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Impacts of environmental sustainability measures on rural accommodation

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Abstract: Rural tourism is currently one of the most dynamic segments of tourism demand and rural accommodation is one of the accommodation choices most in demand. Based on various documentary sources, the objective of this study was to analyse aspects related to the qualitative evolution of this activity that have led to the rapid growth of this type of accommodation. Using a purpose-built database generated from the information obtained from our own survey, which was developed in line with previous studies in this field, we applied a partial least squares (PLS) model to analyse environmental impacts in terms of the offer and their relationship with environmental management. The results show that the attitude of rural establishment managers has a decisive influence on the behaviour of their clients regarding respect for the environment and has a positive effect on water and energy consumption.

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Rural tourism is currently one of the most dynamic segments of tourism demand and rural accommodation is one of the accommodation choices most in demand. Based on various documentary sources, the objective of this study was to analyse aspects related to the qualitative evolution of this activity that have led to the rapid growth of this type of accommodation. Using a purpose-built database generated from the information obtained from our own survey, which was developed in line with previous studies in this field, we applied a partial least squares (PLS) model to analyse environmental impacts in terms of the offer and their relationship with environmental management. The results show that the attitude of rural establishment managers has a decisive influence on the behaviour of their clients regarding respect for the environment and has a positive effect on water and energy consumption.

Keywords: Rural tourism; rural accommodation; sustainability measures; environment; environmental impact; PLS

Introduction

Tourism has become one of the main economic engines of many developed countries. In Europe, drastic reforms in the approach to productivity in the rural environment have led to a progressive reduction in farming activity that has given rise to new perspectives on economic development, among which measures to promote tourism stand out (Nieto & Cárdenas, 2017; Yubero & García, 2016).

As in the rest of Western Europe, the development of rural tourism in Spain has been closely linked to the availability of funding and the need to maintain agricultural income while stemming rural depopulation. Although some rural tourism initiatives had begun by the end of the 1970s, it was not until Spain's incorporation in the European Union (EU) in the 1990s that EU funds became available, leading to steady growth in this segment. Rural tourism complemented sun-and-beach tourism, which had predominated over a

long period and was subject to very strong seasonality. Since then, successive strategic plans for Spanish tourism have included maintaining specific lines of support for the promotion of rural tourism. In general, all Spanish regions have supported ventures in this sector. Scientific interest in this topic also began in the 1990s. In Spain, the first doctoral thesis on rural tourism was defended by Fuentes-García (Fuentes-García, 1994) at the University of Málaga and, at the international level, the special issue of the Journal of Rural Tourism contributed to the definition of the concept of "rural tourism" (Lane, 1994). In Spain, the Integral Plan for Rural Tourism (Spanish: Plan Integral del Turismo Rural) has recently been implemented by the Spanish Government.

Over time, rural tourism has been gaining strength and, due to demand, has been providing an increasingly wide offer. This has been occurring not only in the Spanish regions without coastlines, such as Castile and León and Castile-La Mancha, but also in regions whose extensive coastline has allowed them to participate in the tourism phenomenon for decades. Andalusia is a case in point. It has an area of more than 87000 km2, is the second largest region in Spain, has the longest coastline, and is the only region whose coastline borders the Mediterranean Sea and the Atlantic Ocean. Despite being one of the leading regions in the sun-and-beach segment, these resources have led to the spectacular development of inland tourism in recent years.

According to the Tourism Registry of Andalusia, in 2016, the region had a total of 21 832 regulated accommodation establishments that offered 546 517 places. These data refer to a year in which the registry incorporated more than 16 200 dwellings and 91 200 places, which were added within the category of rural tourist accommodation or houses for tourism purposes. With a 45.2% share, hotels form the main subsector, followed by campsites (15.1%), apartments (13.1%), tourist dwellings (11.8%), pensions and hostels (6.4%), rural tourist accommodation (4.9%), rural houses (2.6%) and rural lodges (0.7%).

Of these segments, in 2017, the greatest growth was in rural houses, with 14 281 places and an interannual increase of 10.8%. The highest concentration of this growth occurred in the province of Malaga (31.3%) followed in order of importance by interior provinces, with participation shares of more than 10%.

This consistent growth in the offer, fostered by an increasingly larger and wider demand at the regional level, has highlighted the need to establish environmental sustainability measures that combine the needed modernization of agriculture and respect for nature itself — a resource and at the same time a tourist destination — while bearing in mind the mistakes made during the years of tourism growth in coastal areas. Thus, the central administration and the regional government have implemented a set of regulations that differ in their intensity according to the degree of protection of different rural and mountain areas, while promoting training plans among those affected, seeking to increase their environmental awareness and equip them with the necessary tools to do so.

The objective of this study was to assess if this effort is achieving the expected results in the specific case of rural accommodation, and if any additional action is needed, whether by the authorities, companies, or the customers of the rural establishments themselves.

This study is structured as follows. Next, we provide an analysis of the most relevant literature, and then describe the methodology and data used. The fourth section provides the results and their discussion. The fifth section offers the most relevant conclusions of the study. As customary, the final section provides the references used and cited in the text.

State of the Art

Without question, rural tourism is the type of tourism that has undergone the greatest growth in recent decades (Gössling & Lane, 2015), given that it represents an alternative of great interest to different segments of tourists, whose preferences include the sustainability of tourist spaces as one of the differential elements when planning their journeys. Respect for the environment has been one of the main pillars of growth in the sector in recent years (McLennan et al, 2017; Lane and Kastenholz, 2015; Huang, 2006), as well as being one of topics of greatest debate in the literature.

As pointed out by Kastenholz (2004), sustainable tourism has been a preferred object of study and debate by the scientific community. This aspect is due to the potential negative impact of this intense activity on the use of the environment, and the then still incipient change in the character of tourism demand, such as

the rural demand that began to take shape in the mid-1990s. From that time to the present, this type of tourism has been constantly evolving. Lane and Kastenholz (2015) distinguished three different phases in such growth: a first phase they called “emergence", in which tourist activity in rural areas is suggested as a solution to avoid depopulation or mitigate decreased income from agricultural activity; a second phase, of consolidated growth in the offer and greater diversification in rural tourism; and a third phase, the current one, of resorting to innovation as an approach to regeneration after somewhat disorganized and unequal growth in this area. The most recent studies on the impact of rural tourism generally address the concept of innovation, an approach that is not alien to the tourism sector as a whole (Hjalager et al, 2018, García-Pozo et al, 2015; Gössling & Lane, 2015; Romeiro & Costa, 2010).

Kallmuenzer et al (2017) suggested that the application of sustainability measures may be induced by internal pressures in tourism companies, external pressures, or a combination of these pressures. Others authors, as Chan et al (2018) investigates potential barriers to the adoption of environmental technologies in accommodations. However, in the specific case of rural tourism companies, governmental regulations have had the greatest influence on the adoption of measures that respect the environment. On the other hand, Bansal and Roth (2000) considered that it was difficult to determine the reasons for companies being more or less environmentally proactive because the positioning of companies is strongly influenced by the government, via regulations, and by tourists, via the strength of their demand. The latter aspect is supported by other studies that have shown the willingness of tourists to pay extra for their stay in tourist accommodation, either in hotels (Sánchez-Ollero et al, 2014; García-Pozo et al, 2013) or other accommodation (García-Pozo et al, 2011), if it is more respectful of the environment. The employee ecological behaviour has been analysed by Chan et al (2017) and Woo et al (2018) studied the tourism impact on stakeholders’ quality of life showing similar results in terms of ecological respect. In the case of the employees, the more environmental knowledge they have, the more ecological behaviour they have; for the stakeholders, their quality of life is dependent on whether the residents are affiliated or not affiliated with the tourism sector.

In such a complex scenario, it is essential to also analyse the sector from a supply perspective to guarantee its sustainability (Farrel & Twinning-Ward, 2005), based not only on the importance of natural

resources in relation to environmental sustainability, but also on the importance they have for generating income in the agricultural environment (economic sustainability) and for preserving ways of life and local culture (social sustainability). In relation to these three aspects, several authors have highlighted the relevance to sustainability of the type of companies in charge of managing tourism resources and the way they present their offer. Thus, Polo-Peña et al (2015) addressed the funding and resources available to these companies; Boys et al (2017) conducted an innovative study on the importance of geolocation for this type of tourism; Martins et al (2014) analysed the specificities of tourism in islands such as Madeira; Komppula (2014) and Kastenholz (2004) emphasized the importance of management work; Marzo-Navarro et al (2017) emphasized the importance of cooperation among stakeholders; and others, such as Kallmuenzer et al (2017), Carlsen, Getz & Ali-Knight, (2001) and Ferrari et al (2010) addressed the role of family businesses or small and medium enterprises.

Other authors have used a multidisciplinary approach to analyse the environmental commitment of companies, attempting to define the characteristics of "green managers" (also called "ecopeneur") versus other types of managers (Weaver & Lawton, 2007). Others have analysed the different motivations of managers while taking into account the impact of economic and social structures (McGregor & Thompson-Fawcett, 2011), and yet other authors have investigated the causes underlying the focus of companies on sustainability, and have even addressed behavioural, attitudinal, or cognitive variables (Getz & Carlsen, 2005; Polo-Peña et al 2012).

Returning to the case of Spain, tourist accommodation studies have mainly focused on the hotel sector, and therefore studies on rural lodging remain scarce. This situation is mainly due to the almost complete predominance of data for the hotel subsector versus the almost complete lack of data for other subsectors and branches. Despite this situation, there have been many recent academic studies in this field. As examples, we highlight the doctoral theses of Roig-Merino (2004), Polo-Peña (2010), Moral-Moral (2016), and Morales-Hernández (2017), and the studies by Ponce-Sánchez and Canales-Martínez (2017), García-Pozo et al (2011), Villanueva-Álvaro (2017), or Ferrari et al (2010), among others.

As our main reference, we have used the most recent work by Professor Ferrari and his team, applying their methodology to our database as described in the following section.

Material & Methods

This study used a database was contracted from the information provided by managers in the rural tourism sector in Andalusia. This information was collected via a questionnaire that was based on previous economic studies in this field (Ferrari et al, 2010; Villanueva-Álvaro et al, 2017), which showed the relevance of environmental perceptions in relation to the offer (García-Pozo et al, 2015; Roberts & Tribe, 2008; Sánchez-Ollero et al, 2011). Table 1 shows this questionnaire, which analyses five dimensions related to the management strategy developed by rural accommodation managers.

[INSERT] Table 1

The table includes 24 questions related to the factors that comprise these five dimensions. Responses were obtained from 454 managers in this sector with establishments in the eight provinces of Andalusia. The number of observations ensures that the sample is representative of the sector with a maximum error of less than 5% for a confidence level of 95%. This study was motivated by the growing importance of this accommodation sub-sector in Andalusia and the special characteristics of rural accommodation which, given its location in contact with nature, have implications for environmental sustainability.

We developed a set of working hypotheses that are in line with previous studies in this field (Ferrari et al, 2010; Villanueva-Álvaro et al, 2017). These hypotheses address the impact of the concerns and environmental involvement of rural tourism establishment managers on their business activity. The hypotheses are as follows:

H1: The environmental factor has an influence on the customer factor.

H2: The water-saving factor is influenced by the environmental variable (H2.1) and the customer factor (H2.2).

H3: The energy-saving factor is influenced by the environmental variable (H3.1) and the customer factor (H3.2).

H4: The managerial factor is influenced by the environmental factors (H4.1), the customer variable (H4.2), the water-saving factor (H4.3), and the energy-saving factor (H4.4).

The methodology used to estimate the proposed model and confirm the hypotheses was based on a structural model using partial least squares (PLS), because the available data were those that best fit the starting requirements, especially all the exploratory stages or predictive models (Barclay et al, 1995; Chin et al, 2003).

The model was estimated in a two-stage process: in the first stage, we estimated the general model for the joint sample used; in the second stage, we estimated two models, given the possible differences between the management of rural establishments located in protected natural areas and those located in different types of areas.

Results & Discussion

As mentioned above, PLS methodology was used to estimate the proposed structural equation model, which was estimated using the SmartPLS 3.0 software package (Ringle et al, 2014).The structure of the submodel comprised five latent factors (with their respective statistically significant 19 indicators or reflective items) that generated nine hypotheses to be tested. This structure was based on previous studies (Ferrari et al, 2010; Villanueva-Álvaro et al, 2017). Figure 1 shows the estimations that were used to test the working hypotheses.

[INSERT] Figure 1

The results obtained for the average extracted variance (AVE) confirmed the convergent and discriminant validity of the model by comparing the square root of the AVE values of each latent variable with the correlation matrix between latent variables. As suggested by Chin (1998), compared to Cronbach's alpha values, the composite reliability indices in PLS models have the advantage of not assuming that all the indicators receive the same weight. The results showed that they had a value of more than 0.7 for all latent variables, which Nunnally and Bernstein (1994) suggested is an appropriate level. These results confirmed the discriminant validity of the model.

[INSERT] Table 2

Furthermore, the results shown in Table 2 also confirmed internal reliability, item validity, and the goodness-of-fit. The GoF index proposed by Tenenhaus et al (2005) confirmed the goodness-of-fit (GoF index = 0.3888).

In addition, the variance inflation factor (VIF) values, which are calculated using the R2 values shown in Table 2, are clearly less than five. Therefore, there was very little collinearity.

Regarding the predictive power of the model, the values obtained for the R2 statistic were significant and greater than 0.1, thus fulfilling the acceptability criterion established by Falk and Miller (1992). The only exception was the latent variable Customer that remained in the model to be able to test the structure of the five latent factor submodel (Ferrari et al, 2010; Villanueva-Álvaro et al, 2017).

[INSERT] Table 3 shows the latent variables and their correlations, whose values also confirm their discriminant validity.

[INSERT] Table 4 presents the estimations of the direct and indirect effects between latent variables of the proposed model. The table confirms the dependency relationships between the latent variables.

[INSERT] Table 5 shows the estimations of the hypothesized relationships between the latent variables of the proposed structural model. In line with the work of Hair et al (2011), bootstrapping (5000 samples) was used to calculate the Student t statistics and their corresponding standard errors to assess the statistical significance of the coefficients corresponding to each of the hypotheses. This procedure was also used in the estimates that were differentiated by the location of the establishment. As shown in Table 5, the four initial hypotheses that support the structural equations model analysed were confirmed by the signs of the relationships and the statistical significance of the coefficients estimated for the hypothetical nine relationships between the latent variables of the model. The results shown in the table demonstrate the marked impact of environmental attitudes and measures taken by rural establishments on energy and water saving, and the impact of water saving on the environmentally sustainable management of rural tourism establishments.

[INSERT Table 6 and Figure 2] The IPMA graphically combines two relevant aspects of the model: importance-performance (Ringle and Sarstedt, 2016; Hair et al, 2018), the inclusion of the variables in the right part of the graph allows its incorporation into decision-making. In our model, the performance of the variables

is high, although we should note that perhaps the efforts should not focus on water and energy savings, for better business management. This fact is caused because in our country most of these savings have an important regulatory component and are imposed on business management, with the scope of action of managers of rural tourism establishments being reduced. The efforts in environmental matters and customers are those of greater efficiency since their increases in performance suppose a greater increase in their importance within the model

Given that in Andalusia there is a specific regulation for rural tourism to protect the environment, and that the administration is promoting the sustainable development of protected areas, the way in which the environmental sustainability of rural accommodation is managed may differ depending on whether the area is protected or otherwise. Following this aggregation criterion, Figures 3 and 4 show the estimations of the two structural equation models by location in protected natural areas or in other areas. The figures confirm that the fit of the model is better in the case of accommodation in unprotected natural areas.

[INSERT] Table 7 shows the direct effects for both types of establishments by location and the statistical significance of the general model proposed for each of the initial hypotheses. In the case of establishments in natural protected areas, the estimations presented in Table 7 reject the hypothesis that the environmental factor has an impact on the customer factor, whereas all other relationships reach statistical significance, thus confirming the remaining hypotheses. On the other hand, in the case of rural accommodation in non-protected areas, the estimations confirm all the hypotheses except for the hypothesis that consumer factors have an impact on energy saving. The hypothesis that environmental factors have an impact on energy saving was only partially confirmed.

Conclusions

This study analysed the implementation of environmental sustainability measures in the management of rural accommodation firms and possible differences in management between establishments located in natural areas protected by legislation and those in areas without special environmental protection. The analysis of the total sample showed that the five latent factors proposed in the model to be estimated generated nine testable hypotheses, all of which were confirmed. This result shows that the attitudes of rural accommodation managers

in Andalusia who implement environmental sustainability measures have a positive impact on the customer attitudes, environmental attitudes related to energy and water saving, and the management of these types of establishments. Considering the relationships between the different constructs in quantitative terms, environmental measures had the greatest impact on attitudes related to energy and water savings, which may be due to the duty of the managers of accommodation in general and managers of rural accommodation in particular to comply with legislation on these aspects.

Striking differences were found between the estimations of the two differentiated models based on the location of establishments in protected natural areas and those in other areas. First, in the case of establishments located in protected natural areas, the construct related to the attitudes of clients had no predictive capacity. This may be explained by the fact that clients who use rural accommodation have internalized the view that environmental sustainability in protected areas is an essential.

Second, in the case of natural protected areas, all the hypotheses were confirmed except for H1, which assumed that the environmental factor had an influence on the customer factor. In addition to the explanation provided regarding the previous point, the rejection of H1 may be related to the fact that the environmental regulations that govern the development of accommodation activities in these areas are very restrictive.

Third, in the case of accommodation in non-protected areas, all the hypotheses were confirmed except for H3, which was only partially confirmed because the consumer factor had no influence on energy-saving decisions.

Finally, although significant relationships were found between environmental awareness among managers of both types of establishments and the other factors, it is also noteworthy that the managers of establishments in unprotected areas showed greater environmental sensitivity, as demonstrated by their paying more attention to environmental issues related to water and energy saving. This aspect may also be related to the applicable regulations, which in this case are less restrictive, and therefore their concerns in this area would be more related to the efficient use of resources.

The results obtained could be useful to companies, public and private managers and public institutions. On the one hand, the efforts made in recent years within public institutions to implement training on

sustainability in rural areas have been successful, suggesting that such training should be provided to all managers of rural accommodation, and, by extension, to the managers of business activities in rural areas. On the other hand, in the private sector managers have incentives to conduct these training actions given that they have demonstrated usefulness, at least in terms of reducing the costs of raw materials, and therefore their business costs, which would lead to improved economic performance.

On the demand side, as the literature has amply demonstrated, environmental awareness among users of rural accommodation in protected areas is much higher than average, which may influence their demands regarding the positioning of the company and the attitudes of the managers themselves. Additionally, this analysis could be significantly improved if new disaggregation criteria were applied to the sample, thereby allowing the comparison of different subsamples of establishments that have implemented environmental sustainability measures. In summary, the business managers of rural establishments should take into account the relevance of environmental sustainability in order to enhance their planning activity. It would be of interest in future studies to analyse the training of managers and their sociodemographic variables (e.g. age), which may influence their environmental perceptions. Although the model presented has strong predictive capacity, it is difficult to know which of the improvements described are due to the legislative restrictions governing such establishments and which are due to the environmental proactivity of the managers and the influence of the clients on it. This represents a limitation of our study, but is also a very interesting starting point for future research investigations.

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TABLES

Table 1. Environmental perceptions questionnaire

M1.- It is useful to implement a code of environmental best practice.
M2.- Application of ecological criteria in investments, purchases, etc.
M3.- Need for staff training and motivation regarding environmental goals.
M4.- Information for customers, workers and suppliers on sustainable environmental conduct.
C1.- Customers' environmental attitudes are satisfactory.
C2.- There are economic incentives for encouraging best environmental practice.
C3.- My customers appreciate best environmental practice.
C4.- Respect for the environment helps to attract new customers.
S1.- In rooms and communal toilets there is information on water-saving measures, asking customers to cooperate in this.
S2.- Importance of introducing water-saving systems.
S3.- Water-saving toilet cisterns have been installed (e.g. with two buttons or short flush).
S4.- We regard the energy rating of domestic appliances as important.
S5.- We regard the installation of energy-saving measures as important.
S6.- We have energy control systems (thermostats, timers, etc.)
S7.- Bulbs that stay on for more than two hours are of the low-energy type.
S8.- We regard the use of solar energy in our business as necessary.
E1.- Need to use non-polluting climate control systems.
E2.- We make sure to buy biodegradable detergents and, generally, cleaning products with a low environmental impact.
E3.- We regard the separation of waste as important.
E4.- We regard the treatment of toxic waste as important.

E5.- We sort containers and packaging, separating glass, plastic, metal and paper.
E6.- We separate special waste (batteries, toner, etc.) and hand it over to an authorized waste manager.

Table 2. Reliability measurements

	AVE	Composite Reliability	R^2	Cronbach´s Alpha	Communality	Redundancy
Customer	0.6288	0.8340	0.0589	0.7101	0.6288	0.0351
Environment	0.4598	0.8309		0.7508	0.4598	
Management	0.5513	0.8295	0.4276	0.7252	0.5513	0.0854
Saving E	0.5019	0.7481	0.3204	0.5011	0.5019	0.0276
Saving W	0.5388	0.7775	0.3202	0.5711	0.5388	0.0747

Table 3. Matrix of correlation between latent variables

	Customer	Environment	Management	Saving E	Saving W
Customer	1.0000				
Environment	0.2426	1.0000			
Management	0.4405	0.4601	1.0000		
Saving E	0.2655	0.5494	0.4839	1.0000	
Saving Water	0.3855	0.4954	0.5586	0.5440	1.0000

Table 4. Direct and overall effects between latent variables

	Direct effects				Overall effects			
	Customer	**Management**	**Saving E**	**Saving W**	**Customer**	**Management**	**Saving E**	**Saving W**
Customer		0.243	0.140	0.282		0.3495	0.1404	0.2819
Environment	0.243	0.163	0.515	0.427	0.2426	0.4601	0.5494	0.4954
Management								
Saving E		0.172				0.1718		
Saving W		0.291				0.2908		

Table 5. Tests of hypotheses for direct effects between latent variables

Hypothesis	Relations	Direct Effects	Standard Error	T-statistic
H4	**Customer > Management**	0.243	0,0561	6.2304*
H3	**Customer > Saving E**	0.140	0.0517	2.7149*
H2	**Customer > Saving W**	0.282	0.0630	4.4783*
H1	**Environment > Customer**	0.243	0.0652	3.7216*
H4	**Environment > Management**	0.163	0.0551	8.3510*
H3	**Environment > Saving E**	0.515	0.0644	8.5315*
H2	**Environment > Saving W**	0.427	0.0642	7.7211*
H4	**Saving E > Management**	0.172	0.0578	2.9749*
H4	**Saving W > Management**	0.291	0.0740	3.9290*

* Significant values at the 1% significance level.

Table 6. Importance-Performance-Matrix-Analysis (IPMA) results

IPMA Results		
	Index Value	**Performance**
Saving W.	4,294	80,531
Saving E.	4,424	82,525
Environment	4,47	82,302
Customer	3,833	65,613
	Total Effects	**Performance**
Saving W.	0,29	80,531
Saving E.	0,171	82,525
Environment	0,46	82,302
Customer	0,349	65,613

Table 7. Tests of hypotheses for direct effects between latent variables

Hypothesis	Relations	Natural Protected Area		Unprotected natural area	
		Direct Effects	T-statistic	Direct Effects	T-statistic
H4	Customer > Management	0.247	6.8731*	0.212	5.2214*
H3	Customer > Saving E	0.202	3.9593*	0.064	1.1201
H2	Customer > Saving W	0.342	5.4231*	0.199	3.2650*
H1	Environment > Customer	0.079	1.3120	0.448	8.5747*
H4	Environment > Management	0.134	5.8891*	0.197	13.1538*
H3	Environment > Saving E	0.506	8.5197*	0.559	8.6475*
H2	Environment > Saving W	0.427	6.8585*	0.465	9.1873*
H4	Saving E > Management	0.155	2.6160*	0.195	3.4548*
H4	Saving W > Management	0.284	3.5747*	0.318	4.8469*
GoF		0.3089		0.4404	

* Significant values at the 1% significance level.

Fig 1. Estimation of the structural equation model.

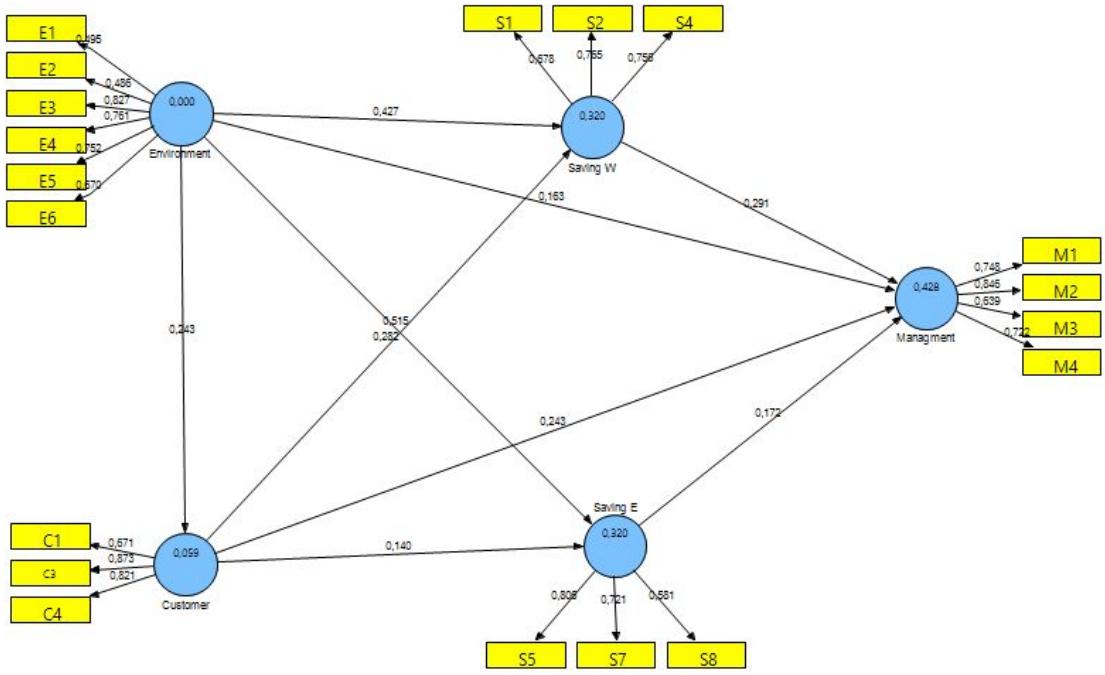

Fig 2. Importance Performance Map Analysis (IPMA)

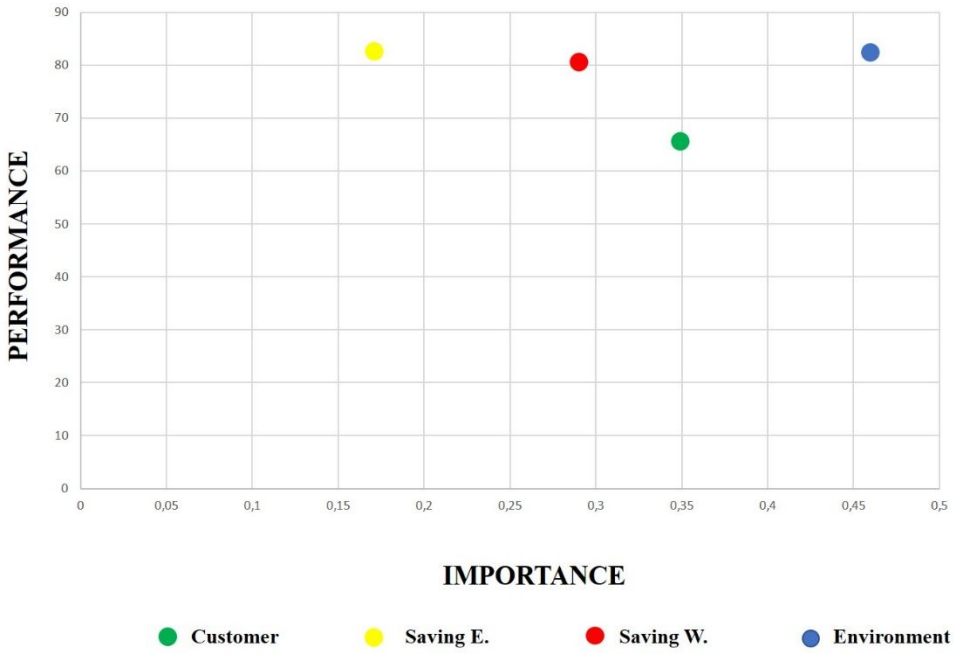

Fig 3. Estimation of the structural equation model (Natural Protected Area)

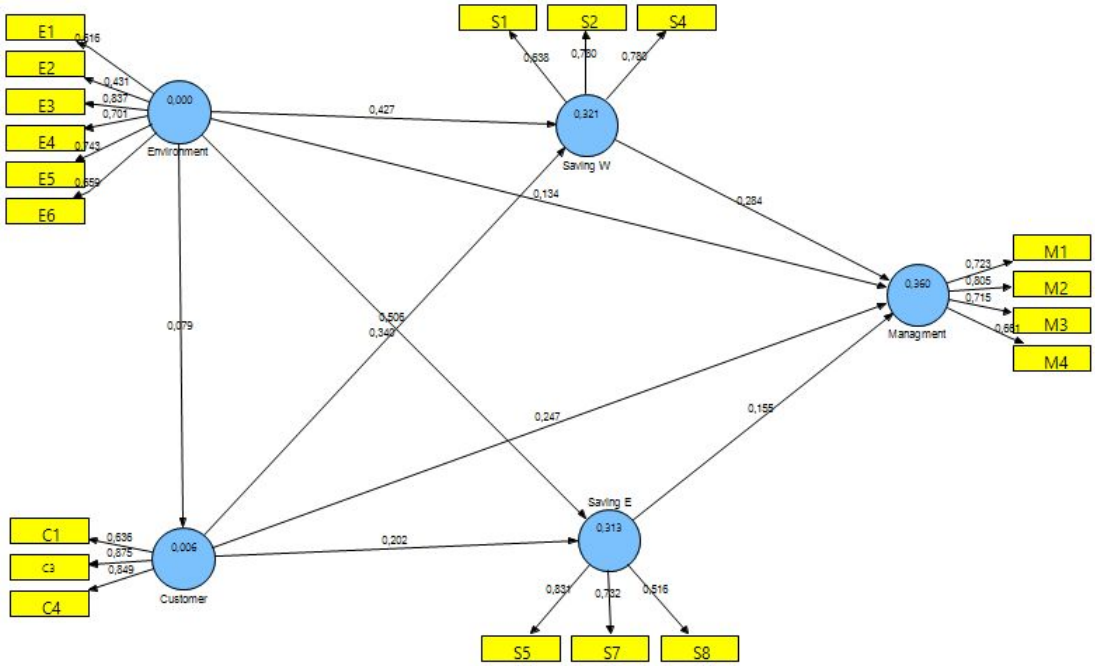

Fig 4. Estimation of the structural equation model (Unprotected natural area)