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## Application of Tourist Function Indicators in Tourism Development. Case Study of Tunisia

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Zastosowanie wskaźników funkcji turystycznej w rozwoju turystyki.  
Studium przypadku Tunezji

**Abstrakt:** W artykule zaprezentowano wyniki oceny stopnia rozwoju funkcji turystycznej w gubernatorstwach Tunezji. Ocenę przeprowadzono metodą wskaźnikową z wykorzystaniem dwóch grup indyktorów funkcji: intensywności ruchu turystycznego i zagospodarowania turystycznego. Funkcję turystyczną przeanalizowano także w kontekście wskaźnika średniej długości pobytu turystów. Uzyskane rezultaty wskazują, że stopień rozwoju funkcji turystycznej w gubernatorstwach jest zróżnicowany: od wysoko rozwiniętej w gubernatorstwach nadmorskich (Sousse, Nabeul, Monastir), po początkowe stadium w gubernatorstwach górskich (Sidi Bouzid, Siliana, Zaghouan). Pod względem średniej długości pobytów – wbrew ogólnym skojarzeniom – Tunezja okazuje się destynacją krótkoterminową. W 13 spośród 24 gubernatorstw przeważają tzw. pobyty weekendowe. Pobyty średnioterminowe charakterystyczne są w północnej części kraju (w gubernatorstwach Nabeul, Bizerte, Manouba), a długoterminowe – tylko na wschodnim wybrzeżu (Ben Arous, Susa, Monastir, Mahdia, Medenine).

**Słowa kluczowe:** funkcja turystyczna; metoda wskaźnikowa; wskaźnik średniej długości pobytu turystów; Tunezja

**Abstract:** The article presents the assessment results of the tourism function development in Tunisian governorates. The evaluation was carried out with the index method based on two groups of function indicators – tourist traffic intensity and tourism development indices. Additionally, the tourism function was analyzed taking into account the average length of tourist stays. The results indicate a varied degree of the tourism function development in the governorates – from a highly developed tourism function in the coastal governorates (Sousse, Nabeul, Monastir) to the initial stage in the mountain regions (Sidi Bouzid, Siliana, Zaghouan). In terms of the average length of stays, Tunisia turns out to be a short-term destination, in contrast to the general misconception.

The so-called weekend stays prevail in 13 out of the 24 governorates. Medium-term stays are most common in the northern part of the country (Nabeul, Bizerte, Manouba), whereas long-term stays dominate only on the east coast (Ben Arous, Susa, Monastir, Mahdia, and Medenine).

**Keywords:** tourism function; indicator method; average length of tourist stays; Tunisia

## INTRODUCTION

The basic measures of tourism development in a given area are tourist traffic and parallel development of tourist infrastructure. Determination of their size and structure indirectly indicates the touristic attractiveness of the region and helps to estimate the development of the tourism function. In the literature, it is referred to as the tourism-recreation function (Matczak 1989). It is defined as any socio-economic activity aimed at management of tourists in a specific spatial unit reflecting the ability of the area to meet the specific tourism needs (e.g. Matczak 1989; Kowalczyk 2002; Kurek, Mika 2007). The tourism function, which is continuous and dynamic, is determined by various internal and external economic, social, and political factors (Gralak 2008).

Studies on the application of tourism function indicators in tourism have been reported by, e.g. Marković *et al.* (2017) in their study of the village of Zlakusa (Serbia), Lukić *et al.* (2018) in the Danube Region (Serbia), Štefko *et al.* (2018) in regions of Slovakia, and Wiskulski (2019) in Croatia. Investigations of the tourism function are quite an important part of studies of Polish tourism geography (e.g. Fischbach 1989; Liszewski (ed.) 1989; Matczak 1989; Derek 2008; Włodarczyk 2009; Durydiwka 2015; Zmysłony 2015; Krukowska, Świeca 2018). The authors carry out spatial analyses of rural and urban areas of Poland. A city, commune, county, and province (voivodeship) are the basic units of reference in their studies.

The aim of the study was to identify and characterize the tourism function in the administrative units of Tunisia. From the point of view of tourism development, the country offers highly attractive tourism resources, which are appreciated by domestic and international tourists. A significant increase in the number of tourists in Tunisia was observed at the turn of the 20<sup>th</sup> and 21<sup>st</sup> centuries (Widz, Brzezińska-Wójcik 2020). It resulted in the development of tourism infrastructure, especially accommodation facilities, in the coastal locations in Tunisia, Hammamet, Nabeul, Sousse, Monastir, Mahdia, and Djerba (Hellal 2017).

Tunisia is the smallest (163.61 thousand km<sup>2</sup>) North African country with a population of approximately 11.44 million people. The average population density is 67 people per km<sup>2</sup>. The country is administratively divided into 24 governorates (delegations or districts) with a size in the range from 288 km<sup>2</sup>

(Tunis) to 38,889 km<sup>2</sup> (Tataouine) (Institut National de la Statistique 2019). This information is important for the adopted research procedure.

## MATERIAL AND METHODS

In the literature, the tourism function is determined with the use of the indicator method in two aspects: 1) tourism development resources (e.g. Defert 1960; Warszńska 1985; Warszńska, Jackowski 1979; Chudy-Hyski 2006; Szromek 2012) and 2) tourist traffic (e.g. Defert 1988; Warszńska 1985; Warszńska, Jackowski 1979; Szromek 2012). The tourism development was assessed in this study with the use of the Baretje–Defert index and the so-called accommodation density index. In turn, the size and spatial differentiation of tourist traffic in the Tunisian governorates were determined on the basis of the number of overnight stays. To this end, two indicators used commonly in tourism geography were considered: 1) tourist traffic density, i.e. the Defert index, and 2) tourist traffic intensity, i.e. the Schneider index. Additionally, an attempt was made to classify tourism in Tunisia in terms of the length of stay based on the indicator of the average length of tourist stays in the governorates.

The analysis of the tourism function was based on two types of data: 1) secondary resources (statistical data from 2017 provided by Office National du Tourisme Tunisien – O.N.T.T., Institut National de la Statistique – I.N.S. and Commissariat Général au Développement Régional – C.G.D.R.) for calculation of the indices of the tourist traffic intensity, tourism development, and average length of tourist stays; 2) primary resources (MerlinX reservation system in 2017–2019) for determination of the time ranges for short-, medium-, and long-term tourism.

### Tourism development indicators

The Baretje–Defert ( $I_{BD}$ ) index, also referred to as the tourism function index, is regarded as a universal measure of tourism function in relation to the characteristics of tourism development. It is expressed as the number of tourist accommodation facilities per 100 inhabitants of an analyzed area (Defert 1988):

$$I_{BD} = \frac{\text{guest beds}}{\text{number of inhabitants}} \times 100$$

There are varying interpretations of the  $I_{BD}$  index in the literature. As proposed by Warszńska (1985), the tourism function can be defined in the following five-grade scale: 0 – *the process of tourism function development has not commenced* (index value < 0.78), 1 – *initial stage of development* (index

value 0.78–6.25), 2 – *additional function* (index value 6.25–25.00), 3 – *equal or supplementary function* (index value 25.00–50.00), 4 – *basic or one of the basic functions* (index value > 50.00).

Warszyńska and Jackowski (1979), Kowalczyk (2002), and Szromek (2007) indicate that an area serves a real tourism function at an  $I_{BD}$  index value of 100 (accommodation capacity equal to the number of permanent residents). Pearce (1995) mentions the six-grade interpretation of the  $I_{BD}$  index proposed by Boyer (1972). According to this classification, the index with the value of 40 denotes an area with a dominant tourist function. In the present study, the interpretation proposed by Warszyńska (1985), where the threshold index value of 50 indicates well-developed tourism areas, has been adopted.

The other measure of tourism development used in the study is the accommodation density index ( $I_{GBN}$ ), which determines the density of accommodation facilities in the studied area (Warszyńska, Jackowski 1979):

$$I_{GBN} = \frac{\text{guest beds}}{\text{area of the analyzed region in km}^2} \times 100$$

The interpretation proposed by Warszyńska (1985) and adopted in the present study suggests a threshold value of 50 for areas with well-developed tourism. The other ranges of values and the degrees of tourist function development are interpreted in accordance with the Baretje–Defert index ( $I_{BD}$ ).

#### Indices of tourist traffic intensity

Two indices of tourist traffic intensity, named after their authors Defert and Schneider, were used in the study. The Defert index ( $I_D$ ), expressing the number of overnight guests per 1 km<sup>2</sup> of the area, facilitates an assessment of tourism density in the studied area (Defert 1988):

$$I_D = \frac{\text{number of accommodation users}}{\text{area of the analyzed region in km}^2}$$

As proposed by Warszyńska (1985), depending on the size of the index, the tourism function can be defined in the following five-grade scale: 0 – *the process of tourism function development has not commenced* (index value < 15.6), 1 – *initial development stage* (index value 15.6–125.0), 2 – *additional function* (index value 125.0–500.0), 3 – *equal or supplementary function* (index value 250.0–500.0), 4 – *basic or one of the basic functions* (index value > 500.0). In the interpretation of the results of the  $I_D$  index following Warszyńska (1985), an area with the  $I_D$  index value exceeding 1,000 is well developed in terms of tourism.

The Schneider index ( $I_{Sh}$ ) is similar to the Defert index, as it is based on the same principal variable, i.e. the number of overnight guests. This indicator shows the number of overnight visitors per 100 permanent residents of the area. Schneider combined some features of the Baretje–Defert and Defert indices and proposed an indicator comparing the number of tourists to the number of permanent residents in a given area:

$$I_{Sh} = \frac{\text{number of accommodation users}}{\text{number of inhabitants}} \times 100$$

The value of  $I_{Sh}$  facilitates classification of the tourism function in the five-grade scale from 0 – *the process of tourism function development has not commenced* (index value < 7.8) to 4 – *basic or one of the basic functions* (index value > 500.0). An index value of 500 or higher indicates well-developed tourism in an analyzed area (Warszyńska 1985).

#### **Indicator of the average length of tourist stays**

The tourism function in the administrative units of Tunisia was also analyzed in terms of the indicator of the average length of tourist stays, which indirectly provides information about the characteristics of tourist stays. The importance of this type of data from a tourist area has been emphasized by many authors (e.g. Doxey 1975; Raymond, Brown 2007; Durydiwka 2015). The length of stays may influence the degree of tourist function development.

The classification of tourism in terms of the *duration of stays* is not explicit in the literature. Kruczek (2009) distinguishes short-term (up to three overnight stays) and long-term (over three overnight stays) tourism. The author additionally distinguishes no-overnight stay and weekend tourism in the former group. Więckowski (2010) classifies tourist stays into short-term (up to two nights) and medium-term (from two to four nights) types. In turn, Buczak *et al.* (2015) underline that, in addition to the duration specified in the Regulation of the European Parliament and the Council (EU) (2011), it is possible to introduce an additional classification, e.g. 4–6 overnight stays, 7–13 overnight stays, etc., depending on the needs associated with the tourist stays.

Since international visits organized by tour operators as the so-called tourist packages dominate in Tunisia (Brzezińska-Wójcik, Widz 2017), it is important to use a classification of stays corresponding to the duration of package holidays offered by travel agencies. Therefore, stay and tour packages in Tunisia offered in 2017–2019 were analyzed using the MerlinX reservation platform. In total, 10,211 packages were analyzed, including 9,882 stay packages, 194 tour packages, and 135 optional packages.

## RESULTS

**Development of the tourism function in Tunisian governorates in relation to the value of tourism development indicators: The Baretje–Defert index ( $I_{BD}$ ) and the accommodation density index ( $I_{GBN}$ )**

The values of the Baretje–Defert index calculated for the 24 areas range from 0.050 to 10.406 (Tab. 1). In accordance with the adopted classification proposed by Warszyńska (1985), no governorate achieved the highest (4<sup>th</sup> or 3<sup>rd</sup>) degree of tourism function development. An additional function (2<sup>nd</sup> degree) was

Tab. 1. Values of the Baretje–Defert index ( $I_{BD}$ ) and characteristics of the tourism function in the Tunisian governorates (Source: Own study based on data from O.N.T.T. [2017], I.N.S. [2017], and C.G.D.R [2017])

Name of governorate	B	R	$I_{BD}$	Degree of tourism function development	Interpretation of tourism function development
Medenine	49,901	479,520	10.406	2	Additional
Sousse	50,125	674,971	7.426		
Nabeul	51,417	787,920	6.526		
Tozeur	5,975	107,912	5.537	1	Initial stage of development
Monastir	23,422	548,828	4.268		
Mahdia	10,686	410,812	2.601		
Kebili	4,004	156,961	2.551		
Jendouba	6,686	401,477	1.665		
Tunis	13,733	1,056,247	1.300		
Béja	2,865	303,032	0.945		
Manouba	3,011	379,920	0.793		
Ben Arous	4,316	631,842	0.683	0	The process of tourism function development has not commenced
Gabès	1,684	374,300	0.450		
Kef	920	243,156	0.378		
Tataouine	514	955,421	0.349		
Sfax	3,334	149,453	0.344		
Gafsa	1,141	337,331	0.338		
Bizerte	1,590	568,219	0.280		
Zaghuan	336	176,945	0.190		
Kairouan	967	570,559	0.169		
Siliana	330	223,087	0.148		
Kasserine	378	439,243	0.086		
Ariana	335	576,088	0.058		
Sidi Bouzid	215	429,912	0.050		

B – guest beds; R – number of inhabitants

only identified in three regions: Medenine – 10.406, Sousse – 7.426, and Nabeul – 6.526. The tourism function representing the initial stage of development (1<sup>st</sup> degree) was identified in seven, with values ranging from 5.537 in Tozeur to 0.945 in Béja. As demonstrated by the indicator, the process of development of the tourism function has not commenced in as many as 14 governorates (Tab. 1).

The information about tourism development was completed with the values of the accommodation density index ( $I_{GBN}$ ). The values of this indicator evidently varied from 0.013 in Tataouine to 47.684 in Tunis (Tab. 2). None of the units

Tab. 2. Values of the accommodation density index ( $I_{GBN}$ ) and characteristics of the tourist function in the Tunisian governorates (Source: Own study based on data from O.N.T.T. [2017], I.N.S. [2017], and C.G.D.R [2017])

Name of governorate	B	SA	$I_{GBN}$	Degree of tourism function development	Interpretation of tourism function development
Tunis	13,733	288	47.684	3	Equal or supplementary
Monastir	23,422	1,024	22.873	2	Additional
Sousse	50,125	2,669	18.780		
Nabeul	51,417	2,840	18.105		
Ben Arous	4,316	790	5.463	1	Initial stage of development
Medenine	49,901	9,167	5.444		
Mahdia	10,686	2,951	3.621		
Manouba	3,011	1,137	2.648		
Jendouba	6,686	3,102	2.155		
Tozeur	5,975	5,593	1.068		
Béja	2,865	3,740	0.766		
Ariana	335	482	0.695	0	The process of tourism function development has not commenced
Sfax	3,334	7,545	0.442		
Bizerte	1,590	3,750	0.424		
Gabès	1,684	7,166	0.235		
Kef	920	5,081	0.181		
Kebili	4,004	22,454	0.178		
Gafsa	1,141	7,807	0.146		
Kairouan	967	6,712	0.144		
Zaghouan	336	2,820	0.119		
Siliana	330	4,642	0.071		
Kasserine	378	8,260	0.046		
Sidi Bouzid	215	7,405	0.029		
Tataouine	514	38,889	0.013		

B – guest beds; SA –surface area [km<sup>2</sup>]

was classified as the highest (4<sup>th</sup>) degree of tourism function development. The Tunis governorate was ranked first, as it represented the 3<sup>rd</sup> grade of tourism function development, i.e. equal or supplementary function, in relation to the other economic functions. The additional (2<sup>nd</sup> grade) function was assigned to three districts: Monastir – 22.873, Sousse – 18.780, and Nabeul – 18.105. The initial stage of development of the tourism function (1<sup>st</sup> degree) was identified in six governorates – from 1.068 in Tozeur to 5.463 in Ben Arous. As shown by this indicator, the process of tourism function development has not commenced in as many as 14 governorates (Tab. 2), as in the case of the  $I_{BD}$  values.

The values of the Baretje–Defert index and the accommodation density index clearly indicated the degree of the tourist function development only in some governorates. This was especially evident in the Sousse and Nabeul regions, where the additional function was assigned. The initial stage of development was recognized in another three governorates: Mahdia, Jendouba, and Tozeur. Significant discrepancies between the values of both indicators were noted in the other governorates. An example of such differences is the governorate of Tunis, where the degree of tourist function development was estimated at 1 by the  $I_{BD}$  index and at 3 by the  $I_{GBN}$  index. Such a large variation in the tourist function development in this area is associated with the value of the second variable, i.e. the number of permanent residents and surface area of the region.

#### **Development of the tourist function in Tunisian governorates in relation to the values of the tourist traffic intensity indicators – Defert ( $I_D$ ) and Schneider ( $I_{sh}$ ) indices**

The results revealed varying values of the Defert index ( $I_D$ ) in the range from 0.057 to 2018.184 in the 24 governorates of Tunisia (Tab. 3). The highest degree of development (4<sup>th</sup>) referred to as the basic or one of the basic functions was only identified in the Tunis governorate. According to the interpretation proposed by Warszyńska (1985), this is an area with well-developed tourism, as the value of its index exceeds 1,000. Sousse was assessed as a governorate with highly important tourism function as well. The value of the  $I_D$  indicator, i.e. 518.146 (3<sup>rd</sup> degree), indicates the equal or supplementary function in relation to other economic functions (Tab. 3).

The second degree of tourist function development defined by Warszyńska (1985) as the additional function was identified in two governorates, i.e. Monastir and Nabeul, with the Defert index values of 426.136 and 347.052, respectively. The initial stage of development of the tourism function was determined in eight governorates: Medenine – 120.252; Mahdia – 78.810; Jendouba – 60.959; Ben Arous – 51.559; Manouba – 40.024; Tozeur – 25.226; Ariana – 20.075, and



Tab. 3. Values of the Defert index ( $I_D$ ) and characteristics of the tourism function in the Tunisian governorates (Source: Own study based on data from O.N.T.T. [2017], I.N.S. [2017], and C.G.D.R [2017])

Name of governorate	AU	SA	$I_D$	Degree of tourism function development	Interpretation of tourism function development		
Tunis	581,237	288	2018.184	4	Basic or one of the basic functions		
Sousse	1,382,933	2,669	518.146	3	Equal or supplementary		
Monastir	436,363	1,024	426.136	2	Additional		
Nabeul	985,627	2,840	347.052				
Medenine	1,102,347	9,167	120.252	1	Initial stage of development		
Mahdia	232,569	2,951	78.810				
Jendouba	189,095	3,102	60.959				
Ben Arous	40,732	790	51.559				
Manouba	45,507	1,137	40.024				
Tozeur	141,088	5,593	25.226				
Ariana	9,676	482	20.075				
Sfax	138,461	7,545	18.351				
Kebili	330,691	22,454	14.727			0	The process of tourism function development has not commenced
Bizerte	45,507	3,750	12.135				
Gabès	55,156	7,166	7.697				
Gafsa	48,276	7,807	6.184				
Kairouan	40,959	6,712	6.102				
Kef	14,314	5,081	2.817				
Kasserine	19,630	8,260	2.377				
Béja	6,231	3,740	1.666				
Zaghouan	1,165	2,820	0.413				
Tataouine	11,815	38,889	0.304				
Siliana	736	4,642	0.159				
Sidi Bouzid	420	7,405	0.057				

AU – number of accommodation users; SA – surface area [km<sup>2</sup>]

Sfax – 18.351. In turn, the process of tourism function development has not commenced in the other 12 governorates (Tab. 3).

The values of the Schneider index ( $I_{Sh}$ ) vary from 0.095 to 229.886 in the 24 governorates of Tunisia (Tab. 4). These data indicate that none of the governorates reached the highest (4<sup>th</sup> or 3<sup>rd</sup>) stages of development. The additional function was identified in six districts, with the highest value in Medenine – 229.886, a slightly lower value in Kebili – 210.684 and Sousse – 204.888, and a substantially lower value obtained for the other three regions, i.e. from 130.744 in Tozeur to 79.508

in Monastir. The initial stage of tourism function development (1<sup>st</sup> degree) was recognized in nine governorates, i.e. from 56.612 in Mahdia to only 7.905 in Tataouine. As shown by the indicator, the process of tourism function development has not commenced in as many as nine governorates (Tab. 4).

The values of the Defert and Schneider indices unambiguously determined the development of the tourism function only in some regions. This is the case

Tab. 4. Values of the Schneider index ( $I_{Sh}$ ) and characteristics of the tourism function in the Tunisian governorates (Source: Own study based on data from O.N.T.T. [2017], I.N.S. [2017], and C.G.D.R [2017])

Name of governorate	AU	R	$I_{Sh}$	Degree of tourism function development	Interpretation of tourism function development
Medenine	1,102,347	479,520	229.886	2	Additional
Kebili	330,691	156,961	210.684		
Sousse	1,382,933	674,971	204.888		
Tozeur	141,088	107,912	130.744		
Nabeul	985,627	787,920	125.092		
Monastir	436,363	548,828	79.508		
Mahdia	232,569	410,812	56.612	1	Initial stage of development
Tunis	581,237	1,056,247	55.029		
Jendouba	189,095	401,477	47.100		
Gabès	55,156	374,300	14.736		
Sfax	138,461	955,421	14.492		
Gafsa	48,276	337,331	14.311		
Manouba	45,507	379,920	11.978		
Bizerte	45,507	568,219	8.009		
Tataouine	11,815	149,453	7.905		
Kairouan	40,959	570,559	7.179		
Ben Arous	40,732	631,842	6.447		
Kef	14,314	243,156	5.887		
Kasserine	19,630	439,243	4.469		
Béja	6,231	303,032	2.056		
Ariana	9,676	576,088	1.680		
Zaghouan	1,165	176,945	0.658		
Siliana	736	223,087	0.330		
Sidi Bouzid	420	429,912	0.098		

AU – number of accommodation users; R – number of inhabitants

of two governorates, i.e. Monastir and Nabeul, where the additional function was identified. Another four regions, i.e. Mahdia, Jendouba, Manouba, and Sfax, were classified with the initial stage of development of the tourism function (Tab. 3–4). The other delegations exhibited significantly different values of both indicators.

As in the case of the Baretje–Defert and accommodation density ( $I_{\text{GBN}}$ ) indices, this is associated with the differences in the surface area and in the number of permanent residents. Examples of the differences in the Defert index are the Sousse and Tunis governorates. The number of overnight visitors in Sousse was 1.38 million, which is the highest number of all the governorates (2<sup>nd</sup> place in the ranking and the 3<sup>rd</sup> degree of tourism function development). In the Tunis governorate, there were only 581.24 thousand overnight tourists at the highest value of the index, i.e. 2018.184 (4<sup>th</sup> degree). This discrepancy is related to the differences in the surface area of the governorates (Sousse – 2,669 km<sup>2</sup>; Tunis – only 288 km<sup>2</sup>). The discrepancy between the values of the Schneider index can be illustrated by Kebili and Sousse. Kebili was ranked the 2<sup>nd</sup> place despite the small number of overnight tourists, i.e. 330.69 thousand. In contrast, the leader among the governorates in terms of the number of overnight tourists, i.e. Sousse with 1.38 million overnight visitors, was only the 3<sup>rd</sup> in the ranking. As in the case of the Defert index, this is associated with the different number of permanent residents in the area.

#### Comparison of the average length of tourist stays with tourist packages

The analysis of the offer from tour operators in Tunisia (stay and tour packages) helped to distinguish seven periods of short-term, medium-term, and long-term tourism (Fig. 1). The long-term tourism was predominant – 92% (7–8 nights – 36%, 14–15 nights – 34%, 9–13 nights – 29%, and over 16 nights – 1%) in comparison with medium-term – 6% and short-term tourism – 2%.

The time intervals distinguished by the indicator of the average length of tourist stays (Fig. 1) facilitated determination of the type of tourism in terms

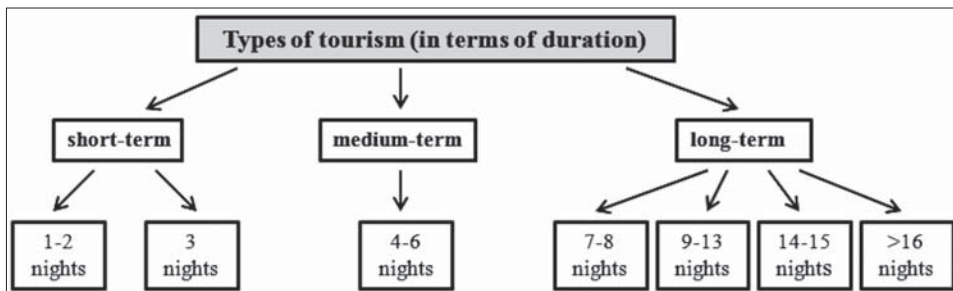


Fig. 1. Types of tourism in terms of duration (Source: Own study)

of the duration of stays in each governorate (Tab. 5). Short-term stays were noted in 67% of the area of the country. In 13 out of the 24 governorates, the average length of tourist stays was 1–2 nights, i.e. these were weekend visits. The average length of stay of three nights was reported in three governorates, i.e. Ariana, Tunis, and Zaghouan. Medium-term stays (4–6 nights) were reported from 13% of all the governorates, namely Nabeul (4 nights), Bizerte (5), and Manouba (5). Long-term stays were reported from only 20% of the area of Tunisia. The longest stays (18 nights) were recorded in Ben Arous. 7–8 nights weekly stays were recorded in the Monastir, Sousse, Mahdia and Medenine delegations. There were no 9–13 and 14–15 overnight stays, i.e. the so-called two-week stays (Tab. 5).

Tab. 5. Average length of tourist stays in the Tunisian governorates (Source: Own study)

Name of governorate	Average length of tourist stays	Types of tourism (in terms of duration)
Ben Arous	17.7	Long-term
Monastir	8	
Sousse	7.2	
Mahdia	7.1	
Medenine	6.5	
Manouba	5.2	Medium-term
Bizerte	5	
Nabeul	3.6	
Ariana	3	Short-term
Zaghouan	2.5	
Tunis	2.5	
Sfax	2	
Béja	2	
Siliana	1.8	
Gabès	1.7	
Tozeur	1.5	
Tataouine	1.5	
Gafsa	1.5	
Kef	1.4	
Kairouan	1.4	
Sidi Bouzid	1.3	
Jendouba	1.3	
Kasserine	1.2	
Kebili	1.14	

The results show that short-term tourism generally predominates in Tunisia. Long-term tourism is concentrated only on the east coast. This coincides with the offer from tour operators, i.e. long-term stay packages are available mostly in the governorates of Sousse, Monastir, Mahdia, and Medenine. In turn, the lack of records of 9–13- and 14–15-day stays is striking, especially since there is an extensive offer of tourist packages covering these periods in Tunisia (29% and 34%, respectively).

**Relationships between the values of tourism development indices ( $I_{BD}$  and  $I_{GBN}$ ) and the tourist traffic intensity ( $I_D$  and  $I_S$ ) and the average length of tourist stays in the Tunisian governorates**

The comparison of the size of the indicators of tourism development ( $I_{BD}$  and  $I_{GBN}$ ) and tourist traffic intensity ( $I_D$  and  $I_S$ ) with the average length of tourist stays in the governorates does not show any significant relationships (Fig. 2).

For example, the values of the tourism development measures calculated for the Tunis governorate indicate the 3<sup>rd</sup> degree of tourism function development according to the accommodation density index ( $I_{GBN}$ ). This result might be explained by the long-term leisure tourism. However, the analysis of the indicator of the average length of tourist stays shows that this is an area of short-term active stays. A similar conclusion is suggested by the comparison of the values of the tourist traffic intensity indicators. For instance, the Kebili and Tozeur districts were assigned with the 3<sup>rd</sup> degree of tourist function development according to the Schneider index, but these areas are characterized by short-term tourism, as indicated by the results of the analysis of the length of stays. Conversely, long-term tourism was indicated to prevail in the Ben Arous governorate, compared to the other districts, but this region is only characterized by the initial stage of development according to the values of the Defert and Schneider indices.

## CONCLUSIONS

In terms of the degree of development of tourism function shown by the values of the function indicators (in accordance with the interpretation proposed by Warszyńska), the entire area of Tunisia exhibits the initial stage of tourism development or the additional function. This is related to the considerable differentiation of the governorates from highly developed tourism regions on the coast (Sousse, Nabeul, Monastir) to the initial stage of development in the mountain areas (Sidi Bouzid, Siliana, Zaghuan). The highest degree of tourist function development defined as the basic or one of the basic ones was achieved only by the Tunis governorate (as shown by the  $I_D$  index). In turn, the process

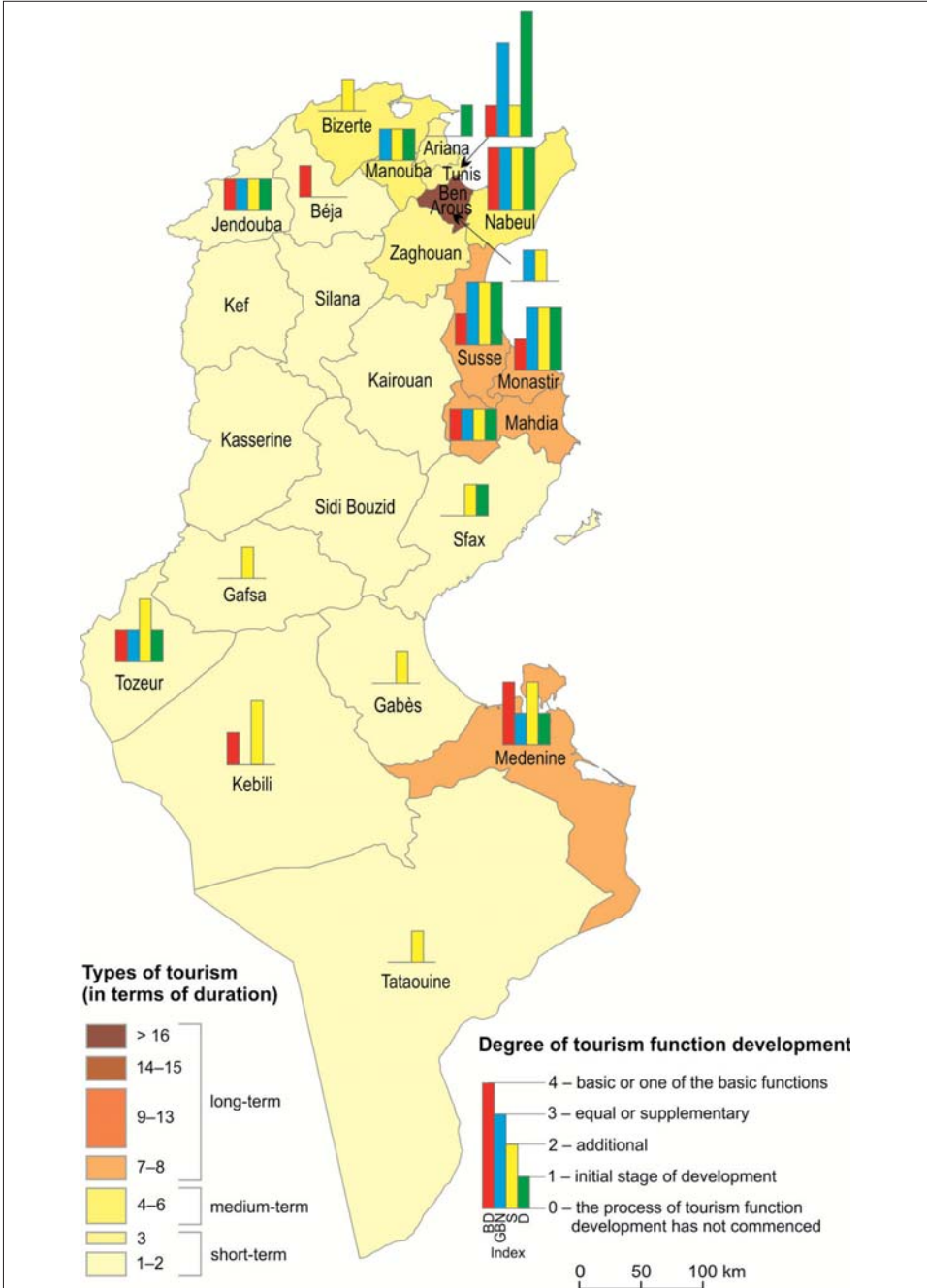


Fig. 2. Average length of tourist stays and the degree of tourism function development shown by the indicators of tourist traffic intensity ( $I_D$  and  $I_{Sh}$ ) and tourism development ( $I_{BD}$  and  $I_{GBN}$ ) (Source: Own study)

of tourism function development has not commenced in more than 10 regions (as shown by the  $I_D$ ,  $I_{Sh}$ ,  $I_{BD}$ , and  $I_{GBN}$  indices).

Tunisia is generally a short-term destination in terms of the average length of tourist stays. This is associated with the fact that long-term stays are concentrated only in the governorates on the east coast of the country accounting for merely 20% of its area. However, it should be noted that some governorates may exhibit a higher degree of tourist function development than that revealed by the indicator values. This may be related to several factors. First, there are some doubts as to the interpretation of the measures of the tourism function components in the following indicators: tourism development ( $I_{BD}$  and  $I_{GBN}$ ), tourist traffic intensity ( $I_D$  and  $I_{Sh}$ ), and the average length of tourist stays. Additionally, the phenomenon of “second homes” is not taken into account in the total number of accommodation facilities included in the calculation of the Baretje–Defert and the accommodation density indices. In such a case, there are a number of non-permanent residents having their houses, flats, or apartments in the area. This phenomenon is relatively common among the older generation of tourists from France, Italy, and Belgium in Tunisia. The coastal governorates of Nabeul, Sousse, Monastir, Mahdia, and Medenine (in particular the island of Djerba) are most popular with foreigners (Hellal 2017). Moreover, in Tunisia, there are hundreds, if not thousands, of private accommodation facilities that are rented by tourists but not included in the statistics. This problem of the reliability of statistical data has been highlighted by Dryglas (2013).

The number of overnight tourists is used to calculate the Defert and Schneider indices. However, it does not include the number of tourists who come to the governorate only to visit a unique tourist attraction (e.g. the Great Mosque in Kairouan) and are not included in the statistics, as they spend the night in neighboring governorates (e.g. Sousse, Monastir). There are also certain doubts as to the accuracy of the data on the average length of tourist stays. As noted above, there are substantial discrepancies between secondary statistical data and trends in offers from tour operators.

Moreover, the results of the degree of tourist function development in the analyzed regions are highly diverse. This is associated with the different statistical variables used for the calculation of the indices. Therefore, the present results cannot be interpreted as an unambiguous indication of the degree of tourist function development. However, they constitute a good background for further considerations of these issues, which should include calculations and analysis of synthetic indicators, e.g. as in the procedure developed by Ziolo (1973), the two-dimensional indicator of tourism function development ( $W_{W-Sz}$ ), and the logistic indicator of the tourism function ( $W_{L\beta}$ ) proposed by Szromek (2012).

Moreover, the data should be analyzed with reference to the evolution of Tunisia as a tourist destination (Widz, Brzezińska-Wójcik 2020) in accordance with the theory developed by Butler (1980).

The identification of regions with tourism function should also take into account: 1) the resources of the geographical environment, 2) the structure of tourist traffic, and 3) the social, economic, and spatial consequences of tourist services, as emphasized by Matczak (1989) and Zmyślony (2015).

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