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CLASSIFICATION OF TOURIST SEASON IN COSTAL TOURISM

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Abstract
Tourism seasonality is the major characteristic of tourism industry, a well know but less understood phenomenon. Seasonal fluctuations of tourism demand are implying numerous negative implications affecting tourist destination, tourist operators and tourist demand. Almost every tourist destination is facing seasonality, but the most pronounced seasonal concentration of tourist activities have costal destinations which attract tourist demand motivated primary by the 3S – sun, sand and sea concept. Seasonality in business operation is the most challenging in tourist companies with a large share of fixed capacity, as the hotel accommodating sector. Former research of causes of seasonality, implications of seasonality and potential strategies to combat seasonality had methodological flaw. Tourism product, as a product with seasonal characteristic, requires analysis of performance by season. The objective of this paper is to classify tourist season in coastal tourist destinations regarding hotel occupancy rates. This is the first attempt to empirically classify tourist season. Sample surveys are 218 hotels located in Dalmatia, Croatia. Cluster analysis on hotel occupancy rate date was conducted, whereby the statistical significance between seasons were testes by Friedman test and the statistical significance between destinations were tested by F-test and ANOVA. Further, factor analysis was conducted to test the achieved results. Regarding the research result tourist season can be divided into three seasons: low, medium and high. Low season as the longest consisting of five months: January, February, March, November and December, middle season as the shortest consisting of three months: April, May and October and high season consisting of four months: June, July, August and September. Research findings are a significant contribution to tourism theory and practice.

Keywords: tourism seasonality, classification of tourist season, cluster analysis, factor analysis.

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INTRODUCTION

Tourism is one of the leading and fastest growing industries in the world (Volvo 2010), but is characterized by seasonality of business operation, which is the biggest problem facing contemporary tourism. Tourism has emerged as a seasonal phenomenon and remained seasonal phenomenon with distinct seasonal concentration (Petricic 1994). Tourism as an integral part of global business is dependent on changes in climate, economic activities, as well as human behavior and society as a whole (Baum and Lundtrop 2001). These changes cause fluctuations in tourist activity hence seasonal fluctuations in the level of business in the global tourism industry (Kolomiets 2010). This phenomenon creates seasonal tourist areas that are popular during the summer season and forgotten in the off-season period (Haas et al. 2007). Tourism seasonality is an essential part of tourism, which is primarily associated with negative implications that require attention.

The concept of tourism seasonality can be seen as a well-known and clear concept, but paradoxically, there is no single and precise definition. The concept of seasonality can be considered from several aspects and seasonality can have different meanings ascribed to different areas. The definition of seasonality prevalent emphasis seasonality as a systematic movement within the year, also seasonality is described as a kind of tourist initiator which is repeated every year. Most definitions and basic concepts of seasonality describe this phenomenon only in general terms or related to its causes. According to that there is a lack of quantitative definitions when tourism seasonality occurs, with the focus to classify tourist season and to compare seasonality between different regions or years (Koenig and Bischoff 2005). The most cited definitions of seasonality are following. Hylleberg (1992, 4) indicates that seasonality is a systematic, although not necessarily regular, intra-year movement caused by changes in the weather, the calendar, and timing of decisions, directly or indirectly through the production and consumption decisions made by the agents of the economy. These decisions are influenced by the endowments, the expectations and the preferences of the agents, and the production techniques available in the economy. Further, the concept of tourism seasonality can be defined as temporal imbalance in the phenomenon of tourism, which can be expressed in the number of visitors, their expenditure, traffic on different forms of transportation, employment and admissions to attractions. Therefore it implies that the seasonality phenomena of tourism affects all aspects of supply-demand activities including pricing, occupancy, human resource, supplies volume, offered activities and available attractions etc. (Butler 1994, 5).

Tourism seasonality is not a characteristic of individual destinations, than almost any destination in the world is faced with seasonality in business (Baron 1973; Yacoumis 1980, Higham and Hinch 2002; Yang 2004). Allock (1994) points out that the most important aspect of seasonality that it includes the concentration of tourist flows in a relatively short period of the year. Its annual peaks in tourist activity, in a few hectic weeks or months, with probability will result in inefficiency of industry as well as a large burden on the natural and social resources of destination areas (Koenig and Bischoff 2005). In tourism industry seasonality is seen as a challenge and a problem that affects many areas of activity, which does not cause reactions only at government and tourism institutions, but also scientists and academics that are looking for the causes of seasonality in tourism demand as well as strategies for combating the seasonal character of tourism stakeholders.

Causes of tourism seasonality were studied by Baron (1975); Hyllerberg (1992); Hartmann (1986); Butler (1994); Frechtling (2001); Kolomiets (2010). Main causes of the unbalanced distribution of tourism demand are natural and institutional factors. Natural causes of seasonality include air and water temperature, precipitation, cloudiness, sunshine, visibility and winds. These causes of seasonality are beyond the control of the decision-maker, tourist demand, and they repeat with relatively small changes. The term institutionalized seasonality, as a reflection of social norms and practices refer to traditional fluctuations created by human, based on social, ethical, religious and other social grounds, which are often contained in the legislation. Institutional causes of seasonality are predictable and determinable, contrary to natural seasonality. Beside natural and institutional causes there is a group of causes called additional causes as calendar effects, the pressure of society and fashion, inertia and tradition travel, sporting season.

General consensus is that the seasonal nature of tourism implies a number of negative effects on the economy, ecological and socio-cultural environment of the tourist destination and so on tourism demand (Cellini and Rizzo 2010; Cooper et al. 2005; Goulding, Baum, and Morrison 2004; Yang 2004; Goeldener and Ritchie 2003; Commons and Page 2001; Butler 2001; Krakover 2000; Butler 1994; Hartmann 1986; Baron 1975). The implications of seasonal business operations according to Manning and Powers (1984) are arising from the unequal distribution of the use of tourism resources over time, leading to inefficient use of resources, loss of potential profit, the pressure on social and environmental capacity and administrative difficulties. Baron (1975) believes that seasonality generates cost loss, called seasonal loss. Seasonality of tourism is an uncontrolled situation (Allcock 1989), and its implications are growing parallel with the growth of tourism (Wall and Yan 2003). A growing number of companies entering tourism industry by increasing capacities are reducing their flexibility and ability to adapt to changes, fluctuation, on the demand side (Koenig and Bischoff 2005). The implications of tourism seasonality were studied with a focus on tourism supply (tourist operators, employees and residents of the seaside resorts) and tourism demand (tourists), wherein research mainly focused on three areas: economic implications, within which, because of their importance, employment was analyzed separately, environmental implications and socio-cultural implications (Butler 1994).

Majority of authors consider seasonality as negative. Negative implications of seasonality are the result of uncontrolled tourism activities. Insufficient understanding of causes of seasonality is limiting reactions of tourism industry on implications arising from the effects of the phenomenon of seasonality. Tourism companies with a dominance of fixed capacities are faced with seasonal fluctuations in tourism demand, what is endangering the existence of their business on the highly competitive market. To oppose seasonality and the negative implications that accompany this phenomenon it is necessary to understand tourism demand. This will enable tourism supply to adjust in accordance with demand characteristics, i.e. supply would consequently meet demand motives and result in reduction of seasonal fluctuations. Accordingly the importance of further research of causes of seasonality in tourism demand as well as identifying strategies to mitigate seasonal fluctuations in demand is highlighted.

Although seasonality is one of the most established characteristics of tourism market, there is a shortage of knowledge about the factors that explain the yearly fluctuations in demand outside climate and institutional, but also a lack of understanding of already

defined causes of seasonality. The above mentioned is limiting the effort to combat the crucial problem of tourism. With the intention to mitigate seasonality a better understanding of the off-season period is necessary accompanied by better planning and more effective use of resources in the tourism sector (Koc and Altinay 2007). It is inconceivable that seasonality of tourism could be completely excluded from tourism business, but it can be reduced (Goeldner and Ritchie 2003). McEnnif (1992) points out, although seasonality will never be completely eliminated, there are numerous ways of balancing the tops of the season with the pre and postseason. Butler (1994) points out the complexity of the problem of tourism seasonality and that the development of mass tourism will contribute to a higher degree of seasonality. Tourist demand is growing parallel with the growth of economic standard. New tourist demand will be concentrate in the peak season and increase in the problem of seasonality if necessary actions are not taken. Baron (1975) points out that tourism expansion means an expansion of the main season, while the focus should be on the pre and postseason and methods of spreading tourism throughout the year. Researches that focus on strategies designed to reduce the problem of tourism seasonality are Cooper et al. (2005); Jang (2004); Goulding, Baum, and Morrison (2004); Goeldner and Ritchie (2003); Commons and Page (2001); Kennedy and Deggan (2001); Butler (2001); Krakover (2000); Batchelor (2000); Weaver and Oppermann (2000); Jeffery and Barden (1999); Baum and Hagen (1999); Baum (1999); Butler and Mao (1997); Witt and Moutinho (1995); Owens (1994); Fitzpatrick (1993); Getz (1991); Witt et al. (1991); Yacoumis (1980); Sutcliffe and Sinclair (1980); BarOn (1975). Different types of strategies can be grouped into four groups differentiation of price, differentiation of attraction, marketing differentiation and state incentives. Although the defined strategies are not supported by empirical findings in research, pursuant to which their applicability in the tourist destinations is under question.

Fact is that seasonality is a repercussion of causes that are stable (Witt and Moutinho 1995), therefor there is a degree of predictability of seasonality and that leaves managers room to anticipate the negative effects of seasonality and adapt adequate strategies (Getz and Nilsson 2004). Furthermore, Hartman (1986) considers seasonality as a predictable and reliable return of tourists forming the economic foundation for the development of tourism within the destination, and thus for tourism companies in the area, and consider accordingly tourism as a seasonal natural phenomenon. A similar position is held by Baron (1975), he defined seasonality as effects that occur each year in almost equal time with almost the same intensity. Regarding the predictability of tourism seasonality, destinations have the option of exploitation of seasonal fluctuations in tourism demand (Lundtrop, Rassing, and Wanhill 1999), which means that the tourism companies should in given environment, characterized by seasonal operation, maximize business performance.

One of the key constraints to combat seasonality in tourism business operation is a lack of understanding of the phenomenon. Seasonality is one of the most salient and significant features of tourism, yet, paradoxically, it is also one of the least understood. Notwithstanding seasonality is a phenomenon that has received much attention in the tourism related literature over several decades, yet it still remains little understood (Butler 2001). One of the problems that limit the understanding of seasonality in tourism is the lack of in-depth and longitudinal research (Baum 1999; Baum and Lundtorp 2001). A good understanding of tourism seasonality causes, implications and strategies, is essential for the efficient operation of tourism facilities and infrastructure. In the

interpretation of seasonal fluctuations in tourism demand may be of importance the fact that tourists have different motivations and needs that vary according to the seasons, which leads to the conclusion that tourists are looking for different benefits of the tourism product through the seasons (Capo, Riera, and Rossello 2007; Spotts and Mahoney 1993; Calantone and Johar 1984). Calantone and Johar (1984) point out that products and services that have a seasonal character require the use of performance-based research on the seasonal effects, otherwise, researching performance in a single point of time or aggregate annual data may lead to incorrect conclusions. Therefore it is necessary to access the measurement and analysis of tourism seasonality from different time points/periods. Set of benchmarks must be focused and limited to a certain period of time, while proper conduct requires dynamic analysis performance standards, not just static, because ignoring the impact of situational context can lead to inaccurate research findings. Accordingly it is necessary to observe and analyze causes of seasonality, implications of seasonality and potential strategies to combat seasonality through time or seasons. According to this it is necessary to classify the tourist season. An overview of research that classified tourist season is following. Fernandez-Morales (2003) classifies three types of tourist season: low season (January, February, November and December), pre and postseason (March, April, May, June and October), and the peak season (July, August and September). Getz and Nilsson (2004) in their study of seasonality in tourism demand used the same classification as Fernandez-Morales. Butler and Mao (2007) classified tourist season into: one season (expressed destinations marked with one season in the year), two peaks (destinations marked with two outlined seasons in the year), and no peak (destinations marked with uniform distribution of demand over the year). Capo, Riera, and Rossello (2007) classified tourist season in three time intervals: high season (June, July, August and September), the middle season (March, April, May and October), and the low season (January, February, students and December). Significant disadvantage of mentioned classification is that they are not empirically based. The aforementioned lack of empirical classification of tourist season is the primary focus of this study.

The goal of the research is, for the first time, to classify tourist season based on empirical findings. The defined classification is the basis for future research of causes of seasonality, implications of seasonality and potential strategies to combat seasonality. It is necessary to research tourism as a seasonal occurrence by tourist season, based on the classification of tourist season, and not aggregate or in one point of time.

METHODOLOGY

Almost every destination in the world is characterized by tourism seasonality, but the negative implications arising from the seasonal fluctuations in demand are the most prominent in destinations with domination of demand motivated for summer tourism. A strong seasonal demand structure have Mediterranean countries, countries marked with bathing tourism and with the domination of demand motivated by pleasant climate. In this group of tourist destinations is also Croatia established and is seen as an international sun and sea holiday product.

Hotel accommodation as a fundamental element of the tourism product, with its fixed capacities is particularly exposed to the implications of the seasonal character of tourism

business operation. Tourist facilities within the destination are faced with concentration of demand in the peak season, in summer, with large differences levels of capacity utilization between summer and winter (Karamusafa and Ulama 2010; Spotts and Mahoney 1993). Seasonality of tourist demand in the hotel accommodation sector is a much more complex phenomenon than just a big difference in numbers of overnight stays per season (Koenig and Bischoff 2004). Hotel accommodation supply is a fundamental element of the tourism product (Capo, Riera, and Rossello 2007), as well as the largest and most frequent sub-sector of the tourism economy, generating about a third of the total tourist spending, the hotel accommodation sector is also the creator of the tourist experience (Sharpley 2000).

Pursuant to the above in research focus are hotel companies in the Croatian coastal area. Sample surveys are 272 hotel companies. The research area includes southern Croatian littoral which is as region Dalmatia represented on the international tourism market. The region consists of six tourist sub regions Zadar County, Sibenik-Knin County, Split Riviera, Makarska Riviera, islands of Brac, Hvar and Vis and Dubrovnik-Neretva County. From a total of 272 hotels from sample surveys in year 2013, 4 hotels did not operate, what reduced the sample to 268 hotels, data on the realized monthly number of overnights was collected for 218 hotels, 81.34% of sample surveys. Data on the number of overnights in observation units on a monthly basis were collected from secondary sources using the database of local tourist boards of research area. The databases include archived collected data on the basis of records in guest books and on the basis of checking-in/out at the tourist offices. The data were collected as raw data and required a statistical analysis:

$$\text{Occupancy rate of hotel accommodation capacities}_{\text{i}} = \frac{\sum_{t=1}^{n} nt}{\sum_{t=1}^{n} kt} * 100 \text{ for each } i$$

i – hotel	$i = 1,2,\ldots,n$
k – beds	$k = 1,2,\ldots,n$
n – nights	$n = 1,2,\ldots,n$
t – month	$t = 1,2,\ldots,12$

The input data for the classification of tourist season are occupancy rates of hotel accommodation facilities. The occupancy rate is a hotel operating performance indicator, which reflects demand, what means that through the utilization of accommodation we can identify trends and fluctuations in demand for accommodation facilities and thus interpret the movement of aggregate demand because the occupancy rate indicator is derived from the demand (Kim 2010). This indicator measures the ability of the hospitality companies to use their fixed capacities, managing seasonality of business operation (Koenig and Bischoff 2003). Accordingly is arising the validity of usage of occupancy rates, relative value, as performance indicator and not number of overnights, absolute value.

Cluster analysis will be used to group monthly hotel occupancy rates data in seasons. Cluster analysis is one of the multivariate technique for grouping observations or variables based on characteristics that these observations have. The goal of cluster analysis is to find the optimal grouping variables so that all variables, months with according occupancy rate, within the same cluster, season, are similar while the variables, months with according occupancy rate, from different clusters differ between clusters, seasons. A Ward's hierarchical cluster analysis with Euclidean distance will be performed.

Further, Friedman test for dependent samples is used in order to test the statistical difference in the average occupancy rate between seasons. Additionally F-test and appropriate analysis of variance (ANOVA) will be conducted for each type of season separately to confirm whether there is a significant difference in the occupancy rate of hotel accommodation facilities between tourist sub regions (six of them: Zadar County, Sibenik-Knin County, Split Riviera, Makarska Riviera, islands Brac, Hvar and Vis, Dubrovnik-Neretva County). F-test is robust to heteroskedasticity of variance between destinations, so it is not necessary to conduct tests of homogeneity of variances.

Factor analysis will be carried out in order to test the classification of tourist season achieved through cluster analysis. That will confirm whether the months are well-clustered. The aim of factor analysis is to examine the interdependence of a large number of variables, monthly occupancy rate, and to explain by a small number of common factors, seasons, thereby principal component analysis (CPA) is used.

RESULTS

The result of hierarchical clustering with Ward's method is shown in the dendrogram (Figure 1). From the dendrogram are visible months similar to each other with respect to the occupancy rate. Considering the value of Euclidean distance all months can be classified into three groups, i.e. season. Affiliation of each month to particular season is evident from Table 1.

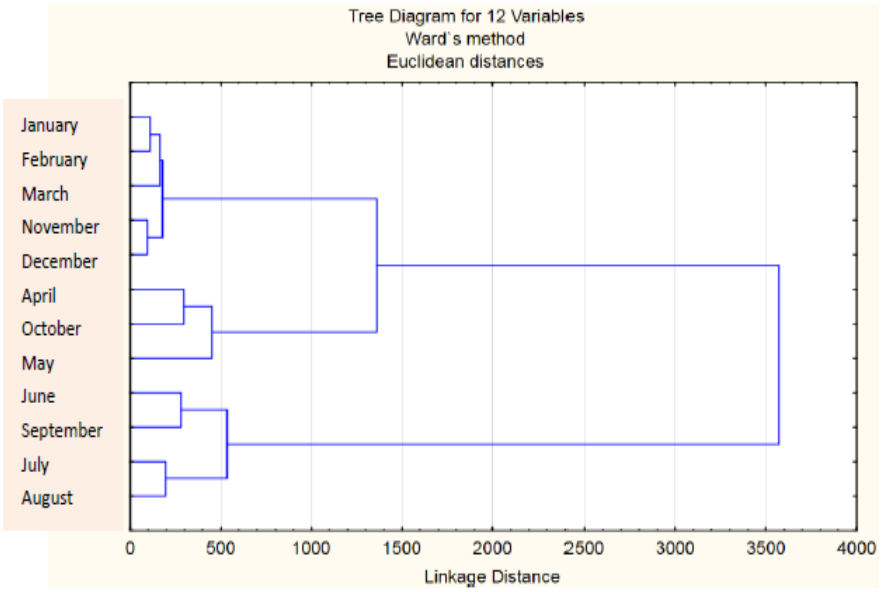

Figure 1. Dendrograme Euclidean distance of affiliation of each month to particular seasonal interval

Table 1. Affiliation of particular month to particular season

	Cluster Membership (Seasonality) Linkage distance = 1213,42 Ward`s method Euclidean distances
	ClusterMembership
January	1
February	1
March	1
November	1
December	1
April	2
May	2
October	2
June	3
July	3
August	3
September	3

It can be concluded that all months of the year are classified into three seasons. Further, classified seasons will be named low, middle and high season. Low season is the longest and consists of five months: January, February, March, November and December. Middle season is the shortest and consists of three months: April, May and October. High season consist of four months: June, July, August and September.

In order to test the statistical difference in the average occupancy rate of three seasons the Friedman test for dependent samples was conducted to test the differences between groups, because in the analysis were used the same units of observation, i.e. the same hotels for which were calculated occupancy rates in the three seasons. The value of Friedman test is 411.4609 with two degrees of freedom df = 2. Test size is the chi-square value, and the associated p-value (empirical level of significance) is approximately equal to zero. Since $p < 0.05$ it can be concluded that there is a statistically significant difference in the average occupancy rate of the three listed season (Table 2).

Table 2. Friedman test analysis of variance ranks — seasonal intervals

Variables	Friedman ANOVA and Kendall Coeff. of Concordance (Seasonality) ANOVA ChiSqr. (N = 218, df = 2) = 411,4609 p =0,00000 Coeff. ofConcordance = ,94372 Aver. rank r = ,94346			
	Average Rank	Sumof Ranks	Mean	Std.Dev.
Low season	1,061927	231,5000	6,03898	9,46876
Middle season	1,951835	425,5000	34,05289	23,65653
High season	2,986239	651,0000	75,78150	22,66443

Additionally F-test was conducted for each type of season separately, i.e. appropriate analysis of variance (ANOVA) to confirm whether there is a significant difference in the hotel occupancy rates between tourist destinations (six of them: Zadar County, Sibenik-Knin County, Split Riviera, Makarska Riviera, islands Brac, Hvar and Vis and Dubrovnik-Neretva County). This means that the analysis of variance was conducted for the low season (Table 3), then the middle season (Table 4) and finally the high season (Table 5). Thereby, in all three cases was examined the differences with respect to the destination. Additional F-test is robust to heteroskedasticity of variance between destinations, so it is not necessary to conduct tests of homogeneity of variances.

Table 3. Analysis of variance of hotel occupancy rate between tourist destinations for the low season

Effect	Univariate Results for Each DV (Seasonality) Sigma-restricted parameterization Effective hypothesis decomposition				
	Degr. of Freedom	Low season SS	Low season MS	Low season F	Low season p
Intercept					
Destination	5	**1658,94**	**331,789**	**3,95237**	**0,001900**
Error	212	17796,71	83,947		
Total	217	19455,65			

Table 4. Analysis of variance of hotel occupancy rate between tourist destinations for the middle season

Effect	Univariate Results for Each DV (Seasonality) Sigma-restricted parameterization Effective hypothesis decomposition				
	Degr. of Freedom	Middle season SS	Middle season MS	Middle season F	Middle season p
Intercept					
Destination	5	**15430,7**	**3086,1**	**6,1717**	**0,000023**
Error	212	106009,4	500,0		
Total	217	121440,1			

Table 5. Analysis of variance of hotel occupancy rate between tourist destinations for the high season

Effect	Univariate Results for Each DV (Seasonality) Sigma-restricted parameterization Effective hypothesis decomposition				
	Degr. of Freedom	High season SS	High season MS	High season F	High seasonp
Intercept					
Destination	5	**18177**	**3635**	**8,261**	**0,000000**
Error	212	93291	440		
Total	217	111468			

From all three tables can be concluded that there is a significant difference in the hotel occupancy rates in all three seasons between tourist destinations, as in all three cases is $p<0.05$ and thus rejects Ho, i.e. accepts the thesis that there is a significant differences between units of observation. Variance of hotel occupancy rate between tourist destinations in seasonal intervals is evident in Figure 2.

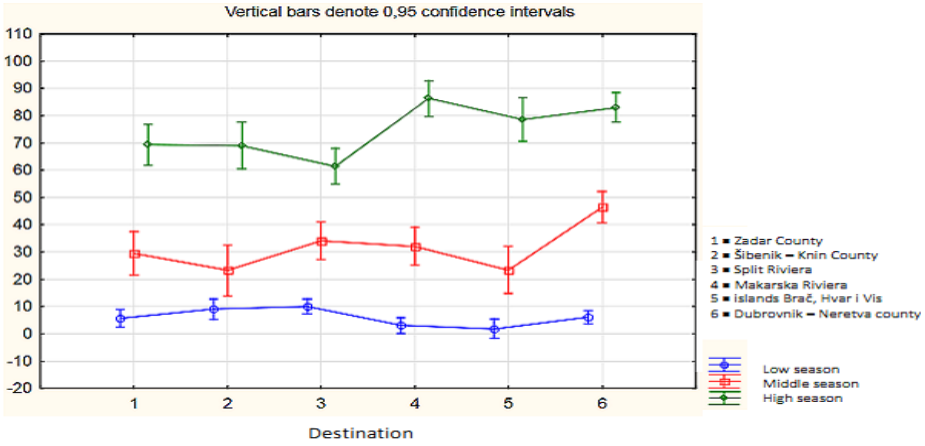

Figure 2. Analysis of variance of hotel occupancy rate between tourist destinations for all three seasons

Further, Factor analysis (CPA) was conducted in order to test results achieved through cluster analysis, results of are shown in Figure 3.

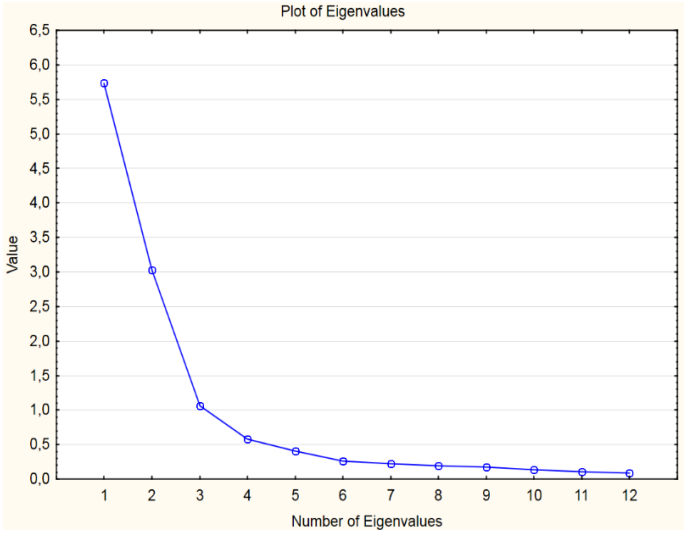

Figure 3. Matrix of eigenvalues

As only three eigenvalues are greater than *a* (1.0) it can be concluded that the optimal number of factors is three. Each of these factors presents a season (low, middle or high). Matrix factor loadings are observed in order to identify which factor is representing which season due to the affiliation of variables to each factor. All factor loadings greater than 0.7 are marked in red and mark the affiliation of each month to a certain factor (Table 6). In other words the results of cluster analysis are confirmed. Stated can be seen from Varimax rotation of factor axis (Figure 4).

Table 6. **Matrix of factor loadings**

Variables	FactorLoadings (Varimax raw) (Sezonalnost) Extraction: Principal components (Markedloadings are >,700000)		
	Factor 1	Factor 2	Factor 3
January	0,002261	**0,882502**	0,053826
February	0,106679	**0,911574**	0,037782
March	0,056139	**0,796315**	0,423584
April	0,148403	0,356569	**0,843174**
May	0,466772	0,197790	**0,769906**
June	**0,809289**	0,059927	0,447100
July	**0,940072**	0,004357	0,134662
August	**0,921789**	0,024825	0,057738
September	**0,751656**	0,057229	0,431929
October	0,287784	0,160004	**0,863805**
November	-0,041275	**0,749041**	0,404184
December	0,025830	**0,801710**	0,293437
Expl.Var	3,292992	3,647062	2,891001
Prp.Totl	0,274416	0,303922	0,240917

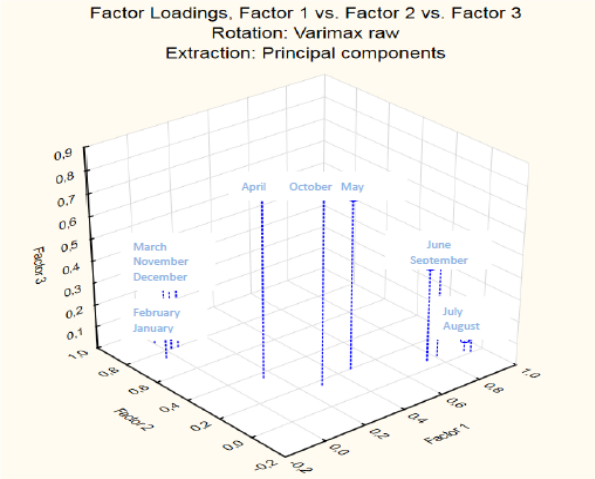

Figure 4. Matrix of factor loadings

Table 7. Percentage of explained variation by factor analysis NAZIVI U TABLICI

Value	Eigenvalues (Seasonality) Extraction: Principal components			
	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
1	5,742286	47,85238	5,742286	47,85238
2	3,027477	25,22898	8,769763	73,08136
3	1,061293	8,84411	9,831056	81,92547

According to Table 7 the percentage of explained variance in all three factors is 81.92% which is a satisfactory value.

CONCLUSION

Tourism seasonality is the key determinant of tourism business in coastal holiday destination. The problem of seasonal concentration of tourist demand is and will be a serious challenge for tourist operators. Large differences in the occupancy of accommodation capacities between summer and winter are causing inefficiency and unprofitable business. Seasonality stands out as a fundamental feature of the tourism industry, but surprisingly, although it is common knowledge that seasons vary in intensity of operations and are divided into specific types, tourism has faced a lack of empirical knowledge about the period of the individual types of seasons.

In accordance, research was conducted involving 218 hotels located in the coastal area of Dalmatia, Croatia. Regarding the research result tourist season can be divided into three seasons: low, medium and high. Low season as the longest consisting of five months: January, February, March, November and December, middle season as the shortest consisting of three months: April, May and October and high season consisting of four months: June, July, August and September.

Research findings are a contribution to tourism theory and practice. Tourist season is the first time empirically classified. The significance of these findings is highlighted because of the inappropriate approach of researching the problem of tourism seasonality so far. Tourism is a seasonal product, and products with seasonal feature require analysis per season and not aggregate or in one point of time. Therefore, the starting point for future research of the seasonality phenomenon should be the researched classification of tourist season. Further analysis of definition of seasonality, causes of seasonality, implication of seasonality as strategies to combat seasonality should be approached by seasonal intervals: low, middle and high season. This will provide a better understanding of the phenomenon of seasonality of tourism as tourism products and tourist demand vary according to seasons, but at the same time the degree of seasonal concentration and causes, implications and potential strategies are varying.

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