculation values that are both larger and smaller than the significance level, which ultimately means the rejection of  $H_0$  and the acceptance of the hypothesis  $H_1$  - these are not data from a normal distribution. Next is the factor of the level of education, where we can observe the difference, as was the case with the regions. The data does not come from a normal distribution if we are talking about an offline store.

On the other hand, the data comes from a normal distribution for the online store. Regular income is the last research factor for which it is valid in both cases (offline and online store) that the data come from a normal distribution.  $H_0$  is accepted and subsequently used to determine the existence of an influence between qualitative and quantitative variables.

**Table 1. Test of normality**

	Shapiro-Wilk test of normality					
		Statistics	df	Sig.		
Gender	offline store	Men	0.944	211	0.000	One-way ANOVA
		women	0.938	239	0.000	
	online store	men	0.879	211	0.000	One-way ANOVA
		women	0.955	239	0.000	
Region	offline store	BA	0.934	52	0.006	Kruskal-Wallis Test
		BB	0.819	16	0.005	
		KE	0.908	27	0.020	
		PO	0.922	183	0.000	
		TN	0.813	12	0.013	
		TT	0.912	109	0.000	
	online store	ZA	0.954	50	0.051	One-way ANOVA
		BA	0.903	52	0.000	
		BB	0.883	16	0.043	
		KE	0.888	27	0.007	
		PO	0.958	183	0.000	
		TN	0.832	12	0.022	
		TT	0.907	109	0.000	
ZA	0.897	50	0.000			
offline store	retiree	0.969	59	0.142		

Economic status		maternity leave	0.864	12	0.055	Kruskal-Wallis Test
		unemployed	0.907	9	0.294	
		student	0.858	199	0.000	
		employed	0.926	171	0.000	
	online store	retiree	0.700	59	0.000	Kruskal-Wallis Test
		maternity leave	0.927	12	0.349	
		unemployed	0.889	9	0.195	
		student	0.865	199	0.000	
Education	offline store	employed	0.923	171	0.000	Kruskal-Wallis Test
		Bachelor	0.926	123	0.000	
		Master	0.943	35	0.070	
		HS graduation	0.910	202	0.000	
		PhD.	0.967	6	0.868	
	online store	apprenticeship certificate	0.979	84	0.189	One-way ANOVA
		Bachelor	0.884	123	0.000	
		Master	0.932	35	0.032	
		HS graduation	0.936	202	0.000	
		PhD.	0.765	6	0.028	
Income (regular)	offline store	apprenticeship certificate	0.843	84	0.000	One-way ANOVA
		No	0.962	147	0.000	
	online store	Yes	0.975	303	0.000	One-way ANOVA
		No	0.965	147	0.001	
		Yes	0.914	303	0.000	One-way ANOVA

Source: own processing with SPSS

However, it is also necessary to take into account graphical methods, which are also a suitable alternative for evaluating normality, especially in the case of Q-Q plots. When we received p-values and then determined the tests that we will use for individual data, we tested hypotheses or dependencies of individual variables based on the characteristics of respondents such as gender, region in which respondents live, social status, level of education and income, when we determined as a null hypothesis that there is a dependence between spent money in traditional retail (or e-shop), resp. the amount of money spent is affected by a specific qualitative variable (gender, region, social status, level of education attained or regular income). Otherwise, as an alternative hypothesis ( $H_1$ ) to the null hypothesis, we determined the independence of the variables, i.e., the amount of money spent is not affected by the qualitative variable. The stated p-values are shown in Table 2, which also contains the retention/rejection of the null hypothesis.

The test results show that the gender factor has an effect on the amount of money spent in a traditional retail store and also during online shopping. For the other factors, the null hypothesis was rejected, i.e., an alternative hypothesis ( $H_1$ ) was adopted, which states that the selected factor does not affect the amount of money spent (Table 2). When testing the hypotheses, our starting point was the previous Table 1, in which, according to the findings about the normal /non-normal/ distribution of the data, we made tests that we will use to determine the rejection or acceptance of the null hypothesis. In all cases, the null hypothesis is established, so that the factor has no effect on the variable and thus the mean values are the same in all categories. It is opposed by the alternative hypothesis, which states that there is at least one change in the factor that affects the variable. The level of significance is at 0.05.

The gender factor is the only one of the investigated factors that does not affect the amount of money that the consumer spends in an offline or online store. We do not reject  $H_0$  in this case. In all other cases, the influence of the factor on the volume of spent money was present, so the null hypothesis was rejected and the alternative hypothesis was accepted.

**Table 2. Statistical significance**

<b>Hypothesis testing</b>				
Gender	offline store	One-way ANOVA	p-value 0.822	Retain the null hypothesis
	online store	One-way ANOVA	p-value 0.233	Retain the null hypothesis
Region	offline store	Kruskal-Wallis Test	p-value 0.018	Reject the null hypothesis
	online store	One-way ANOVA	p-value 0.030	Reject the null hypothesis
Economic status	offline store	Kruskal-Wallis Test	p-value 0.000	Reject the null hypothesis
	online store	Kruskal-Wallis Test	p-value 0.000	Reject the null hypothesis
Education	offline store	Kruskal-Wallis Test	p-value 0,000	Reject the null hypothesis
	online store	One-way ANOVA	p-value 0.002	Reject the null hypothesis
Income (regular)	offline store	One-way ANOVA	p-value 0.000	Reject the null hypothesis
	online store	One-way ANOVA	p-value 0.000	Reject the null hypothesis

Source: own processing with SPSS

## Discussion

Domestic authors dealt with the influence of factors on the retail format when testing showed that demographic characteristics have an impact on consumer types of consumers (Trembošová et al., 2021). The rate of this effect is low and moderately low (Mitríková et al., 2021). Others (Gajanová & Nadanyiova, 2020) studied the online shopping behavior of Slovak consumers. Some research also focused on the analysis of consumer behavior and the development of online shopping during the pandemic in Slovakia (Kukura, 2021; Vernerová, 2021)

However, studies with a similar methodology are absent in Slovakia. Many authors in the scientific community deal with the dependence of spending money on retail by type of consumer goods. Some of the foreign authors dealt with the influence of demographic factors in fashion retail (Pentecost & Andrews, 2010), these factors are gender and generational cohorts. Using regression analysis, the results of the study showed that there was a significant effect of gender on weekly, monthly and annual expenses. Women shop more often and are significantly different from male respondents. A study was also conducted on the purchasing orientation of American college students in the field of fashion when there was a gender difference between the participants (Seock & Bailey, 2008).

Regarding the influence of factors on buying in traditional or Internet retail, based on research carried out across the countries of the world, the authors in India (Nagra & Gopal, 2013) focused on the dependence of factors in online shopping. ANOVA results on consumer response across different demographic factors show that gender affects internet ownership and consumer online shopping frequency is a demographic variable that does not affect any of the variables examined. The overall results show that the respondents perceive online shopping positively, which can be considered as clear evidence of the increase in online shopping.

According to the research, the frequency of online shopping was still relatively low in this country. In the case of food retailing, it was found (Prasad & Aryasri, 2011) that shopper age, gender, occupation, education, monthly household income, family size and store distance are significantly related to the retail format choice decision. Moon et al. (2021) in

their publication they find a certain connection between online shopping and the level of education. Consumers with higher education bought more online and were also more satisfied.

## Conclusions

The present has brought changes in consumers' expectations, which means that their demands are constantly increasing in connection with the development of the situation in the markets. It is not just a matter of meeting a primary need, but consumers expect more from retailers - they want to choose a product or service, choose the way or format they will buy through, and also choose a retailer that expresses loyalty. A large percentage of retailers were most aware of this fact during the COVID-19 pandemic and began to look for new ways to gain consumer interest through the use of new retail formats.

The theoretical contribution may envisage an extensive literary research and discussion as a basis for the issues studied, which have been enriched by the knowledge of not only domestic but also foreign authors. Investigated factors - region, level of education, economic status and regular income have an impact on the amount of funds spent in traditional and online stores. During the testing of the hypotheses, we found that the only factor of gender has no influence on the variable. The paper has practical implications mainly in the complexity of spending money in a brick-and-mortar retail store and online shopping. It brings a better understanding of retail formats and their use by Slovak consumers in the context of changing consumer characteristics such as gender, level of education, social status, regions in which they live or regular income. These findings can help retailers implement a more effective retail strategy, moving from offline to online, and gain a competitive advantage.

There are some limitations in this study. We can observe the limitations of the research mainly in the fact that we did not take into account the age of the respondents when determining the dependencies. It is the generational stratification that we will deal with in future research on consumer behavior in retail. In addition to generational stratification in relation to consumer behavior, we would like to focus in the future on determining the prediction of this type of behavior in the Slovak Republic.

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## References

- Bijmolt, T. H., Broekhuis, M., De Leeuw, S., Hirche, C., Rooderkerk, R. P., Sousa, R., & Zhu, S. X. (2021). Challenges at the marketing–operations interface in omni-channel retail environments. *Journal of Business Research*, 122, 864-874. <https://doi.org/10.1016/j.jbusres.2019.11.034>
- Bilková, K., & Križan, F. (2013). Koncentrácia podnikateľských subjektov v maloobchode v slovenských mestách. *Geographia Cassoviensis*, 7(1), 31-44.
- Bradley, C., Kohli, S., Kuijpers, D., & Rüdiger Smith, T. (2021, July 8). Why retail outperformers are pulling ahead. *McKinsey & Company*. <https://tinyurl.com/mu2p9uje>
- Drezner, Z., & Turel, O. (2011). Normalizing variables with too-frequent values using a Kolmogorov–Smirnov test: A practical approach. *Computers & Industrial Engineering*, 61(4), 1240-1244. <https://doi.org/10.1016/j.cie.2011.07.015>
- Fay, S., Feng, C., & Patel, P. C. (2022). Staying small, staying strong? Retail store underexpansion and retailer profitability. *Journal of Business Research*, 144(1), 663-678. <https://doi.org/10.1016/j.jbusres.2022.02.022>



- Gajanova, L., & Nadanyiova, M. (2020). Analysis of consumer behaviour in the networked environment: case study of the Slovak Republic. In W. Sroka (Ed.), *Perspectives on consumer behaviour* (pp. 123-146). Springer. [https://doi.org/10.1007/978-3-030-47380-8\\_6](https://doi.org/10.1007/978-3-030-47380-8_6)
- Gavrila, S. G., & de Lucas Ancillo, A. (2021). Spanish SMEs' digitalization enablers: E-Receipt applications to the offline retail market. *Technological Forecasting and Social Change*, 162(1), 120381. <https://doi.org/10.1016/j.techfore.2020.120381>
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International journal of endocrinology and metabolism*, 10(2), 486. <https://doi.org/10.5812/ijem.3505>
- Grimmer, L. (2022). Lessons from the COVID19 pandemic: The case of retail and consumer service firms. *Journal of Retailing and Consumer Services*, 68, 103012. <https://doi.org/10.1016/j.jretconser.2022.103012>
- Har, L. L., Rashid, U. K., Te Chuan, L., Sen, S. C., & Xia, L. Y. (2022). Revolution of retail industry: From Perspective of retail 1.0 to 4.0. *Procedia Computer Science*, 200(1), 1615-1625. <https://doi.org/10.1016/j.procs.2022.01.362>
- Hecke, T. V. (2012). Power study of anova versus Kruskal-Wallis test. *Journal of Statistics and Management Systems*, 15(2-3), 241-247. <https://doi.org/10.1080/09720510.2012.10701623>
- Horáková, J., Uusitalo, O., Munnukka, J., & Jokinen, O. (2022). Does the digitalization of retailing disrupt consumers' attachment to retail places? *Journal of Retailing and Consumer Services*, 67, 102958. <https://doi.org/10.1016/j.jretconser.2022.102958>
- Jiang, Y., & Stylos, N. (2021). Triggers of consumers' enhanced digital engagement and the role of digital technologies in transforming the retail ecosystem during COVID-19 pandemic. *Technological Forecasting and Social Change*, 172(1), 121029. <https://doi.org/10.1016/j.techfore.2021.121029>
- Jindal, R. P., Gauri, D. K., Li, W., & Ma, Y. (2021). Omnichannel battle between Amazon and Walmart: Is the focus on delivery the best strategy? *Journal of business research*, 122(1), 270-280. <https://doi.org/10.1016/j.jbusres.2020.08.053>
- Kotler, P., & Keller, K. L. (2013). *Marketing management*. Grada.
- Krymov, S., Kolgan, M., Suvorova, S., & Martynenko, O. (2019). Digital technologies and transformation of modern retail. *IOP Publishing*, 497(1), 012126. <https://doi.org/10.1088/1757-899X/497/1/012126>
- Kukura, M. (2021). Analysis of shopping behavior in the furniture segment during the Covid-19. *Marketing Identity*, 9(1), 417-425.
- Lim, X. J., Cheah, J. H., Dwivedi, Y. K., & Richard, J. E. (2022). Does retail type matter? Consumer responses to channel integration in omni-channel retailing. *Journal of Retailing and Consumer Services*, 67, 102992. <https://doi.org/10.1016/j.jretconser.2022.102992>
- Lone, S., Harboul, N., & Weltevreden, J. W. J. (2021). *2021 European e-commerce report*. Ecommerce Europe. <https://tinyurl.com/msapvw4m>
- Markechová, D., Stehlíková, B., & Tirpáková, A. (2011). *Štatistické metódy a ich aplikácie*. UKF.
- McKight, P. E., & Najab, J. (2010, January 30). Kruskal-wallis test. *The corsini encyclopedia of psychology*. <https://doi.org/10.1002/9780470479216.corpsy0491>
- Mitříková, J., Marchevská, M., Kozárová, I., Bezpartochnyi, M., Britchenko, I., & Vazov, R. (2021). Current shopping trends in Slovakia. *Medzinárodný vedecký časopis Mladá veda. Young Science*, 9(3), 1-18. <https://doi.org/10.2139/ssrn.3960087>
- Moon, J., Choe, Y., & Song, H. (2021). Determinants of consumers' online/offline shopping behaviours during the COVID-19 pandemic. *International journal of environmental research and public health*, 18(4), 1593. <https://doi.org/10.3390/ijerph18041593>
- Mostaghel, R., & Chirumalla, K. (2021). Role of customers in circular business models. *Journal of Business Research*, 127(1), 35-44. <https://doi.org/10.1016/j.jbusres.2020.12.053>
- Mostaghel, R., Oghazi, P., Parida, V., & Sohrabpour, V. (2022). Digitalization driven retail business model innovation: Evaluation of past and avenues for future research

- trends. *Journal of Business Research*, 146, 134-145. <https://doi.org/10.1016/j.jbusres.2022.03.072>
- Nagra, G., & Gopal, R. (2013). A study of factors affecting online shopping behavior of consumers. *International journal of scientific and research publications*, 3(6), 1-4.
- Pentecost, R., & Andrews, L. (2010). Fashion retailing and the bottom line: The effects of generational cohorts, gender, fashion fanship, attitudes and impulse buying on fashion expenditure. *Journal of Retailing and Consumer Services*, 17(1), 43-52. <https://doi.org/10.1016/j.jretconser.2009.09.003>
- Pilawa, J., Witell, L., Valtakoski, A., & Kristensson, P. (2022). Service innovativeness in retailing: Increasing the relative attractiveness during the COVID-19 pandemic. *Journal of Retailing and Consumer Services*, 67(1), 102962. <https://doi.org/10.1016/j.jretconser.2022.102962>
- Prasad, C. J., & Aryasri, A. R. (2011). Effect of shopper attributes on retail format choice behaviour for food and grocery retailing in India. *International Journal of Retail & Distribution Management*, 39(1), 68-86. <https://doi.org/10.1108/09590551111104486>
- Seock, Y. K., & Bailey, L. R. (2008). The influence of college students' shopping orientations and gender differences on online information searches and purchase behaviours. *International Journal of Consumer Studies*, 32(2), 113-121. <https://doi.org/10.1111/j.1470-6431.2007.00647.x>
- Sorescu, A., Frambach, R. T., Singh, J., Rangaswamy, A., & Bridges, C. (2011). Innovations in retail business models. *Journal of retailing*, 87(1), S3-S16. <https://doi.org/10.1016/j.jretai.2011.04.005>
- Tiejun, Z. (2021). Implementation status and development thinking on "cloud national examination" in China under the situation of "online anti-COVID-19 epidemic". *Technological Forecasting and Social Change*, 162(1), 120322. <https://doi.org/10.1016/j.techfore.2020.120322>
- Tomšík, R. (2017). *Kvantitatívny výskum v pedagogických vedách. Úvod do metodológie a štatistického spracovania*.
- Trembošová, M., Dubcová, A., Nagyová, L., & Cagaňová, D. (2021). The specifics of the retail network and consumer shopping behaviour in selected regional towns of west Slovakia. In D. Caganova, N. Hornakova, A. Pusca & P.F. Cunha (Eds.), *Advances in Industrial Internet of Things, Engineering and Management* (pp. 39-74). Springer. [https://doi.org/10.1007/978-3-030-69705-1\\_3](https://doi.org/10.1007/978-3-030-69705-1_3)
- Vernerová, D. (2021, May 19-20). *Impact of the pandemic COVID-19 on consumer shopping behaviour in Slovakia* [Paper presentation]. 21st International Joint Conference "Central and Eastern Europe in the Changing Business Environment", Prague, Czech Republic. <https://doi.org/10.18267/pr.2021.krn.4816.21>
- Vyt, D., Jara, M., Mevel, O., Morvan, T., & Morvan, N. (2022). The impact of convenience in a click and collect retail setting: A consumer-based approach. *International Journal of Production Economics*, 248, 108491. <https://doi.org/10.1016/j.ijpe.2022.108491>
- Yang, Y., Gong, Y., Land, L. P. W., & Chesney, T. (2020). Understanding the effects of physical experience and information integration on consumer use of online to offline commerce. *International Journal of Information Management*, 51(1), 102046. <https://doi.org/10.1016/j.ijinfomgt.2019.102046>