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# Analysis of the productivity of the retail sector of the Republic of Serbia regarding the COVID-19 pandemic

## Анализа продуктивности сектора малопродаје Републике Србије са освртом на COVID-19 пандемију



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**Abstract:** The sector that has suffered the highest market turbulence caused by the COVID-19 pandemic is the retail sector. Evidence for this can be found in the great shocks on the demand side, primarily for essential products necessary in conditions of self-isolation and quarantine. The principal question is whether the sharp increase in demand, restrictions on the operation of retail facilities, strict epidemiological measures among both employees and consumers, tightened safety protocols, mandatory protective equipment etc., have affected the business, primarily of small retailers. In this regard, the aim of the paper is to analyze productivity between key groups of retailers in the market of Serbia with special reference to the assessment of productivity in the period before and during the COVID-19 pandemic. The results showed statistically significant differences existed between the productivity of local and regional retail chains in relation to the leading retail chains. It was confirmed that the average productivity of associated retailers is higher than that of independent (local) retailers. Also, there are differences in productivity per employee between the observed groups. However, the results showed no statistically significant difference in the degree of productivity of the retail sector in the period before and during the COVID-19 pandemic. The obtained results suggest that the retail supply chain has stabilized after the first months of the pandemic and shown its complete flexibility to sudden market shocks. Guidelines for future research are included in the paper.

**Keywords**: retailing, productivity, employee, COVID-19 pandemic
**JEL classification:** L81, E24, O40

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**Сажетак:** Сектор који је претрпео највеће турбуленције на тржишту изазване COVID-19 пандемијом је сектор малопродаје. О томе сведоче велики шокови на страни тражње првенствено за есенцијалним производима неопходним у условима самоизолације и карантина. Кључно питање је да ли су се нагли раст тражње, ограничавања рада малопгодајних објеката, строге епидемиолошке мере како међу запосленима тако и међу потрошачима, појачани протоколи безбедности, обавезна заштитна опрема, итд., одразили на пословање, превасходно малих малопродаваца. Стим у вези, циљ овог рада је да се анализира продуктивност између кључних група малопродаваца на тржишту Републике Србије са посебним освртом на оцену продуктивности у периоду пре и током COVID-19 пандемије. Резултати су показали постојање статистички значајних разлика између продуктивности локалних и регионалних малопродајних ланаца у односу на водеће малопродајне ланце. Потврђено је да је просечна продуктивност удружених малопродаваца виша у односу на независне (локалне) малопродавце, као и да постоје разлике у продуктивности по запосленом између посматраних група. Међутим, резултати су показали да не постоји статистички значајна разлика у степену продуктивности сектора малопродаје у периоду пре и током COVID-19 пандемије. Добијени резултати сугеришу да се ланац снабдевања малопродаје након првих месеци пандемије, стабилизовао и показао своју потпуну флексибилност на изненадне тржишне шокове. Смернице за будућа истраживања су наведене у раду.
**Кључне речи:** малопродаја, продуктивност, запослени, COVID-19 пандемија.
**ЈЕЛ класификација:** L81, E24, O40.

## Introduction

The primary task of every national economy is to help economic entities create new value by creating favorable conditions for businesses and their maintenance over time (Leković, 2016). The biggest obstacle to establishing a market-friendly business environment in Serbia, as in other transition countries, is the problem of increasing market centralization. In particular, centralization is emphasized in the retail sector, and some authors who measure it by using the ratio of centralization (CR) define it as high ranging from 0.85 to 1.22 (Vukmirović & Marić, 2017). Similarly, Petković, Lovreta, Pindžo, & Pešić asses retail rating as moderately centralized as measured by the Herfindahl-Hirschman Index (HHI), which is 1.256 points for Serbia. However, the same authors predict a significant increase in the value of HHI in the coming years (Petković et al., 2016).

Excessive centralization of the retail market disrupts the desired concentration of retailers in one region and thus harms other positive economic effects. Foreign retail chains contribute to centralization in their tendency to achieve better business results in a shorter period. They enter the markets of developed regions, which further disrupts the existing market distribution. The inhomogeneous retail market entails the growth of unemployment in rural areas and the migration of the population to economic centers, causing the lack of certain products and services in the available assortments.

The problem of centralization being a ballast for retail in Serbia was accompanied by the global pandemic caused by the COVID-19 virus. The first registered case of coronavirus in Serbia was recorded on March 6, 2020, and as a consequence, on March 15, a state of emergency was declared on the territory of the entire country (Official Gazette of RS 29/2020). In addition to a state of emergency, the Government of the Republic of Serbia adopted several measures regulating the rules of conduct and restricting the movement of the population, such as self-isolation and quarantine, social distancing, mandatory wearing of masks and other protective equipment (gloves), use of disinfectant barriers and glass barriers, et cetera. In addition, for 40 days, measures were introduced that instantly prevented the work of companies and entrepreneurs in the service sector, except for retail (Official Gazette of RS 39/2020).

Consumers reacted to these measures by accumulating stocks in panic, especially products essential in conditions of self-isolation and quarantine, such as flour, oil, rice, yeast, meat and meat products, bottled water, chemicals, hygiene supplies, medical masks, medicines, et cetera. (Marić & Đurković-Marić, 2021). The panic in consumer behavior caused shocks in the market with an inconceivable increase in demand for these categories of goods (Stojadinović-Jovanović, Krstić, & Marković, 2020). It is interesting to note that the situation, which requires measures of social distancing and prohibiting contact, acted as a driver for retailers in the market of the Republic of Serbia to redirect much of their activities to e-retail and purchasing products and services via the Internet. According to expert estimates (Rašić, 2020), electronic retail records 50% higher growth compared with the months before the crisis and drastically higher growth in 2020 compared to 2019.

*The subject of this paper* is to define the impact of the consolidation and centralization of the retail market on its productivity, with an emphasis on the consequences of the COVID-19 pandemic for all participants in the retail sector. *The aim of this paper* is to analyze productivity between key groups of retailers in the market of the Republic of Serbia with special reference to the assessment of productivity in the period before and during the COVID-19 pandemic. The research covers the business activities of key retailers in the market of Serbia, which are divided into three statistically significant units (strata): (1) ten leading retail chains in the Serbian market, (2) retail companies that are members of the Domestic Trade Chain (DTC) and (3) independent retail chains or local and regional retailers. Their productivity and profitability were investigated during the stated period before (2016-2019) and the period (2020) of the COVID-19 pandemic. *The obtained results* show significant deviation in terms of productivity, especially between local and regional retail chains concerning the leading retail chains, and significant differences in profitability per employee between the observed groups. The study did not confirm a statistically significant impact of the COVID-19 pandemic on business results. *The practical significance of the paper* is reflected in the fact that it indicates to the management of trade companies where the crucial problems for achieving better business results lie and the measures and incentives that local and regional retailers must take to raise their productivity and profitability.



## 1. Theoretical background

In academic studies, there are two opposing views regarding the justification of a centralized retail market. Some authors argue that the centralization of the retail market through the strengthening of vertical integrations leads to increased business efficiency and improved competitive position of retailers in the market. As a result, big retail chains have more efficient coordination of activities and cooperation between all members of the supply chain and a reduction in the costs of ownership change. (Rickert, Schain, & Stiebale, 2018).

Proponents of centralization point out that consolidation enables large retail chains to achieve higher levels of gross turnover and operating income, the ability to influence or even determine the level of competitive prices, providing super discounts on quantity, and providing promotional discounts as additional sales revenue, et cetera. (Li et al., 2016; Yoon, 2016). On the other hand, small retailers face serious problems reflected in lower turnover and lower total earnings per unit of product, lack of bargaining power, non-competitiveness, higher prices, higher margins, etc. (Vukmirović & Marić, 2017).

In Serbia, the retail market is focused on large centers, such as Belgrade, Novi Sad, Niš, etc. The centralization ratio (CR), defined as the ratio of each macro indicator concerning the average values for a given indicator (Bhattacharya, 2003), shows certain deviations for the market of Serbia. The north part of the country and AP Vojvodina show the CR value, which, in the last five years, was within the interval from 0.98 to 1.04 for the gross turnover of retailers, from 1.01 to 1.06 for the consumer basket, and about 0.85 for the number of population (a result closer to a score of 1.00 indicates a more homogeneous market). The results show that the CR of the city of Belgrade in the observed period ranges from 1.46 to 1.48, which is one index point higher than the value of CR for Central-Southern Serbia, which ranges from 0.59 to 0.62 measured by the realized turnover of key retailers. When it comes to the consumer basket, for the city of Belgrade CR = 1.03 in all years, in Vojvodina it ranges from 1.01 to 1.06, while in Central-Southern Serbia it is slightly below the ideal value and amounts to 0.91 to 0.95.

In line with the greater degree of centralization of the domestic retail market, the increase in the market share of foreign retail chains leads to a change in the balance of power between local-national and international (global) retail chains. The most commonly used supply chain model of foreign retail chains can be presented with a ratio of 80:20, which indicates that the range of these retailers includes a maximum of 20% of products from local and national markets, and 80% of the total range are products produced by foreign manufacturers. The growing share of products of foreign origin has a high negative impact primarily on the business of local, regional, and national retailers. The reasons for that are the impossibility of gaining advantages at purchase prices for products of foreign origin due to a lower volume of purchases from foreign retail chains, as well as exclusive agreements between foreign retail chains and their suppliers which prevent the supply of competing retailers. This triggers a negative spiral of declining revenues and profitability, which in the long run significantly reduces or eliminates the possibility of applying low price policies in response to price competition from foreign retailers and manufacturers.

It turns out that the homogeneity and stability of the market are important, especially for local and national producers and retailers to be able to precisely define the projected business income and target market segment. In addition to the inhomogeneity, the balance in the domicile retail market was further disturbed by the sudden global COVID-19 pandemic. At the beginning of the pandemic (March-April, 2020), the retail sector in some categories, such as consumer goods and goods essential for quarantine and self-isolation periods (for example, meat, rice, flour, milk, canned food, oil, bottled water, etc.), recorded significant growth rates. It is estimated that the total turnover of consumer goods in retail stores in that period in the Republic of Serbia was 100% higher than in February, and almost 50% higher compared to the same period in 2019, primarily as a result of the enormous shock on the demand side, and the present fear among consumers of store closures. As a result, sales tripled and there were huge gaps on the demand side, empty shelves in stores, and a lack of some product categories. Demand was stabilized at the beginning of May 2020, when consumers realized that the stocks of basic foodstuffs were provided and that the assortment of products in retail stores was stable (Zrnić et al., 2021). It is necessary to mention that the decision on the state of emergency and the introduction of restrictions on work in the services sector did not apply to large retail chains that continued to supply the population without hindrance. The assumption is that after the initial shock, the productivity and profitability of the retail sector were saved. At the same time, the minimal level of demand for technical equipment and devices, footwear and clothing, appliances, furniture, and cars was offset by increased demand for food products and rapid growth in e-commerce and product placement through e-channels and e-retail.

With regards to the abovementioned, it is necessary to analyze how the enlargement of the retail market affects the productivity and profitability of trade companies and how the COVID-19 pandemic affected their business. In particular, it is necessary to compare the business result according to the most significant strata in retail, namely: leading retail chains, members of the Domestic Trade Chain (DTL), and local and regional retailers.

## 2. Methodology

### 2.1. Aim of research and research hypotheses

The research aims to assess productivity and profitability among key groups of retailers in the market of the Republic of Serbia in the period before and during the COVID-19 pandemic. Modeled according to some previous research as key groups of retailers in the domestic market, ten key retail chains, retail companies that are members of the Domestic Trade Chain (DTC), and independent retailers or local and regional retailers were chosen. Based on the set goal and the research sample, four research hypotheses were defined:

$H_1$: There is a statistically significant difference in productivity (income per employee) between the observed groups of retailers in the market of the Republic of Serbia.

$H_2$: The average productivity of associated retailers is higher than that of independent (local and regional) retailers.

$H_3$: There is a statistically significant difference in productivity in 2020 compared to the previous period before the outbreak of the COVID-19 pandemic.

$H_4$: There is a statistically significant difference in profitability per employee between the observed groups of retailers in the market of the Republic of Serbia.

### 2.2. Research variables

The set hypotheses were examined using variables included in the research. These are independent grouping variables and dependent interval variables (indicators of profitability and productivity of trading companies). An independent, grouping variable is the size of a trading company operating on the market of the Republic of Serbia. Within this research, and following the set hypotheses, trade companies are divided into 3 statistically significant groups (strata). The number of trade companies in each stratum is uniform: leading retail chains - 10 companies, DTC - 11 companies, and local and regional retailers - 14 companies. Dependent variables are of the interval type of measurement and represent indicators of the company's profitability in the previous four years (2017-2020), individually by years and in total. Profitability measures of retail companies (Lukić, 2010) include net profit, operating income, number of employees, net profit per employee, and operating income per employee (Table 1).

## 2.3. Research sample

The research was conducted on a sample of 35 trade companies in the retail sector of the Republic of Serbia. In the sample structure, the leading retail chains participate with 28.6%, trade companies, members of DTC with 31.4%, and small independent retailers with 40%. The data were collected by analyzing the financial statements on profitability. They were taken from the website of the Business Registers Agency of the Republic of Serbia (BRA) and included the years from 2017 to 2020. The key indicators taken into consideration are business (gross) income, net profit, and the number of employees. Data collection was performed during the first quarter of 2022. The detailed structure of the research sample and collected data on retailers in the domicile market are presented in Table 1.

*Table 1: Structure of the research sample*

| Order No. | Retailer's name | Business income (in bill. RSD) | | | | Net profit (in bill. RSD) | | | | Average no. of employees |
|---|---|---|---|---|---|---|---|---|---|---|
| **Leading retailers** | | **2017** | **2018** | **2019** | **2020** | **2017** | **2018** | **2019** | **2020** | **2017/20** |
| 1 | Lidl | 7.352 | 11.470 | 37.851 | 57.014 | -3.284 | -5.506 | -1.986 | 1.138 | 1.454 |
| 2 | Delhaize | 94.884 | 100.488 | 104.869 | 111.485 | 4.264 | 2.666 | 5.175 | 3.931 | 12.196 |
| 3 | MercatorS | 90.748 | 79.549 | 78.465 | 79.966 | -6.852 | -1.662 | -2.158 | -5.478 | 8.121 |
| 4 | Aman | 19.039 | 19.649 | 21.811 | 24.965 | 457 | 420 | 106 | 627 | 2.560 |
| 5 | Univerexport | 16.913 | 18.819 | 20.262 | 23.011 | 53 | 31 | 79 | 367 | 2.249 |
| 6 | DIS | 22.623 | 20.688 | 21.325 | 21.279 | 131 | 40 | 158 | 100 | 1.285 |
| 7 | Veropulos | 5.390 | 5.638 | 5.969 | 6.558 | 351 | 300 | 383 | 578 | 555 |
| 8 | Metro | 26.606 | 26.531 | 25.068 | 22.351 | -203 | -22 | -139 | -20 | 1.245 |
| 9 | Gomeks | 11.728 | 12.972 | 14.275 | 16.568 | 250 | 226 | 15 | 218 | 1.904 |
| 10 | Quattro Company | 6.322 | 7.044 | 7.973 | 8.927 | 76 | 132 | 76 | 317 | 817 |
| **Domestic Trade Chain** | | **2017** | **2018** | **2019** | **2020** | **2017** | **2018** | **2019** | **2020** | **2017/20** |
| 11 | Senta promet | 3.250 | 3.619 | 3.960 | 4.164 | 66 | 63 | 65 | 105 | 617 |
| 12 | Persu | 7.242 | 7.678 | 9.170 | 9.810 | 46 | 62 | 38 | 54 | 948 |
| 13 | Morava Kragujevac | 2.325 | 2.412 | 2.646 | 2.825 | 55 | 41 | 30 | 83 | 278 |
| 14 | Vum Šabac | 1.777 | 1.869 | 2.033 | 2.409 | 9 | 10 | 14 | 18 | 360 |
| 15 | Tekijana Kladovo | 2.971 | 3.115 | 3.135 | 3.194 | 97 | 116 | 88 | 151 | 445 |
| 16 | VP Dima | 1.589 | 1.845 | 2.093 | 2.348 | 38 | 46 | 58 | 119 | 173 |
| 17 | Proleter G. Milanovac | 1.801 | 2.376 | 2.707 | 3.143 | 42 | 43 | 49 | 72 | 327 |
| 18 | Styline Požarevac | 719 | 815 | 890 | 910 | 6 | 12 | 25 | 26 | 103 |
| 19 | Kastrum | 1.192 | 1.202 | 1.327 | 1.359 | 28 | 24 | 25 | 40 | 197 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | Podunavlje AD | 1.749 | 1.872 | 1.970 | 2.074 | 11 | 16 | 13 | 8 | 331 |
| 21 | Europrom Valjevo | 4.265 | 4.669 | 5.021 | 5.501 | 208 | 199 | 246 | 256 | 574 |
| **Independent retailers** | | **2017** | **2018** | **2019** | **2020** | **2017** | **2018** | **2019** | **2020** | **2017/20** |
| 22 | Aroma | 3.840 | 4.927 | 5.498 | 5.427 | -131 | -79 | -45 | -248 | 865 |
| 23 | Soulfood | 4.849 | 5.117 | 5.117 | 5.144 | 78 | 98 | 52 | 119 | 473 |
| 24 | Sinagoga Sombor | 3.868 | 4.164 | 4.591 | 5.590 | 135 | 87 | 126 | 246 | 176 |
| 25 | Trnava Kragujevac | 9.096 | 9.929 | 10.404 | 11.563 | 137 | 50 | 64 | 3 | 865 |
| 26 | Orion Leskovac | 2.116 | 2.031 | 66 | 0 | 34 | 31 | -102 | -11 | 170 |
| 27 | ES Komerc Prijepolje | 1.725 | 1.739 | 1.888 | 1.943 | 19 | 47 | 31 | 104 | 312 |
| 28 | Fortuna market | 2.706 | 2.829 | 2.968 | 3.224 | 120 | 86 | 137 | 177 | 445 |
| 29 | Podunavlje Beočin | 1.749 | 1.872 | 1.970 | 2.074 | 11 | 16 | 13 | 8 | 331 |
| 30 | Mikromarket | 3.299 | 4.732 | 5.596 | 6.156 | 141 | 158 | 237 | 257 | 795 |
| 31 | Čutura Prokuplje | 2.214 | 2.195 | 2.319 | 2.472 | 103 | 134 | 86 | 112 | 452 |
| 32 | VIVA 92 Kruševac | 3.157 | 3.646 | 3.967 | 673 | 18 | 35 | 38 | 37 | 119 |
| 33 | TIS Mitrovic Zaječar | 458 | 578 | 647 | 720 | 2 | 1 | 1 | 0 | 109 |
| 34 | TSV Brave Beograd | 2.850 | 2.944 | 2.886 | 3.017 | 33 | 38 | 34 | 58 | 523 |
| 35 | Transkom 94 Šabac | 2.778 | 2.895 | 3.035 | 3.038 | 54 | 49 | 57 | 65 | 505 |

*Source: the authors' calculation*

## 2.4. Data processing method

The collected data were processed by the statistical package SPSS 20. The accuracy of the set hypotheses was tested by different statistical methods, appropriate to the set hypotheses. One-way analysis of variance (ANOVA) and Scheffe's Post Hoc test were used to test statistically significant differences in productivity. Scheffe's Post Hoc test and T-test for independent samples were used to examine average productivity. The consequences of the COVID-19 pandemic were analyzed using the T-test for dependent samples, and the profitability between the observed groups was tested based on One-way analysis of Variance (ANOVA) and Scheffe's Post Hoc test.

## 3. Research results

To test the first Hypothesis **H₁**, we examined whether there is a statistically significant difference in productivity, that is, in income per employee between the observed groups of trading companies. The difference between the groups was examined by One-way analysis of variance (ANOVA) test. The categorical, independent variable was the group to which the enterprise belongs. The dependent variable was operationalized as the average income per employee in the period from 2017 to 2020.

Table 2 shows the productivity (arithmetic mean and standard deviation) for each group of retailers in the sample. Leading retail chains scored the highest productivity. They are followed by DTC members and, finally, local and regional retail chains.

*Table 2: Descriptive statistics for the productivity value concerning the type of trading company*

| | | Mean | SD |
|---|---|---|---|
| Productivity (000. RSD) | Leading retail chains | 12.549 | 5.196 |
| | DTC members | 10.873 | 8.043 |
| | Independent retailers | 7.905 | 2.187 |
| | **Total** | **10.413** | **6.136** |

*Source: the authors' calculation*



Based on the analysis results and the obtained indicators, it can be concluded that the observed difference between the groups is statistically significant. The test results are listed in Table 3. There is a statistically significant difference between the surveyed groups of trading companies in the achieved level of productivity in the given time.

*Table 3: Indicators of the conducted analysis of variance*

| | | The sum of the squares | Degrees of freedom | Median square | F | Significance |
|---|---|---|---|---|---|---|
| Productivity | Between groups | 470.604.375 | 2 | 235.302.187 | 6.776 | .002 |
| | Within groups | 4.687.951.797 | 135 | 34.725.568 | | |
| | Total | 5.158.556.172 | 137 | | | |

*Source: the authors' calculation*

Utilizing Scheffe's post hoc test, it was examined between which groups of retailers there is a statistically significant difference in the achieved level of productivity. Scheffe's post hoc test, which is strict, indicates that the largest difference exists between independent, that is, local and regional retailers compared to the leading retail chains (Table 4). The leading top 10 trade companies are statistically significantly more productive in the market of the Republic of Serbia.

*Table 4: Post hoc test results*

| | | Subset for α = 0.05 | |
|---|---|---|---|
| | | **1** | **2** |
| Type of trading company | Independent retailers | 7.906 | |
| | DTC members | 10.873 | 10.873 |
| | Leading retail chains | | 12.549 |
| | **Significance** | **10.413** | **6.136** |

*Source: the authors' calculation*

Based on the conducted testing, it is concluded that the first research hypothesis $H_1$ is accepted and that there are statistically significant differences in terms of the achieved level of productivity between trade companies in the retail sector of the Republic of Serbia. These differences are the most expressed between the top 10 retail chains and local and regional retailers. This result was expected, bearing in mind that the degree of centralization of the Serbian market has been increasing in recent years and vertical integrations within the supply chain are increasingly present. In this way, a privileged position is provided to large trade companies that achieve competitive advantages at price, location, product range etc., at the expense of small and independent retailers, primarily in urban areas.

The second research hypothesis sought to test whether the average value of united retailers was higher than that of independent (local) retailers. Based on the conducted analysis, the obtained value is higher and on the border of statistical significance (according to the values of Scheffe's post hoc test). The T-test for independent samples was applied to compare the two groups separately. The independent variable had two degrees - affiliation to the domestic retail chain or local and regional retail chains. The dependent variable was productivity, measured as income per employee in the period from 2017 to 2020.

Group statistics confirm earlier findings that retail companies in the domestic retail chain are achieving higher productivity. The conducted analysis shows that the difference is statistically significant (Table 5). Domestic retail chain members are more productive than local and regional retail chains.

*Table 5: T- test results for independent samples*

| | | Mean | SD | T | Significance |
|---|---|---|---|---|---|
| Productivity | DTC | 10.873 | 8.043 | 2.375 | .020 |
| | Independent retailers | 7.905 | 2.187 | | |

*Source: the authors' calculation*

The obtained results confirmed the $H_2$ hypothesis implying that the volume of generated income and average productivity increases with retailers becoming a part of special units and groups, such as DTC. Members of such groups achieve better business results compared to independent (local and regional) retailers.

The third research hypothesis was to test whether there is a statistically significant difference in the productivity of the retail sector in 2020 compared to the period before the outbreak of the COVID-19 pandemic (2017-2019). This hypothesis aims to define whether and in what way the consequences of the COVID-19 pandemic and the sudden shocks it caused on the market affected the business of domestic retailers. T-test for dependent samples was conducted to examine these differences. It examined whether there is a difference in productivity in the period from 2017 to 2019 concerning the achieved productivity in 2020. The independent, grouping variable was the period, while the dependent variable was operationalized as the productivity of the retail business. Table 6 presents the obtained results.

*Table 6: T-test results for dependent samples*

| | | Mean | SD | T | Significance |
|---|---|---|---|---|---|
| Period | 2017-2019 | 10.170 | 5.618 | 0.081 | .936 |
| | 2020 | 10.212 | 5.399 | | |

*Source: the authors' calculation*

The given table shows that the values of achieved productivity are uniform in retail chains before the pandemic and in its first year (as well as the standard deviation). Based on the obtained findings, we can conclude that there is no statistically significant difference in productivity in the period before the COVID-19 pandemic concerning the productivity achieved in 2020. We deduce that the pandemic did not leave significant consequences on the retail sector in the Republic of Serbia. Therefore, we reject the third research hypothesis **H₃**. The objective reason for this result is the retail sector's stabilization after the first two months of closure. The decline in demand for non-essential products such as appliances, electronic devices, furniture, etc., was offset by significantly higher demand for food products. The positive trend reflected itself in the sharp increase in the share of electronic retail, which also filled the gap in retailers' business revenues. Social distancing, limited contacts, shorter working hours of stores, and fear of infection seemed to divert a part of the activities of Serbian retailers to the electronic purchase of products and services. It is estimated that the frequency of online shopping and the volume of turnover of products and services through this channel increased by as much as 67% in 2020 (Kovačević & Petković, 2021).

The fourth hypothesis examined whether there was a statistically significant difference in profitability (net profit per employee) between the observed groups of retail chains. A one-way analysis of variance (ANOVA) was applied to test this hypothesis. An independent, grouping variable was the type of trade enterprise (leading retail chains, DTC members, local and regional retail chains). The dependent variable was net profit per employee from 2017 to 2020.

Table 7 shows descriptive statistics for net profit per employee in relation to the group to which the retail chain belongs. It can be seen that the average profit per employee is the highest among leading retailers, while it is the lowest in the group of local and regional retail chains.

*Table 7: Descriptive statistics for the value of profit concerning the type of trading company*

| | | Mean | SD |
|---|---|---|---|
| Profit (000. RSD) | Leading retail chains | 11.310 | 1.708 |
| | DTC members | 7.905 | 366 |
| | Independent retailers | 7.425 | 433 |
| | **Total** | **9.486** | **939** |

*Source: the authors' calculation*

The results of the conducted One-way analysis of variance revealed a statistically significant difference between the groups (Table 8). Based on these results, we conclude that the fourth research hypothesis **$H_4$** is accepted since there is a statistically significant difference in net profit per employee between the groups of trading companies in the market of the Republic of Serbia.

*Table 8: Indicators of the conducted analysis of variance*

| | | The sum of the squares | Degrees of freedom | Median square | F | Significance |
|---|---|---|---|---|---|---|
| Profitability | Between groups | 7.247.344 | 2 | 3.623.672 | 4.308 | .015 |
| | Within groups | 110.196.788 | 131 | 841.196 | | |
| | Total | 117.444.132 | 133 | | | |

*Source: the authors' calculation*

Scheffe's post hoc test examined which groups included in the research found this difference as the most significant. The analysis indicated a statistically significant difference between the leading retail chains whose profitability is statistically significantly higher compared to local and regional retail chains and domestic retail chains. The results of the analysis are shown in Table 9.

*Table 9: Post hoc test results*

| | | Subset for α = 0.05 | |
|---|---|---|---|
| | | **1** | **2** |
| Type of trading company | Independent retailers | 7.425 | |
| | DTC members | 7.905 | |
| | Leading retail chains | | 11.310 |
| | **Significance** | **.991** | **1.000** |

*Source: the authors' calculation*

Based on the conducted analyses and tests, the conclusion is that the results of some previous studies (Vukmirović & Marić, 2017; Petković et al., 2016; Leković, 2016) have been confirmed by this research and that the consolidation of the retail market leads to higher productivity and profitability. Simultaneously, an interesting indicator is that the COVID-19 pandemic did not leave major consequences on the business results of the retail sector. It only forced retailers to change their sales policy, that is, to place their products and services through several channels, including electronic and mobile commerce.



## 4. Discussion

Based on the conducted research and confirmed research hypotheses, it follows that the centralization and consolidation of trade companies in the retail market have a statistically significant impact on productivity and profitability. The research confirmed that the volume of gross income and the retailers' productivity are statistically significant related to their size and enlargement (**$H_1$** and **$H_2$**). Also, significant differences between large and small retailers can be seen regarding net profit and profitability (**$H_4$**).

As the fundamental goal of trade policymakers is to achieve a homogeneous retail market, the following measures and incentives should be implemented to harmonize the elementary economic indicators of trade companies. On the one hand, this means taking the following trade policy measures, which would make the retail sector more attractive and efficient, such as:

1) granting subsidies, favorable credit lines, and financial incentives to small independent retailers by competent institutions, associations, and commercial banks;

2) developing modern infrastructure, logistics, and distribution networks;

3) encouraging employment growth through the release of taxes and contributions for new employees in the retail sector;

4) reduction of income tax for small retailers, etc.

On the other hand, small and independent retailers need to find ways to achieve identical profitability results as leading trading companies through more efficient operations. This usually means (1) increasing sales revenue through greater application of the concept of customer relationship management; (2) more efficient margin management; (3) reduction of total costs through the application of a modern concept of cost management (TQM, supply chain analysis, just in time delivery, continuous improvement, etc.); (4) application of modern IT technology, etc.

These trade policy measures and incentives in the retail sector itself should be the primary instrument in the hands of trade policymakers that will reduce the degree of centralization and enable achieving a homogeneous retail market.

## Conclusion

The need to investigate the impact of centralization and consolidation in the retail sector of the Republic of Serbia on the productivity and profitability of retailers stemmed from the fact that it is one of the fastest-growing economic activities with a share of gross retail value in total GDP of about 10% operating income in 2019 of about 600 billion RSD. Of course, the sudden changes in the market and the shocks caused by the COVID-19 pandemic on the demand side required a thorough analysis.

The obtained results and the confirmed impact of enlargement on profitability and productivity were expected. The impact of the pandemic consequences proved to be less statistically significant than assumed. In accordance with these results, a whole set of measures and incentives was proposed in order to equalize the business results among the most dominant groups of retailers in the Serbian market. Also, retailers were recommended to place an increasing volume of their products and services through electronic channels (internet, e-shops, mobile trading).

The lack of the existing research is the territorial limits of the research exclusively on the market of the Republic of Serbia. The objective reason for this is the availability of data with and the author's familiarity with the mechanisms of retail functioning in the domicile market. Another shortcoming of the research is that the analysis is limited to five performance indicators (gross income, net profit, number of employees, net profit per employee, and gross income per employee), which may have led to simplified interpretations.

As part of suggestions for future research, the analysis should be extended to more regions. For example, perform a comparative analysis between EU regional countries (Croatia, Hungary, Bulgaria, and Romania) and the Republic of Serbia. Include several profitability indicators (ROA, ROE, turnover ratio, etc.) in the analysis. Extended research would deepen the scientific view of the importance of centralization and enlargement of companies on the productivity and profitability of the retail sector.

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