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RETAIL ENVIRONMENT IN THE CONTEXT OF DEFINING CONSUMPTION PATTERNS ON THE EXAMPLE OF SLOVAKIA

Summary: The Slovak retail market is characterised by an enormous growth in the concentration of the distribution. The number of supermarkets in Bratislava has been rapidly increased for the past years. It can be considered as a successful business result, when the launch of the non-traditional sales forms such as communal gardens, farmer markets and other alternative forms of grocery sales aimed to increase the access to groceries on the Slovak food market were noticed. In this context, the article focuses on concentration of supermarkets and also evaluates locations of supermarkets in Bratislava from 2011 to 2016. To calculate the concertation of supermarkets in Bratislava relative entropy was applied, using data from the supermarket network located in Bratislava from 2011 to 2016. The spatial distribution of supermarkets within the city was evaluated using a geographic information system. Although there were changes in the distribution of supermarkets in each part of Bratislava during the observed period, the results show that supermarkets sufficiently cover the city. The changes mainly concerned moving away from the city centre towards the peripheries. These changes will continue and will reflect the changes in a grocery demand, the current healthy grocery trends, settlements and a new district creation.

Keywords: retail environment, consumption patterns, supermarket.

JEL Classification: M31.

Introduction

Retail environment is connected to the evolution of commercial structures and innovations of distributors and contributes to shaping purchasing practices and defining a market culture. Its main contribution is to recognise that the development of the commercial structures helps to promote consumer engagement in the marketplace, motivate decisions and change consumption patterns. It evaluates the special structure of the retail network during the two periods. The creation of a great number of retail units describes the first period. This period is characterised by the emergence of conditions for the appearance of the modern consumption, that is to say, the development of the market economy as a dominant form of an economic organisation and as a framework for economic relations. The second period is marked by the international retail chains entering the Slovak market. The construction was concentrated mainly in larger cities. New retail units were built in the second half of the 1990s, the first of which were hobbymarkets (Bauhaus, Hornbach) and groceries, supermarkets (Alma, Billa), large surface stores like hypermarkets (Auchan, Kaufland) and later shopping malls. Development of large scale shopping complexes brings the problems such as declining city centres, outflowing of commercial functions to the suburbs, commuting and ecological problems, closuring of small and traditional retailers. In the 1990s, the ‘consumer society’ started in Slovakia. Consumption in its modern form is a part of the market economy, that is to say in the system where the decisions to produce and exchange goods and services are defined by the confrontation of supply and demand and the intervention of regulations and intermediaries.

1. Literature review

Several authors focus on the retail unit concentration in Slovak cities. By defining the theoretical and the real number of the retail units, and by comparing these two numbers, these authors obtained information about the surplus and the deficiency of retail units in each town [Bilková and Križan, 2013]. Ceapraz

[2008] considers closely the spatial specialisation and concentration from the perspective of the competitiveness of the European Union. His article provides different perspectives of the diverse economic theories on the concentration and the spatial specialisation development. The author defines the concentration and the spatial specialisation in connection to manufacturing a structure and tries to explain the regional employment structures. Lang, Marcon and Puech [2016] notice that the spatial concentration through the distance-based methodology is used to improve spatial economics of the economic activities through the accurate spatial layout evaluations. Furtună et al. [2013], Glaeser [2012], Arbia; Copetti and Diggle [2009], Fingleton [2006], Badia-Miró, [2015], and Desmet and Fachamps [2005] focus on analysing the impact of a city's territorial structure based on an inner metropolitan approach. Garcia-López and Muñiz [2012] further study the city employment growth model based on a dynamic agglomeration economy tied to a city's spatial structure using a distance of employment centre to judge the metropolitan effects and the variable distances to measure the neighbourhood effects. Fujita and Mori [2005] provide an overview of the development of the spatial economics while emphasising the spatial economic theories, i.e. the general location economics.

2. Objective

The authors analysed the supermarket concentration in Bratislava as a rapidly developing city. The first part of the paper examines the supermarket as a dominant retail format in the retail store structure in retail chains. The second part provides an analysis of the supermarket concentration in Bratislava. This article also evaluates the spatial supermarket distribution in each city district from 2011 to 2016.

3. Spatial concentration

Krugman [1991] indicates that production is concentrated in space and considers this as one of the important features of the current economic activity geography. Thus, the article focuses on the supermarket spatial concentration in Bratislava and, if there is a spatial concentration of industries.

According to P. Kotler [Kotler and Keller, 2006, pp. 30-38], on the sectoral level of the analysis of the grocery market the individual retail units do not pose as a competition to one another, but it is on the retail chain level where there is a competition to offer the highest utility to the consumer in the exchange process. Acquisition of merging of various businesses within the distribution channel can explain the concentration. This market structure resembles an oligopoly where only a small number of businesses represent the offer. Based on this, the market becomes less competitive as the competition grows. The grocery market shows a clear propensity towards the concentration which leads to the creation of global enterprises (retail chains) and strategic business alliances. Concentration happens also on the organisational and spatial accessibility levels (the retail units concentrate in shopping centres, commercial venues etc.). The concentration process has a negative influence, e.g. the closure of numerous small commercial businesses, which cannot compete with retail chains. However, it improves the effectiveness of businesses and thus improves consumer satisfaction. The highest level of the concentration is observable on a retail chain level where a fast moving merchandise is sold mainly in supermarkets and hypermarkets. The existence of the retail units on an inter-regional and regional level is due mainly to a correct strategy based on an accurate analysis of the market landscape [Cimler, 1994; Kunc et al., 2012].

4. Economic geography

This field of the research concentrates on the uneven distribution of the economic activities in space. Two conflicting theories are influential in this field: the institutional economic geography and the 'new' economic geography. The institutional geography is led by experts with a background in cartography and has many similarities to the institutional economics [Hodgson, 2001]. Plainly said, the institutional geography states that the uneven distribution of wealth in an area is due to the institutional differences [Whitley, 2000]. The new economic geography results from the neoclassical economics [Krugman, 1991; Brakman et al., 2001] and considers an uneven distribution of the economic activities as a result of universal processes of the agglomeration fuelled by the production factor mobility. The lack of intersections between the two theories can be explained as the two immeasurableneses such as the institutional economics and the neoclassical economics [Boschma and Frenken, 2006]. In many cities or regions, it is believed that the retail is stabilising the industry for socio-economic development. From a food policy perspective, it provides nourishment for citizens, i.e. citizens living in cities or a countryside, and make it accessible to low-income consumers to limit malnutrition or overconsumption. While analysing the food policy, various authors focus on understanding the relations in the geographical accessibility of healthy groceries to ensure nutritional security [Battersby and Peyton, 2014] and the supermarket concentration in Bratislava along with its placement among districts. On a macro scale, analysing the relations within the economic chains focuses on globalisation processes manifested in the presence of the multinational retail chains on the grocery market. These are strongly concentrated and supported by an established supplier and a logistics network along with their offensive marketing strategy and the widespread distribution. The globalisation in Slovakia is observable not only in the number of the domestic and international retail chains but also in their supply policy and the price stability. On a micro scale, the retail chains concentrate on the providing a food access to consumers based on a relation between a consumer income, and a food prices and a consumer behaviour. The increasing consumer interest in a healthy and fresh produce in the past decade resulted from impacts of grocery scandals in some developed countries which contributed to the increased interest in the food safety (BSE, food-and-mouth disease in cows). At the same time, changes in consumer behaviour towards distrusting food processing procedures or unfavourable stances towards the anonymous environment of supermarket and shopping centre appeared. The consumers are also aware of the increasing number of red flagged groceries in retail chains. From this perspective, the new food security programme places a small farmer into the spotlight of its efforts to resolve a growing worldwide problem of food insufficiency. In this respect, Slovakia is on the tail end in Europe and on a global scale, according to the Global Food Security Index, established by "The Economist" in 2012 (Table 1).

Table 1. Food security index 2012-2016

Year	2012	2013	2014	2015	2016
Rank	27.	37.	31.	32.	40.

Source: Based on: "The Economist"[2012]; Kita et al. [2017].

5. Geographical localisation

Even though it seems that this problem is more severe in the countryside, the truth is the opposite. This problem increasingly concerns population in cities, where it takes the form of accessibility. Accessibility to groceries in cities depends on the ability of a family to realise the purchase; this ability is influenced by their level of income, grocery prices, and retail unit location [Karamychev and van Reeven, 2009]. Groceries can be economically accessible, but not present within a certain space (the store is located too far or it is difficult to get to). On the contrary, groceries can be available in the given space (supermarket) but economically non-accessible (the merchandise is sold out). Grocery supply in Slovakia leans on a developed distribution system of each retail chain.

6. Supermarkets

The result of developing large surface store was the boom in supermarkets, originally supposed to cover the needs of higher and middle class citizens. Currently, a supermarket is the most widely constructed retail store format due to rapid district urbanisation like in Bratislava. In contrast to traditional food distribution systems, a farmer market, communal gardens and niche oriented stores (Starý otec – bio market) serve as a key selling point for small and medium farmers that are not able to compete with large surface stores [Pinard et al., 2016]. Customers in these stores search for a greater shopping experience and foster a personal relationship with a farmer or a vendor.

These stores type do not play such a significant role in the city's fresh food supply as supermarkets do, although there are increasingly important for job-creation. Slovaks have taken their shopping behaviour from Western countries, but the main purpose of the traditional and non-traditional distribution systems is still providing the citizen with fresh and processed food. The rapid development of supermarkets has a significant influence on non-traditional food distributors. Supermarkets intensify competition with non-traditional distributors by becoming increasingly universal in their offerings to cover lower-income consumers. Although, groceries are becoming more accessible to the low-income families [Fan and Brzeska, 2016], this effort leads to the lack of quality in the groceries and price wars among competitors [Pickles et al., 2016]. A neoliberally managed market at first glance brings some positive consequences for low-income consumers, who do not realise it. On the contrary, the business sphere is significantly affected by market entry, competition and control.

7. Methodology

The field research took place in the metropolitan area during two periods, first from February to May 2011 and second from October to November 2016. The research was conducted in Bratislava, the capital of Slovakia, since it is the largest metropolitan area in Slovakia's market.

Using a geographical information system, the geographical distribution of supermarket and their concentration in Bratislava were identified.

Two research questions based on the defined objective were formulated:
1. Is each of the districts of Bratislava sufficiently covered by supermarkets?
2. Were there any changes to the territorial coverage of supermarkets in Bratislava between 2011 and 2016?

The formula used for calculating entropy enables measuring spatial dispersion of the population. The more dispersed in space the population is, the higher the entropy is. The geographic measure use entropy to gauge outflow of residents from the countryside. When the entropy is low, the population dispersion decreases, thus population concentration is higher [Cliquet et al., 2006]. In the article the entropy formula applied on retail chains suggests that their development will increase their areal coverage.

The authors of the article used the following formula to calculate the territorial supermarket coverage in Bratislava.

$$^{k}E = -\sum fi \log fi \tag{1}$$

where:
i = 1,
E – the entropy,
k – the number of divided geographical areas,
fi – the number of retail unit within area i.

The application of the relative entropy [Cliquet et al., 2006]:

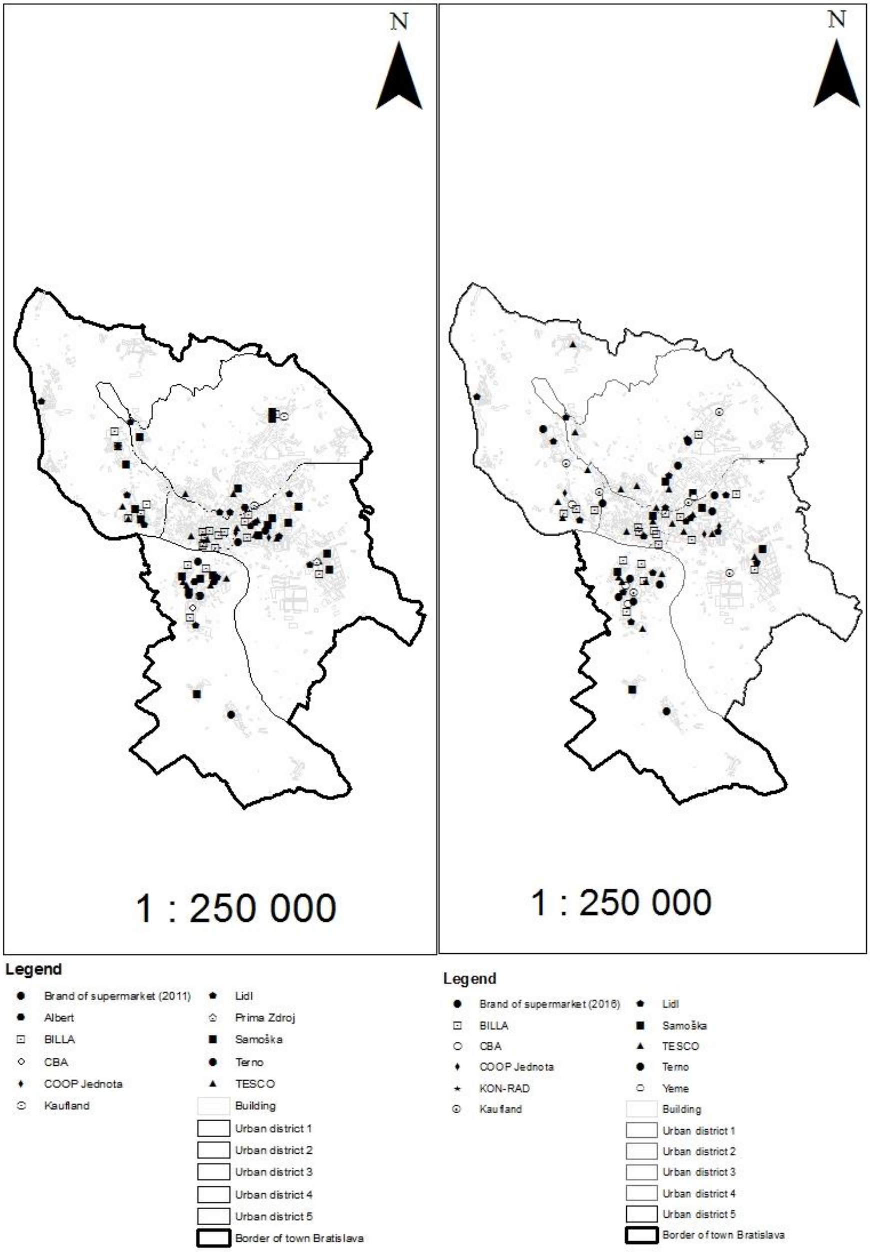
$$RE = E / \log k \tag{2}$$

where: k is calculated within the interval [0, 1] to ensure the simplest comparison with competitors [Cliquet et al., 2006]. For calculating the relative entropy in Bratislava the k = 5, due to the administrative division into 5 districts [Bratislava 1, Bratislava 2, Bratislava 3, Bratislava 4, Bratislava 5].

8. Results

Although, the most common literature concentrates on a adequate provision of food for residents to ensure their sufficiency, from this perspective the emphasis should be on the groceries on offer in the whole city, i.e. if the retail store types offer a wide range of healthy and fresh groceries at competitive prices. For this reason, the study focuses on supermarket chains supposing they provide a complete assortment of fresh groceries at low costs and profit margins. This is in accordance with the work of Apparicio et al. [2007] or Leat, Revoredo-Giha and Lamprinopoulo [2011]. In 2011, the field research resulted in locating 99 supermarkets belonging to the 13 retail chains, displayed in the Figure 1. In 2016, the field research localised 119 supermarket under 14 chains.

Figure 1. The supermarket network in Bratislava in 2011 and 2016



Source: Own research.

The supermarkets are located in every district of Bratislava. Table 2 displays the format and the number of the retail unit per chain in 2011 and 2016. Based on the available data, the most numerous are Billa and Tesco. There are also some changes among the retail chains as well. The chains such as Albert, Bala, Hypernova, Prima Zdroj were present only in 2011, whereas Delia, Malina, Môj obchod and Yeme were present only in 2016. The other retail chains were localised in both this years.

Table 2. The overview of supermarkets in Bratislava

Retail chain	**Type of store**	**Number of stores in 2011**	**Number of stores in 2016**
Albert	Supermarket	4	X
Bala	Small sized store	4	X
Billa	Supermarket	22	20
Carrefour	Hypermarket	2	2
CBA	Supermarket	5	3
DELIA	Small sized store	X	9
Hypernova	Hypermarket	1	X
Jednota	Supermarket	2	4
Kaufland	Supermarket	3	6
KON-RAD	Supermarket	X	1
Lidl	Supermarket	15	16
Malina	Small sized store	X	5
Môj obchod	Small sized store	X	8
Prima Zdroj	Convenience store	1	X
Samoška	Supermarket	18	7
Terno	Supermarket	1	11
Tesco	Hypermarket/ supermarket	21	26
Yeme	Supermarket	X	1

Source: Own research.

Tables 3 and 4 show the relative entropy of all the competing supermarket chains in Bratislava, in 2011 and 2016. The calculation are done for all five districts.

Table 3. The relative entropy calculation for the complete set of the competing supermarket chains in Bratislava in 2011

District	fi	log fi	fi log fi	E	k	log k	RE
Bratislava 1	0,121212121	−0,916453949	−0,111085327				
Bratislava 2	0,292929293	−0,533237197	−0,156200795				
Bratislava 3	0,151515152	−0,819543936	−0,124173324	**0,67823647**	5	0,69897	**0,97033701**
Bratislava 4	0,191919192	−0,716881594	−0,137583336				
Bratislava 5	0,242424242	−0,615423953	−0,149193686				

Source: Own research.

Value fi and $fi \log fi$ were calculated for every retail chain to obtain the relative entropy of every retail chain in Bratislava. In 2011, Terno, Prima Zdroj, Jednota, Hypernova attained the lowest entropy values. These retail chains attained an entropy value of 0 due to their incomplete territorial coverage of Bratislava. In 2016, KON-RAD was the only chain to attain an entropy value of 0. On the contrary, Tesco in 2016 and Billa in 2011 attained the highest entropy values.

Table 4. The relative entropy calculation for the complete set of the competing supermarket chains in Bratislava in 2016

Mestská časť	fi	log fi	fi log fi	E	k	log k	RE
Bratislava 1	0,168067227	−0,774516966	−0,130170919	**0,687224**	5	0,69897	**0,983195102**
Bratislava 2	0,268907563	−0,570396983	−0,153384063				
Bratislava 3	0,168067227	−0,774516966	−0,130170919				
Bratislava 4	0,151260504	−0,820274456	−0,124075128				
Bratislava 5	0,243697479	−0,613148963	−0,149422857				

Source: Own research.

Tesco supermarkets were presented in each district. It had 7 units in district Bratislava 2, attained a frequency of fi 0,269230769 and value of $fi \log fi$-0,153427968. In Bratislava 1, Tesco had 3 units with a frequency of fi 0,115384615 and value of $fi \log fi$ −0,108213703. The Tesco's entropy value is E = 0,680623155 and relative is RE = 0,973752. The relative entropy ranges between 0 and 1. Therefore, Tesco covers almost all of Bratislava, i.e. it has an excellent territorial supermarket coverage.

9. Discussion

The answer to the first research question is: Yes, supermarkets sufficiently cover every district of Bratislava. It is supported by the displayed calculations where the relative entropy attained a value of 0,983195102 in 2016 and 0,970337 in 2011. Although there are districts with a lower number of supermarkets per capita, such as Bratislava 4 and Bratislava 5 in 2011 as well as 2016.

The answer to the second research question is: Yes, there were some changes in the territorial supermarket distribution. Figure 1 shows the supermarket distribution in 2011 and 2016, there was a certain movement from the centre towards the peripheries. In 2011 supermarkets were more concentrated around the centre, which left peripheries with low coverage. In 2016 noticeable changes were visible from the centre towards the peripheries. This may be connected with the development of new peripheral areas, rising rent prices in the city centre as well as changing settlement tendencies.

Conclusions

The Slovak retail market, as the other central European countries' markets, is typical for an enormous growth in the concentration of the distribution and radical changes in distribution channels. The modern grocery supply chains are increasingly tied by contracts among distribution channel members in their purchasing decisions. Supermarkets represent a large portion in sales of processed or fresh groceries among a limited number of preferred suppliers. Most supermarkets in the retail chains dispose of a centralised purchase and distribution centre. The supermarket revolution will not radically transform city systems of food supply in the future. The territorial changes in supermarket distribution will continue to reflect changes in demand for groceries, current healthy food trends, settlement changes or new district creation.

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RYNEK DETALICZNY W KONTEKŚCIE OKREŚLANIA WZORÓW KONSUMPCYJNYCH NA PRZYKŁADZIE SŁOWACJI

Streszczenie: Słowacki rynek detaliczny charakteryzuje się ogromnym wzrostem koncentracji dystrybucji. W ostatnich latach liczba supermarketów w Bratysławie gwałtownie wzrosła. Wprowadzanie na słowacki rynek artykułów spożywczych nietradycyjnych form sprzedaży, takich jak ogrody komunalne, targi rolnicze i inne umożliwiające szerszy dostęp do świeżych artykułów spożywczych, należy uznać za znaczące osiągnięcie. W tym kontekście artykuł skupia się na koncentracji supermarketów, a także ocenia rozlokowanie supermarketów w Bratysławie w latach 2011-2016. Aby obliczyć koncentrację supermarketów w Bratysławie, zastosowano metodę relatywnych entropii, wykorzystując dane z sieci supermarketów zlokalizowanych w Bratysławie z lat 2011 i 2016. Rozkład przestrzenny supermarketów w mieście oceniono za pomocą systemu informacji geograficznej (GIS). Chociaż w obserwowanym okresie nastąpiły zmiany w rozlokowaniu supermarketów w każdej części Bratysławy, wyniki pokazują, że supermarkety w wystarczającym stopniu pokrywają miasto. Zmiany dotyczą głównie przeprowadzek z centrum miasta na obrzeża. Należy oczekiwać, że zmiany te będą postępować i odzwierciedlać zmiany w popycie na artykuły spożywcze, aktualne trendy dotyczące zdrowych produktów spożywczych, zmiany w osadnictwie oraz tworzenie nowych powiatów.

Słowa kluczowe: rynek detaliczny, wzorce konsumpcji, supermarket.