

HETEROGENEITY OF SHOPPING CENTERS' ATTRACTIVENESS IN BRATISLAVA

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ABSTRACT:

The aim of the paper is quantification of shopping centers' attractiveness in the territory of Bratislava city. Attractiveness can be measured in many ways. In this contribution, index of attractiveness, expressing the share of an individual shopping center's attractiveness out of all shopping centers in the city, has been applied. Two variants of this index (both mutually compared) have been used in the paper. Results of our analyses show heterogeneity of shopping centers' attractiveness in Bratislava. The most attractive shopping center is at least 20 times more desirable than the least one. Three most attractive shopping centers represent more than 50% of the total shopping centers' attractiveness.

Key-words: Shopping centers, Index of attractiveness, Bratislava, Slovakia.

1. INTRODUCTION

Retailing and consumption are the traditional themes not only in economic research, but also in geographic one (Birkin, Clarke & Clarke, 2002; Wrigley & Lowe, 2002). In many post-communist countries there is a considerable impact of globalisation trends in retailing that consumer responds to (Križan et al, 2016). In these terms, shopping centers as an important shopping format play a significant role (Coleman, 2012). Competitive struggle for consumers is obvious in all kinds of services and retail outlets. Similarly competition between shopping centers and other retail stores takes place. They try to attract customers by a variety of stores and services, entertainment facilities or special offers. Attractiveness of shopping centers is gaining more and more attention from retail experts what is supported by a large number of studies on this topic (Arentz & Timmermans, 2001; Bodkin & Lord, 1997; Dennis et al, 2002; Ismail El-Adly, 2007; Kunc et al, 2016; Teller & Alexander, 2014).

The attractiveness of shopping centers is affected by many factors. Shopping centers are very attractive for consumers because they reduce time and costs required to travel between single shops (Ghosh, 1986). There can be stated that a shopping center's attractiveness is dependent on several factors, among which tenant mix, size of gross leasable area and accessibility of the shopping center are of the most importance (cf. Kunc et al, 2016).

The aim of this paper is to analyse shopping centers within the territory of Bratislava city and quantify their index of attractiveness by applying the selected methodology. The paper is looking for an answer to our research question: Is the shopping centers' attractiveness (considering the used index) in the city center higher than in the periphery?

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2. METHODS AND DATA

There is a number of ways and means of measuring, quantifying and interpreting the shopping center attractiveness. Means for measuring the attractiveness can be divided into two main branches. The first approach uses predominantly quantitative methods based on interaction models (Huff, 1963). The second one takes into account various indices of attractiveness (Kunc et al, 2016). In this contribution, index of attractiveness which quantifies the shopping center attractiveness as a share of a single shopping mall out of all shopping centers in the city of Bratislava (Des Rosiers, Thériault & Mémétrier, 2005) has been applied:

$$CAI_i = \frac{\sum_{j=1}^{199} [(S_i/D_{ij}^2) \cdot P_j] \cdot 100}{\sum_{i=1}^{14} CAI_i}$$

where

S_i is the size of gross leasable area, D_{ij}^2 is the square distance between the source node i (shopping center) and the destination node j (centroid of a populated cell 1x1 km), P_j is the population of the destination node j .

The shopping center attractiveness has been evaluated from two perspectives. The first option (A variant) has been considering the attractiveness of the retail stores in the shopping centers. In this case the size of the shopping center (S_i) has been quantified by the size of gross leasable area (GLA) of all retail stores in the shopping center i . In the second variant (B) the attractiveness of the shopping centers as a whole has been studied, while the size of the shopping center (S_i) has been quantified by the size of gross leasable area of all service outlets (restaurants, cafés, cinemas etc.) in the shopping center i .

In the analysis, geographic information systems (GIS) has been used not only as a cartographic (visualisation) research tool, but also as an analytical (interpretative) one (cf. Haidu, 2016). The GIS can be considered as an appropriate tool for examination of retail sector. The analysis itself within the GIS consisted of several steps: (i) Digitalisation of raster and production of underlayers. (ii) Analysis of the shopping centers availability applying binary accessibility measure by road network in a GIS environment using Network Analyst tool (cf. Corodescu, 2014). Centroids of square grids with dimensions 1x1 km were regarded as source nodes. As destination nodes, 14 shopping centers in the territory of Bratislava city (as of 2016) have been taken into account. (iii) Cartographic interpretation of the analysis results. In the GIS environment (ArcGIS) analytical parts of the research have been visualised using multiple cartographic techniques.

The data applied in the analysis can be divided into two groups. The first of them is represented by primary data collected by field research for each shopping center within the meaning of retail stores structure and service facilities and their GLA. The second group contains secondary data provided by the Statistical Office of the Slovak Republic in the form of the data grid of the Slovak Republic. The territory of the Bratislava city is covered by the grid of 436 squares of size 1x1 km. 230 of these spatial units (52.8%) are uninhabited and 25 of them are with population size lower than 10. This fact outlines heterogeneity in the distribution of city population and confirms appropriateness of the grid square choice for analytical purposes (**Fig. 1**). Average population density in this grid reaches 946 inhabitants per square kilometre (sq. km) while the maximum value reaches

16,351 inhabitants per sq. km. 199 out of 206 inhabited squares have been analysed. Geocoding has proved to be a limiting factor referred to an overlapping area of the city by the square grid and the road network. In total 7 squares (their centroids, respectively) have not been included in the study. These have been of marginal location with no effect on the analysis results.

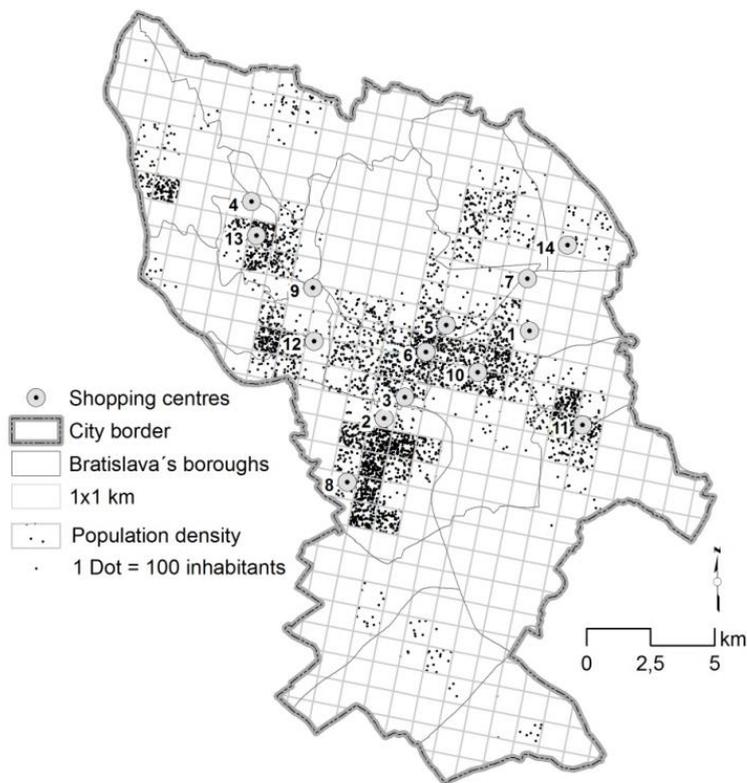


Fig. 1. Studied region covered with grid 1x1 km.

3. CENTER ATTRACTION INDEX OF SHOPPING CENTERS IN BRATISLAVA

Shopping center can be defined as set of retail and other business facilities, which has been planned, built, owned and managed as one entity, usually with proprietary parking available with the limiting value of 5,000 square meters of gross leasable area (ICSC Research, 2005). In Bratislava, there were 14 shopping centers in 2016 (tab. 1). Sizes of GLA, numbers of stores and flows of consumers in these shopping centers are different (cf. Križan et al, 2015).

Table 1. Shopping centers in the Bratislava city territory in 2016.

No.	Shopping center	Opening year	GLA (m ²)	No. of stores
1	Avion Shopping Park	2002	84 000	187
2	Aupark	2001	58 000	208
3	Eurovea	2010	56 000	161
4	Bory Mall	2014	54 000	185
5	Polus City Center	2000	40 000	159
6	Central	2012	36 000	147
7	Shopping Palace	2004	35 000	81
8	OC Danubia	2000	26 000	41
9	OC Galéria	2008	18 500	61
10	OC Retro	2011	14 000	79
11	NC Hron	2007	9 400	29
12	OC Cubicon	2009	7 600	48
13	NC Vajnoria	2015	5 400	20
14	OD Saratov	2004	5 200	33

Source: Own survey

In case of index of attractiveness of shopping centers calculated considering values of the total GLA of retail stores (A variant), the shopping centers of Eurovea (26.31%), Aupark (22.34%) and Central (21.39%) have achieved the greatest share. Proportions of the top three shopping centers represent two thirds of the total shopping centers attractiveness in the city of Bratislava (**Fig. 2**).

The share of Eurovea shopping center exceeds one quarter (26.31%) of the overall shopping centers attractiveness. Based on the values of the index of attractiveness (variant A and B), Eurovea shopping center is the most attractive shopping center in the territory of Bratislava city in 2016 what is confirmed by its high numbers of visitors (Križan et al, 2015).

Bearing in mind the spatial distribution of proportions of index of shopping centers attractiveness (A variant) within the city of Bratislava, the concentration of shopping centers with the highest shares of this indicator to the city center is stronger and more visible than in case of option B. Shopping centers (SC) with the greatest shares of index of attractiveness are located, just like in the option B, in the city districts of Staré Mesto – Old Town (SC Eurovea), Petržalka (SC Aupark) and Ružinov (SC Central). In addition to that Aupark and Central centers are located near Old Town district which gives an evidence of the concentration of shopping centers with the highest levels of index of attractiveness in the city center.

The newest shopping centers like Bory Mall (opened in 2014) or NC Vajnoria (2015) achieved low levels of index of attractiveness in both variants of the index: Bory Mall with

shares 1.74% (A) and 2.60% (B), respectively, and NC Vajnoria with proportion 1.14% (A) and 1.26% (B), respectively. Low shares of these shopping centers have been caused by great distance of these SCs from the city center and the small density of population in their immediate surroundings. However, there is a high probability of increasing of these shares in case of the above mentioned centers in the future due to an ongoing process of population decentralisation towards the suburban belt (Šveda & Šuška, 2014).

Table 2. Values of index of attractiveness of the shopping centers in the Bratislava city territory in 2016.

No.	Shopping center	CAI (A variant, %)	CAI (B variant,%)
1	Avion Shopping Park	6.07	9.72
2	Aupark	22.34	17.75
3	Eurovea	26.31	18.84
4	Bory Mall	1.74	2.60
5	Polus City Center	6.89	15.55
6	Central	21.39	17.08
7	Shopping Palace	2.26	2.09
8	OC Danubia	5.22	5.68
9	OC Galéria	0.75	1.57
10	OC Retro	2.44	3.23
11	NC Hron	1.10	2.34
12	OC Cubicon	0.66	0.81
13	NC Vajnoria	1.67	1.46
14	OD Saratov	1.14	1.26

Source: Own survey

When the index of attractiveness computed from the values of the overall gross leasable area of the shopping centers is taken into consideration (B variant), the greatest proportions have been in case of centers of Eurovea (18.84%), Aupark (17.75%), Central (17.08%) and Polus City Center (15.55%). High levels of index of attractiveness of these shopping centers can be explained by their favourable location within the city and favourable transport accessibility with links to main city transport lines (Križan et al, 2015). Furthermore, the size of gross leasable area has positively affected the high percentage share of this indicator because three of the analysed shopping centers belong to the category of large shopping centers (Eurovea, Aupark, Polus City Center) and one of them is sorted into middle-sized shopping center formats (Central). The shopping centers in the category of the large shopping centers (as mentioned above) are the most visited and preferred shopping centers (Kita & Grossmanová, 2014).

Spatial distribution of index of attractiveness of the shopping centers (B variant) in the Bratislava city (**Fig. 2**) confirms the statement that shopping center attractiveness is

decreasing proportionally with growing distance of the shopping center from the city center (cf. Dennis et al, 2002). Shopping centers with the greatest shares of index of attractiveness are concentrated in the historical core and the inner city (Eurovea, Aupark, Central, Polus City Center). Regarding the administrative divisions of Bratislava, they are located in the districts of Staré Mesto (Eurovea), Petržalka (Aupark), Ružinov (Central) and Nové Mesto (Polus City Center) which are among the most densely populated areas in the Bratislava. On the contrary, the lowest shares of index of attractiveness (B variant) have been observed in the shopping centers situated further away from the Bratislava center, in the areas with lower population density (districts of Vajnory, Dúbravka, Karlova Ves).

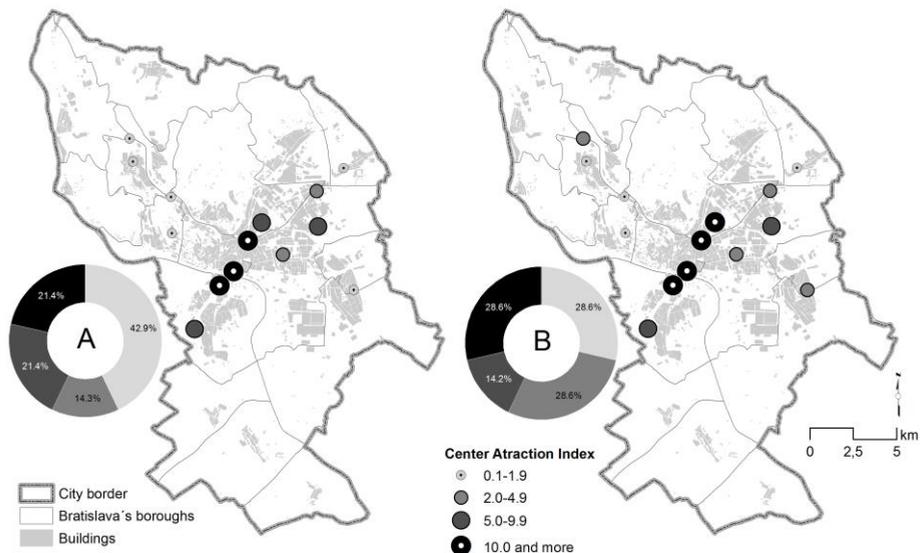


Fig. 2. Index of attractiveness of the shopping centers in the Bratislava city territory in 2016
(Source: Own survey).

4. Conclusions

Applied index of attractiveness (Des Rosiers, Thériault & Mémétrier, 2005) is one of the tools for marketing solution of shopping center localisation in cities such as Bratislava where 14 shopping centers are mutually compared. In this context, index of attractiveness can serve as a tool for the entrepreneur, for whom it may help identify consumers' associations with their "first choice" of location where to go shopping. This means that index of attractiveness includes attributes important for consumers as a measure of their importance. It helps quantify attractiveness of an existing shopping center as well as of a potential newly constructed one not only from the perspective of a location study, but also

by differentiation of the shopping centers. Attractiveness based on the B variant represents a strategic element of the shopping centers' market position. Authors consider application of B variant as more appropriate due to the fact that except for the size of GLA of retail stores, attractiveness of the shopping centers is affected also by other factors (cf. Kunc et al, 2016).

To conclude, the results of analyses show that attractiveness of shopping centers in the inner city is higher than in the city periphery. Reasons for that can be found in the applied methodological approaches as well as in the empirical analyses (cf. Križan et al, 2015). On the other hand, there is an option to discuss the limiting factors of research. Rate of attractiveness used in the paper has been based on the potential customers living in the territory of the city. Customers from neighbouring towns and villages have not been taken into account. Consumers commuting to the city often use shopping centers on the outskirts of the city (Kunc et al, 2012). On the contrary, shopping centers in the Bratislava city center are classified into the large shopping centers as for the size of GLA which predetermines their level of attractiveness.

The contribution is focused on exploration of shopping centers' image, location image and other components which are either connected with retail brand image or are a part of memory network of consumer (Zentes, Morschett & Schramm-Klein, 2011) affecting potential sales and profitability. On the other hand, we reflect some limitations of this research. The first one is the consideration of other factors such as tenant mix affecting attractiveness of shopping centers (cf. Teller & Reutterer, 2008, Wong, Lu & Yuan, 2001). Another factors include volumes of consumer flows and consumer preferences. Last but not least, it is also about the development of shopping tourism as a separate consumer category (Egresi & Kara, 2015).

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