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Structural equation modeling in the analysis of the satisfaction of those responsible for tourist accommodation to the performance of Portuguese municipalities

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Abstract

Despite a decline at the end of 2019 after years of continuous growth, the tourism industry is expected to keep driving Portugal's regional and national economic growth. Hospitality is one of the most economically relevant sectors. Its existence enables the region to host tourists and, in certain cases, to boost the region's dynamism. Thus, using structural equation modeling as a methodology, it was analyzed how the allocation of resources made by local authorities to attract tourists contributes to the overall satisfaction of those responsible for tourist accommodation. It was concluded that the methodology used was adequate to validate the model initially proposed and that the privileged factor with the greatest impact was publicizing/promotion. However, events organized or supported by municipalities influenced the overall satisfaction of those responsible for tourist accommodation.

Keywords: Tourism. Tourist accommodation. Structural Equation Modeling. Publicizing. Events.

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A modelação de equações estruturais na análise da satisfação dos responsáveis de alojamentos turísticos ao desempenho dos municípios portugueses

Resumo

Apesar do revés, após o final de 2019, no crescimento que se vinha observando na indústria do turismo, é expectável que esta continue a impulsionar o crescimento económico regional e nacional. Um dos setores económicos com elevada relevância ao nível do turismo é o da hotelaria. A sua existência capacita a região para a permanência do turista e, em alguns casos, é o motor da dinamização da região. Assim, recorrendo à modelação de equações estruturais como metodologia, analisou-se de que forma a alocação de recursos feita pelos responsáveis autárquicos na captação de turistas contribui para a satisfação global dos responsáveis pelos alojamentos turísticos. Concluiu-se que a metodologia usada se mostrou adequada na validação do modelo inicialmente proposto e que o fator privilegiado e com maior impacto foi a divulgação/promoção. Contudo os eventos organizados ou apoiados pelos municípios também mostraram ter impacto na satisfação global dos responsáveis pelos alojamentos turísticos.

Palavras-chave: Turismo. Alojamentos turísticos. Modelação de Equações Estruturais. Divulgação. Eventos.

Modelado de ecuaciones estructurales en el análisis de satisfacción de los responsables de alojamientos turísticos con el desempeño de los municipios portugueses

Resumen

A pesar del revés sufrido por la industria turística tras finalizar 2019, se espera que esta continúe impulsando el crecimiento económico regional y nacional. Uno de los sectores económicos de mayor relevancia en materia turística es la hostelería. Su existencia permite la permanencia de los turistas en la región y, en algunos casos, es el motor de la dinamización de la región. Así, utilizando como metodología el modelado de ecuaciones estructurales, se analizó cómo la asignación de recursos para la atracción de turistas, realizada por las autoridades locales, contribuye a la satisfacción general de los responsables de los alojamientos turísticos. Se concluyó que la metodología empleada resultó adecuada para validar el modelo inicialmente propuesto y que el factor privilegiado de mayor impacto fue la divulgación/promoción. Sin embargo, los eventos organizados o apoyados por los municipios también han demostrado tener un impacto en la satisfacción general de los responsables de los alojamientos turísticos.

Palabras clave: Turismo. Alojamiento turístico. Modelado de ecuaciones estructurales. Divulgación. Eventos.

INTRODUCTION

Despite a decline at the end of 2019 after years of continuous growth, due to SARS-CoV2, the tourism industry is expected to keep driving Portugal's regional and national economic growth. Hospitality is one of the most economically relevant sectors. Its growth will depend on the ability of the various entities linked to this sector to generate value through the implementation of innovative practices, especially in terms of differentiating strategies in emerging regions. Based on the concept of "smart specialization", Boschma (2016) refers to the importance of strengthening links between economic sectors based on the endogenous resources and current capabilities in each region.

One of the most relevant economic sectors in the field of tourism is the hospitality industry. Hospitality is one of the most economically relevant sectors. Its existence enables the region to host tourists and, in certain cases, to boost the region's dynamism. Hospitality creates wealth by generating employment, retaining population and paying fees and taxes, some of them being municipal.

However, the publicizing and promotion of tourism in a region is made by the combination of several factors and entities, public or private. Municipalities play a key role in attracting tourists to a particular region of Portugal. Part of the resources of these entities should be used with the aim of increasing the number of tourists in the region and, consequently, increasing the wealth of the population in general and the tourist accommodation in particular. In short, the allocation of resources made by the municipalities will have to take into account the satisfaction of their various "clients", which are their citizens, whether individuals or companies.

Thus, using structural equation modelling (SEM) as a methodology, it was analysed how the allocation of resources made by municipal authorities to attract tourists contributes to the overall satisfaction (GS) of those responsible for tourist accommodation (TA). The use of structural equation modelling (SEM) as methodology, intended to validate a model previously defined, in which some factors (latent variables) were determined from several observed variables.

THEORETICAL FRAMEWORK

Customer satisfaction is increasingly a subject of study in several areas and the tourism industry is no exception (KWOK, JUSOH and KHALIFAH, 2016). This raises the question of defining the meaning of satisfaction. In literature there are several definitions, one of the most popular refers to the fulfilment of expectations generated by the customer (KWOK, JUSOH and KHALIFAH, 2016).

The measurement of satisfaction levels has been the target of several approaches and different methodologies in the desire to find a way to exceed customer expectations and give organizations the possibility to differentiate themselves. However, measuring satisfaction levels is not an easy task, since it is intangible, abstract and differs from client to client due to previous experiences, expectations, needs and goals.

Typically, most of tourism-related studies are performed from the tourist's point of view. Remoaldo et al. (2016), for example, analysed the satisfaction levels of tourists regarding the

city of Guimarães as a World Heritage, as well as some specific attributes like signage, tourist information or transports. But there are also studies developed from the perspective of populations, such as Foroni, Modica and Zenga (2019), which sought to capture the impact of tourism in residents' satisfaction on an Italian seaside resort. Despite only mentioning these two authors, a vast bibliographic research was carried out which, although not reflected in this document, showed that no study addressed the satisfaction of those responsible for the TA, considering them as "customers" of the municipalities. This way, add that it was not possible to compare the results obtained with those of other studies. This is an innovative approach considering in one hand the point of view in which the analysis is carried out and on the other hand the application of this methodology to this subject.

METHODOLOGY

In this study, SEM was the technique used to analyse the satisfaction, which despite having some limitations, was used by several authors to analyse tourism satisfaction. For example, San-Martín, Herrero and Salmones (2018) analysed destination brand equity in tourist satisfaction; Djofack and Camacho (2017) investigated the effects of ISO certification on the satisfaction of those responsible for Spanish tourism industry; Ali et al. (2017) examined relationships between Guests' Perceived Hotel Service Quality and Satisfaction in Malaysia; Mendes et al. (2010) analysed the relationship between tourist satisfaction and destination loyalty in the region of Arade, Algarve.

SEM is a modelling technique commonly used to test the validity of theoretical models that define causal and hypothetical relationships between variables. These relationships are represented by parameters that indicate the magnitude of the effect that some independent variables have on dependent variables. Dependent variables are called latent variables (LV) whenever they cannot be measured and therefore are hypothetical constructs, based on observed variables (OV) that serve as indicators.

SEM is a multivariate analysis method that combines aspects of multiple regression and factor analysis with the aim of simultaneously estimating a series of dependence relationships. As an advantage, it is possible to corroborate all the hypotheses of the model at the same time, as it allows the analysis of the behaviour of each of the variables on the others. Additionally, it can be represented graphically (KLINE, 2011).

As mentioned, the objective of this research was to create a model to evaluate which constructs contributed the most to the satisfaction of respondents with their municipality regarding the actions taken to capture the attention of tourists and, consequently, their visit and stay. Thus, an integrated explanatory model was developed based on two hypotheses: (1) the perception that those responsible for the AT had about the performance and allocation of resources by the municipalities; (2) the way the conceived constructs generated causal relationships in satisfaction.

In view of the above stated and given the complexity of measuring satisfaction levels, it has resorted to its representation through a significant and measurable number of parameters that could have value for the respondents. Thus, and despite the limitations analysing the satisfaction,

questionnaires with 7-point Likert scales were used, where 1 meant completely dissatisfied and 7 completely satisfied, to perceive the levels of satisfaction related to the activities and actions of the municipalities. By e-mail, 3,665 questionnaires were sent to AT of Portugal, between May 21 and July 10, 2020. Due to the SARS-CoV-2 pandemic situation, many establishments were closed, so only 379 valid responses were obtained.

Proposed model and research hypotheses

The model presented was based on the literature review, on the responses to the questionnaire and, in a first phase, on the principal components analysis. Changes to the initial model took into account critical thinking and theoretical research. The model was based on six research hypotheses that are presented below. For each hypothesis within parentheses is the name assigned to each LV, as well as the numbering of the questions designated to each hypothesis (see Box 1).

H1. Satisfaction with the events organized by the municipality, as well as the support given to the tourists has a positive effect on the GS perceived by the respondents ("Events": 4:5-4:20).

H2. Satisfaction with the publicizing made by the municipality has a positive effect on the GS perceived by the respondents ("Publicizing": 4:1-4:4 e 4:21-4:24).

H3. Satisfaction with the investment made by the municipality in assets and services has a positive effect on the GS perceived by respondents ("Investment": 4:25-4:31).

H4. Satisfaction with the municipality's website has a positive effect on the GS perceived by respondents ("Website": 7:1-7:5).

H5. Satisfaction with the supply of tourist products, with the number of beds and the municipality's workforce has a positive effect on the GS perceived by the respondents ("Products/ services supply": 8:1-8:4).

H6. Satisfaction with the publicizing made by tourism entities, such as Business Tourism Associations (BTA), Regional Tourism Promotion Agencies (RTPA), Intermunicipal Entities (IE) and Hotel Associations (HA), has a positive effect on the GS perceived by the respondents ("Promotion/ Publicizing by other Entities": 9:1-9:4).

BOX 1

Observed variables

4:1	National publicizing	4:23	Investment in advertising and marketing to the municipality (promotional films, participation in tourism fairs...)
4:2	International publicizing	4:24	Support for hospitality companies (financial incentives, hiring incentives, tax exemption...)
4:3	Clear, attractive and appropriate signage	4:21	Support in reducing seasonality in tourism through publicizing strategies
4:4	Multilingual and well-localized signage	4:22	Support in reducing seasonality by participating in tourism fairs

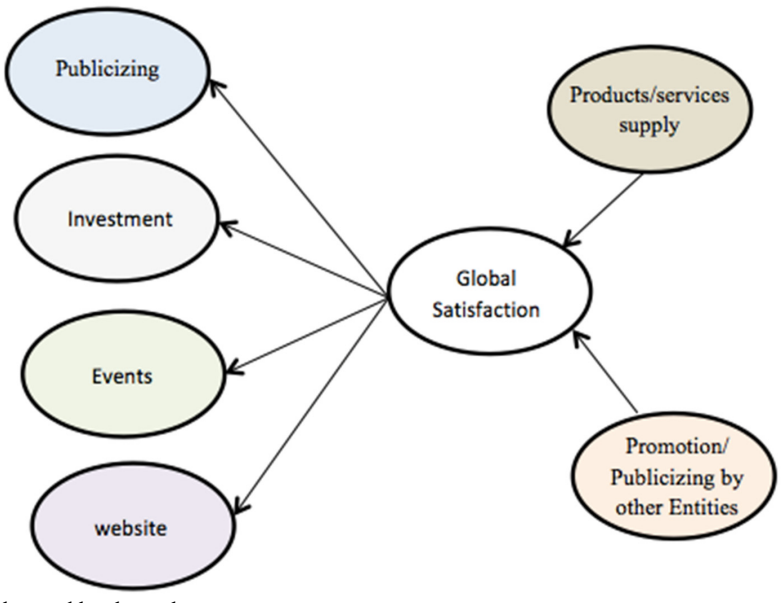
Continue

4:5	Organization of cultural events by the municipality	4:25	Investment in infrastructure (roads, parking and transport)
4:6	Organization of sports and adventure events by the municipality	4:26	Investment in basic sanitation services
4:7	Organization of audio visual events (projection lights) by the municipality	4:27	Investment in street cleaning services
4:8	Street decoration and other decorations taken by the municipality	4:28	Investment in garbage collection services
4:9	Support for parties, fairs and pilgrimages	4:29	Investment in municipal gardens and parks, natural parks and urban vegetable gardens
4:10	Support for cultural events: theatre	4:30	Investment in museums and recovery of material heritage
4:11	Support for cultural events: music	4:31	Investment in the recovery of intangible heritage
4:12	Support for cultural events: cinema	7:1	Publicizing of the tourist attraction of the municipality through the website
4:13	Support for cultural events: exhibitions	7:2	Clarity and ease of access to information on the municipality website
4:14	Support for cultural events: ethnography and folklore	7:3	Attractiveness of the municipality's website
4:15	Support for handicraft	7:4	Multilingual availability on the website
4:16	Support for music festivals	7:5	Publicizing of tourist accommodations on the municipality's website
4:17	Support for food festivals	8:1	The offer of tourist products in the municipality
4:18	Support for sports and adventure events	8:2	The number of tourists who visit the municipality
4:19	Investment in tourism information/ support offices	8:3	Amount of skilled labor available to the hospitality industry
4:20	Support to tourists by organizing guided tours	8:4	The number of beds (supply) in relation to demand
9:1	Promotional and publicity actions carried out by the BTA	9:3	Promotional and publicity actions carried out by the IE
9:2	Promotional and publicity actions carried out by RTPA	9:4	Promotional and publicity actions carried out by HA

Source: Elaborated by the authors.

Based on the hypotheses defined above, the initial model presents six LV (constructs) impacting the LV global satisfaction (Figure 1).

FIGURE 1
Initial model



Source: Elaborated by the authors.

The use of SEM requires an evaluation of the model through confirmatory factor analysis (CFA), as well as alterations to the initial model whenever justified. Subsequently, the structural model is estimated, the results are evaluated and, if necessary, new adjustments are made. After validating the model, the results can then be analysed.

The contributing phases to the confirmatory analysis are:

1. Detect possible data distortions: all "don't know/don't answer" answers were considered as missing data. After its analysis and whenever possible, the series mean methodology was used to fill these gaps, since the SEM technique is sensitive to the size of the sample and the exclusion of responses with omitted cases would reduce the accuracy of the estimates;
2. Possible existence of outliers, which would lead to distortions in the analysis (HAIR et al. 2009). To identify possible univariate outliers, each variable was analysed individually, using a moderate limit >2.58 e p<0.01 (KLINE, 2011). The results of this test identified 11 outliers, all connoted with question 4:24, leading to the exclusion of this question. As this question is directly related to a possible support given by the municipalities directly to the TA and not with the performance of the municipalities in attracting tourists, it may have caused discrepancies in the answers. To identify multivariate outliers was used the Mahalanobis distance (D^2), which resulted in the exclusion of 39 responses for not meeting the requirements (GÓNZALEZ, ABAD and LÈVY, 2006);
3. Analysis of normality via univariate and multivariate tests. The univariate normality of the sample was first verified using the Shapiro-Wilk test and, for a p-value<0,001, the absence of normality was verified for all variables. Then came *skewness* and *kurtosis* tests. The *skewness* test showed significant deviations, for moderate indicators of normality, connoted with four questions (4:2; 4:4; 4:20 and 4:21). These questions had values greater

than |3.00|, which is why they were excluded (KLINE, 2011). Concerning the *kurtosis* test, no question reflected an extreme situation, as the maximum value found was 3.8, below the value(GÓNZALEZ, ABAD and LÈVY, 2006). The perception of the existence of multivariate normality was ensured by calculating the Mardia test (K_m) (MARDIA, 1970). It was obtained a value of K_m=57.3, which, being greater than 5, indicates that there is no multivariate normal distribution;

4. The verification of the linearity of the variables was performed by analysing the scatter plots and the standardized residual graphs that pointed to linear relationships for all dimensions of the model, with no curvilinear relationships being observed (HAIR et al., 2009). It was also performed the *Pearson* correlation test. This coefficient is a good indicator of the linear fit between the variables. The greater the degree of association between the variables, the closer the value is to 1 (HAIR et al., 2009). The values obtained from Pearson's coefficient proved to be acceptable as they were all between 0.4 and 0.9;
5. The values obtained for the *variance inflation factor* (VIF) allowed to analyse the multicollinearity between the variables. The VIF value must not exceed 10. (NORUSIS, 2004). Of the 42 variables, it was found that only three did not meet the requirements of VIF<10, as a result and for the construction of the model, they were excluded. These variables concern the questions 4:11; 7:1 and 7:2. With the exclusion of these variables, the Mardia coefficient (K_m) changed to 51.2 – which meant a slight general improvement in the multivariate normality value.

Model identification and estimation methods

Since the SEM has underlying inter-response relationships, not individually considered, there are two hypotheses regarding the data entry: the covariance matrix and the correlation matrix of all the model indicators. As it is intended to test a theoretical model, previously proposed, in which there are causal relationships that need to be validated, the covariance matrix was chosen based on the confirmatory factor analysis previously performed (BYRNE, 2010).

In the estimation of parameters, there are several techniques that can be used, such as ordinary least squares, maximum-likelihood, generalized least squares or asymptotically distribution-free estimation (HAIR et al., 2009).

Applying the SEM and since the sample did not meet the normality requirements, it was used the maximum likelihood estimator (MATTOZO, 2014). However and as suggested by Ullman (2006), it was applied the Satorra and Bentler test which allows greater robustness to the results. In terms of estimation, it was applied the direct estimation in which the model is directly estimated and it is the sampling error that underlies the confidence interval and the standard error of each estimate (HAIR et al., 2009).

Presentation and Discussion of the Results

The results of the confirmatory and structural analysis were obtained through the R®_V4.0.2 software. However, due to better graphical representation, all the figures presented in this work were obtained using the AMOS® V.25 software.

The model validation process begins with the measurement of the components that will allow the operationalization of the LV. From the factor loadings analysis of each item, and as all of them contributed positively (above 68%) to the construction of each LV, there was no need to exclude any other item, in addition to the ones mentioned above. However, it was necessary to make correlations between several measurement errors in the construction of the different LV. It was also necessary to rethink the model, since the LV "Website" did not present acceptable fit indices. In this case, two hypotheses were put forward: (1) exclude this LV or (2) consider items 7:3; 7:4 and 7:5 as positively impacting the LV "Publicizing". By comparing the results of the indices of both hypotheses, it was found that they were more adequate for the hypothesis (1), leading to a total exclusion of the items underlying the variable "Website".

All variables had adequate factor weights, above the reference value ($\lambda>0.5$), and were statistically significant (p-value ≤ 0.05, reference value), (REIS, 2001). The individual reliability of the items was high, since the lowest value of R^2 was greater than 0.42 and the goodness-of-fit indices were considered good, as can be seen in Table 1 (the reference values can be consulted in Table 2).

TABLE 1

Summary of latent variables fit indices – Satorra and Bentler test (2001)

Fit Indices	Publicizing	Events	Investment	Products / services supply	Promotion/ Publicizing by other Entities
GFI	1.000	0.951	0.980	0.999	0.995
SRMR	0.001	0.017	0.016	0.008	0.007
RMSEA	0.000	0.047	0.069	0.000	0.064
AGFI	0.999	0.916	0.931	0.985	0.952
TLI	1.005	0.984	0.984	1.000	0.987
NFI	1.000	0.980	0.991	0.998	0.997
CFI	1.000	0.989	0.994	1.000	0.998
RFI	0.999	0.971	0.976	0.990	0.982
AIC	4,263	11,595	6,583	4,266	3,921
X 2 /df	1.343	1.428	1.489	1.654	1.920

Source: Elaborated by the authors.

Then, each LV was analysed through the values obtained for the residual terms (errors). Likewise, the correlation effects of the model were analysed based on the fit indices and the relationships that make sense in theoretical terms.

The LV "Events" contains 13 items (OV), all with λ>0.8. Internal consistency was considered excellent, since Cronbach's alpha value was 0.978, higher than 0,9 (HAIR et al., 2009; KLINE, 2011). The item that contributed the most to the constitution of this variable was 4:13 and the one that contributed the least was 4.7. However, given the proximity between the values obtained, it shows that all items had a significant and equivalent weight.

The results pointed to the existence of several correlations between items.

Positive correlation between item 4:10 and items 4:8, 4:9, 4:12 and 4:13, suggests that greater appreciation of cultural activities, such as theatre, involves the appreciation of other cultural activities of the municipality, such as: cinema (8%), exhibition (43%), street exhibition (22%) and parties, fairs and pilgrimages (23%). The negative correlation between item 4:10 and items 4:6 (-7%) and 4.17 (-6%) indicates that respondents who most value events linked to culture, such as theatre, devalue events more linked to sport and adventure and vice versa. The positive correlation between items 4:6 and 4:18 (28%) was to be expected, as both variables relate to sports and adventure events, with the only difference being that the municipality in one case would organize them and in the other would only be supporting. The high correlation (50%) between item 4:5 and 4:6 is based on the assumption that the expectation regarding the organization of sports events by the municipalities is equivalent to the organization of cultural events. Correlations between item 4:8 with 4:9 (28%) and 4:7 (22%) assume that the existence of parties, fairs and pilgrimages, as well as audio visual events, imply the decoration of the streets in order to create a greater appeal to these events. Finally, the positive correlation between municipalities' support for cultural events, such as theatre (4:10), cinema (4:12) and exhibitions (4:13), shows the inherent relationship and similarity that exist in these three types of events.

The variable "Publicizing" contains 4 items, all with λ>0.7 and a Cronbach's alpha of 0.919. The item that most contributed to the constitution of this variable was 4:1, with a weight of 91%. The one that contributed the least was 4:22, with a weight of 79%. It was only necessary to make a single correlation between items 4:22 and 4:23 (59%), which presupposes that the investment in publicizing by the municipality will enhance the reduction of seasonality.

The variable "Investment" contains 7 items, all with λ>0.8 and a Cronbach's alpha of 0.956. The item that contributed the most to the constitution of this variable was 4:29 with a weight of 90% and the one that contributed the least was 4:31 with a weight of 82%. The highest correlation between items (71%) occurs between 4:30 and 4:31, since both relate to the investment made by the municipalities in the recovery of heritage, with the difference that one concerns the material and the other the immaterial. It is also important to mention the correlation between items 4:28 and 4:27 (60%), whose assumption is that the municipality, by investing in garbage collection services, manages to have cleaner streets and vice versa. Finally, a brief reference to the 20% correlation between variables 4:26 (Investment in basic sanitation services) and 4:25 (Investment in infrastructure, such as roads, parking and transport).

The variable promotion/publicizing by other entities, which will be called "PublicizingEntities", contains 4 items, all with λ>0.8 and a Cronbach's alpha of 0.928.

Regarding the contribution to the LV, all items have very similar weights, between 0.854 and 0.877. Items 9:1 and 9:4 showed a correlation of 30%, suggesting some similarity in the promotional and dissemination actions carried out by the Business Tourism Associations and the Hotel Associations.

The variable supply of products and services, which will be called "Supply", contains 4 items, all with $\lambda>0.6$ and a Cronbach's alpha of 0.855. The item with the highest contribution to the constitution of this variable was 8:1 with a weight of 87%, and the one that contributed the least was 8:4 with a weight of 68%. In this case, only one correlation was made between items 8:4 and 8:1. Interestingly, this correlation is negative: 33%, which means that the supply of tourist products has a negative influence on the supply/demand ratio of the municipality. This may express some imbalance between the supply and demand for beds, due to excess or scarcity, in the supply of tourist products.

After performing aforementioned correlations, according to the two-stage approach, the model was firstly confirmed, through confirmatory factor analysis and the analysis of fit indices and then analysed using the structural equations. (MARÔCO, 2014).

Based on the values obtained, it was still necessary to make some adjustments, making some more correlations between items 9:1 and 9:2 (15%); 4:1 and 4:3 (31%), since the existing signage in the municipalities can be considered as a component of publicizing to the points of interest for the tourist; between items 4:16 and 4:18 (11%), that relates the support for music festivals with the support for sports and adventure events; and between items 8:1 and 8:3 (-25%), with the indication that the supply of tourist products negatively influences the amount of skilled labour in the hospitality industry, leading to the dispersion of labour across several areas linked to tourism, often in regions where labour is scarce.

Since each LV was examined by itself, the initial model and the final model presented very similar values for the fit indices. The values referring to the final model are shown in Table 2 and can be considered reasonable/good.

TABLE 2

General Fit Measures: reference values and values obtained in the final model

Fit Measures	Fit indices	Acceptable reference values	Final Model
Absolute Fit Measures	X^2	The fewer, the better the significance levels.	678
	GFI	Values close to 0.9: 0: null fit; 1: perfect fit	0.873
	SRMR	Values below 0.10	0.039
	RMSEA	Values below 0.08	0.045

Continue

Fit Measures	Fit indices	Acceptable reference values	Final Model
Incremental Fit Measures	AGFI	Recommended above 0.9: 0: null fit; 1: perfect fit	0.844
	TLI ou NNFI	Recommended above 0.9: 0: null fit; 1: perfect fit	0.965
	NFI	Recommended above 0.9: 0: null fit; 1: perfect fit	0.939
	CFI	0: null fit; 1: perfect fit	0.970
	RFI	0: null fit; 1: perfect fit	0.929
Parsimonious Fit Measures	AIC	The fewer the better: 0: perfect fit; negative value: null fit	29,336
	X^2 /df	Acceptable value between >1 and ≤ 5	1.208

Legend: X^2- Chi-square; GFI – Goodness-of-fit index; SRMR – Standardized root mean square residual; RMSEA - Root-mean square error of approximation; AGFI - Adjusted goodness-of-fit index; TLI – Index of Tuker-Lewis; NNFI - Non-normed fit index; NFI - Normed fit index; CFI - comparative fit index; RFI - Relative fit index; AIC - Akaike information criterion; X^2 /df =X^2 weighted (df=degrees of freedom).
Source: Elaborated by the authors.

According to the CFA and since the measurement model shows consistency with the theoretical model, it is possible to conclude that effectively the different OV fit the measures of the five LV constructed. From the analysis of the values in Table 3, it can be seen that the composite reliability is greater than 0.88 for all LV, which is a good indicator (FORNELL and LARCKER, 1981).

To analyse the convergent validity, which allows to evaluate the total percentage of items that is explained by the LV, the average extracted variance (AEV) was used, obtaining values above 0.65 for all LV (Table 3).

TABLE 3
Composite Reliability and Average Extracted Variance

Item	Latent Variable	Standardized coefficients	Composite Reliability[(a)]	Average Extracted Variance[(b)]
X9:2	PublicizingEntities	0.846	0.92	0.73
X9:1		0.829		
X9:3		0.901		
X9:4		0.841		
X4:1	Publicizng	0.833	0.91	0.72
X4:23		0.905		
X4:3		0.777		
X4:22		0.866		

Continue

Item	Latent Variable	Standardized coefficients	Composite Reliability[a]	Average Extracted Variance[b]
X4:27	Investments	0.881	0.95	0.75
X4:25		0.851		
X4:26		0.872		
X4:28		0.848		
X4:29		0.893		
X4:30		0.853		
X4:31		0.849		
X8:1	Supply	0.956	0.88	0.65
X8:2		0.763		
X8:3		0.812		
X8:4		0.654		
X4:16	Events	0.896	0.98	0.77
X4:5		0.883		
X4:6		0.824		
X4:7		0.815		
X4:8		0.856		
X4:9		0.869		
X4:10		0.876		
X4:12		0.866		
X4:13		0.908		
X4:14		0.903		
X4:15		0.896		
X4:17		0.892		
X4:18		0.898		

(a) Composite Reliability should be > 0.7 (NUNNALLY, 1978).
(b) AEV should be > 0.5 (FORNELL and LARCKER, 1981).
Source: Elaborated by the authors.

Using the method of Fornell and Larcker (1981), it was found that the values obtained for the AEV are higher than those obtained from the square of correlation coefficient of the LV (shared variance), which is indicative of the existence of discriminant validity (Table 4). This validation of the allows to understand if the questions were understood by the respondents as a homogeneous set (MATTOZO, 2014).

TABLE 4

Discriminant validity

Correlations		Average extracted variance	Shared Variance (Correlation between LV)²
PublicizingEntities	Publicizing	0.73	0.52
	Investment		0.38
	Supply		0.56
	Events		0.41
Publicizing	Investment	0.72	0.68
	Supply		0.62
	Events		0.80
Investment	Supply	0.75	0.46
	Events		0.68
Supply	Events	0.65	0.48

Source: Elaborated by the authors.

Confirmatory factor analysis validated the proposed model. In fact, the final model, after adjustments, showed acceptable and good values for all adjustment tests, confirming the existence of reliability, convergent validity and discriminant validity. Thus, it can be concluded that the LV on which the model was based were well predicted.

Structural equation model: global satisfaction as a latent variable

In this section, the GS was considered as a LV built based on the constructs already constituted and presented in the previous section. In the next section, following a different approach, the GS will be analysed as an observed variable (OV).

Once validated the model by the CFA, it was initiated the structural analysis of the model (SEM) with the objective of validating whether the hypotheses initially made are statistically significant. To this end, the fit indices were calculated again in order to verify if the model was still valid and consistent with what was theoretically alleged. As the covariance matrix of OV residuals was defined as non-positive, it was necessary to exclude the correlation between the error in items 4:28 and 4:31 and also to create the correlation between the error of item 8:3 and 8:4 which relates a relationship between the skilled labour and the supply-demand ratio in terms of the number of beds. The fit indices obtained can be found in Table 5, column "GS final (LV)".

The goodness-of-fit is between acceptable and good, as can be seen from the analysis of the indices. In general, it can be considered that all measures of absolute adjustment are acceptable despite the chi-square value be a little high (HAIR et al., 2009).

Incremental adjustment measures are adequate and in accordance with what is recommended in the literature (BYRNE, 2010); the exception is the GFI value, which is below the

recommended. However, according to Kim (2005), since this index is sensitive to the dimension and possible complexity of the model, it is already considered acceptable as long as its value is above 0.8. Finally, parsimonious adjustment measures can also be considered acceptable.

TABLE 5

General Adjustment Measures according to the structural model considering global satisfaction as LV versus OV

Fit Measures	Fit indices*	GS final (LV)	GS final (OV)
Absolute	X^2	733	732
	GFI	0.863	0.869
	SRMR	0.047	0.037
	RMSEA	0.049	0.046
Incremental	AGFI	0.833	0.839
	TLI	0.960	0.964
	NFI	0.934	0.937
	CFI	0.965	0.969
	RFI	0.924	0.928
Parsimonious	AIC	29,392	30,129
	X^2 /df	1.210	1.187

* Reference values in Table 3.
Source: Elaborated by the authors.

It is now interesting to understand the magnitude of the effects of one construct on another, since the objective of this research is to understand to what extent the various constructs, based on the initial hypotheses, are not only related to each other (which has already been analysed by the CFA), but also in relation to their contribution to the respondents' GS.

As can be seen in the diagram of Figure 2, all the items of the constructs present values above 0.42, which can be considered adequate, since the individual reliabilities are adequate if $R^2 \geq 0.25$ (BOLLEN, 1989). The items with the lowest values belong to the "supply" construct with 0.42 and 0.58, while the other two coefficients of the items of this same construct present values of 0.62 and 0.93. All other items of the different constructs of the model present values of $R^2 > 0.66$.

Likewise, all standardized multiple correlation coefficients related to the LV (factors) that contribute to the "GS" construct present high R^2 values, expressing the high percentage of variance explained by each factor and how important the factor is. As can be seen, it is the "publicizing" factor that has the highest coefficient, followed by "events" – the R^2 values can be seen in Figure 2 or Table 8, column "R^2 GS (LV)".

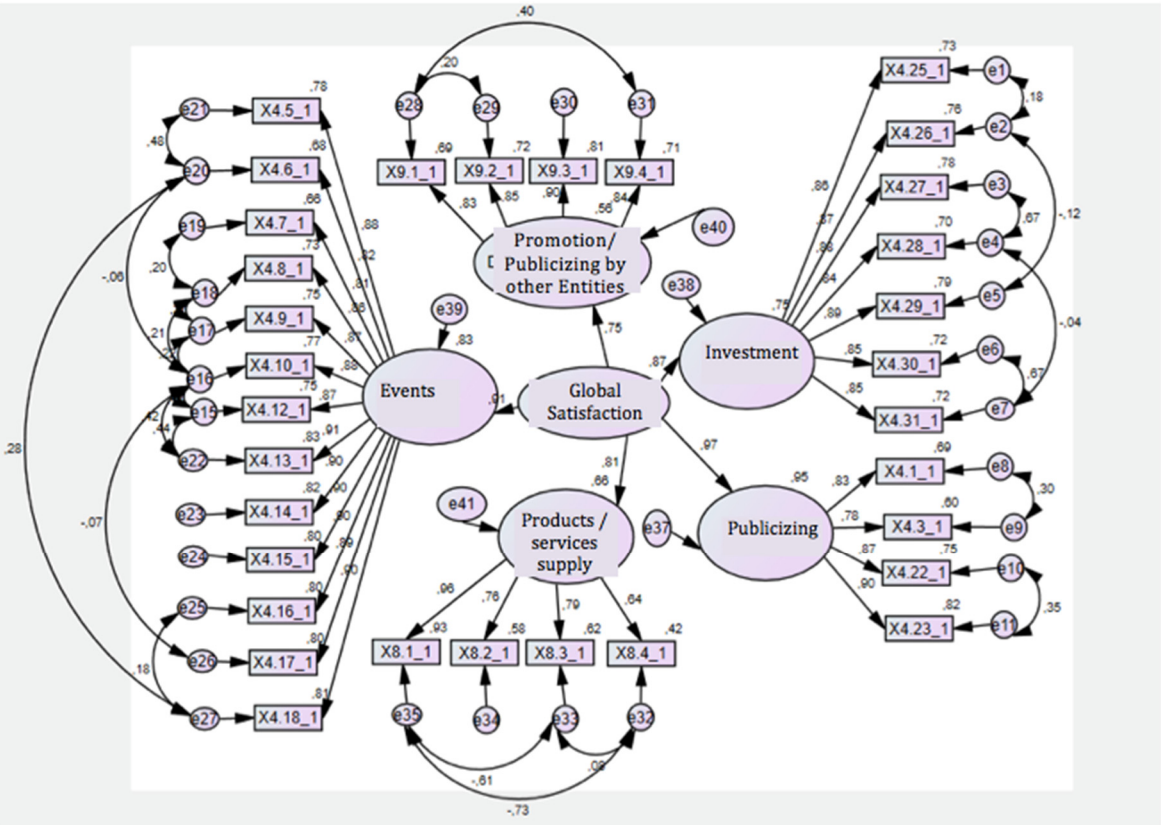
Considering the model with standardized estimates, it is also verified that the factor weights, regardless of the construct, are between 0.64 and 0.97, indicating that all OV, as well as

LV, converge very satisfactorily and showing a high relationship in the formation of each of the constructs. In fact, the greater the value of R^2, the greater the explanatory power of the regression equation and the greater the prediction of the dependent variable. (MATTOZO, 2014).

In terms of the contribution of the factors to the GS, two analyses can be made. An analysis based on non-standardized values and another based on standardized values. The significance index of each factor loading is determined by the relationship between the value of the variable's factor loading and its standard error. The value obtained can be considered as a critical value, since it is on it the confirmation or not of the hypothesis proposed (Table 7, column "CR-statistic t"). If the value obtained is greater than |1.96|, it is considered significant; if this does not happen, it indicates that the value is statistically equal to zero and, therefore, the index explains little about the LV. As can be seen, all values are greater than 13, with $p<0.01$. "Publicizing" presents the value 1 for B, since it was pre-fixed, in order to obtain the remaining coefficients, and therefore has no associated standard error.

FIGURE 2

Structural Equations Model that analyses the effect of the LV on the LV "Global Satisfaction"



Legend: from e37 to e41: disturbance or measurement error for each LV; remaining "e": measurement error for each item; rectangles: OV; ovals: LV; values next to one-way arrows: magnitude of the effects of one variable on the other; values next to the two-way arrows: indicates the existing correlation between the two variables; values next to rectangles or ovals: proportion of explained variance (R^2). The values presented are standardized and present significant levels ($p<0.01$).
Source: Elaborated by the authors.

TABLE 6

Hypothesis test of the structural model: estimated coefficients of the relationships between variables in which global satisfaction is a LV

		Non-standardized coefficients		Standardized coefficients	CR Statistic t	*p-value*	Validation of hypotheses
		B	Standard deviation				
H1. Events	⇒GS	0.943	0.043	0.910	22.069	0.000	**Not rejected**
H2. Publicizing	⇒GS	1	-	0.973	-	-	**Not rejected**
H3. Investments	⇒GS	0.899	0.043	0.866	20.758	0.000	**Not rejected**
H4. Website	⇒GS	-	-	-	-	-	**Not tested**
H5. Supply	⇒GS	0.808	0.044	0.812	18.194	0.000	**Not rejected**
H6. PublicizingEntities	⇒GS	0.660	0.048	0.749	13.815	0.000	**Not rejected**

Source: Elaborated by the authors.

Also, according to the values presented in Table 6, all the hypotheses initially raised were validated. Hypothesis H4 had been excluded due to the impossibility of being tested individually, as previously explained.

Additionally, there follows a more perceptible explanation of the impacts of the various factors on the dependent variable GS. According to non-standardized estimates and since all impacts are positive, the greater, for example, the support that the municipality gives to the organization of events, the greater the levels of satisfaction of the respondents. The same applies to the other constituted factors. As for the standardized estimates (Figure 2), it is possible to perceive, in the scope of the measurement component, which factor has the largest population (lobby) in relation to the LV "global satisfaction". In this case, it is "Publicizing" that has the greatest contribution, as it explains 95% of the variability of the LV Global Satisfaction, followed by the variable "Events", with 83%.

The addition of one point in "Publicizing" leads to an average increase of 0.97 in the GS of the respondents, keeping everything else constant, which leads to the conclusion that the more the municipality invest in publicizing, the higher will be the levels of satisfaction of the respondents. "Publicizing" is undoubtedly the factor that has the greatest predictive power in the respondents' Global Satisfaction.

In summary, it can be said that all the constructs are important determinants of the GS of the respondents. LV "Publicizing" had the greatest impact (97%), followed by "Events" (91%), "Investment" (87%), "Supply" (81%) and, finally, "Publicizing by other Entities" (75%).

Structural equation model: global satisfaction as an observed variable

Since the respondents were asked in the questionnaire to assess their degree of GS in relation to the performance of municipalities in attracting tourists, a second structural analysis was carried out, but now considering GS as an observed variable.

In this case, the general fit indices are slightly better than those obtained when the GS variable was latent – Table 7, column "Final GS (OV)".

Table 7 shows the values of the standardized coefficients and it can be seen once again that all LV significantly influence the GS (p=0.000; t>|1.96|).

TABLE 7

Hypothesis test of the structural model: estimated coefficients of the relationships between variables in which global satisfaction is a OV

		Non-standardized coefficients		Standardized coefficients	Statistic t	p-value
		B	Standard deviation			
H1. Events	⇒GS	0.766	0.048	0.757	15.837	0.000
H2. Publicizing	⇒GS	0.882	0.044	0.892	20.181	0.000
H3. Investments	⇒GS	0.734	0.047	0.724	15.504	0.000
H5. Supply	⇒GS	0.760	0.036	0.794	21.051	0.000
H6. PublicizingEntities	⇒GS	0.587	0.046	0.684	12.856	0.000

Source: Elaborated by the authors.

According to the values presented in Table 8, when the GS is an observable variable, the LV "Publicizing" continues to be the one with the greatest contribution. However, the contribution of the other LV changes slightly and now the variable "Supply" comes in second, followed by "Events", which has lost explanatory power. It can also be seen that the explanatory power of all latent variables on the GS is lower when compared to the first situation, in which the GS was itself a LV (Figure 3).

TABLE 8

R^2 values and factor weights for global satisfaction as LV and as OV

Factor	R2 GS (OV)	R2 GS (LV)	Weights (OV) (Coef. Stand.)	Weights (LV) (Coef. Stand.)
Publicizing	0.80	0.95	0.89	0.97
Events	0.57	0.83	0.76	0.91
Investments	0.51	0.75	0.72	0.87
Supply	0.65	0.66	0.80	0.81
PublicizingEntities	0.47	0.56	0.68	0.75

Legend: GS- global satisfaction; OV- observed variable; LV- latent variable
Source: Elaborated by the authors.

As for the predictive power, that is, the magnitude of the effects of one variable on the other, there are decreases in the weights of the factors, even though they continue to have significant values. Thus, although the variable with the greatest predictive power continues to be "Publicizing", is now followed by "Supply", "Events" and "Investment".

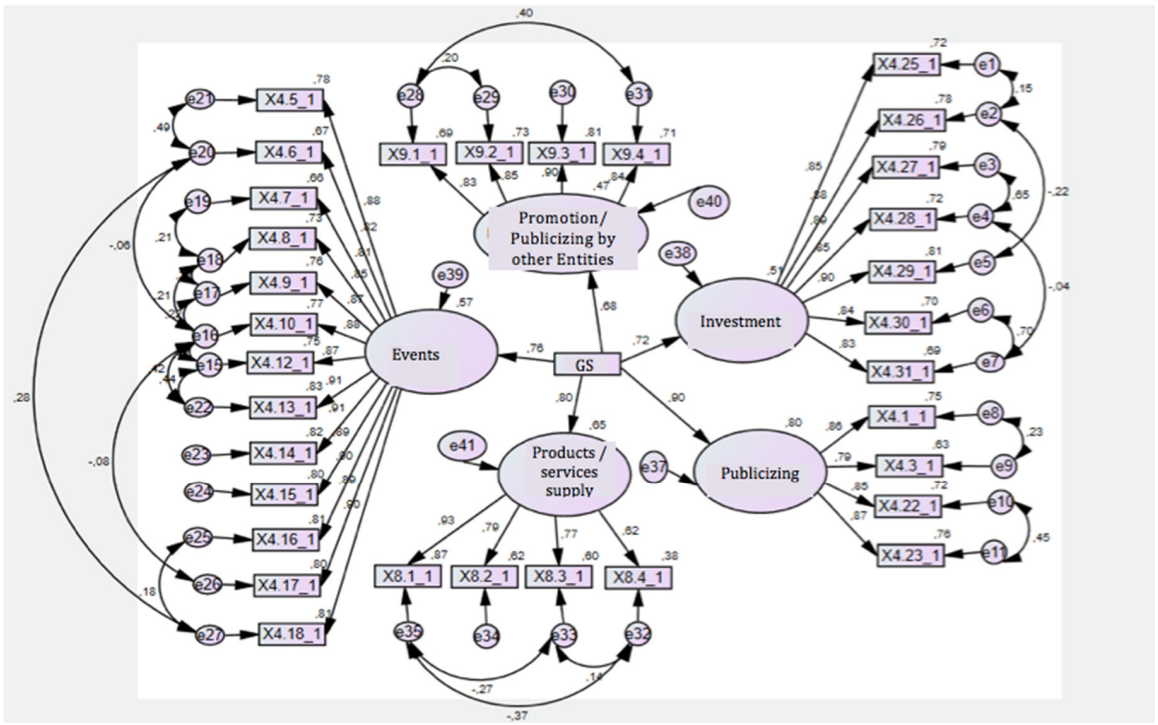
According to the results, it can be assumed that, on the one hand, when constructs are created to define a LV (in this case, the GS), the model is able to predict the explained variance and the degree of importance of a variable. On the other hand when comparing the results obtained for GS as LV and OV the model continues to be adequate. However there are some changes in the variance explained by the constructs and in the degree of importance of latent variables on the GS (OV).

In summary, the sequence in terms of explained variance and prediction of the latent variables on the GS is different:

GS(OV): Publicizing⇒Supply⇒Events⇒Investments⇒ PublicizingEntities.
GS(LV): Publicizing ⇒Events⇒Investments⇒ Supply ⇒ PublicizingEntities.

FIGURE 3

Structural Equations Model that analyses the effect of the LV on the OV "Global Satisfaction"



Source: Elaborated by the authors.

CONCLUSIONS

Based on a previously defined theoretical model, hypotheses that could be validated were elaborated to understand which variables have the greatest impact on the GS of those responsible for tourist accommodation in relation to the performance of their municipality in attracting tourists, since despite playing a key role in the tourism development of a region, most of the times they are not consulted by the municipal authorities when allocating their resources.

An unusual statistical methodology - SEM, - was used to perform the analysis and also to understand the extent to which a pre-conceived model, which included 44 questions, could be interpreted through the construction of latent variables and evaluate the causal relationships between these and the GS.

The model was based on the construction of six LV; however, due to constraints related to prerequisites of the structural equation model, hypothesis H4, concerning the LV "Website", was excluded.

Regarding the construction of the remaining LV, and for them to fulfil the prerequisites inherent to a later confirmatory analysis, there was a need to exclude eight OV. There was also a need to establish different covariances between the errors of the OV and to resort to the series mean methodology in order not to reduce the number of the sample and to solve the problem of omitted cases.

The model was validated using fit indices and it was found that structurally all the hypotheses initially proposed, apart from H4 for having been excluded, were validated, since all the constructs contributed positively to the GS.

The weight and contribution of each construct to the GS are different when considering this variable as latent or as observed. However, the main conclusion is that publicizing, regardless of how the GS is considered in the model, is the variable with the greatest impact to those responsible for tourist accommodation in relation to the allocation of resources by the municipalities in attracting tourists.

Thus, it is essential that municipal authorities have the ability to implement efficient publicizing and promotion strategies that demonstrate the diversity and the local wealth in terms of cultural, natural or gastronomic attractions offered by the municipalities. This ability is even more important for municipalities less famous in terms of tourism. In addition, the organization or support of events, regardless their nature, are equally fundamental to attract tourists.

It is also important to mention the need to have privileged conditions in the municipality for the tourist to stay. This is ensured by AT providing adequate and quality services, guaranteeing tourist satisfaction and being a strong driver of tourism in a region. It is suggested a wager on the training of the workforce or in a diversified supply of services related to tourism, such as restaurants, adventure and nature activities or sports and cultural events that the municipality should promote and support.

LIMITATIONS AND FUTURE RESEARCHES

The methodology used (SEM) can be framed as enabling research works in several areas of knowledge and sectors of activity. Actually, it facilitates the analysis of elements and results leading to an easy interpretation and an imminently practical nature.

In this specific case, the results were in line with what would be expected, contributing to validate both the methodology and the model that was intended to be tested. However, at the root of the results are the questions that gave rise to the questionnaire. In view of this, it can be mentioned that it would be very convenient to approach smaller regions, restricting to less generic aspects, allowing to understand for each region, which aspects are most valued by those responsible for tourist accommodation in terms of the allocation of resources by municipalities.

For future work, it would be equally interesting to be able to compare the perspective of those responsible for tourist accommodation with that of municipal authorities and tourists. Or, still, compare the results obtained in this study with those obtained if using other methodologies.

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