



## OVERVIEW AND CHARACTERISTICS OF TOURISM SEASONALITY IN OHRID

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**Abstract:** Tourism research has always been an imperative for the scientists and policy creators, so they can maximise its socioeconomic effects. In that order, all the factors that influence the tourism industry must be taken into consideration. One of the biggest characteristics of tourism and challenges for researchers is its seasonality. It is a temporary imbalance of tourism activities caused by many factors and can have many social, economic and environmental consequences. Seasonal component of tourism becomes more important with its development. This paper analyses tourism seasonality in Ohrid as the most popular tourist destination in Macedonia. Findings and conclusions are based on several research methods like: Descriptive statistics, Seasonality coefficient, Gini coefficient and Seasonal Indicator. Research results determine Ohrid as a tourist destination with a strong seasonality caused by natural factors. Paper outcomes can be useful for tourism policy creators and tourism practitioners for further planning and carrying of all tourism activities. Also, findings and presented methodologies can be used in further similar researches or in further analyses of overall tourism seasonality in the country.

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## **1. Introduction**

Tourism as one of the fastest growing industries in the world has a significant role in the local and the national economic development. There are many reliable indicators on its importance as its impact on the national balance of payment or country's GDP. The tourism industry has also a high level of influence on country's aggregate employment, living standard of the population, volume and structure of investments etc. These effects are multiplied considering indirect economic impact of tourism on other industries that are not part of the tourism sector. Researches in the field of tourism are always a great challenge and contribute to maximising its socioeconomic effects.

It is very important for the stakeholders to deliberate all the factors that can influence tourism development when creating tourism policy or tourism strategies. There are, as for example, objective factors of tourism demand like working and living environment that can stimulate tourist needs, or spare time and finance that generate possibility to satisfy tourist needs. Also, there are factors that determine tourism offer like attractiveness features, transport infrastructure and receptive factor of tourism offer (Ацковски & Ацковска, 2005, pp. 105-119). These factors determine nature of tourism in a particular place and one of the most significant characteristics of tourism as a social phenomenon is its seasonality.

This research paper investigates tourism seasonality in Ohrid as the most important touristic place in Republic of Macedonia. Proper understanding of tourism seasonality and the factors that determine this phenomenon are necessary for the purpose of the research. Paper findings and conclusions are based on several research methods: Descriptive statistics, Seasonality coefficient, Gini coefficient and Seasonal indicator.

## **2. Tourism Seasonality – Definition, Factors, Consequences**

Defining tourism seasonality has always been a challenge for the researchers. One of the most important and most used definition of tourism seasonality has been given by Richard Butler, according whom „...seasonality is a temporal imbalance in the phenomenon of tourism, which may be expressed in terms of dimensions of such elements as numbers of visitors, expenditure of visitors, traffic on highways and other forms of transportation, employment, and admissions to attractions” (Cannas, 2012, p. 41). As a result of a seasonal component, tourism varies in its dynamics in short intervals that are periodically repeated from one to another year. It can be best seen from the time distribution of tourist arrivals or tourism income, when certain months or quartiles of the year have significant concentration. Some authors consider that seasonal component of tourism becomes more important with

its development and as tourism grows massive, seasonality comes to be more apparent (Велкоски, 1997).

Many authors recognise two main factors that determine tourism seasonality: natural (physical) and social (institutional or socio-cultural) (Lee et al., 2008; Kožić, 2013; Secareanu & Firoiu, 2011). Natural factors refer to climate changes and natural physiognomies of tourist destination. Weather seasons and temperature differences, amount of precipitation, number of sunny days and other natural phenomena can significantly influence tourism seasonality. These natural dimensions refer more to certain forms of tourism. Seasonality caused by natural factors is higher at those tourist destinations with dominant outdoor activities, particularly if the destination is located on the peripheral parts of the Northern or Southern hemisphere that are more vulnerable on climate changes. Tourist seasonality caused by natural factors is highly predictable. Many researches have shown particular differences between domestic and foreign tourist behavior at this type of seasonality. Domestic tourist demand is more elastic on weather changes compared to foreign tourist demand (Agnew & Viner, 2011). It suggests that domestic tourists, especially in smaller countries, can quickly respond to weather changes. If weather conditions are not favourable, they can leave the destination proximately which will reduce the number of domestic tourist arrivals. Unlike them, foreign tourists are planning their trips and possible sudden weather changes do not give them much space to react. They usually stay in the destination according to their plan regardless the weather conditions.

Social (institutional or sociocultural) dimension of tourism seasonality is determined by written rules or traditions applicable in tourism practice, and therefore these factors have an influence on the dynamics of tourism activities (Kožić, 2013). In general, institutional and sociocultural factors include seasonal vacations, holidays, free days, school brakes and holidays and so on. Tourism seasonality caused by these reasons is less predictable as number of spare days and holidays, especially religious holidays (eg. Easter) can vary from year to year. In long terms, tourism seasonality influenced by institutional factors is expected to be even more unstable. Some authors consider the aging of population as the main reason for that flux (Butler & Mao, 1997). Retired persons do not have major restrictions on their spare time and their travels are not always determined by holidays and free days during the year. Another significant reason that makes tourism seasonality influenced by social factors unpredictable is that the way and needs of using seasonal holidays has been changed in recent years. Today, people usually split their holidays and use the free days in summer and in winter as well. For example, tourists from Northern Europe more rarely use their spare days from the holidays for summer vacations on traditional Mediterranean destinations. Their decision more often falls on visiting exotic destinations during the summer and winter centers during the winter (Nadal et al., 2003).

The consequences of tourism seasonality in scientific and professional literature are generally categorised into three main groups: social, environmental and sociocultural (Koenig-Lewis & Bischoff, 2005).

Social consequences are seen through variability of incomes, variability of the employment rate, difficulties in attracting investments etc. These are so-called direct consequences of tourism seasonality. This phenomenon has also indirect influence on the quality of tourism services, considering the difficulties to attract excellence workforce on temporary jobs (Kožić, 2013). Although the social consequences are generally negative, there are researchers that emphasise positive side of tourism seasonality. For example, group of authors highlight that seasonality in tourism is in favour of construction industry because construction work in tourist destinations are usually being done out of the tourist season (Grant et al., 1997).

Environmental consequences of tourism seasonality are related to overcoming environmental capacities of tourist destination during the tourist season. It usually results with increased pollution and ecological misbalances of flora and fauna. On the other side, tourism seasonality can be considered as positive in respect to environmental consequences because an intense tourist activity in particular place through the whole year can very adversely affect the environment.

Sociocultural consequences of tourism seasonality refer to the local community, or else the local population in the tourist destination. This influence largely depends on the intensity of communication between local population and tourists. During the season, locals are facing overloaded attendance of public space, crowded markets, slow traffic, price increase, and often enlarged crime rate. On the other hand, out of the season, the local population may face shortage of supply of goods and services necessary for basic living needs.

Tourism seasonality is certainly interesting phenomenon worth studying towards tourism development in order to achieve sustainability of the tourist destination.

### **3. Research Methodologies to Examine Tourism Seasonality in Ohrid**

There are several scientific research methods for determining and examining tourism seasonality. For the purpose of this study we will use the following research methods and indicators in order to reach more relevant findings about tourism seasonality in Ohrid in the analysed period:

1. Descriptive statistics
2. Seasonality Coefficient -  $KS_L$  (A method of treatment of general average)
3. Seasonality Indicator (SI)

#### 4. Gini Coefficient (G)

Data used in this research are taken from the official tourism reports of Municipality of Ohrid (Municipality of Ohrid, 2015).

### ***3.1. Using Descriptive Statistics to Determine Tourism Seasonality***

Descriptive statistics provides an image of characteristics of the phenomenon. For the purpose of the paper, calculation of descriptive statistics indicators is made for each year separately and based of the monthly number of tourist arrivals.

The value of the mean ( $\mu$ ) shows the average monthly number of tourist arrivals in each year separately. Comparing the mean with the Median (Md) illustrates whether there are extreme values in the analysed phenomenon. Existence of extreme values is an indicator of seasonality. Also, high values of Standard error (Std. Err.) and Standard deviation (Std. Dev.) can confirm that there are extreme values in certain months in the number of tourist arrivals which certainly is another indicator of tourism seasonality.

Tourism seasonality can also be determined using descriptive statistics through calculating Kurtosis and Skewness indices which measure peakedness, skewness and symmetry of data distribution. These indices can also confirm or deny presence of extreme values and shows if they are higher or lower than the mean. Kurtosis and Skewness allow us to determine if the tourism seasonality is long-lasting or it is on a shorter period. They are also useful for a comparative analysis of tourism seasonality on more tourist destinations.

The methods of calculating descriptive statistics indicators are well known and contained in research methodology literature (Berenson & Levine, 1996; Делова Јолевска, 2008; Велкоски, 2003). For the purpose of this research, calculation of descriptive statistics indicators is made by using Data analysis package in Microsoft Excel software. Data used for the purpose of this analysis are taken from the official reports of Municipality of Ohrid (2015). The results are given in Table 1.

Analysis of the values of the mean and maximum (max.) and minimum (min.) values of the population in each year discover extreme values in the number of tourist arrivals in Ohrid. As seen from the results in Table 1, 2008 was the best year in the analysed period with monthly average of 16842 tourist arrivals, compared to the 2010 with monthly average of 13759 tourist arrivals. Though, it is easy to notice high extreme values which differ from the average number of tourist arrivals per month. For example, only 1.586 tourists visited Ohrid in February 2012, compared to the 54.356 tourist arrivals in July 2007 (34.3 times more). Results show that higher deviation from the mean have the months with more tourist

arrivals (Table 1). These extreme values (maximal number of tourist arrivals) have even higher deviation from the geometric (GEOMEAN) and harmonic mean (HARMEAN). Registered major deviations are good indicator for the existence of expressive tourism seasonality in Ohrid with only few months in the year with exceptionally high values of tourist arrivals.

**Table 1. Descriptive static indicators for tourism seasonality in Ohrid**

	2007	2008	2009	2010	2011	2012	2013
Mean ( $\mu$ )	15109.17	16842	15808.25	13759.08	14856.42	15277.92	16062.17
Std. Err.	4974.551	5251.189	5013.412	4248.423	4473.632	4337.314	4261.03
Median (Md)	9209.5	9910	9452	8972	9624.5	10513	12345
Std. Dev.	17232.35	18190.65	17366.97	14716.97	15497.12	15024.9	14760.64
Sam. Var.	2.97E+08	3.31E+08	3.02E+08	2.17E+08	2.4E+08	2.26E+08	2.18E+08
Kurtosis	2.316406	1.640526	1.731396	1.704993	1.537175	0.786371	0.277807
Skewness	1.868851	1.681854	1.710076	1.690161	1.60784	1.328647	1.110444
Range	51463	51073	48352	40824	45138	43620	43476
Max.	54356	54059	52053	44139	48016	45206	45581
Min.	2893	2986	3701	3315	2878	1586	2105
Sum	181310	202104	189699	165109	178277	183335	192746
Count	12	12	12	12	12	12	12
GEOMEAN	9614.896	10786.56	10062.07	8885.004	9555.438	9502.223	10286.84
HARMEAN	6944.848	7650.609	7244.906	6373.512	6691.003	5854.368	6484.168
AAD	11946.94	13074.83	12323	10265.63	10935.22	11381.07	11446.03
MAD	4320.5	5499.5	5381	5380	5926	7496.5	8618
IQR	8635	11995.75	12377.75	10264.25	12308.25	14590.75	17098

*Source:* Author's calculations based on data taken from official statistical reports (Municipality of Ohrid, 2015)

High values of Standard error (std. err.), Standard deviation (std. dev.), Absolute average deviation (AAD) and Median average deviation (MAD) in each year can be also considered as additional indicator of expressive tourism seasonality in Ohrid.

Another interesting finding that can be delivered from the results is dropping values of the "Range" from the beginning to the end of the analysed period. It highlights reduced difference between months with the lowest and months with the highest number of tourist arrivals. Still, the high values of range cannot be considered as indicator of reduced seasonality.

Skewness and Kurtosis indices determine the shape of the distribution and its deviation from normal distribution. Calculated values in this research refer that more of the values are on the left side of distribution, which means that extreme

values are on the right side of distribution (Skewness > 0). Kurtosis rate (>0) denote high probability for extreme values and confirms increased number of tourist arrivals in certain months of the year. Noteworthy is that Kurtosis declines last few years of the analysed period which leads us to a conclusion that there is a particular neutralization of the seasonality. Still, from the given results we can highlight the excessive tourism seasonality in Ohrid.

### ***3.2. Method of Treatment of the Overall monthly average (Seasonality Coefficient)***

One of the most used methods to determine tourism seasonality is the method of treatment of general average (Seasonality coefficient). Some authors calculate Seasonality Coefficient ( $KS_L$ ) by using this methodology (Secareanu & Firoiu, 2011) (Велкоски, 1997). The following formula has been used for the purpose of our research:

$$KS_L = \frac{\bar{X}_L}{X_G} * 100 \quad (1)$$

- $KS_L$  – Seasonality Coefficient
- $\bar{X}_L$  – average level of each month registered on a period of a few years
- $X_G$  - general monthly average

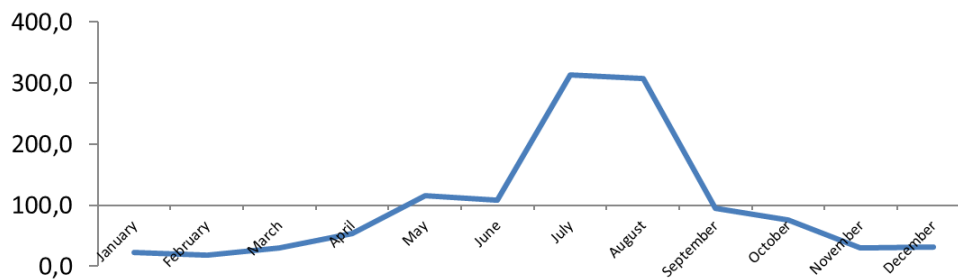
If certain month has  $KS_L < 100\%$ , then seasonal component has acted in direction of reducing tourist arrivals in terms of general monthly average. If  $KS_L > 100\%$ , then seasonal component has favorable influence towards increasing tourist arrivals in tourist destination.

According the results in Table 2, seasonal component has very negative influence in February where the number of tourist arrivals would have been 82% higher if the seasonal component was excluded. On the other side, results show highly positive impact of seasonality on tourist arrivals in the summer period in Ohrid. For example, seasonal component increases number of tourist arrivals in July and August for over 300%.

**Table 2. Seasonal monthly coefficient in Ohrid (2007-2013)**

Month	$\bar{X}_L$	$X_G$	$KS_L$
January	3378	15388	22%
February	2828	15388	18%
March	4627	15388	30%
April	8239	15388	54%
May	17719	15388	115%
June	16619	15388	108%
July	48295	15388	314%
August	47266	15388	307%
September	14595	15388	95%
October	11723	15388	76%
November	4569	15388	30%
December	4797	15388	31%

Source: Author's calculations based on data taken from official statistical reports (Municipality of Ohrid, 2015)

**Figure 1. Seasonality impact on the number of tourist arrivals in Ohrid (2007-2013, % changes)**

Source: Author's illustration of results in table 1

One of the advantages of the method of treatment of overall monthly average is that it can be used for projections of the number of tourist arrivals with eliminating the influence of seasonality (Велкоски, 1997). Seasonal component can be neutralised by using following equation:

$$N_L = \frac{n}{KS_L} * 100 \quad (2)$$

- $N_L$  – Number of tourist arrivals after removing seasonal component
- $n$  – number of tourist arrivals in certain month
- $KS_L$  – Seasonality coefficient



The projected number of tourist arrivals in Ohrid after excluding the seasonal component is given in Table 3.

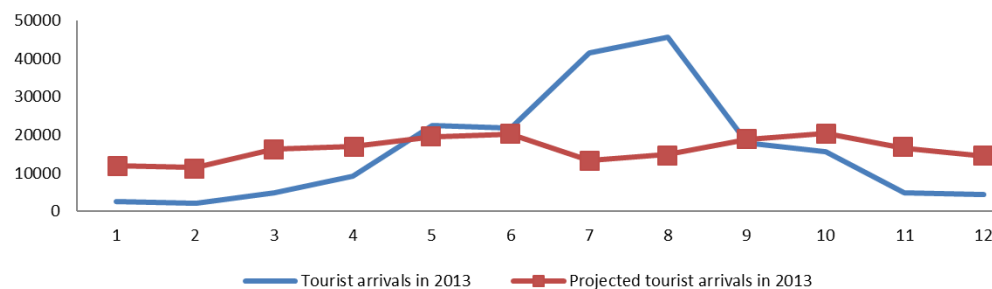
**Table 3. Projected number of tourist arrivals in Ohrid after neutralization of seasonal factor (2007 – 2013)**

Month	2007	2008	2009	2010	2011	2012	2013
January	14364	17129	18732	15133	15903	14468	11986
February	15744	16250	21932	18040	15662	8631	11456
March	16705	16832	15804	11461	16353	14254	16306
April	14984	12541	15165	16013	14898	17032	17083
May	11418	18181	15805	13067	14016	15779	19450
June	13815	15139	14889	12553	13747	17448	20124
July	17319	17225	16199	14064	15299	14404	13206
August	15478	17574	16946	14222	14423	14232	14839
September	11449	13446	13450	13333	17479	19761	18796
October	13646	16788	14155	12299	14796	15628	20402
November	16013	19017	14386	12588	13154	15949	16609
December	20018	22671	11873	13698	12678	12348	14430

*Source:* Author's calculations based on data taken from official statistical reports (Municipality of Ohrid, 2015) and table 2

Data in Table 3 indicate that if the seasonal component is excluded, the number of tourist arrivals by months in Ohrid will have more equal distribution with very small deviations in different months of the year. Figure 2 illustrates the difference between the number of tourist arrivals with and without seasonal influence.

**Figure 2. Seasonality impact on the number of tourist arrivals in Ohrid in 2013**



*Source:* Author's illustration of data taken from table 3

Calculating Seasonality coefficient has firmly confirmed the high level of tourism seasonality in Ohrid. Generated projection of the number of tourist arrivals by using this methodology revealed that the monthly distribution of tourist arrivals in Ohrid would be more equal if the seasonality component is neutralised.

### 3.3. Gini coefficient (G) and seasonality indicator(SI)

One of the most used scientific methods for seasonality research is Gini coefficient. It was developed by Italian statistician Corrado Gini in 1912 as a summary measure of income inequality. Gini index is the most common measure of inequality (Stats Direct, 2015; Halpern, 2015). The value of Gini coefficient can vary from 0 to 1. Higher values indicate higher inequality which means existence of tourism seasonality and vice versa. There are many ways to calculate Gini coefficient (G). Base formula is used for the purpose of this research (Kožić et al., 2013).

$$G = \frac{2}{n \sum_{i=1}^n (x_i - y_i)} \quad (3)$$

- n – number of months
- $x_i$  – rank of the months (1/12, 2/12, 3/12, ... ,12/12)
- $y_i$  – cumulative relative frequency of tourist arrivals in rank by ascending order

Despite Gini coefficient (G), Seasonal indicator (SI) will be used as an additional measure for tourism seasonality in each year of the analysed period. Seasonal indicator value can vary from 1/12 to 1. Lower value indicates higher seasonality and vice versa. Seasonal indicator (SI) can be calculated as (Bigović, 2012):

$$SI = \frac{y_0}{y_n} \quad (4)$$

- $y_0$  – average number of tourist arrivals per year
- $y_n$  – highest number of tourist arrivals in particular year

Results of conducted research are given in Table 4.

**Table 4. Tourism seasonality in Ohrid according Gini coefficient and Seasonal indicator**

Year	2007	2008	2009	2010	2011	2012	2013
Gini (G)	0.50	0.50	0.50	0.49	0.49	0.48	0.47
Seasonal Indic. (SI)	0.28	0.31	0.30	0.31	0.31	0.34	0.35

*Source:* Author's calculations based on data taken from official statistical reports (Municipality of Ohrid, 2015)

Data in Table 4 indicate extensive tourism seasonality in Ohrid. It can be also concluded by the given results that there is a slightly neutralisation of seasonality in the last few years with a bit more equal distribution in the number of tourist arrivals. Also, comparison of Gini coefficients for Ohrid and Macedonia (Petreska, 2013) for the same period of time, leads to a conclusion that Ohrid has more

expressive seasonality than tourism seasonality at the national level. Considering that Ohrid is the most important tourist destination in Macedonia, it can be concluded that tourism seasonality in the country is largely influenced by tourism seasonality in Ohrid.

#### **4. Conclusion**

Studying tourism as one of the fastest growing industries in the world has always been an imperative for tourism policy creators so they can maximise its socioeconomic effects. In addition, all factors that influence this industry must be considered. One of the biggest characteristics of tourism is its seasonality.

Tourist seasonality can be considered as temporary imbalance of tourist activities, where in a short time period in the year that is periodically repeating every year exists large concentration of tourist activities seen through increased tourist arrivals, nights spent, tourists consumption etc.

There are many factors that have an impact on tourism seasonality. They can be grouped on natural and social factors. Natural factors refer to climate changes, time seasons and geographical characteristics of tourist destination. Social factors refer to written laws and rules, customs and traditions in certain place and therefore they influence dynamic of tourist activities.

Consequences of tourism seasonality are categorised in three basic groups: social, environmental and sociocultural. Social consequences are seen through income changes, employment rate changes, difficulties in attracting investments etc. Environmental consequences of seasonality are related to overloading of destination capacities. Sociocultural consequences of seasonality refer to local community and local population in tourist destinations.

Several research methods were used in this paper for measuring tourism seasonality in Ohrid. Conducted results and findings based on the number of tourist arrivals in Ohrid in the period 2007 – 2013 led to the following conclusions:

- Tourism in Ohrid has strong seasonality.
- Influenced by the seasonal component, tourist arrivals in the summer period, especially in July and August, are increasing by more than 300%, while in some months in winter are decreasing by about 70%-80%.
- Elimination of the seasonality factor will cause much more equitable distribution of the number of tourist arrivals by months in Ohrid.
- There is a slight neutralization of seasonality with a minor reduction of monthly deviation of tourist arrivals in the last few years.
- Ohrid has much more expressive seasonality than tourism seasonality at the national level. Tourism seasonality in Macedonia is highly determined from the tourism seasonality in Ohrid.

- Characteristics of tourism seasonality in Ohrid direct to the point that it is very much influenced by natural factors.

The research has shown that Ohrid as the most attractive tourist destination in Macedonia is a summer tourist destination. Still, intensity of the seasonality is reducing in the last few years by increasing the number of tourist arrivals in other time periods. Putting an accent on the socio – cultural tourist values of Ohrid and increasing the number of tourists out of the summer season can neutralize effects of the seasonal component caused by the natural characteristics of Ohrid, to a certain level.

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## PRIKAZ I KARAKTERISTIKE TURISTIČKE SEZONALNOSTI U OHRIDU

Apstrakt: Istraživanje turizma je uvek bio imperativ za naučnike i kreatora politike, da bi oni mogli da maksimiraju njegove socioekonomske efekte. U tom cilju, svi faktori koji utiču na turističku industriju moraju se uzeti u obzir. Jedan od najvećih karakteristika turizma i izazova za istraživače je njegova sezonalnost. To je privremeni disbalans turističkih aktivnosti izazvan od strane mnogo faktora, a može imati mnoge društvene, ekonomske i ekološke posledice. Sezonska komponenta turizma postaje još važnija sa njegovim razvojem. Ovaj rad analizira turističku sezonalnost u Ohridu, kao najpopularnijoj turističkoj destinacija u Makedoniji. Nalazi i zaključci zasnivaju se na nekoliko istraživačkih metoda, kao što su: deskriptivne statistike, koeficijent sezonalnosti, Gini koeficijent i sezonski indikator. Rezultati istraživanja su pokazali da Ohrid kao turistička destinacija ima jaku sezonalnost izazvanu prirodnim faktorima. Rezultati mogu biti korisni za kreatora turističke politike i turističke stručnjake za dalje planiranje i realizaciju svih turističkih aktivnosti. Isto tako, nalazi i predstavljene metodologije mogu se koristiti u daljim sličnim istraživanjima ili u daljim analizama ukupne turističke sezonalnosti u zemlji.

Ključne reči: turizam, sezonalnost, Ohrid, Makedonija, dolasci, politika, faktori

### Authors' biographies

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