COMPARATIVE STATISTICAL STUDY OF TOURISTIC POTENTIAL REGARDING SOME EUROPEAN MOUNTAIN RESORTS

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Abstract: *The paper presents an analysis based on the direct comparison of some statistical indicators describing the flow of tourists, the average prices of accommodation spaces and the total length of the ski slopes in several European mountain resorts. The analysed resorts are from Bulgaria, the Czech Republic, Switzerland, France, Romania and Serbia. Aspects to be compared are the distributions covering the winter season (from October to May). Observations made during the study can be an initial basis for understanding and regulating some useful mechanisms of the local demand and supply system.*

Key words*: statistical indicators, tourism, mountain resorts*

INTRODUCTION

Demand and supply system of accommodation in the tourism industry is largely comprised of online applications that professionally facilitate the access of potential tourists to a vast and dynamic market. Moreover, the offer of online applications is transparently described, suggesting a multitude of statistical indicators that directly lead to the formation of a clear picture of the analysed objectives [1,4,5].

The study is based on statistical data provided by several sites with a tourism profile [11-17], largely based on the booking.com portal. The purpose of the study is to compare the data related to several mountain resorts in Romania with similar ones in Europe during the winter season.

MATERIAL AND METHOD

The statistical data (statistical indicators) studied are those in table 1. We refer to the average price ($a_{p/n}$) for the accommodation unit (a room for two persons / night) during the months where winter sports are usually practiced (October to May) form the flow of tourists as described by booking.com (on a scale of 1 to 5; 1 being a small number of tourists and 5 a large amount) and to the number of accommodation spaces found when accessing this portal [17]. Other data is also used related to the length of the ski slopes in those resorts, as described by some profile sites. The mountain resorts to be compared are: Arieseni, Poiana Brasov, Vatra Dornei and Sinaia in Romania, Kopaonik in Serbia, Harrachov in the Czech Republic, Bansko in Bulgaria, Morzine in France, Sölden in Austria respectively Wengen and Zermatt in Switzerland [7, 11-17].

Statistical calculations and the related charts were achieved using SPSS software [18]. We refer here to the box plot charts of the respective data and to the calculation of Kendall's coefficient (τ), which describes the correlation between some statistical series. Based on the values of these coefficients [9], some discussions were conducted on the interactions between the phenomena described by the statistical series [2,3,6,8,10]. The 2d-column chart was made with Microsoft Excel.

Table 1.

Statistical data on the tourist flow and characteristics of some European mountain resorts

Average price - 1 double room/ night, euro / month[1] ($a_{p/n}$)	Sinaia	P.Brasov	Arieseni	V.Dornei	Kopaonik	Harrachov	Bansko	Morzine	Sölden	Wengen	Zermatt
Oct.	62	91	45	40	46	64	56	87	142	180	191
Nov.	70	83	42	39	54	56	55	123	149	124	190
Dec.	77	116	45	51	87	115	94	235	208	280	316
Ian.	74	127	46	48	98	94	91	210	228	275	330
Feb.	67	126	42	49	103	106	82	274	266	290	341
Mar.	63	86	41	46	75	80	73	232	244	249	340
Apr.	65	98	40	40	51	64	65	167	200	197	283
May	58	79	40	46	47	61	52	110	105	201	199
Median[3]	66	94.5	42	46	64.5	80	69	188.5	204	225	299
Min[3]	58	79	40	39	46	56	52	87	105	124	190
Max[3]	77	127	46	51	103	115	94	274	266	290	341
Range[3]	19	48	6	12	57	59	42	187	161	166	151
Tourist numbers / month [1]											
Oct.	2	2	1	2	1	1	1	1	2	1	2
Nov.	2	3	2	2	1	1	1	1	3	1	1
Dec.	3	4	3	2	4	3	4	3	5	1	3
Ian.	2	5	3	2	4	4	5	5	5	1	2
Feb.	3	5	2	2	5	5	5	5	5	2	3
Mar.	1	2	1	2	3	2	2	5	5	1	2
Apr.	1	1	1	1	1	1	1	2	3	1	2
May	2	2	3	1	1	1	1	1	1	1	2
Properties offers[1]	154	57	21	45	213	177	423	196	455	113	534
Km ski slop[2]	17.8	22.4	3.9	5.3	62	8	70	370	144	86	252
Average $a_{p/n}$ (oct.-may)[3]	67	100.7	42.6	44.8	70.1	80	71	179.7	192.7	224.5	273.7
Average (oct.-may) tourists number[3]	2	3	2	1.7	2.5	2.2	2.5	2.8	3.6	1.1	2.1

Source: [1][17], [2][11-16] ,[3][17,18]

RESULTS AND DISCUSSION

A first set of observation will be made based on the box plot chart for the $a_{p/n}$ (shown below in Figure 1) for the time interval between October and May. This chart was obtained by processing the data from Table 1 using SPSS. The rectangle represented graphically indicates the values between quartiles 1 and 3 of the statistical series and the line marked within the rectangle is the series median. Median values in Eastern European resorts (Romania, Bulgaria, the Czech Republic, Serbia) are clearly inferior to those from Central and Western Europe (Austria, Switzerland and France respectively), thus indicating lower prices (Figure 2). Moreover, the rectangle length is also lower in the Eastern European countries, indicating a grouping of values within a narrow range, with no significant variation from one month to the next.

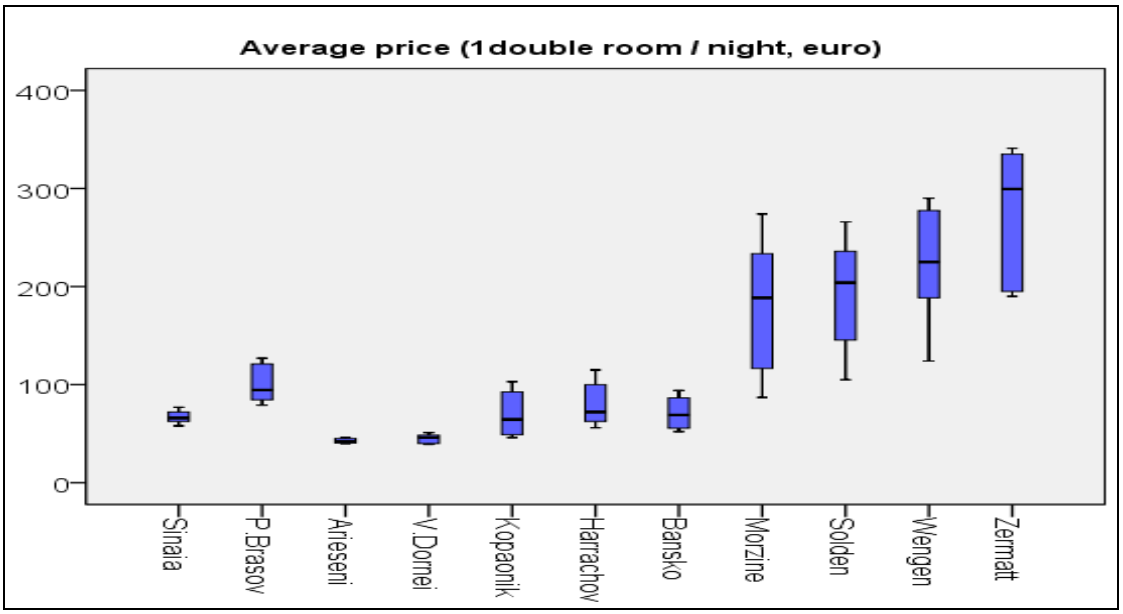

Figure 1. Box plot diagram for $a_{p/n}$ (average price/1 double room/night, euro) for the comparison sites

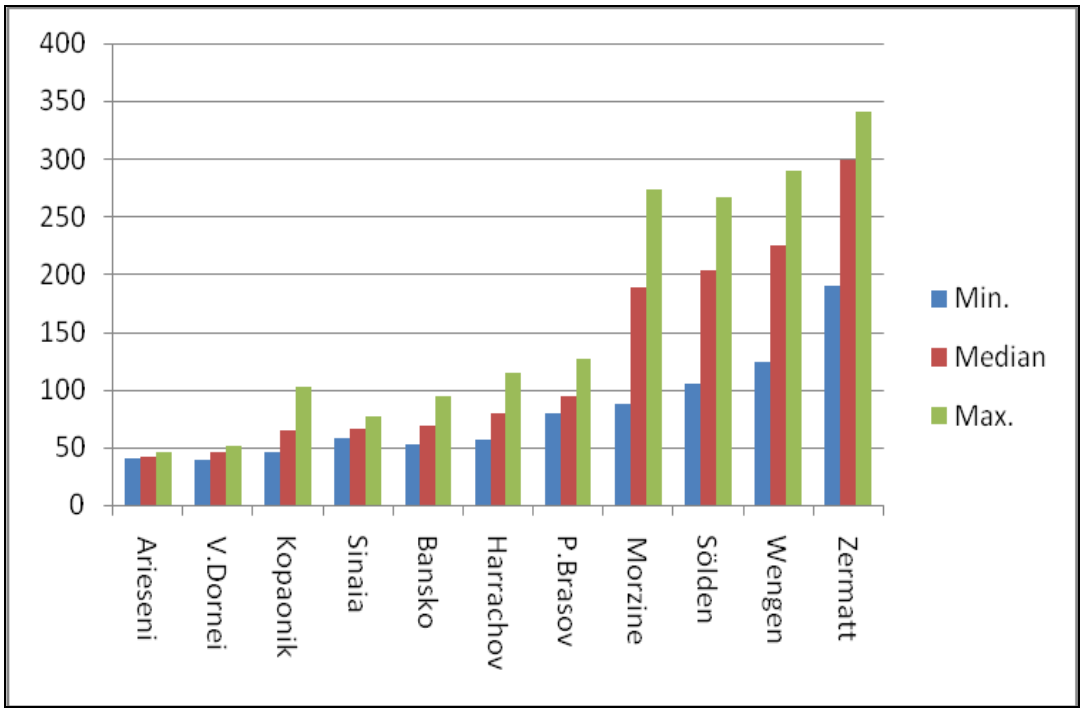

Figure 2. Minimum, median and maximum $a_{p/n}$ for the comparison sites

Regarding the number of tourists, a similar box plot diagram is shown in Figure 3.

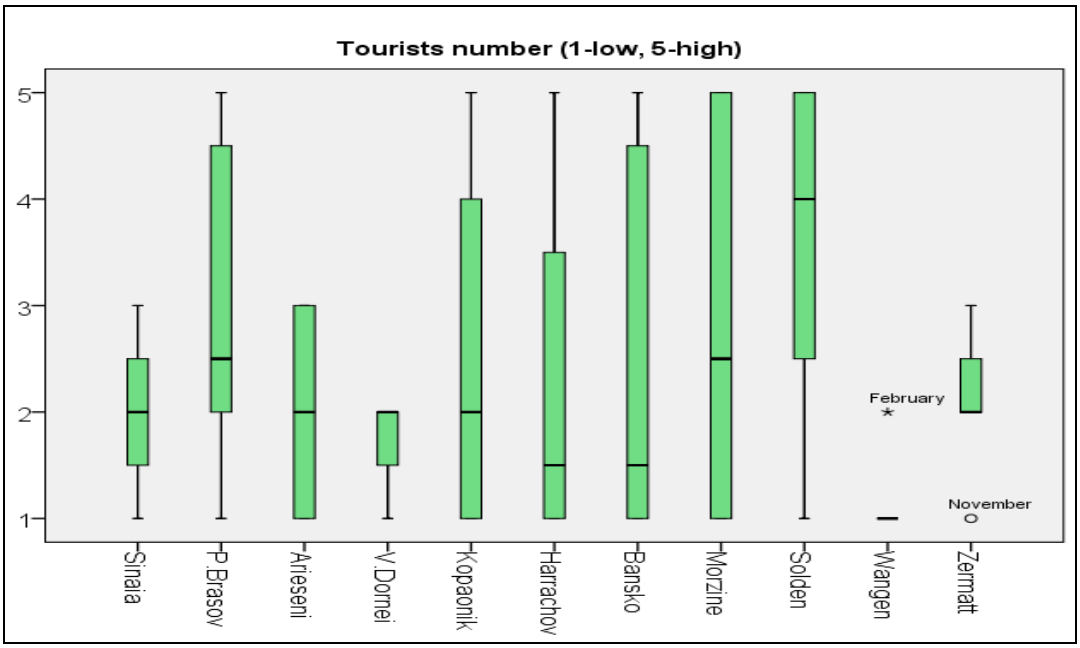

Figure 3. Box plot diagram for tourists' number for the comparison sites

Table 2 shows the values of τ (Kendall correlation), calculated between several data series found in in Table 1: the length of the ski slopes representative of a resort, the offer of properties found on the booking.com portal, respectively the average number of tourists and data this time calculated cumulatively for the whole period from October to May. We have found a positive and moderate correlation between the offered properties and the length of the ski slopes, the value of the correlation coefficient being $\tau = 0.600$ having a significance threshold of 0.01. The ski slope scope is also directly linked to the range of prices offered. τ coefficient here is 0.673, high significant with sig.= 0.004. Therefore, resorts that have long trails of ski slopes can bear increased prices or a high number of offered properties. The number of tourists is significantly correlated with any other data.

Table 2.

Kendall's correlation (τ) calculated for the statistical data in Table 1

τ (Kendall)	Booking offers	Ski slopes (km)	Average $a_{p/n}$	Average tourists number
Booking offers	-	.600*	.491*	.352
Sig. (2-t.)	-	.010	.036	.137
Ski slopes (km)	.600*	-	.673**	.315
Sig. (2-t.)	.010	-	.004	.183
Average $a_{p/n}$	.491*	.673**	-	.278
Sig. (2-t.)	.036	.004	-	.240
Average tourists number	.352	.315	.278	-
Sig. (2-t.)	.137	.183	.240	-
Significant,*-0.05/**-0.01(2-t.)				

Source: Own calculation in SPSS

CONCLUSIONS

The observed statistical data on the tourist flow, the prices of the accommodation, the occupancy degree, etc. can provide direct support to those involved in the organisation of their own tourism activities, or interested in understanding the mechanisms underlying the optimal development of these activities.

Even though the adjustment mechanisms of the demand and supply system have multiple features on a local level, the levers needed to optimize them are largely depended on these features, however, knowing and understanding similar international descriptors can directly lead to positive results. This aspect is directly influenced by the improvement of road and air infrastructure, which now allows a much easier bilateral travel for tourists compared to the past.

REFERENCES

[1]. BJØRKELUND E., BURNETT T. H., NØRVÅG K., 2012, A study of opinion mining and visualization of hotel reviews. In Proceedings of the 14th International Conference on Information Integration and Web-based Applications & Services, pg. 229-238

[2]. CIOLAC R., PETROMAN C., PETROMAN I., RUJESCU C., STANCIU S., MARTIN S, TUCUDEAN A. R., 2013. Research on agro-tourism stage and traditional products recovery through this activity in the Alps Mountain-Trento Province. In The sixth international conference Rural Development Proceedings. Vol.6, book 1, pg.74-79

[3]. CIOLAC R., CSOSZ I., RUJESCU C., NITA S., ILIE A., BOGDAN N., 2012, Managerial approach of rural tourism through holiday village-realities and profitability. Journal of Biotechnology, Book 161, pg. 21

[4]. HEERSCHAP N., ORTEGA S., PRIEM A., OFFERMANS M., 2014. Innovation of tourism statistics through the use of new big data sources. In 12th Global Forum on Tourism Statistics, Prague, CZ

[5]. KIRÁĽOVÁ A., PAVLÍČEKA A., 2015, Development of social media strategies in tourism destination. Procedia-Social and Behavioral Sciences, 175, pg. 358-366

[6]. PETROMAN I., 2014. Romania on the way of creating a competitive country image as an European tourist destination. Scientific Papers Animal Science and Biotechnologies 47 (2), pg. 325-329

[7]. PIKE S., 2002. Destination image analysis-a review of 142 papers from 1973 to 2000. Tourism management, 23(5), pg. 541-549

[8]. PÎRVULESCU L., TUCHILĂ C., RUJESCU C., BORDEAN D. M., BĂNEŞ A., 2008, Comparative statistic studies concerning the nutritious value of some groups of foods. Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Agriculture, 65(2), pg. 345-350

[9]. RUJESCU CIPRIAN, 2015, Statistică matematică, Editura Artpress

[10]. TOADER C.S., BRAD I., SÂMBOTIN D., HURMUZACHE T. C., MARTIN S. C., 2014, Aspects regarding factors that contribute to the choice of tourism destinations by tourists, Lucrări ştiinţifice Management Agricol, seria I, vol. XVI (4), pg.140-143

[11]. ***http://www.mediafax.ro/externe/cele-mai-bune-statiuni-de-schi-din-europa-topul-destinatiilor-perfecte-pentru-pasionatii-de-sporturi-de-iarna-foto-13712834

[12]. ***http://www.ski-in-romania.com/resorts.php?lang=ro

[13]. ***https://media.imopedia.ro/stiri-imobiliare/top-10-cele-mai-bune-statiuni-de-schi-din-austria-21610.html

[14]. ***https://ski-bulgaria.travelplanner.ro/statiuni-ski-bulgaria.html

[15]. ***https://www.ghiduri-turistice.info/ghid-turistic-5-motive-sati-faci-vacanta-de-iarna-in-kopaonik-serbia
[16]. ***https://www.snowtrex.ro/cehia/regiuni_de_schi.html
[17]. ***www.booking.com
[18]. ***www.ibm.com/analytics/us/en/technology/spss/