The Effect of Retail Market Concentration on Development of Electronic Retailing in the Danube Region

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The development of electronic retailing as a new retail marketing channel based on the Internet appears in contemporary theory and practice. In such market conditions, there is a research problem in which the level of development of the retail market and increasing concentration and competition in the market impact the development of electronic retailing. The aim to prove in this paper is to determine whether the level of concentration of the traditional retail market influences the share of electronic retailing in total retail revenue. The Danube region countries are chosen because of differences in the level of development of the retail market and electronic retailing. The sale revenues of the largest retailers based on which the level of concentration of the retail market in a particular country is determined are analyzed. The study concluded that a high share of the ten biggest retailers in the total retail revenue, as an indicator of the development of the retail market, follows the high share of e-retailing in total retail revenue to some extent. The results also confirmed a significant relation between the origin and types of retailers and the degree of concentration of electronic retail. Recommendations for future research are given in the paper.

Keywords: *Marketing Channels; Retail Market; Electronic Retailing; Concentration; Danube Region.*

Introduction

The development of the Internet is directly changing the structure of traditional marketing channels and contributing to the emergence of electronic marketing channels in the global market (Borkar, 2020; Lovreta *et al.,* 2019). The change in the structure of the marketing channel, marketing channel transformation, the emergence of new participants, and the changing relations between the participants in marketing channels come with the application of information and communication technologies in marketing channels (Hu & Oliveri, 2020). However, no other innovation has received as much attention from retailers, manufacturers, consumers, and the general public as did Internet retailing, or e-tailing; no other form of intertype competition has threatened to upset traditional retailing more than Internet retailing in the last few decades including discount stores, superstores, warehouse stores, direct sales, and home shopping cable networks, where the difference between these retail formats and e-tailing is technology (Rajesh & Prasad, 2020; Wisker, 2020; Pandey, 2019). All the largest retailers, manufacturers, and other participants in the world apply electronic retailing in their business as a factor for achieving market competitiveness (Kim *et al.,* 2019).

The *objective of analysis* in this paper is the level of development of electronic retailing comparing and determining the level of causality between the concentration of the retail market, the share of electronic retailing in the total retail revenue, and the level of concentration of electronic retailing. Parallel to the increase of retail market concentration and increase of the market share of the individual retail chains, the power of retailers is constantly increasing compared to the power of the other members of marketing channels (Petkovic & Uzar, 2020; Lovreta *et al.,* 2015). Strengthening the power of retailers increases the use of technology in their business.

Forecasts show that in the period until 2025, the share of electronic retail in total retail transactions will increase significantly. For example, electronic retailing in the United States as one of the countries that have the most advanced electronic retailing will reach 50 % of the total retail sale still accounts (Huggins *et al.*, 2020). It goes that the share of electronic retailing in the total retail sale is significantly different for different markets and different market structures. In research by Hackl et al. 2014, authors used novel instrumental variables strategy to investigate the interaction between market structure and market performance in e-commerce. The results show a significant impact on market concentration and the number of retailers on price formation and turnover in e-retail. After the period of recession traditional retail market decreased in retail sales, while the top ten electronic retailers have retail sales growth in electronic retailing from 7 % to 66.2 %, traditional retail recorded a decline in revenue from 4 % to 5 % (Deloitte 2020). In this way, electronic retailing has become the fastest-growing retail channel through which retailers achieve competitive advantage (Tunsakul, 2020; Sorkun *et al.,* 2020; Vojvodic, 2020).

In this regard, *the main objective of the research* is to determine whether the level of concentration of the traditional retail market impacts the share of electronic retailing in total retail revenue. *The practical significance of the research* is in the obtained results, which enable the management of trade companies to predict future directions of electronic retail development, the potential volume of turnover through electronic channels, including the contribution of electronic retail revenues to total retail revenues.

Theoretical background and Development of Hypotheses

Electronic retailing (also called e-tailing, online retailing, and Internet retailing) is a retail format in which the retailers communicate with customers and offer products and services for sale over the Internet (Wu *et al.,* 2020, Tesic, 2020). The evolution of retailing with the advent of the Internet starts with the orientation towards the product and the existing forms of competition, which had been at the local level, and it goes over the emergence of new participants as "pure-play" electronic retailers ("dot.com") and new multichannel competition, to the implementation of the electronic marketing channel as an additional channel in traditional retail business (Zarie *et al.,* 2020; Grubor *et al,* 2020). The Internet cannot eliminate or replace the traditional functions performed in marketing channels; it can significantly restructure marketing channels and contribute to the development of new relationships between the participants in marketing channels (Lovreta *et al.,* 2019).

Retailers today enter the electronic retail business very cautiously, since the entire business relies on traditional marketing channels, neglecting the importance of electronic retailing in the overall shopping experience of consumers and the indirect effects that electronic retailing may have on existing marketing channels. According to Forrester Research, Inc., 70 % of overall growth in online sales in 2010 came from the fact that existing shoppers were simply buying more online (Forrester Research, Inc. February 2011). So, an important note for electronic retailing is that its appearance did not increase consumer demand, it has become a competitive marketing channel that takes over the existing demand from other channels, and in that way creates competitiveness between marketing channels (Altıntas *et al.,* 2019). During the period of penetration of e-tailing, the percentage of the adult population shopping online is estimated to have risen from under 5 % to 62 %, accompanied by a progressive bonding of the gender, age, and social class gaps in the online shopper population. In the process, e-tailing has penetrated retail sectors differentially – with the highest online market shares being in music & video, books, and electrical goods, but with the fastest growing and largest online sector being food & grocery (Palalic *et al.,* 2020). The studies show that those changes in marketing channels and retail operations under the influence of electronic retailing have different levels of influence in countries (Vucenovic, 2018; Banyte *et al.,* 2011).

The conclusion about the importance of electronic retailing in contemporary marketing channels can be drawn based on the results of previous research (Hu & Oliveri, 2020; Borkar, 2020; Kordrostami & Rahmani, 2020; Zarie *et al.,* 2020; Wu *et al.,* 2020; Kim *et al.,* 2019; Altıntas *et al.,* 2019), as well as potentials of its growth and relevance of the research problem. Electronic retailing is a consequence of the development of traditional retailing and the application of technology in the business of the largest and strongest retailers in the market, but also itself is a factor drawing the further development of traditional retail (Tunsakul, 2020; Huggins *et al.,* 2020; Altıntas *et al.,* 2019 Siqueira *et al.,* 2019).

In this study on the impact of the concentration of the retail market on the development of electronic retailing in the Danube Region countries, answers to the following research questions (RQ) are being looked for:

RQ₁: What is the relation between the degree of concentration of traditional retail market and share (participation) of electronic retailing in the total retail sale? This question should prove that countries with a high concentration of traditional retailing have developed electronic retailing as a result of retail development.

RQ₂: How strong is the relation between the concentration of the traditional retail market and the concentration of the electronic retail market?

RQ₃: How strong is relation between height of the concentration of electronic retailing and electronic retailing share in the total retail sale?

RQ₄: What is the connection of the presence of domestic/foreign/global retailers in the group of the largest electronic retailers with a high /low concentration?

RQ₅: To what extent is the presence of types of electronic retailers ("pure-play", "click and brick" and multichannel) connected with a high/low concentration?

Parameters that will be the subject of analysis can be seen in the research questions stated above. The first three questions on which hypotheses are defined are crucial to determine the influence of the concentration of the retail market on the development of electronic retailing. Other issues are used to determine the influence of the origin of electronic retailer on the concentration of electronic retailing, or the presence of a type of electronic retailing, as well as the parameters of electronic retailing, which have an impact on the development of electronic retailing and return impact on the development of traditional retail. Based on research questions, three key hypotheses are set:

H₁: *The high concentration of the retail market as an indicator of traditional retailing has an relation with the high share of e-retailing in the total retail revenue*. Some research (Borkar, 2020; Kordrostami & Rahmani, 2020; Zarie *et al.,* 2020; Wu *et al.,* 2020; Palalic *et al.,* 2020) show that the development of the traditional retail market and strengthening the position of retailers in the market resulted in a steady expansion of the use of technology and the development of electronic retailing in retailers' business. Retailers "strengthen their market share and market power, and at the same time increase retail market concentration" (Rajkovic *et al.,* 2020; Vucenovic, 2018; Lovreta *et al.,* 2016; Kozlenkova *et al.,* 2015; Banyte *et al.,* 2011). The research by Hugins et al., (2020) states that in the next five years, the share of e-retailing in total sales revenue in the USA will amount to over 50 %. There is a question of the extent of development of the retail market

where increasing concentration and competition in the market has an impact on the development of electronic retailing.

H₂: *A high concentration of the retail market, as an indicator of traditional retailing also has an impact on the high participation of the ten largest electronic retailers in the total retail revenue of electronic retailing*. According to the latest report of the auditing company Deloitte (2020), there is a noticeable trend of decreasing traditional retail in the global market. At the same time, the top ten electronic retailers recorded sales growth at a rate of 66.2 %. Studies show that in markets with developed retail with the evolution of the Internet, there is a reorientation of retailers from the local to the global level and the emergence of new participants as "pure-play" electronic retailers ("dot.com") with a significant share in total retail revenue of electronic retailing (Zarie *et al.,* 2020). For instance, the four largest players in the electronic market in the United States are expected to account for an estimated 33.5 % of segment revenue in 2020, where Amazon.com, as a dominant player, is responsible for 28.8 % of segment revenue alone (Kordrostami & Rahmani, 2020). The results of similar studies conducted in the Danube region countries show a strong relation between the degree of concentration of the retail market and the growth of the share of the largest electronic retailers in total retail revenue (Koncar *et al.,* 2020). Therefore, it is necessary to test whether the high degree of concentration of the retail market affects the development of electronic retailing, thus contributing to the growth of the largest electronic retailers' share in the total revenue from electronic retail.

H₃: *The high concentration of the electronic retail market is related to the origin and types of electronic retailers in the market*. According to AT Kearney, the factors of importance for the development of the online electronic retail market are the concentration of retail market and online market size, which has the biggest importance, followed by consumer behavior, growth potential, and infrastructure, which are of equal importance in the online market attractiveness (Ben-Shabat *et al.,* 2013). Also, some studies (Tunsakul, 2020; Sorkun *et al.,* 2020) show that the degree of concentration and development of electronic retail directly correlates with the origin and type of electronic retailers in the market. It increases with the increase in the number of foreign electronic retailers and, on the other hand, decreases with the decrease in the number of "pure-play" retailers. Among the countries with the highest degree of concentration of domestic electronic retailers are China, Japan, the United States and the United Kingdom, and the Federal Republic of Germany among the countries of the Danube Region. Domestic online channels have managed to procure 15.3 % of retail trade, excluding foodstuff; food itself has a share of 8.5 %, while the highest domestic e-commerce share in Germany can be found in the technology sector, with 20.9 % in 2019 (Statista Market Forecast, 2019). In the global market, following the widespread adoption of electronic retailing by consumers, Japan gives the highest priority to the development of e-retail, and the Chinese e-retailers have the highest potential for further growth.

The study included retail sector and electronic retailing in Danube Region countries: Federal Republic of Germany,

Austria, the Slovak Republic, Hungary, Republic of Romania, Republic of Bulgaria, the Republic of Croatia within the EU, and the Republic of Serbia, and Ukraine out of the EU. The choice of the Danube region in the analysis is due to the Strategy for the Danube Region that was formed to overcome the unequal level of economic development as one of the most visible challenges within the Region, which is evident in different economic sectors. Owing to the contrasting economic development, digitalization as a topic may seem relevant in one country, however, it does not still exist in another (EUSDR Action plan, 2020). A similar situation is with electronic retailing that is developed differently in the country closely connected with the development of the implementation of digitalization. The Danube Region Strategy Area 8 aims to support the competitiveness of retail enterprises in the Danube Region through digitalization, improving digital skills, and know-how transfer about digital innovations (Danube Region Strategy Area 8, 2020). The study analyzes revenues from sales of the ten biggest retailers in the last three-year period (2017–2019) based on which the level of concentration of the retail market in a particular country is determined. Calculation of the concentration of electronic retailing is done on the same basis, taking into account the analysis of sales revenue of the largest electronic retailers in 2017–2019. The share of electronic retailing in the total retail revenue for each country that provides a basis for proving hypotheses is calculated based on the data on total retail revenue in the country and profit in electronic retailing in 2017–2019. The data was collected based on national statistical yearbooks, reports of domestic agencies for business registers, and reports of the auditing company Deloitte on the situation in the global retail market from 2018–2020.

Methodology and Research Sample

The survey was conducted for each selected country of the Danube region individually based on: electronic retail participation in the total retail revenue in the country, the difference in concentration of traditional retailing and electronic retailing, and participation of the ten largest electronic retailers in the total revenue of electronic retailing.

Accordingly, we based the analysis of the development of e-retailing in the countries of the Danube region on determining the following three basic parameters: a) the participation of electronic retailing in the total retail revenue in the country; b) the difference in the concentration of traditional retail market and electronic retailing; c) the participation of 10 major electronics retailers in the total revenue of electronic retailing.

The two most representative methods for market calculation of concentration used in the retail practice are concentration ratio and Herfindahl-Hirschman Index (HHI). Due to the complex relations of the retail market with the development of electronic retailing, concentration ratio, as a percentage indicator of the retail market, which has a specific retailer was used in the survey. The concentration ratio is the percentage of the market share held by the largest firms in an industry (Kvalseth, 2018), that is, the ten largest traditional retailers for determining

the concentration of the retail market, and the biggest electronic retailers, for determining the concentration of electronic retailing for individual countries.

$$CRm = \sum_{i=1}^{m} Si \qquad (1)$$

Therefore it can be expressed as:

$$CRm = S_1 + S_2 + S_3 + S_4 ... + Sm \qquad (2)$$

where Si is the market share and m defines the m^t firm, and in this research m=10.

The concentration ratio indicates the level of concentration which may have a low value of 0 % to 50 %, indicating the competition and oligopolistic market. The mean value of 50 to 80% indicates an oligopolistic market while increasing the value to 80% concentration ratio indicates a growth of monopoly position and the concentration of power in the hands of a small number of retailers. In this study, the value of the share of the ten biggest retailers in the total retail revenue and value of the participation of the ten largest electronic retailers in total revenue of electronic retailing in examined countries are categorized as: high (over 30 %); medium (20–30 %) and low (less than 20 %) participation.

As previously stated, in the initial stages of the development of electronic retailing forecast of theorists has suggested that electronic retailing has a significant share in the total retail revenue, which is determined by the following formula:

$$EM = Vem/Vmp \times 100 \qquad (3)$$

where EM stands for a share of electronic retailing in the total retail revenue; Vem for the value of electronic retailing in the country, and Vmp for the total value of the retail market in the country. The values of the variables of participation of electronic retailing in the total retail revenue in the examined countries are categorized in this research as high (> 3 %) and low (<3 %) share. The following table illustrates the structure of the research sample observed by selected countries of the Danube Region and the basic parameters related to the participation of the largest electronic retailers in the total retail revenue (column 3), the participation of the largest electronic retailers in the total revenue of electronic retailing (column 4) and participation of electronic retailing in the total retail revenue (column 11). The remaining columns 5, 6, and 7 show the structure of the ten analyzed retailers by country in terms of their origin (global, foreign, domestic), and columns 8, 9, and 10 illustrate their predominant business orientation (pure-play, click and brick, multichannel).

Table 1

Research Sample - Empirical Data of State of Retail Market and Electronic Retailing in Countries

No.	Countries	Participation of the ten largest retailers in the total retail revenue (%)*	Participation of the ten largest electronic retailers in total revenue of electronic retailing (%)*	Global (No.)	Foreign (No.)	Domestic (No.)	Pure play (No.)	Click and brick (No.)	Multichannel (No.)	Participation of electronic retailing in the total retail revenue (%)**
1	2	3	4	5	6	7	8	9	10	11
1.	Germany	36.14	24.51	1	1	8	3	2	5	10.09
2.	Austria	51.23	13.22	2	4	4	5	3	2	9.00
3.	Slovakia	32.25	11.68	0	8	2	9	1	0	3.65
4.	Hungary	11.48	10.65	1	3	6	5	3	2	2.53
5.	Rumania	29.73	45.88	1	2	7	3	4	2	1.25
6.	Serbia	22.56	9.74	0	1	9	3	7	0	1.25
7.	Croatia	32.33	81.51	3	2	5	5	5	0	0.75
8.	Bulgaria	13.18	20.19	0	5	5	5	5	0	0.42
9.	Ukraine	24.28	92.60	0	0	10	9	1	0	0.40
	Average	**27.57**	**34.47**							**3.14**

* Concentration: high (over 30 %), medium (20–30 %) and low (less than 20 %)
** Market share: high (> 3 %) and low (<3 %)
Source: Author

Appropriate statistical methods were used to test the set hypotheses. Structural modeling (SEM) or Path analysis were used to test the impact between 1) the participation of the ten largest retailers and electronic retail participation in the total retail revenue and 2) the participation of the ten biggest retailers in the total retail revenue and the participation of the ten largest electronic retailers in the total revenue of electronic retailing. Kendall's correlation coefficient C was applied to test the correlation between the participation of the ten largest electronic retailers in the total revenue of electronic retailing and origin (global, national, and international) and type (pure-play, click and brick and multichannel) retailer. Pearson's correlation coefficient was applied to test the correlation between the participation of the ten biggest retailers in the total retail revenue with the share of the ten largest electronic retailers in the total revenue of electronic retailing and electronic retail with a share in the total retail revenue. Spearman's correlation coefficient was applied to examine the correlation between 1) the participation of the ten largest retailers and electronic retail participation in the total retail revenue and 2) the participation of 10 major electronic

retailers in the total revenue of electronic retail and electronic retail participation in the total retail revenue.

Research Result

The results in Table 2 show the way in which the participation of the biggest retailers in total retail revenue (retail market concentration) impact the electronic retail share in the total retail revenue. The method of Structural modeling (SEM) or Path analysis were applied to test the mutual influence of indicators in this group. By a way of the Path analysis based on the defined paths we see the method in which the indicators of retail market concentration impact the electronic retail share in the total retail revenue. The results of Path analysis indicate that the model fitting is satisfactory (NFI = 0.957, RFI = 0.931, IFI = 0.977, TLI = 0.965, CFI = 0.976, RMSEA = 0.041, CMIN/DF =1.386). The obtained results show that the set

of examined variables, that is., the participation of the largest retailers in the total retail revenue, statistically significantly impacts the dependent variable, that is, the electronic retail share in the total retail revenue. The results of Path analysis suggest that the nature of the relation between these variables of concentration of traditional retail and electronic retail participation is high and positive (r = 0.884, t = 14.251), and that a high share of the ten largest retailers in the total retail revenue is accompanied by high participation of electronic retailing in the total retail revenue. The conducted analysis indicates that there is also a significant impact of medium and high retail market concentration on medium share of electronic retail in the total retail revenue. Similarly, the analysis records that there are statistically significant relations between the low retail market concentration and the electronic retail share in the total retail revenue.

Table 2

Relation between Participation of the Largest Retailers in Total Retail Revenue (Retail Market Concentration), and Electronic retail Share in the Total Retail Revenue

Ord. no.	Path	Path coefficient (r)	T value	Results
1	Low retail market concentration » Low electronic retail share in the total retail revenue	0.141	0.998	Reject
2	Medium retail market concentration » Low electronic retail share in the total retail revenue	0.322	1.108	Reject
3	High retail market concentration » Low electronic retail share in the total retail revenue	0.051	1.609	Reject
4	Low retail market concentration » Medium electronic retail share in the total retail revenue	0.114	1.200	Reject
5	Medium retail market concentration » Medium electronic retail share in the total retail revenue	0.677	11.250	Support
6	High retail market concentration » Medium electronic retail share in the total retail revenue	0.589	10.030	Support
7	Low retail market concentration » High electronic retail share in the total retail revenue	0.022	1.718	Reject
8	Medium retail market concentration » High electronic retail share in the total retail revenue	0.370	1.835	Reject
9	High retail market concentration » High electronic retail share in the total retail revenue	0.884	14.251	Support

Source: Author

To additionally examine the connection between the participation of the ten largest retailers in the total retail revenue (retail market concentration) and the participation of electronic retailing in the total retail revenue, Spearman's correlation coefficient was applied (Table 3). The results suggest that this relation is moderately high, positive, and statistically significant (r = 0.67, p < 0.05).

Table 3

Relation between Retail market Concentration and Electronic Retailing Share in the Total Retail Revenue

Parameter	Retail market concentration	
	R	*Sig.*
Electronic retailing share in the total retail revenue	0.67	0.03

* Significant at 5 %

Based on the conducted tests and the obtained results, we conclude that the first research hypothesis **H₁** is accepted and that the high concentration of the retail

market has an relation on high share of electronic retail in the total retail revenues in the Danube region. In response to the first RQ₁ research question, it follows that in countries with high concentration ratios for the traditional retail market such as Germany, Austria, Slovakia, etc., e-retail accounts for a significant share of total retail revenue, that is, there is a positive relation between the increase of the degree of concentration of the retail market and the increase of the volume of electronic retail. This conclusion suggests that countries that have sufficiently developed retail are developing and turning to e-retail.

To test the second research hypothesis **H₂**, which is based on examining the impact of retail market concentration on the share of e-retailers in total e-retail revenue, it is necessary to conduct more testing and answer research questions RQ2 and RQ3. In order to test the impact of the participation of the ten largest retailers in the total retail revenue (retail market concentration) on the participation of the ten largest electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing), we applied the Path analysis. Values

of both variables are categorized according to the same principle - high (>30 %), medium (20–30 %), and low (<from20 %) share. Results are shown in Table No. 4 suggest that the relation between these variables was not significant. The obtained result shows that the model fitting isn't satisfactory (NFI = 0.324, RFI = 0.418, IFI = 0.387, TLI = 0.061, CFI = 0.273, RMSEA = 0.042,

CMIN/DF =0.997). The results show no relation between the concentration of traditional retail and the degree of concentration of electronic retail. In response to RQ$_2$, it follows that a higher concentration ratio of traditional retailers does not necessarily predict that they also achieve a higher concentration ratio in the e-retail segment.

Table 4

Relation between Retail Market Concentration and the Concentration of Electronic Retailing

Ord. no.	Path	Path coefficient (r)	T value	Results
1	Low retail market concentration » Low concentration of electronic retail	0.224	1.108	Reject
2	Medium retail market concentration » Low concentration of electronic retail	0.033	1.554	Reject
3	High retail market concentration » Low concentration of electronic retail	0.021	1.119	Reject
4	Low retail market concentration » Medium concentration of electronic retail	0.127	1.200	Reject
5	Medium retail market concentration » Medium concentration of electronic retail	0.066	0.987	Reject
6	High retail market concentration » Medium concentration of electronic retail	0.371	0.938	Reject
7	Low retail market concentration » High concentration of electronic retail	0.011	1.718	Reject
8	Medium retail market concentration » High concentration of electronic retail	0.284	1.835	Reject
9	High retail market concentration » High concentration of electronic retail	0.334	1.345	Reject

Source: Author

To test the connection between the participation of the ten largest electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing) and electronic retail participation in the total retail revenue the Path analysis was also applied. Values of both variables are categorized according to the same principle: high (>30 %), medium (20–30 %), and low (<20 %) participation. The obtained results show that the model fitting is

satisfactory (phd: NFI = 0.933, RFI = 0.968 IFI = 0.973, TLI = 0.939, CFI = 0.924, RMSEA = 0.038, CMIN/DF =1.588). The results in Table No. 5 suggest that the relation between these variables was high and significant (r = 0.994, t = 15.221). In other words, the high concentration of e-retail has an impact on a higher share of e-retailers in total retail revenue, which is also a response to RQ$_3$.

Table 5

Relation between the Concentration of Electronic Retailing and Electronic Retail Share in the Total Retail Revenue

Ord. no.	Path	Path coefficient (r)	T value	Results
1	Low concentration of electronic retailing » Low electronic retail share in the total retail revenue	0.039	0.977	Reject
2	Medium concentration of electronic retailing » Low electronic retail share in the total retail revenue	0.201	1.118	Reject
3	High concentration of electronic retailing » Low electronic retail share in the total retail revenue	0.042	1.690	Reject
4	Low concentration of electronic retailing » Medium electronic retail share in the total retail revenue	0.011	1.211	Reject
5	Medium concentration of electronic retailing » Medium electronic retail share in the total retail revenue	0.599	9.033	Support
6	High concentration of electronic retailing » Medium electronic retail share in the total retail revenue	0.497	8.303	Support
7	Low concentration of electronic retailing » High electronic retail share in the total retail revenue	0.112	1.608	Reject
8	Medium concentration of electronic retailing » High electronic retail share in the total retail revenue	0.260	1.735	Reject
9	High concentration of electronic retailing » High electronic retail share in the total retail revenue	0.994	15.221	Support

Source: Author

As the conducted testing showed, there is no relation between the concentration of the retail market and the concentration of electronic retail. There is a relation between the concentration of electronic retail and the participation of electronic retailers in total retail revenue. Therefore, in the next step, it is necessary to test all three variables. To test the relation between the participation of the ten biggest retailers in the total retail revenue (retail market concentration), the share of the ten biggest electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing) with the share of electronic retailing in the total retail revenue, we applied Pearson's correlation coefficient. Results that are shown in Table No. 4 confirm that the relation between retail market concentration with the concentration of electronic retailing is not statistically significant ($p > 0.05$). On the other hand, the relation between the concentration of electronic retailing with the share of electronic retailing in the total retail revenue is significant, moderately high, and positive ($r = 0.67$, $p < 0.05$).

Table 6

Relation between the Retail Market Concentration, Concentration of Electronic Retailing and Electronic Retailing Share in the Total Retail Revenue

Parameter	Retail market concentration	
	r	Sig.
Concentration of electronic retailing	0.04	0.75
Electronic retailing share in the total retail revenue	0.67	0.02*

* Significant at 5%

To additionally confirm the connection between the participation of the ten largest electronic retailers in the total electronic retail revenue (concentration of electronic retailing) and the participation of electronic retailing in the total retail revenue Spearman's correlation coefficient was applied. The results suggest that this relation is moderately high, positive, and statistically significant ($r = 0.43$, $p < 0.00$).

Table 7

Relation between Height of Concentration in Electronic Retailing and Electronic Retail share in the Total Retail Revenue

Parameter	Concentration in electronic retailing	
	r	Sig.
Electronic retail share in the total retail revenue	0.43	0.00

* Significant at 1%

Based on the conducted statistical analyses, we conclude that the second research hypothesis H_2 is rejected and that there is no direct relation between the concentration of the traditional retail market and the concentration of electronic retail. This means that a developed retail network does not influence on a larger share of the biggest electronic retailers in the total electronic retail revenues. The relation was confirmed only between the increase of the concentration of electronic retailing and the increase of the share of electronic retailing in the total retail revenue.

In this part, research questions are whether there is a connection between the height of electronic retail concentration, and the presence and representation of domestic, foreign, and global electronic retailers (RQ4), and representation of types of electronic retailers in the group of ten largest retailers (RQ5).

In order to test the connection between the participation of the ten largest electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing) and origin (global, foreign and domestic) and type (pure play, click and brick, and multichannel) of retailers Kendall's correlation coefficient C was applied. Results shown in Table No. 8 suggest that the concentration of electronic retailing increases with the reduction in the number of foreign e-retailers on the market ($C = -0.481$, $p < 0.05$), whereas it decreases with the increase of the number of domestic e-retailers ($C = 0.333$, $p < 0.05$). In terms of the type of retailer, with the increase in the number of "brick and click" retailers the concentration of electronic retail supply decreases ($C = 0.111$, $p < 0.05$), that is, with the decrease of the "pure-play" retailer ($C = -0.472$, $p < 0.01$). Relations with the remaining measures of the origin and type of retailers are not significant.

Table 8

Relations between Concentration in Electronic Retailing and Origin and Type of Electronic Retailers

Parameter		Global	Foreign	Domestic	"pure play"	"brick and click"	Multichannel
Concentration in electronic retailing	Kendall C	-0.037	-0.481	0.333	-0.111	0.472	-0.148
	p level	0.908	0.028	0.022	0.043	0.000	0.521

Source: Author

Based on the conducted tests, we conclude that the third research hypothesis H_3 is accepted. There is a relation between the origin and type of electronic retailer in the market with the concentration of electronic retail. In terms of origin (RQ4), this relation is statistically significant with foreign and domestic electronic retailers, however, when looking at the type of retailer (RQ5), a statistically significant relation with the concentration of electronic retail is recorded by "brick and click" and "pure-play" retailers.

Discussion

The analysis applied in research of the connection of concentration of the retail market in the development of e-retailing in the countries of the Danube region, revealed the following findings:

▪ The Path analysis between the retail market concentration and participation of electronic retailing in the total retail revenue indicated that the relation between these variables is statistically significant and the nature of

the relation between these variables is high and positive ($r = 0.884$, $t = 14.251$), indicating that a high share of the ten largest retailers in the total retail revenue (retail market concentration), as an indicator of the development of the retail market directly connected with the high share of e-retailing in the total retail revenue to some extent - which confirms the hypothesis **H₁**;

▪ The Path analysis applied in testing the relation between the concentration of the retail market and the concentration of electronic retailing indicates that the relation between these variables is not significant, which means that high participation of the largest retailers (retail market concentration), as an indicator of the development of traditional retailing does not impact on high participation of largest electronic retailers in the electronic retailing (concentration of electronic retailing), as an indicator of the development of electronic retailing - which rejects the hypothesis **H₂**;

▪ The relation between the concentration of the retail market with origin (global, foreign and domestic) and type (pure-play, click and brick, and multichannel) of electronic retailers is statistically significant ($p < .05$), which indicates that differences in the representation of electronic retailers in terms of origin and predominant business activity in the market, affect the concentration ratio of electronic retail - which confirms the hypothesis **H₃**.

The obtained results confirmed the findings of previous studies (Hu & Oliveri, 2020; Borkar, 2020; Kordrostami & Rahmani, 2020; Zarie *et al.,* 2020; Wu *et al.,* 2020; Kim *et al.,* 2019; Altıntas *et al.,* 2019) that the concentration of the retail market influences the increase of the volume of electronic retail and a larger share of electronic retail revenues in the total retail revenues. The relation of concentration of the retail market with a share of electronic retailing in the total retail revenue is significant, moderately high, and positive indicating that countries with a high concentration in traditional retail sales have developed electronic retailers.

The analysis also proved that the relation between the concentration of electronic retailing and electronic retail participation in the total retail revenue indicates that there is a significant relationship between these two variables which means that countries with a low share of electronic retailing, such as Serbia, don't have electronic retailers who have significant participation, or vice versa countries such as Germany with a high concentration of e-retail concentrations have large e-retailers with a significant share in total retail revenues.

Analysis of the relation between the concentration of electronic retail, origin (global, domestic, and foreign), and type (pure-play, click and brick, and multichannel) of electronic retailers indicate that the participation of the ten largest electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing) increases with the decrease in the number of foreign retailers. This relationship is negative, moderate-intensity, and statistically significant and can be explained by greater confidence in the local electronic retailers, reduced risk, lower cost of delivery, and tax burden when ordering from electronic retailers in the country, etc. On the other hand, many "pure-play" e-retailers appear simultaneously with a significant share in e-retail revenues (Toufaily et al., 2013), which reduces the degree of concentration and participation of the largest e-retailers in total e-retail revenues. According to the results from the above, the following conclusions regarding the phase of development of electronic retailing in the countries of the Danube region can be made: 1) the differences in the participation of the ten biggest retailers in the total retail revenue (retail market concentration), are related with differences in electronic retail participation in the total retail revenue in the countries of the Danube region and 2) the differences of participation of ten electronic retailers in the total revenue of electronic retailing (concentration of electronic retailing), are related with differences in origin and type of electronic retailers.

Conclusions

The need to examine the relation between traditional and electronic retail and the degree of mutual dependency of their concentration arose from the growing presence of electronic retail in total retail revenues and total business operations of traditional retailers. An increasing number of traditional channels are turning to electronic marketing of products and services, so it was necessary to investigate the position of electronic retail and its connection to traditional retail in the countries of the Danube Region where, in some markets, electronic retail is still at its beginning.

The scientific contribution of the research is reflected in the following facts:

1) It's been defined that a high share of the ten largest retailers in total retail revenue, as an indicator of retail market development, directly impacts a high share of e-retailing in total retail revenue.

2) The second contribution lies in the fact that if a country has a high participation of the largest retailers, as an indicator of the development of the traditional retail market does not imply high participation of the electronic retailing as indicators of development of electronic retailing. If we look at the indicator of the concentration of the traditional retail market in selected countries, it does not necessarily imply they have a developed e-retail and high electronic retail market concentration.

3) Finally, the research confirmed that in the countries of the Danube region, the concentration of electronic retail is related to the origin and type of the predominant activity of electronic retail. Analysis of the origin of electronic retailers indicates that the participation of the ten largest electronic retailers in the total revenue of electronic retailing increases with a reduction in the number of international retailers' presence. It also indicates that domestic electronic retailers have the most confidence, due to reduced risk, lower cost of delivery, and taxes when ordering from electronic retailers in the country, etc.

The practical significance of the obtained results in this research provides an opportunity for the management of trade companies and trade policymakers in the Danube region to more easily predict the development of e-retail, define its further development followed by appropriate legislative solutions, and propose a set of measures and incentives in those markets where total e-retail sales revenue is small, etc.

The shortcomings of the research are related to:

1) Geographical limitation of the sample to the countries of the Danube region. The reason for choosing such a sample is the author's knowledge of how retail and electronic retail function in selected countries.

2) Limited to the top ten largest retailers in each country. The reason for choosing this structure of the analyzed retailers is a more objective view of the concentration ratios in each country.

Recommendations for further research based on this study are directed towards investigating the impact of the traditional retail market development on electronic retailing in a larger number of countries than the ones included here. A significant scientific contribution would be provided by creating a comparative analysis of EU / non-EU countries as well as an analysis between traditional and electronic retail in terms of participation in the placement of some product categories, such as Fast-Moving-Consumer-Goods (FMCG), organic products, etc. The conducted research also represents a solid basis for the new, more complex financial analysis of electronic profitability and productivity concerning traditional retail.

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