APPLICATION OF TOURIST FUNCTION INDICATORS IN TOURISM DEVELOPMENT

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Abstract: Tourism development planning requires consideration of indicators regarding the intensity of tourist activity within destination and measure that should not be exceeded in further improvement of this activity, in order to prevent disturbing the needs of local community and sustainability of local environment. The village Zlakusa is located within the territory of the City of Užice and it represents an important tourism destination of South-western Serbia. Rural tourism of Zlakusa is characterized by its authenticity and recognition, regarding the pottery and ethno-park called “Terzića avlija”. Accordingly, tourist function indicators were used in this research: tourist accommodation density, Defert Baretje’s index, Charvat’s index and Schneider’s index, with the aim of emphasizing the importance of rural potentials of Zlakusa for tourism development within this village, but also within the whole territory of the City of Užice. Research results showed that tourism is important industry within Zlakusa, with necessity of its further affirmation on tourist market and its adaptation to contemporary needs of modern tourists. Also, research results showed that Zlakusa participates in total tourist arrivals with 18%, as well as in total tourist overnights with 13% and it comprises 1.9% of accommodation capacities of the overall tourism development within the City of Užice for observed period (2008–2016). Therefore, results of this study actually show that Zlakusa is highly oriented towards tourism industry, which is the main reason of necessity for further improvement of conditions for its development, especially in the case of rural tourism, without threatening the local community and local environment.

Keywords: tourist function indicators, rural tourism, pottery, ethno-park “Terzića avlija”

Introduction

Tourism, as one of the leading industries of nowadays, is characteristic by its constant evolving and expanding. This leads to establishing the new forms of tourism, adapted to wishes and needs of each individual, but the most attractive
tourism destinations are still those with preserved natural-geographical environment, protected nature, as well as natural and anthropogenic tourism resources with the ability to attract tourists (Todorović & Štetić, 2009).

Natural environment and socio-cultural resources represent the basis of rural tourism development. Characteristics of rural tourism are primary traditional village and rural architecture, including the specific way of living and working of local population, their folk songs, legends and traditions (Rabotić, 2013). Every village in Serbia has its own customs and traditions, usually passed on from “generation to generation”. Folklore, as part of intangible cultural heritage, is primary held in rural areas of Serbia and it reflects the national identity of local population. During 2010, the Ministry of Culture and Information of the Republic of Serbia formed the network for preservation of intangible cultural heritage at the Ethnographic Museum in Belgrade. Currently, their National list covers 27 registered elements, including the pottery from the village Zlakusa.

The manual production of traditional pottery of Zlakusa attracts the attention of scientific community since 1900 (Pantić, 2013). This pottery is known for its specific technological process, unique in Serbia and Europe. Basic raw materials for making the pottery are processed clay and mineral calcite. The high-quality clay is obtained from mines in the village Vranjani, while the calcite is derived from the quarry in the village Rupeljevo. Contemporary researches indicate the high tourism attraction of this pottery, represented through the cultural and event tourism. Thus, manifestation called “International fine art colony of ceramics - Zlakusa” was initiated in respect to renewal, resumption, revival of preserved tradition and presenting it to the world. The first one was organized in 1996 and, since then, it became tradition, with duration between the 1st and 11th August annually. Ceramists, archaeologists, ethnologists, art critics, art photographers and architects, not only from Serbia, but from all over the world, showed the interest for the handcrafts exposed during this event.

Beside the pottery, the village Zlakusa is also known by its ethno-park “Terzića avlija”, unique museum under the open sky. Development of rural tourism within Zlakusa started simultaneously with the construction of this ethno-park in 2005 (Bjeljac, Terzić, & Ćurčić, 2014). Aforementioned ethno-park represents a typical rural household with old houses and garden around them. This unique complex consists of several parts. Accommodation part includes the oldest houses (built during 1907), today converted to apartments. In museum part, there is the permanent exhibition of the old Serbian school and numerous historical exhibits from different historical periods. In the gallery with the library, there is another permanent exhibition named “Three centuries of the pottery in Zlakusa”.

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Ethno-park also contains over 4,000 books that are available to tourists. Souvenirs, handmade crafts and works of art could be purchased within the nearby store. Furthermore, the ethno-park is the seat of ethno-association “Zavičaj”, which has about 200 members and it is formed with the aim of preserving the tradition, culture, customs, traditional crafts, music, folklore, as well as passing on the tradition to younger generations, but also for development of rural tourism. This ethno-association organizes numerous manifestations (such as “Zlakusa in songs and dances festival”, “Singing yard event”, “The Serbian spinning-bee”, “The Easter concert”, “Bike tour of Užice”, “Autumn in Zlakusa event”, “Long night of museums”) and other cultural events.

Therefore, the subject of this research is rural tourism of the village Zlakusa, with the task of pointing to the significance of tourism potential of this village and its share in total tourism offer of the City of Užice. Tourist function indicators are used with such a purpose within this study and they are applied to the village Zlakusa, but also to the territory of the City of Užice. These indicators are used to measure the economic and socio-cultural effects of tourism within a destination. They are, also, used to analyze the current state of tourism development and suggest the possibility of its further advancing through these indicators, in order to provide positioning the tourist offer on a higher level, which is the aim of this research.

**Literature background**

Until the sixties of the XX century, researches regarding the indicators of tourism development within specific tourism destination were mainly related to the analysis of tourist arrivals, number of beds and the average length of staying, as well as the number of employees in the service industry (Durydiwka, 2013). Later on, studies were focused on researching the relationship between the accommodation capacities and the number of local population within specific destination, but these studies also included the research of tourist accommodation distribution, in order to determine the impact of tourism on the local economy (Keogh, 1984; Van Doren & Gustke, 1982). The first one who applied this type of research was French geographer Pierre Defert, who created the tourist function index in 1967 (Potts & Uysal, 1992). In the literature, this index is usually termed as Defert’s index. In 1978, French explorer Rene Baretje improved existing Defert’s index and brought it into relation with the spatial unit of destination area.

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2 According to the Law related to the Territorial organization of the Republic of Serbia, the municipality of Užice received the status of the City in 2007
Defert-Baretje’s index was used in many studies during the seventies of the XX century, when it was applied to the region of Colorado, Normandy, New Brunswick, Ontario (Potts & Uysal, 1992) and New Zealand (Keogh, 1984). However, this index is also widely used in contemporary studies. Thus, Borzyszkowski, Marczak and Zarębski (2016) determined the impact of tourism on the local population in the West Pomerania Province (Poland). Bănică and Camară (2011) showed the level of tourism development on the group of 215 small towns in Romania within their study. Contrary to their research, Dumbrovská and Fialová (2014) dealt with the issue of development of urban tourism and its impact on the local population. The survey was conducted within the leading European city centers: Prague, Budapest and Vienna. Furthermore, Aubert, Jónás-Berki and Marton (2013) used Defert-Baretje’s index with the purpose of determining the tourism attractiveness of settlements in Hungary. The survey showed that, out of 3,150 settlements, about 1,751 are attractive for tourists.

Available literature regarding the tourist function indicators primarily points to the results of researches conducted in Poland. Tourism, as a factor of development of peripheral rural areas within Eastern part of the Lublin Province (Poland), was researched by Szczęsna and Wesołowska (2015). They highlighted the potentials and limitations related to intensity of tourism development in these areas by applying the aforementioned Defert-Baretje’s index. The similar study was conducted by Lithuanian researchers T. Baležentis, Kriščiukaitienė, A. Baležetnis and Garland (2012). Based on Defert-Baretje’s index, they found that, since 2008, rural tourism is affected by a strong negative trend that occurs as a result of the recession. On the other hand, Polish researcher Parzych (2013) studied the structure of accommodation capacities in rural areas within the seaside resort Rowy. In this village, located between the Baltic Sea and Lake Gardno, in the Pomerania Province (Poland), tourism development was characteristic by its rapid growth during the sixties of the XX century, which is also evidenced by very high value of Defert-Baretje’s index for this period. In studies of Hungarian and Polish researchers (Gromada, Bujdosó & David, 2010), Defert-Baretje’s index was used for determination of the significance of artificial water reservoirs within tourism development of rural areas.

Numerous studies, in addition to Defert-Baretje’s index, also included other indicators for the measurement of tourism intensity. One of them, often used in studies, is Charvat’s index. Thus, Polish researchers used Charvat’s index to demonstrate the intensity of tourism development as a consequence of urbanization (Polák, Cerkal & Břežínová, 2015). Skitova and Žemla (2015)
examined tourism as a factor of socio-economic development in four communities from Malopolska province (Poland) on the basis of Charvat’s index. Their research confirmed that the local government recognized tourism as one of the most important activities for development of local community, which resulted in incorporating the tourism in local strategies and plans of development. Lisiak, Borowiak and Wierzbicka (2016) explored the current state of tourism development in the eastern part of “Krzywińsko-Osiecki”, protected area in Poland, also on the basis of this index. Majewska and Truskolaski (2011) measured the intensity of tourism within the regions of Poland, on the basis of their tourist attractiveness. Kulczyk-Dynowska (2015) determined the number of overnights in the municipalities belonging to the Roztocze National Park (Poland). Also, Kowalczyk-Anioł (2015) studied the characteristics of tourism development in the Polish city named Łódź, during the period from 2000 to 2014.

In addition to above-mentioned indicators, determination of tourism intensity could also be established by Schneider’s index, in literature often named as tourist turnover intensity index. Thus, the intensity of tourist arrivals in urban centres of the Warmian-Masurian province was established, as well as the level of development of tourism accommodation facilities, on the basis of Schneider’s index (Treija & Skujeniece, 2015). Szymańska (2011) found that Schneider’s index is above the average in three districts (Warsaw, Legionowo and Warsaw West County) by exploring the tourist function in Mazovia Province (Poland). Zalech and Kamińska (2014) also used Schneider’s index as one of tourist function indicators, to determine the tourist attractiveness of rural and rural-municipal communes in the eastern part of Warmian-Masurian Province (Poland). Mitura (2016) investigated the relation between the local population and tourists in spa centre Horyniec-Zdrój Health Resort (Poland), by applying the Schneider’s index. Research results showed that the impact of tourism on the local environment is minimal, because the observed centre is ranked at 25th place, out of 34 health spa centres in Poland.

Study settings

The village Zlakusa represents an important tourism destination, located in the foot of the limestone hill Gradina, on the right side of the composite valley of the river Djetinja, 13 km east of Užice-settlement (Gökçe, Yayla, Özkan, 2014).

It is situated between 43° 47' 34" north latitude and 19° 57' 03" east longitude. According to the last Census, conducted during 2011 (Statistical Office of the Republic of Serbia, 2014a), about 670 residents live in the village and they are distributed into 224 households. The population of Zlakusa is intensively
engaged in tourism and agriculture, but also in manual production of the handcrafts. The young population is oriented towards tourism as a sector that could provide them a variety of job opportunities with decreased consequences of the village–city migration, at the same time.

Residents of Zlakusa have always been known as good merchants, in accordance to the fact that trade caravans were passing by near the village, through the valley of the river Djetinja and these caravans were connecting Dubrovnik on the west with Niš on the east side. Today, railroad Belgrade–Bar is passing near the village, as well as other modern roads, which connect the Pannonian Plain with Bosnia and Herzegovina and the Adriatic coast (Figure 1).

Thanks to well-equipped and well-kept infrastructure, the village Zlakusa is appropriately connected with surrounding valorised and renowned tourism areas in Western part of Serbia (such as Tara, Zlatibor, Mokra Gora and Zlatar). Favourable geographical position enables a good connection between the village Zlakusa and Užice-settlement, the largest town in this part of Serbia, administrative centre and the seat of Zlatibor district and tourism region of West Serbia.

**Methodology**

This paper analyzes tourist function indicators that might help in determination of tourism intensity and development within specific destination. Analysis of four tourist function indicators (tourist accommodation density, Defert-Baretje’s index, Charvat’s index and Schneider’s index) is applied within the territory of
the City of Užice and the village Zlakusa, in order to determine the importance and share of ethno-tourism in the whole tourist offer of this municipality. The secondary data sources were used for the purpose of this study (data provided by Statistical Office of the Republic of Serbia, 2014b, for the period 2008–2016, including the publication of Statistical Office of the Republic of Serbia for 2014\(^3\) and Tourism Organization of Užice, 2017).

Collected data were analyzed by using the mathematical formulas and equations. The obtained results are represented in the form of graphs. Tourist function indicators are shown in relation to the time period and tourism destination/place, by using the comparative method.

Defert’s index \( T(f) \) measured the intensity of tourism within specific destination on the basis of the following formula:

\[
DTFI = T(f) = \frac{N}{P} \times 100
\]

(1)

where \( DTFI = T(f) \) is Defert’s tourist function index, \( N \) is the number of beds and \( P \) is the number of local residents.

Defert’s index was improved by French author Rene Baretje and in this form, is often termed as Defert-Baretje’s index. The index is presented with the following formula:

\[
DTFI = T(f) = \frac{N \times 100}{P} \times \frac{1}{S}
\]

(2)

where \( DTFI = T(f) \) represents Defert-Baretje’s tourist function index or Baretje-Defert’s indicator, \( N \) is the number of beds, \( P \) is the number of local residents, and \( S \) is the surface of researched area, represented in km\(^2\).

Measurement of the intensity of tourism development could also be established by using the Charvat’s index, expressed with the following formula:

\[^3\] Statistical Office of the Republic of Serbia does not issue the data regarding the population by settlements in the inter-census period. The authors calculated the number of inhabitants per settlement on the basis of data regarding the population growth between censuses.
where \( Tch \) is Charvats’ index, \( N \) is the number of overnights and \( P \) is the number of local residents. Number of overnights might be excellent economic indicator, with possibility of pointing to the positive and negative impact of tourism on specific area.

Schneider’s index could be calculated on the basis of the following formula:

\[
Ts = \frac{N}{P} \times 100
\]

(4)

where \( Ts \) is a Schneider’s index, \( N \) is the number of tourists, and \( P \) is the number of local residents. This indicator reflects the intensity of tourist saturation, which refers to the establishment of a balance between the tourist and general spatial planning for the needs of the local community.

**Results and Discussion**

Research results indicate that the village Zlakusa is well-established destination on the tourist market, which is reflected in the visits throughout the whole year. Zlakusa participates with 13% in the total number of overnights, 18% in realized tourist arrivals and it represents 1.9% of the total accommodation capacity within the City of Užice. The Ethno Park “Terzića avlija” is the base of rural tourism development, as the only accommodation capacity in the village.

Popularity of the village Zlakusa is evident, especially during the summer months, when numerous tourist events are organized in the village. Tourist arrivals are very intensive in the summer period and this is the consequence of rapid development of Zlakusa as tourist destination. However, beside the positive impacts of numerous tourist arrivals, the high number of tourist visits might affect the saturation of this area and it might lead to the decline in the quality of providing the tourism services, but also to exceeding the carrying capacity of the destination (Jovičić, 2002).

The authors initially calculated the tourist accommodation density (Figure 2) in order to establish the carrying capacity of tourist destination and to observe its possible changes in reporting period (2008–2016).
Tourist accommodation density is constant within the village Zlakusa, regarding tourist accommodation density within the City of Užice and it is very low (2.3 bed places/ km²). This means that, since the establishment of “Terzića avlija”, number of beds in Zlakusa stayed unchanged, while this number followed the changes related to privatization of business units in hospitality sector within the territory of the City of Užice. The accommodation capacities of the village Zlakusa represent 1.9% of the entire accommodation capacity within the City of Užice.

Ethno-park “Terzića avlija” is the only accommodation capacity in the village, where tourists retain between two and three nights on average. Although there are more tourists than local population during the summer months in the village Zlakusa (between two and four times more), this ethno-park still satisfies the guests’ needs. It means that high number of tourist arrivals during the summer months usually occurs on daily basis, especially during the ethnic and cultural events, when tourist activity is very pronounced.

Another important tourist function indicator is Defert-Baretje’s index, often used for showing the number of tourist bed places per 100 inhabitants of the study area (per km²). Defert-Baretje’s index might point to the impact of tourism on sustainability of cultural identity within the local population. Precisely, it might indicate whether tourism development encourages intensive construction of
accommodation facilities, which further might threat and change the architectural appearance of tourist destination.

![Defert-Baretje's tourist function index](source: D. Doljak, 2017)

Defert-Baretje’s index for the village Zlakusa is constant for observed period (2008–2016) and it ranges from 2.24 to 2.33. On the other hand, it ranges from 1.52 to 1.83 within the territory of the City of Užice (Figure 3). If Defert-Baretje’s index is less than four, it could be sad that it is a destination with low tourist activity (Borzyszkowski et al., 2016).

Based on Defert-Baretje’s index, it is obvious that local population is not threatened by intensive construction of tourism infrastructure. This means that building the new accommodation capacities is still not planned. However, it does not mean that construction of new accommodation capacities will not happen in the future in accordance with the guests’ needs and in respect to architectural appearance that will not impair the whole ambience of the village. The ethno-park “Terzića avlija” currently remains the leading hospitality facility in the village, which is also evidenced by distribution of accommodation capacities (Figure 2). In the case of the City of Užice, Defert-Baretje’s index expressed a decline in the number of local residents, but it also pointed to changes in the number of accommodation facilities.

Charvat’s index (Figure 4) and Schneider’s index (Figure 5) are the best indicators of tourist turnover intensity and tourist saturation. It is well known
that high intensity of tourism might have a negative impact on the local population. It could also disturb its cultural identity and decrease the quality of tourist experience (Jovičić, 2002).

Charvat’s index for the territory of the City of Užice is relatively constant. It ranges from 139.88 to 169.88 overnights per 100 inhabitants. These values pointed to the minimum of overnights in 2008 and reached maximum in 2016. For the village Zlakusa, Charvat’s index is not constant. Therefore, it could be concluded that, during the observed period (2008–2016), maximum of overnights was reached two times. The first maximum was recorded in 2009, only four years after the establishment of ethno-park “Terzića avlija”. This is also the period when the village started to organize the event called “International fair of the pottery — Lončarijada”, where masters of Zlakusa exhibit and sell their products. Beside this event, “International ECO camp” was also founded in 2009 and today it is the event which attracts the visitors from all over the world, every year since then. The second maximum of tourist overnights was recorded in 2014.

Realized number of overnights could be a great indicator of economic development within the specific destination. Incomes achieved in this way remain to the local population, with the possibility of investing these incomes in promotion and development of ethnic tourism. In this way, local community
might encourage the young people to stay in the countryside and it might involve them into the sector of tourism. Research results indicate that the number of overnights in the village Zlakusa makes 13% of the total number of overnights within the territory of the City of Užice on average.

Schneider’s index indicates the tourist turnover intensity of specific destination through the number of tourist arrivals. Tourist arrivals to the village Zlakusa are seasonal, especially expressed during the summer months, while there is an obvious increase of tourist arrivals within the territory of the City of Užice from 2008 to 2016. It occurs as a result of growth of tourist arrivals to tourist destinations of the municipality.

Based on the Figure 5, it could be said that maximums of tourist arrivals were recorded in 2009 and 2014. These two maximums of tourist arrivals are related to two recorded maximums of overnights. The first maximum was achieved in 2014 within the territory of the City of Užice, while the second one was recorded in 2016, also within this territory. On the other hand, Schneider’s and Charvat’s indexes show that the highest tourist turnover intensities in Zlakusa were achieved during the 2009 and 2014. The village Zlakusa participates with 18% of tourist arrivals in total tourist arrivals within the City of Užice on average.
Authors believe that tourist arrivals and visits to the village are even more expressed in comparison with the research results. The village Zlakusa is located near the main road that leads to tourist centers and destinations in the immediate environment. This means that the village is visited by numerous transit passengers. However, precise record of this group of tourists is not present in the practice for now.

**Conclusion**

Intangible cultural heritage, as part of moving or stationary tangible cultural heritage, might raise its value and enrich the offer of tourist destination. Thus, from once-forgotten and unknown village, Zlakusa eventually became a tourist brand of Serbia and it obtained the status of tourist destination on the map of the country.

The pottery products from the village Zlakusa are well known within tourism market for a long time and they are related to items with practical use, placed on the market in the form of souvenirs. They are recognizable by its unique trademark (Cyrillic letter Z). Furthermore, as the most successful household in the rural tourism of Serbia, ethno-park “Terzića avlija” is the winner of the biggest award in the field of rural tourism — “Tourist flower award 2008”. Its contemporary tourist offer cannot be imagined without manifestations “Pottery — Zlakusa” and “Autumn in Zlakusa”, organized with the aim of presenting the traditional crafts and preparing the food in these ceramic dishes.

The commitment and involvement of local population in conservation of traditional crafts and development of cultural, event and rural tourism, represents an important contribution to improvement and promotion of tourist offer, which is evidenced by the number of tourists within Zlakusa, as one of its consequences. It is essential that local population express their agreement, based on previous information about the significance and development of tourism for the whole society, for active participation in tourism development (promotion, marketing, construction of accommodation and other hospitality facilities, tourism projects and strategies) and to become a part of the process related to tourism planning. It is necessary to devote more attention to construction of new accommodation capacities in the future. Currently, there is only one facility, “Terzića avlija”, which could lead to degradation of the environment or even the violation of sustainable tourism development, due to the high number of tourist arrivals. Future studies should research this problem in more details. Also, similar researches of tourist function indicators could be conducted within other
destinations of rural tourism, in order to provide mutual comparison of results and to point to the best practical solutions of tourism development.

Tourism researches pointed out that the village Zlakusa represents the cultural heritage of great importance, which contributed to nomination for its registration in UNESCO’s list of intangible cultural heritage. All together indicates that the village Zlakusa could become one of the leading destinations of rural tourism and research results of this study could serve as a basis for tourism development without compromising the tourist function.

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