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Environmental Sustainability in Andalusian Rural Accommodation: Perceptions by Gender

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Abstract

Social commitment through environmental interventions is becoming an increasingly important aspect of making decisions since ordinary citizens are becoming more demanding and, consequently, they analyses how companies can respond to this challenge. In this context, Spain, as a top provider of tourism services, is no stranger to this demand. This paper attempts to answer this question within one of the most promising types of tourism: rural tourism. Using second-generation statistical techniques (PLS-SEM), the impacts of environmental management on this type of tourism were analysed from the perspective of the client - and their gender - as an influential factor. The main results showed a marked influence of the environmental awareness in both genders, being customer participation the dimension in which differences were found as women seemed to be less active.

Key words: Environment; Environmental impact; Gender; Rural tourism; SEM

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INTRODUCTION

As set out in the Spanish Sustainable Tourism Strategy 2030 (MINCOTUR, 2019), tourism development in Spain has become a pillar of the country's economy over the last 40 years, accounting for around 12% of GDP. Mainly, all the effort focused on sun-and-beach tourism, but this model may have reached its peak of development and is now showing its shortcomings and problems for reinventing and evolving. Due to its high seasonal nature because of the sun dependence, its strong link to particular international markets, the urban saturation, and the certainty of some failed models (e.g., "Mar Menor" pollution case) all point to a scenario of complex evolution. In line with the general guidelines of Spain's 2030 sustainable tourism strategy, rural alternatives are a relevant factor in the new model of sustainable tourism. Thus, rural tourism is seen as vitally important not only as a complement to the more traditional tourist offer but also as a way of encouraging certain areas of the most depopulated Spain to persist with guarantees and to continue to contribute their essence to the cultural melting pot of the country (MINCOTUR, 2019).

There is a clear need to analyse the sector from the perspective of guaranteeing the sustainability of the economy in the very long term, and it is here that care for and integration with the environment is undoubtedly the key. The challenge is enormous, and that is why most of the studies on the subject analyse costs and competitiveness, regarding that those who so far operate in this sector are small companies (Villanueva-Alvaro et al., 2017). In this context, and even without clear guidelines on the water and energy saving policies are highly valued preferences. On the other hand, the gender perspective has been gaining more weight in each aspect of everyday life, so there is no doubt that it will also have more weight in this dimension. Sevilla-Sevilla et al. (2019) show how caring for the environment is important regardless of gender, although they point out some differences.

This paper aims to analyses the causal relationship between men's and women's perceptions, identifying possible differences between genders in how they perceive

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the various aspects. The hypotheses are the same for both subsamples, although the analyses were carried out separately. Therefore, it was sought to determine whether the efforts made in recent years by the administrations at all levels, companies directly involved, and the different actors in the rural world have been successful and, if this was not the case, to determine in which areas would it be more appropriate to go deeper to try to correct the deviations that have occurred. After this brief introduction, the materials and methods are presented, followed by a brief discussion of the results and a conclusion.

MATERIALS AND METHODS

Firstly, regarding the data to perform the analyses, it came from an own questionnaire delivered to rural tourism establishment managers in Andalusia, whose items were designed based on the work in previous economic studies (Ferrari et al., 2010; García-Pozo et al., 2015; Villanueva-Alvaro et al., 2017). It compiled 24 questions - 1 to 5 Likert scale - divided into five dimensions about the strategies developed by rural accommodation managers. In total, 453 responses were retrieved along the region. The breakdown by gender shows 247 men and 206 women. Given that both subsamples exceed the minimum threshold of 100 observations to run the analyses, the results may be representative (Reinartz et al., 2009). The questionnaire was structured as follows:

Environmental construct

E1.- Need to use non-polluting air conditioning systems.

E2.- We make sure to buy biodegradable detergents and, in general, cleaning products with a low environmental impact.

E3.- We consider waste separation to be important.

E4.- We consider the treatment of toxic waste to be important.

E5.- We classify containers and packaging, separating glass, plastic, metal and paper.

E6.- We separate special waste (batteries, toners...) and deliver them to an authorised waste manager.

Customer construct

C1.- Customers' environmental attitudes are satisfactory.

C3.- My customers appreciate good environmental practices.

C4.- Respect for the environment helps to attract new customers.

Water saving construct

S1.- In rooms and collective toilets, there is information about water-saving measures, asking customers to cooperate.

S2.- Importance of implementing water-saving systems.

S3.- Water-saving toilet cisterns have been installed (e.g., with two buttons or short flush).

Energy saving construct

S4.- We consider the energy rating of household appliances to be important.

S5.- We consider the installation of energy-saving measures to be important.

S6.- We have energy control systems (thermostats, timers...)

S7.- The light bulbs that remain on for more than two hours are of the low consumption type.

S8.- We consider it necessary to use solar energy in our business.

Management construct

M1.- It is useful to implement a code of good environmental practices.

M2.- Application of ecological criteria in investments, purchases...

M3.- Need for training and motivation of personnel about environmental objectives.

M4.- Information to customers, employees, and suppliers on environmental sustainability conduct.

As stated by Hair et al. (2021), first-generation techniques belong to the core set of researchers' methods to test empirically hypothetical relationships between variables of interest. These techniques present three crucial limitations. First, they postulate a simple model structure since multiple regression analyses and their extensions propose a simple model structure involving a layer of dependent and independent variables. Secondly, they require all variables to be observable, so theoretical concepts, which are abstract and unobservable, can only be considered after independent validation by, for example, confirmatory factor analysis (CFA). Finally, they assume that all variables are measured without error, but every real-world observation has a certain degree of measurement error, which can be either systematic or random. Hence, strictly speaking, first-generation techniques are applicable only when the measured variables contain neither systematic nor random error. Nevertheless, this situation is rarely faced, even more, when the objective is to estimate relationships between measures of theoretical concepts (Hair et al., 2021).

Second-generation techniques attempt to overcome these limitations by simultaneously modelling and estimating complex relationships between multiple dependent and independent variables. These techniques, known as SEM, obtain more precise measurements of the theoretical concepts of interest. On the one hand, CB-SEM is mainly used to confirm (or reject) theories and their underlying hypotheses, while PLS-SEM focuses on explaining the variance of the dependent variables of the model. In this study, the second approach was used (Hair et al., 2021).

Before running the models, data were pre-processed by cleaning invalid responses. No missing values or nominal variables were found. One of the advantages of using second-generation techniques is that the statistical

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requirements are very lax. That is, PLS-SEM is a non-parametric statistical method, so it does not require the data to have a specific distribution or to be independent of each other. Consequently, apart from the basic cleaning of the database, no additional transformations should be done to the variables. Plus, the data were not excessively abnormal or skewed (Chin, 2010).

In general, all indicators have means above 3, except for C2, which seems to indicate there is not enough aid to develop environmental practices. Regarding the rest of the items, it stands out that women present higher values. These indicators form five latent variables - Environmental factor (ENV), Customer (CUS), Water savings (WS), Energy saving (SE) and Management (MAN) - from which were developed a set of hypotheses, in line with previous studies in this field (Ferrari et al., 2010; Villanueva-Alvaro et al., 2017). These hypotheses address the impact of the environmental concerns and involvement of the managers of rural tourism establishments in their business activity. The hypotheses are as follows:

H1: The environmental attitudes of the business (ENV) influence the customer response (CUS).

H2: The water saving measures (WS) are influenced by the environmental variable (ENV) (H2.1) and the customer response (CUS) (H2.2).

H3: The energy saving measures (ES) are influenced by the environmental attitudes of the business (ENV) (H3.1) and the customer response (CUS) (H3.2).

H4: The management policies (MAN) are influenced by the environmental attitudes of the business (ENV) (H4.1), the customer response (CUS) (H4.2), the water saving factor (WS) (H4.3), and the energy-saving factor (ES) (H4.4).

RESULTS

Once the hypotheses were set, the R package "seMinR" (version 2.3.0) was used to estimate the model through PLS-SEM, following the guidelines set out in Hair et al. (2021), as in the model in Figure 1. This model, run for both subsamples, contains two parts: the measurement model, which are the relationships between the latent variables and their indicators, and the structural model, which addresses the relationships between the latent variables (Hair et al., 2019). The following subsections show the results of the estimations for each particular analysis and subsample.

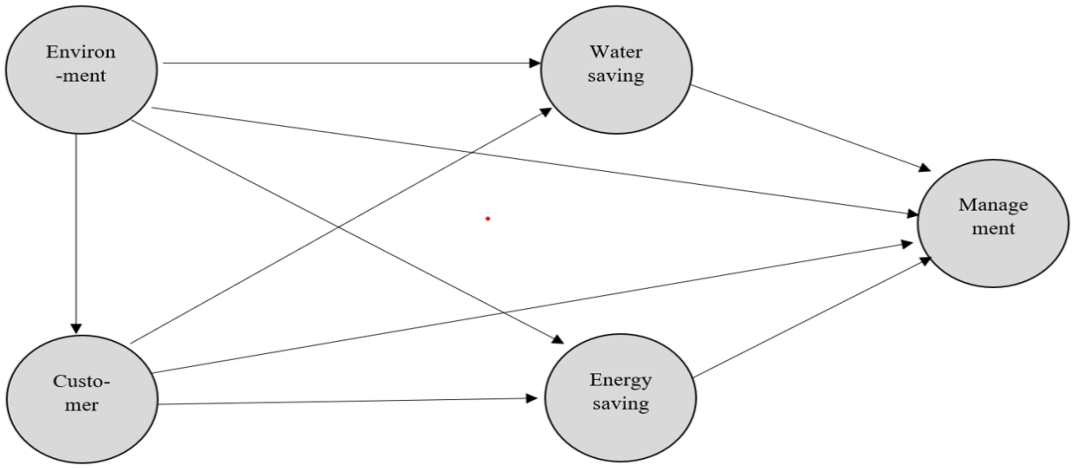

Figure 1
Proposed model
Source: Authors

Assessing the Reliability of the Indicator

Firstly, it is assessed which part of the variance of each indicator is explained by its construct, which is indicative of its reliability. The resulting loadings (Table 1) should be above 0.708 are recommended, as they indicate that the construct explains more than 50% of indicators' variance, thus providing acceptable reliability (Hair et al., 2019). In general, indicators with loadings between 0.40 and 0.708 should be considered for removal only if removing them would lead to an increase in convergent validity, but if the loadings are below 0.40, they should be removed from the measurement model (Hair et al., 2021).

For the Environmental factor (ENV) construct, only indicator E3 exceeds 0.708 in both genders, while E5 is close. However, for women, E3, E4, E5 and E6 are higher than for men. Regarding the Customer (CUS) and Water Saving (WS) ones, even if all indicators do not surpass the 0.708 thresholds, the ones which do not reach it have very close values - above 0.6 - which makes them acceptable for exploratory studies (Hair et al., 2019). Conversely, the Energy Saving (ES) construct presents lower values for S8, but they are not low enough to be removed without compromising the whole latent variable. However, in all cases, the indicators work better for the women's model than for men's one.

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Table 1
Loadings

	ENV		CUS		WS		ES		MAN	
	M	W	M	W	M	W	M	W	M	W
1	.585	.408	.709	.615	.674	.683			.701	.799
2	.551	.429			.781	.737			.849	.842
3	.783	.865	.859	.889					.680	.577
4	.671	.848	.811	.837	.736	.787			.759	.675
5	.686	.809					.802	.822		
6	.635	.690								
7							.626	.793		
8							.585	.598		

Source: Authors

Assessing Internal Consistency Reliability

Internal consistency reliability is the extent to which indicators measuring the same construct are interrelated by measuring the degree of correlation between them. The thresholds for this value are between 0.7 and 0.95 for all three indicators (Hair et al., 2019). Values higher than 0.95 may imply multicollinearity problems or homoskedasticity. The following tests were performed (Table 2).

Table 2
Validity and reliability

	Cronbach's Alpha		Rho_c		Rho_a		AVE	
	M	W	M	W	M	W	M	W
ENV	.738	.766	.817	.843	.731	.816	.431	.491
CUS	.715	.708	.837	.829	.742	.785	.633	.623
WS	.564	.580	.775	.780	.571	.589	.535	.543
ES	.413	.599	.714	.785	.444	.635	.459	.554
MAN	.738	.704	.836	.818	.755	.736	.562	.534

Source: Authors

First, Cronbach's alpha is the traditional measure for assessing internal consistency. However, it is slightly biased by the size of the sample and, despite being a classic test, it is steadily been replaced, as it tends to underestimate. Contrarily, the composite rho_c reliability is less biased than the previous test in PLS-SEM as it does not assume that the indicators are equally weighted. Despite its tendency to overestimate, it does so to a lesser extent than Cronbach's alpha. Lastly, Dijkstra-Henseler's rho_A is an emerging test as it is the most consistent among the three, although it is not widely used (Henseler et al., 2015).

For all the constructs, all parameters exceed the required threshold except for the Energy Saving (ES) and Water Saving (WS) constructs, which are below it. Nevertheless, it does not invalidate the model but means that the construct could have been better defined.

Assessing Convergent Validity

Convergent validity is the degree to which the construct converges to explain the variance of its indicators. It is measured through the Average Variance Extracted (AVE), which assesses whether each construct explains at least 50% of the variance of its indicators. The threshold for this test is 0.5 (Hair et al., 2019). The Customer (CUS), Water Saving (WS) and Management (MAN) constructs exceed the threshold. However, the minimum value is not reached for the Environment (ENV) construct neither for men nor women, and men in Energy Saving (ES).

Assessing Discriminant Validity

This metric measures the degree to which a construct is empirically distinct from other constructs in the This test assesses the degree to which a construct is empirically different from other constructs in the model, that is, it measures the differences between constructs. For this purpose, generally, the Fornell & Larcker criterion is used (Fornell & Larcker, 1989), but it often does not reliably identify discriminant validity problems and should therefore be avoided. The heterotrait-monotrait ratio (HTMT) (Table 3) has increasingly been used, but it is still in its early stages, so it is not commonly found in scientific articles compared to the first. The HTMT is defined as the mean value of the indicator correlations between constructs (Kline, 2011). Discriminant validity problems are present when HTMT values are higher than 0.90 since it would mean that the analysed constructs are conceptually very similar.

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Tabla 3
HTMT criteria

ENV	ENV	CUS	WS	ES
CUS	.248 | .398			
WS	.602 | .925	.665 | .504		
ES	.863 | .901	.504 | .370	.875 | 1.109	
MAN	.500 | .763	.621 | .560	.873 | .833	.750 | .861

Source: Authors
Note: Values for men at left, values for women at right

Predictive Power of the Model

The values obtained for the R2 statistic were significant and greater than 0.1 - thus meeting the acceptability criterion established by Falk and Miller (1992) - being 0.432 for the men's model and 0.454 for women's one.

Lastly, the results of the estimations of the direct and indirect effects between latent variables of the proposed model are shown. Then, all relationships between the latent variables are assessed through bootstrapping with 5,000 subsamples, as recommended in Hair et al. (2011). Almost all results are statistically significant.

DISCUSSION & CONCLUSIONS

Once the results have been presented, their analysis (Table 4) reveals that they are much more reliable for women than for men concerning the environmental factor. For both genders, waste management is important, although women take it more seriously. For both genders, the customer is positively influenced by environmental practices although women are less active than men in terms of their attitude. In line with the above, active water saving by the customer (water saving systems) versus passive one (household appliances), women favour passive customer behaviour overactive customer behaviour. Both genders clearly consider important energy savings, although the issue of solar energy is still not very well established, perhaps because there is no clear legislation on the subject. Women still attach less importance than men to anything in which the customer is directly involved. In general, reliability is good, being higher among women than men.

Table 4
Hypotheses tests

	Direct effect		T-statistic	
	M	W	M	W
H1: ENV -> CUS	.210	.306	2.996**	3.800***
H2: CUS -> WS	.368	.157	5.295***	2.569**
H2: ENV -> WS	.328	.576	5.199***	8.020***
H3: CUS -> ES	.182	.083	3.454***	1.371
H3: ENV -> ES	.466	.605	7.518***	7.224***
H4: CUS -> MAN	.251	.235	3.877***	3.814***
H4: ENV -> MAN	.144	.218	2.133*	3.032**
H4: ES -> MAN	.152	.259	2.694**	3.030**
H4: WS -> MAN	.334	.159	4.237***	1.882*

Source: Authors

In general, in the case of men, the estimates presented reach statistical significance, thus confirming the hypotheses. In the case of women, the hypothesis that the client has an impact on the energy saving factor is rejected, while all the other relationships reach statistical significance, thus confirming the remaining hypotheses.

This study analysed the implementation of environmental sustainability measures in the management of accommodation companies and possible differences in management between establishments where there were differences in management.

The total analysis showed that the five latent factors proposed in the model to be estimated generated nine hypotheses, all of which were confirmed. This result shows that the attitudes of the managers of rural accommodation in Andalusia that implement environmental sustainability measures have a positive impact on the customer, environmental attitudes related to energy and water saving, and the management of this type of establishment.

Concerning the analysis by gender, we can observe certain differences, although these are not particularly striking except in some cases, showing that the gender factor does not seem to be a major discriminating factor. If we begin with the first of the hypotheses (the environmental factor influences the customer factor) fulfilled for both, we see that in the case of women it is fulfilled with more emphasis.

In the second hypothesis, the water saving factor is influenced by the environmental variable and the customer factor, issues that could be contradictory are observed. This is true for both genders, although the part related to the environmental factor is much higher for women. It seems that men put both the environmental factor and the customer factor on an equal footing when it comes to saving water, while women rely more on the environmental factor and less on the customer factor. In the third, the energy saving factor is influenced by the environmental variable and the customer factor, in the case of women it is not fulfilled. It is not fulfilled and is consistent with the previous one, with extreme confidence in the environmental factor and less in the customer when it comes to saving energy.

For the last of the hypotheses, the management factor is influenced by the environmental factors, the customer variable, the water saving factor, and the energy saving factor is fulfilled for both genders, being generally equal or higher in women, except for the water saving factor in which the difference between men and women is large. Further analyses could include customer perceptions and the subsequent comparisons with the results contained in this piece of work.

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