

Sustainability and efficiency of rural accommodation business: an approach in the main tourist region of southern Europe

Rural
accommodation
business

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Abstract

Purpose – The objective of this study is to determine the efficiency of tourist accommodation companies located in the main tourist area of southern Europe as one of the three elements of the local sustainable development triangle.

Design/methodology/approach – The analysis, carried out using the data envelopment analysis (DEA) methodology on 130 companies, has obtained that from the CCR perspective (results-oriented method when companies present constant returns on the input variables).

Findings – The companies involved are quite inefficient, while which from the BCC perspective (where the input and output variables used in the company respond to a variable and not constant scale) are quite efficient. The efficiency of these companies in the seven provinces of Andalusia has also been analysed to determine if there are patterns that differentiate them and thus be able to propose strategies that improve the sustainability of these territories. The conclusions of the study indicate the need to improve the operational efficiency of rural accommodation companies.

Originality/value – The analysis of efficiency in the hotel sector and even more so in the rural tourism sector is relatively scarce in the literature, especially in Spain. More specifically, Rubio and Román (2006) have demonstrated the existence of scale inefficiencies in hotels, but no evidence has been found in previous studies that this behaviour carries over to accommodation establishments located in the destinations under study.

Keywords Sustainability, Business efficiency, Rural accommodation, Business management, Data envelopment analysis

Paper type Research paper

Introduction

Tourism has become an engine of economic development at the national level given its role in offsetting the balance of payments, job creation and driving immigration from inland areas to the coast (Jiménez-García *et al.*, 2014; Nieto and Rios, 2021), as well as the main source of wealth for some Autonomous Communities such as Andalusia (Millán *et al.*, 2006; Comerio and Strocci, 2019; Ruiz-Real *et al.*, 2022; Bahamonde-Rodríguez *et al.*, 2023). The great climatic, gastronomic and cultural-traditional richness of Andalusia has turned it into an autonomous community where a multitude of tourist typologies are developed (Castillo Rodríguez, 2001; López-Olivares *et al.*, 2006), receiving 30,871,402 tourists in 2022, of which 31.3% were



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international (IECA, 2023). Lee *et al.* (2020) added that tourism has a significant influence on cultural phenomena. This fact has ensured that the tourism sector in Andalusia has a strong economic impact and that, therefore, tourism is a fundamental economic activity in its territory (Jiménez-García *et al.*, 2014). Maroto-Martos *et al.* (2020) added that while the overall objective was to achieve sustainable rural development in Spain, i.e. a balance between economic efficiency, environmental conservation and social equity (Fernández-Alles and Moral-Moral, 2013), a more precise objective was to improve the quality of life in rural areas and promote economic diversification. The identification of explicit objectives required the adoption of “diversification of the rural economy” as the main operational objective.

Within the importance of the tourism sector as an engine for the development of Andalusia in Southern Europe, different types of tourism can be considered, one of which is rural tourism, which will be the subject of study in this paper. Rural tourism is considered by Mckercher (2021) as one of the main economic sectors worldwide, with the greatest potential for growth in the territory. Rural tourism that takes place in destinations with a population of 2,500 inhabitants or less (Máxima, 2020), i.e. it is the tourism that takes place in environments that are more closely related to nature. In recent decades, numerous studies have been carried out on this typology, as shown by Melián *et al.* (2008). Moreover, the growth of rural tourism often depends on a variety of different resources, contents and territorial environments. In many cases, the only shared characteristic among these diverse examples is the occurrence of this type of tourism activities in rural areas (Nieto-Masot and Ríos-Rodríguez, 2021; Marzo-Navarro *et al.*, 2015; Ivona, 2015). The importance of rural tourism can be justified by the generation of wealth and employment for the territory, as mentioned above. However, it can also be pointed out, as Rubio (2000) indicated, that the creation of wealth in the territory in rural tourism is greater, since it not only generates directly employment, but also generates indirect employment due to the production of the goods and services necessary to be consumed by tourists.

Among the demand factors driving the development of rural tourism are the variety of motivations of tourists, the splitting up of holidays, changes in the value system and the process of emigration from rural to urban areas from the second half of the last century (Flores, 2008). On the other hand, supply factors include others such as the launch of tourism as an alternative that allows for a certain socio-economic recovery from the crisis in rural areas (Valdés, 2004); the need to diversify sun and beach tourism by promoting other types of tourism; tourism not only as an engine for generating wealth but also as a conservator of natural and socio-cultural resources (Reyna, 1992); the advance and application of information and telecommunications technologies (Francés, 2007; Morales-Hernández *et al.*, 2022); and the revaluation of tourist interest as a result of the acquisition of the Protected Natural Spaces brand, which provides an image of environmental quality (Vacas, 2001), among others. According to Ramsey and Malcolm (2017), Protected Natural Spaces has emerged as a significant archetype for attracting a lot of tourists to peripheral rural areas, mainly through the concept of “autonomous tourism.”

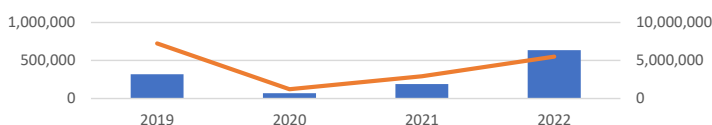
Therefore, for rural tourism to exist, in addition to the three fundamental pillars that make up the triangle of local development (economy, population and environment), it is necessary for there to be companies that are responsible for efficiently producing the economic sector and society in synchrony with the sustainable use of resources and the environment (Swarbrooke, 1999; Salinas-Chávez and La O-Orsorio, 2006; Broccardo *et al.*, 2017).

In addition, authors such as Taymourtash *et al.* (2023), Cárdenas-García *et al.* (2014) and Flores (2008) consider that tourism increases consumption in the territory, so SMEs or micro-enterprises are needed to provide these goods or services, which would increase entrepreneurship in the destination. But for businesses to be efficient, competitive and sustainable, the involvement of the local population is essential, as well as conservation policies that promote the socio-economic development of destinations (Flores, 2008). In the

European Union, within the framework of the “future of rural society”, the maintenance and conservation of rural landscapes is the objective of the Common Agricultural Policy, which incorporates new activities to revitalise traditional ones, improve living conditions, promote population growth, create employment opportunities, etc. (García-Delgado *et al.*, 2020).

Once the benefits of rural tourism have been determined, attention will focus on the influence that this type of tourism has not only on the development of the territory where it takes place but also on its sustainability. This is justified from the perspective of different authors (Cardoso, 2006; Velásquez, 2007; Inostroza, 2008; Alcívar and Bravo, 2017) given its triple aspect: social, economic and environmental. Moreover, Cunha *et al.* (2020) found that in small tourism enterprises, where the concern for efficiency and business success are evident, and management practices, although informal, prove to be accurate as is the case of cross-selling strategies, investments in organic farming, environmentally sound management or the multiple valorisation of local culture. Other concepts are developed by Fernández-Alles and Moral-Moral (2013), who state that social equity refers to the elimination of barriers to make the tourism sector accessible to all types of people. Likewise, the same author indicates that economic efficiency refers to the increase in economic benefits as a consequence of the greater influx of tourists to the destination. Finally, environmental conservation is the intervention on tourism products and services to make them accessible to the current and future generation of tourists. In other words, sustainable tourism is the means capable of achieving social organisation (as the basis of an equitable, solidarity-based and responsible economy) and the preservation and correct use of natural resources, giving rise to an efficient economy (Alcivar-Vera and Mendoza-Mejía, 2020). Furthermore, tourism integrated in sustainable development preserves and recovers cultural, social and environmental values through changes in thinking, production and consumption that must be promoted by authorities, businesses, social organisations and individuals (Fernández-Fernández, 2020).

On the other hand, it should be borne in mind that this phenomenon is not something that has occurred fortuitously only in Spain and Andalusia, but rather, at the beginning of the second decade of the 21st century, rural tourism has begun to take on relevance at a European level where 26% of inhabitants choose to spend their holidays in rural areas (Cánoves *et al.*, 2014). Moreover, there is currently a resurgence of rural tourism, following the health crisis, especially in the case of Andalusia (Bódalo and Cantero, 2022; Auriolos, 2022). People have preferred to flee the environment that has confined them and have taken refuge in natural spaces with their families, seeking to develop a tourist activity, but in a safer way (González, 2020). It is imperative that stakeholders adopt local development as the main objective of natural parks. This is because a significant number of actors tend to operate by inertia, prioritising fashion or market demand over genuine conviction and the achievement of objectives. In order to achieve the desired development, it is essential that all parties fully understand and internalise the different dimensions and impacts on the territories (Bahamonde-Rodríguez *et al.*, 2023). However, in the case of Southern Europe, although there was a strong increase in travellers in rural areas in 2020, this increase decreases proportionally at the national level in 2022, as can be seen at the national (blue) and Andalusian (red) levels in Figure 1.



Source(s): Figure created by authors

Figure 1.
Evolution of number of
overnight stays in rural
destinations

This evolution of demand justifies the need to study the efficiency of the different companies in the tourism sector in rural areas. As mentioned above, rural tourism is a driving force for the economy of rural areas. Moreover, the development of these populations depends on the good functioning of these companies to avoid depopulation and increase employment in these areas (Cánoves *et al.*, 2005), a latent issue at present given the depopulation of this type of territories. But this study is even more justified given the scarcity of literature on the efficiency of rural tourism companies. This is why this research aims to determine the efficiency of accommodation companies located in the rural territory of this place.

In more detail, business efficiency refers to the ability of an organisation to maximise its profits and revenues while minimising its efforts and expenses. Business efficiency is key to the competitiveness and long-term success of a company. The study of business efficiency in rural accommodation companies is a topic of interest for academic research. Research on rural tourism enterprises indicates that most of them are owner-managed (Castrillón *et al.*, 2014; Maduro *et al.*, 2022). But this topic is even more interesting because of the relationship between resource conservation and financial performance (Sakshi *et al.*, 2020; Hsiao *et al.*, 2014; Mensah, 2007; Trung and Kumar, 2005).

Within the tourist accommodation sector, some authors have focused on examining the relationship between the efficiency indicators obtained and a set of variables such as geographical location and economies of scale (Barros, 2005; Zhang *et al.*, 2022), variables related to organisational aspects in the company (Botti *et al.*, 2009; Xu *et al.*, 2017), or other characteristics such as forms of management based on internationalisation strategies (Chiang *et al.*, 2004; Nurmatov *et al.*, 2021).

In relation to the objective of assessing the efficiency of accommodation companies located in the rural territory of Southern Europe to determine whether it is influencing the sustainability of the study territory, there is evidence showing that the growth of overnight stays in rural residences has grown, but less than that of overnight stays in hotels (Pérez-López and Ibarrondo-Dávila, 2018), which could lead to a lack of efficiency in hotels. However, despite the importance of this sector, the analysis of efficiency in the hotel sector and even more so in the rural tourism sector is relatively scarce in the literature (Arbelo-Pérez, 2016), especially in Spain (Alberca and Parte, 2013; Ibarrondo- Dávila and Pérez López, 2018). Specifically, Rubio and Román (2006) have demonstrated the existence of scale inefficiencies in hotels, but no evidence has been found in previous studies that this behaviour carries over to accommodation establishments located in the destinations under study. However, it should be noted that the literature considers rural destinations and, therefore, rural tourism as a key factor in the differentiation and development of the economy, which is the starting point for studies such as those carried out by Nieto *et al.* (2022) or Soler-Vaya and San Martín-González (2023) which explain the importance of leader aid for the maintenance and development of local areas through rural tourism or the value of the Network of Protected Areas as a tool for the promotion of rural tourism (Soler-Vaya and San Martín-González, 2023) or Escribano and Mulero (2022) which focus on the relationship between Natural Parks, sustainable development and rural tourism.

Moreover, the relationship between efficiency and sustainability is even more important given their direct relationship, which is even stronger in rural settings, although policies are needed to help the preservation and durability of this relationship (Garavito *et al.*, 2019). This is because economic growth is based on the efficient use of opportunities for workers' knowledge and skills to lead to the creation of new jobs, new enterprises and greater democracy in decision-making. In other words, the alliance between sustainable and efficient development lies in the need to improve the quality of life by using only the necessary natural resources (Castillo-Martín, 2011; Camacho and Bajaña, 2020). This can be achieved as outlined by Han (2020, 2021), Dong *et al.* (2012), Leary *et al.* (2014), Minton *et al.* (2018) and Sing and Verna (2017) through post-purchase and pre-purchase behaviours of green products,

energy efficiency actions, saving natural resources and water, sorting waste, reducing food waste, minimising solid waste, using green products and public transport. Other authors such as [Pereira et al. \(2021\)](#) emphasise efficiency improvements in hotels in the use of renewable energies and water saving measures. In other words, the above authors refer to the fact that sustainability and improvement of business efficiency is related to sustainable environmental consumption and the establishment of useful strategies for the reduction of environmental impacts caused by tourists.

This demonstrates the importance of the research presented here, since it is necessary to determine the financial situation of companies in the rural tourism sector, which is not a subject that has been given special interest in previous literature, and especially if we take into account that rural tourism companies are SMEs that may not be operating at their optimum production size and that, given the situation in which they find themselves, they must make strategic decisions to recover their competitive advantage.

Following this approach, our hypothesis are as follows:

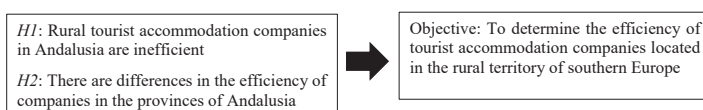
H1. Rural tourist accommodation companies in Andalusia are inefficient.

H2. There are differences in the efficiency of companies in the provinces of Andalusia.

This hypothesis will help us to achieve the objective of our paper “To determine the efficiency of tourist accommodation companies located in the rural territory of southern Europe” as shown in [Figure 2](#).

Methodology

From a methodological point of view, this study is framed within a quantitative approach where the SABI database has been used to obtain the financial information of the accommodation companies in the different rural municipalities of Andalusia. More specifically, economic-financial information was obtained from this database for companies under IAE (Business Activity Tax) 68 headings (accommodation companies) for the different Andalusian municipalities considered as rural population, or establishments found in municipalities with less than 2,500 inhabitants ([Maxima, 2020](#)) for the years 2019 and 2021. A total of 130 accommodation companies were obtained referring to the total data of companies with updated information in the SABI database for each of the provinces of Andalusia. After eliminating the accommodation companies that are not still open in 2021, there were 102 before the elimination of outlayers, as shown in [Table 1](#). It should be noted that the use of data from 2020 has been refrained from in order to avoid the economic-financial problems caused by COVID-19. Finally, in order to respond to the objectives set out, a procedure based on two phases will be carried out, where in the first phase a data envelopment analysis (DEA) will be carried out to determine the efficiency of the companies under study, since with this analysis it is possible to measure the quantity of inputs consumed and the quantity of outputs generated proportionally by the company, being a useful tool in the field of business management and in operational research to evaluate the performance of the different areas of the company. After carrying out the DEA, a second phase of comparison of means was carried out using the Mann–Whitney U analysis for



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Figure 2.
Hypothesis and
objective of the study

non-parametric and abnormal tests. This second phase is carried out to determine whether the companies in the study show differences in the mean efficiencies obtained before and after COVID-19 as a consequence of the increase in rural tourism during COVID-19.

As for the classification of municipalities, regions or areas in general as rural is a difficult task, as there is no universally accepted definition of what is considered rural, since the meaning of rural depends on the context (Dinis, 2006; Rye, 2006). While economists focus on functional definitions based on economic variables, environmental scientists tend to emphasise the characteristics of the landscape and the natural environment (Goerlich and Cantarino, 2011). However, both disciplines relate it to the importance of the territory and its development and sustainability.

If one broadens the analysis of the study of these destinations, research on the rural world is extensive and takes place in a wide range of disciplines. International agencies are paying increasing attention to rural development policies, which now take many factors into account and are no longer focused on agricultural subsidies. Rural areas depend on a wide range of factors for their development: globalisation, improvements in transport networks, new information and telecommunication technologies. All these factors capable of driving growth in these areas must be harnessed in the most efficient way possible in order to achieve an ever-increasing development in these areas that aims to shift the typical primary sector activities developed in these areas to the background in order to be able to carry out other activities to stimulate growth.

Taking these statements into account, we can differentiate the rural population as those municipalities whose population is made up of 2,500 inhabitants or less, making a distinction with semi-rural populations, which consider municipalities whose population is made up of 10,000 inhabitants or less, considering urban population as municipalities with a population of more than 10,000 inhabitants (Máxima, 2020).

Once the study territories from which the data originate have been explained, the methodologies used to respond to the objectives set out in the study are explained, we will begin with the analysis of the efficiency of the accommodation companies in the different towns that are considered to be rural population and finally a contrast of averages will be carried out. To begin with, the efficiency percentage of the companies has been determined through the use of super-efficiency and DEA.

DEA can be defined as a non-parametric and deterministic study whose ultimate goal is to determine the efficiency of a set of homogeneous decision-making units (DMU). This method is carried out through a linear programming comparison of identical inputs and outputs in order to obtain an efficiency ranking. In this, the value of 1 means efficiency and its representation will show the efficiency frontier (Samoilenko, 2014), while values close to 0 represent inefficiency. In terms of inputs and outputs, these are variables that determine the level of efficiency and in this study, they are composed of the financial parameters of sales figures as revenues (outputs) and personnel, financial and material costs (inputs).

Table 1.
Population and
samples

	Accommodation
Population size	130
Sample size	102
Sample year	2019, 2021
Confidence level	95%
Error	5%
Source(s): Table created by authors	

However, DEA has a major handicap in that it is very sensitive to extreme values. In order to solve this problem, the super-efficiency method has been used with the aim of detecting and eliminating contaminated observations and thus obtaining more accurate results with a more accurate efficiency (Banker and Giford, 1988; Banker and Chang, 2006). To this end, we have followed what is set out by Martínez and Pérez (2014) who consider 2 as the pre-set limit value for finding super-efficiency, i.e. for the elimination of outliers, 2 is considered as the maximum efficiency value that companies can have and the value 1 as the discriminant, since if the value obtained is lower than this, the company will be inefficient and the value is higher than this, it will begin to be efficient (Martínez *et al.*, 2005).

Finally, it should be pointed out that the two extensions of the method have been used to determine the DEA analysis. On the one hand, it has been determined by means of the BCC extension (Banker, Chames and Cooper), by means of which the variable returns to scale are determined. On the other hand, the CCR (Chames, Cooper and Rhodes) extension has also been used to determine the technical efficiency (Martínez and Pérez, 2014). Furthermore, the output orientation has been chosen, since it is the variable that determines in the analysis the revenue from sales figures and, therefore, it is the variable that companies are interested in maximising. More specifically the CCR-O.

More deeply, the CCR method oriented towards outputs is used in the case that the companies present constant returns of the input variables and is expressed mathematically according to Fernández *et al.* (2016) as follows:

$$\begin{aligned} \max \phi, \lambda, S+, S- \\ z0 = \phi + \epsilon * 1 S+ + \epsilon * 1 S- \\ \text{Subject to: } \phi Y0 - Y \lambda + s+ = 0 \\ X \lambda + s- = X0 \\ \lambda, s+, s- \geq 0 \end{aligned}$$

On the other hand, BCC analysis is used in the case where the input and output variables used in the company respond on a variable rather than a constant scale. In this case, since what is of interest is the maximisation of the sales figure (variable outputs), this is translated mathematically according to the previous author as follows:

$$\begin{aligned} \max \phi, \lambda, S+, S- \\ z0 = \phi + \epsilon * 1 S+ + \epsilon * 1 S- \\ \text{Subject to: } \phi Y0 - Y \lambda + s+ = 0 \\ X \lambda + s- = X0 \\ 1 \lambda = 1 \\ \lambda, s+, s- \geq 0 \end{aligned}$$

Finally, in the second phase, an inferential study is carried out using the non-parametric U-Mann Whitney-Wilcoxon test for independent samples (Quispe, 2015). The test allows the comparative contrast for two groups, on the one hand, the efficiency results for 2019 and on the other hand, the efficiency results for the year 2021. These procedures were used to analyse and test the statistical hypothesis (H1: Accommodation companies in the rural tourism sector in southern Europe are inefficient).

Results

Having contextualised the companies of the accommodation tourism sector in the rural population of Andalusia in the southern Europe, we proceed to present the main results obtained from the data envelopment analysis of the accommodation companies (Table 2) for the years 2019 and 2021. The results presented show that the accommodation enterprises in the rural populations of this places, from the perspective of variable returns to scale (VRS) are quite efficient, although decreasing over time, 65.15 and 55.87% in 2019 and 2021, respectively. On the other hand, from the perspective of the basic model or CCR model of technical efficiency, accommodation companies in Andalusian rural towns are mostly inefficient, reaching 77.84 and 80.40% in 2019 and 2021, which shows the increase in the inefficiency of this type of establishment after the pandemic.

Making the results more concrete, it can be stated that practically a quarter of the target companies studied in 2019 are efficient, while this percentage is reduced to 21.59% in 2021 from the perspective of the BCC. But despite this, it is more worrying to note that half of the companies are in limbo between being efficient or inefficient on a variable return scale (CCB), data that worsen if attention is focused on the inefficiency presented in CCR. With regard to the dispersion in which their efficiency results (standard deviation) are found, it can be stated that the accommodation companies present a standard deviation far from 0, higher than 0.25 regardless of the year of study, which suggests the existence of a large difference between the companies in the study.

After determining the behaviour of the efficiency of the accommodation companies in the rural population of southern Europe, it has been determined whether the companies present differences in their averages between 2019 and 2021. For this purpose, Table 3 calculates

Table 2.
Efficiency of rural accommodation companies in southern Europe

	2019		2021	
	CCR	BCC	CCR	BCC
Efficient DMU	7	23	5	19
Average efficiency (%)	22.16%	65.15%	19.60%	55.87%
Standard deviation	0.28	0.31	0.24	0.36
Average inefficiency (%)	77.84%	34.85%	80.40%	44.13%
Efficient DMU (%)	7.61%	25.00%	5.68%	21.59%

Source(s): Table created by authors

Table 3.
Normality analysis of efficiency data

One-sample Kolmogorov-Smirnov test					
		Score CCR-O 2019	Score BCC-O 2019	Score CCR-O 2021	Score BCC-O 2021
N		92	92	88	88
Normal parameters	Media	0.222	0.651	0.196	0.559
	Dev. Deviation	0.280	0.307	0.244	0.358
Test statistic		0.334	0.128	0.236	0.112
Mr. salt. (bilateral)		0.000	0.001	0.000	0.009
Sig. Monte Carlo (bilateral)d	Sig	0.000	0.001	0.000	0.009
	99% confidence interval	Lower limit	0.000	0.000	0.007
		Upper limit	0.000	0.002	0.012

Source(s): Table created by authors

whether the company follows a normal distribution or not. After reviewing the data, it is affirmed that the efficiency data of the companies in the study present a non-normal distribution since the p -values are less than 0.05. This result leads to perform the Mann–Whitney U statistical test to check the differences between the existing means in both CCR and BCC efficiencies for the years 2019 and 2021. As shown in Table 4, there are no significant differences between the means of the efficiency of accommodation establishments in southern Europe between 2019 and 2021 for both types of efficiency, since the significance of the differences (0.23 for CCR and 0.319 for BCC) are not less than 0.05. This indicates that the closure of accommodation establishments due to the pandemic has not led to an improvement in the financial situation of the remaining ones, as their inefficiency was not only before COVID-19 but also after it.

In order to try to understand the results obtained a little more, and bearing in mind that the resources of the different provinces are very different from each other, despite the fact that rural accommodation companies are what is being studied, Table 5 shows a breakdown of the CCR efficiency for both years of the study for the accommodation companies located in each of the provinces. It should be noted that the province of Seville is not included in Table 5 or 6, since it is not sufficiently representative to be able to find a pattern of efficiency comparable with the rest of the provinces.

Focusing attention on the companies that are completely technically efficient (CCR), it can be seen that there is no great difference between the provinces but that this is the case in Granada where 4 and Cordoba with 1 efficient unit in both years and Huelva in 2021 with 2 efficient units can be found. However, considering the number of these with respect to the total number of study units in each of the provinces shows that Cordoba has the highest percentage technical efficiency in both years. Moreover, it is precisely this province, Cordoba, which achieves the highest average efficiency and deviation, albeit decreasing between the two years. However, it should be noted that Huelva had a higher average efficiency and deviation in 2019, but this has decreased drastically in the following two years. As for the provinces with rural accommodation companies with the highest inefficiency, these are Almería, Cádiz, Jaén and Málaga, all of them exceeding 80% inefficiency in both years (2019 and 2021).

Placing greater emphasis on the situation of technical efficiency presented by the companies of each province with respect to the Andalusian average, it can be stated that only Córdoba and Granada exceed the average of the average efficiency in both years of the study, with the rest of the provinces of Andalusia with the companies that present the greatest inefficiency. However, it is necessary to highlight that, although they present good technical efficiency results, they are also the ones with the greatest differences between their companies. This denotes the need to establish two types of differentiated strategies from a technical perspective. It is necessary to provide the provinces of Córdoba and Granada with tools that help equalise the situation between companies located in their provinces. But, on

	Score CCR-O 2019	Score BCC-O 2019
Mann–Whitney U	23.50	113.00
Wilcoxon W	38.50	303.00
Z	−1.22	−1.03
Sig. asin. (bilateral)	0.22	0.30
Exact meaning [2*(unilateral sig.)]	0.23 ^a	0.32 ^a
a. Not corrected for ties		a. Not corrected for ties

Source(s): Table created by authors

Table 4.
Analysis of means with
the Mann–Whitney U
of efficiency

	Almería		Cádiz		Córdoba		Granada		Huelva		Jaén		Málaga	
	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019
CCOR	0	0	0	0	1	1	4	4	0	2	0	0	0	0
Efficient DMU	12.51	9.68	9.71	14.67	32.54	28.50	26.47	25.52	16.47	33.59	13.12	12.19	10.85	18.42
Average efficiency (%)	0.07	0.02	0.06	0.01	0.35	0.36	0.33	0.33	0.17	0.34	0.09	0.07	0.07	0.26
Standard deviation	87.49	90.32	90.29	85.330	67.46	71.50	73.53	74.48	83.53	66.41	86.88	87.81	89.15	81.58
Average inefficiency (%)	0.00	0.00	0.00	0.00	0.17	0.14	0.12	0.11	0.00	0.17	0.00	0.00	0.00	0.00
Efficient DMU (%)	0.00	0.00	0.00	0.00	0.17	0.14	0.12	0.11	0.00	0.17	0.00	0.00	0.00	0.00

Source(s): Table created by authors

the other hand, for the rest of the provinces in the study it is necessary to determine the elements that prevent these companies from achieving high efficiency rates and support companies to reduce or eliminate these problems.

Once the technical efficiency (CCR) has been analysed by province, it is necessary to focus attention on the efficiency due to variable returns (BCC) distinguished by each of the provinces of Andalusia for the two years of the study, as shown in [Table 6](#). As observed in practice, the province with the greatest number of efficient companies is Granada, doubling the rest of the provinces and followed by the province of Jaén. However, Córdoba is the province that has the highest average efficiency in 2021 followed by Granada, although in 2019 Málaga was the one with the highest efficiency. However, Huelva and Córdoba are the provinces with the greatest disparity in efficiency results between the companies studied, which indicates the need for an analysis of the company's organisational systems, as well as the use of its resources and capabilities, above all, in Córdoba given the good efficiency results it presents. On the other hand, if the percentage efficiency is considered, Cádiz is the province with the most efficient companies in 2019, being replaced in 2021 by Huelva, Jaén and Córdoba. Finally, the province that has the greatest number of companies with inefficiency due to variable returns are Cádiz and Málaga in 2021 and Granada in 2019.

Discussions and conclusions

Following the study carried out, we have been able to verify that the hypotheses of inefficiency are confirmed in six of the seven Andalusian provinces. This fact, together with the lack of strategic and economic-financial departments in rural tourism microenterprises in southern Europe, suggests that this may be due to two possible alternatives. On the one hand, the need for departments specialising in finance and accounting in tourism companies, as well as departments specialising in strategy, which would mark out the steps to be followed in the maintenance, growth and consolidation of companies in the sector. And, on the other hand, these results indicate that accommodation companies, in the towns considered rural in southern Europe, in the year of the study, 2019, were not relevant in the sector, given that tourists preferred beach destinations to rural destinations ([Schulz, 2020](#)). A fact that changed from the 2020 confinement due to the COVID-19 pandemic, where this tourist typology becomes one of the preferences as shown by the increase observed in 2020.

If we delve a little deeper into the possible consequences that the lack of efficiency can generate in these destinations, although it serves to diversify the economy as stated by [Cárdenas *et al.* \(2014\)](#) and [Flores \(2008\)](#), there is insufficient evidence to affirm that the tourism sector is a generator of wealth given the inefficiency of the companies in the sector. This fact demonstrates the serious problems of sustainability in the rural regions of the Andalusian provinces because if there is no economic development, what [Fernández and Moral \(2013\)](#) stated is not fulfilled. This fact is explained by the fact that, if the companies in the tourism sector in rural areas are technically inefficient, this means no economic benefits, and therefore no funds would be contributed to the administration's coffers. Moreover, if the inefficiency is maintained over time, instead of bringing social benefits, these would be converted into harm, given the unemployment that could be caused if the inefficient companies were to close their businesses. Therefore, it can be affirmed that, if inefficiency persists over a medium or long period of time, the impact generated by the tourism sector could become negative and therefore the sustainability of these territories would be seriously compromised.

In order to avoid bad results, it is necessary to take strategic policies that focus on reaching the optimum level of production in the occupation of the accommodation establishments in the rural area of southern Europe, to establish management models that guarantee the management of sustainable tourism through planning and organisation of work,

	Almería				Cádiz				Córdoba				Granada				Huelva				Jaén				Málaga			
	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021	2019	2021			
BCC	0	1	0	2	35.14	65.11	75.85	66.59	60.59	60.32	52.85	71.04	63.12	56.61	63.12	39.17	72.00	39.17	72.00	39.17	72.00	39.17	72.00	39.17	72.00			
Efficient DMU	0	1	0	2	35.14	65.11	75.85	66.59	60.59	60.32	52.85	71.04	63.12	56.61	63.12	39.17	72.00	39.17	72.00	39.17	72.00	39.17	72.00	39.17	72.00			
Average efficiency (%)	0.27	0.21	0.36	0.32	0.39	0.39	0.39	0.37	0.36	0.35	0.42	0.23	0.37	0.37	0.33	0.24	0.21	0.37	0.33	0.37	0.33	0.24	0.21	0.37	0.33			
Standard deviation	49.17	29.48	64.86	34.90	24.15	33.41	24.15	33.41	39.42	39.68	47.15	28.96	43.39	43.39	36.88	60.83	28.00	43.39	36.88	43.39	36.88	60.83	28.00	43.39	36.88			
Average inefficiency (%)	0.00	0.20	0.00	0.40	0.33	0.29	0.33	0.29	0.24	0.22	0.31	0.25	0.29	0.29	0.27	0.00	0.18	0.29	0.27	0.29	0.27	0.00	0.18	0.29	0.27			
Efficient DMU (%)	0.00	0.20	0.00	0.40	0.33	0.29	0.33	0.29	0.24	0.22	0.31	0.25	0.29	0.29	0.27	0.00	0.18	0.29	0.27	0.29	0.27	0.00	0.18	0.29	0.27			

Source(s): Table created by authors

the carrying out of a diagnosis of the territory and the study of different strategies for the development of the community. On the other hand, it is necessary to take strategic measures that enhance the attraction of tourists to the destination in a synchronous way that generates positive impacts in the social, environmental and economic spheres of the territory. These measures could include synergetic strategies between economic sectors that promote the culture and gastronomic value of the territory, financial studies that allow costs to be adapted to the income received, digitalisation strategies that allow future tourists to learn more about not only the establishments but also the attractive resources of their surroundings, among other economic and financial measures such as the union of companies or the creation of tourism cooperatives that serve as a driving force for the development of SMEs in the sector.

Once the hypotheses and results of the research have been set out, it can be affirmed that the study has fulfilled its main objective, which was to determine the efficiency of accommodation companies in the rural environment of southern Europe in order to determine the sustainability of the territory. This objective is of great interest given the lack of efficiency studies of this type of establishment, as well as the need to generate wealth and diversification in the rural areas of Andalusia in order to guarantee the preservation of these territories so that they can be enjoyed by both the current and future world population. For these strategies to be effective, greater coordination and assistance is needed between the three main agents (administration, business and society) to offer unique experiences, of high value to the client and which satisfy their needs. Moreover, in order for these territories to develop, it is necessary for governments to formulate, design and engage in the elaboration of coherent sustainability policies that correct the negative effects of tourism and attract positive impacts (Fernandez-Fernandez, 2020).

However, despite the above, this study has some limitations, such as the local and temporary nature of the research. Based on these, the study opens up future lines of research such as the extension of the study of efficiency in other territories that are of a strong sustainable nature with the aim of determining whether the efficiency of companies in the new territories continues the same dynamic presented in this study. On the other hand, emphasis should be placed on the consequences why companies are achieving such high rates of inefficiency, which may be due to failures in management or financial procedures. Finally, the authors consider it interesting to extend the study to the rest of the rural areas of Spain or even other countries, as well as the detailed study of efficiency by areas with convergent policies and strategies in order to determine which strategies have not yet been used and could improve the results of tourism companies in these destinations.

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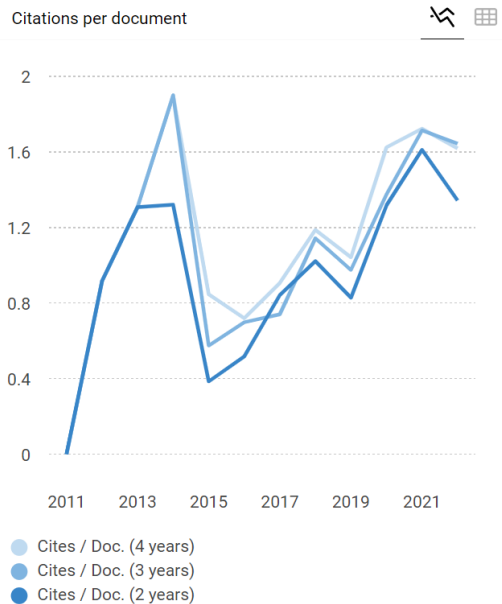
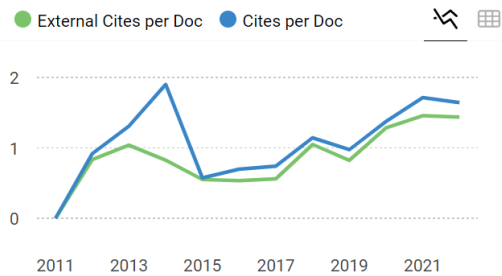
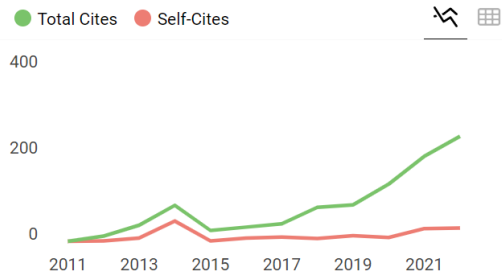
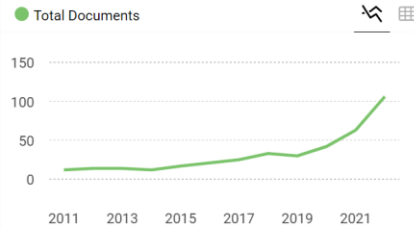
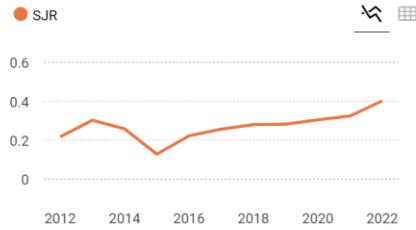
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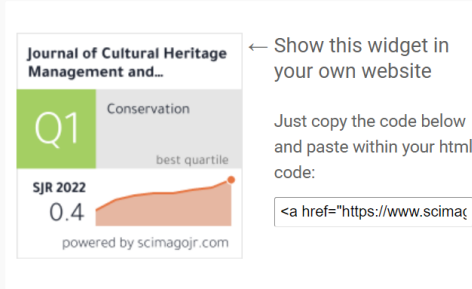
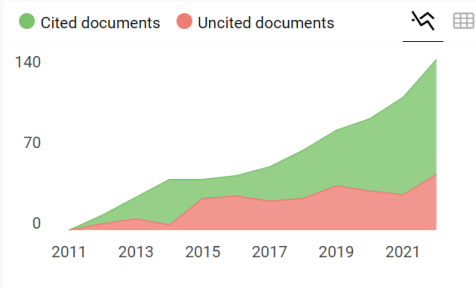
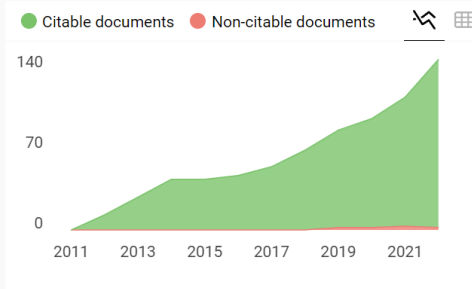
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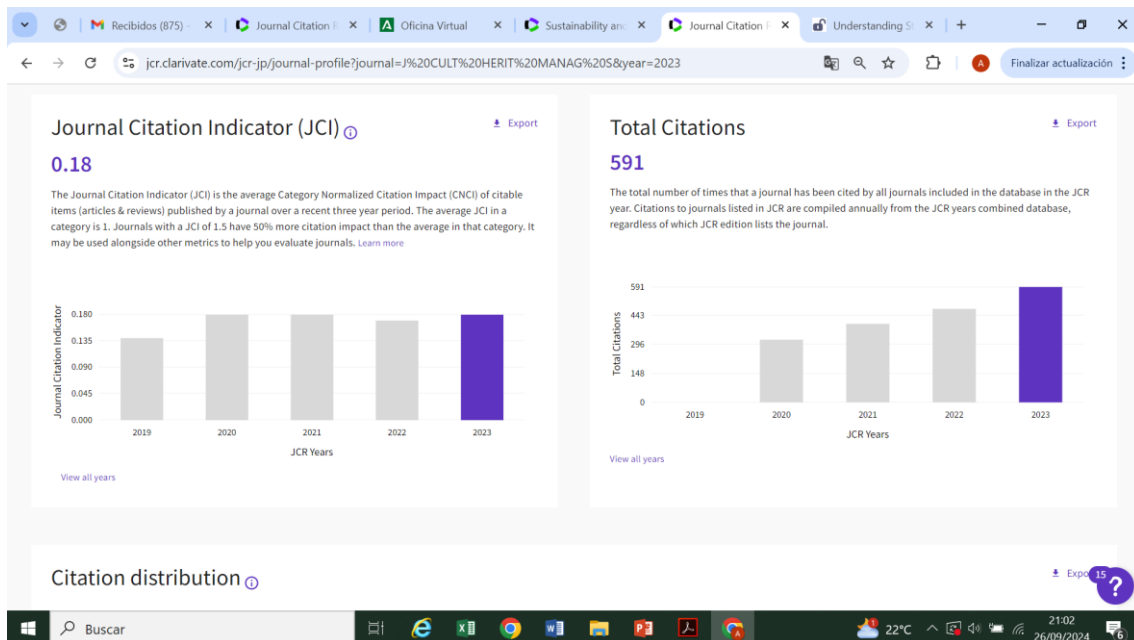
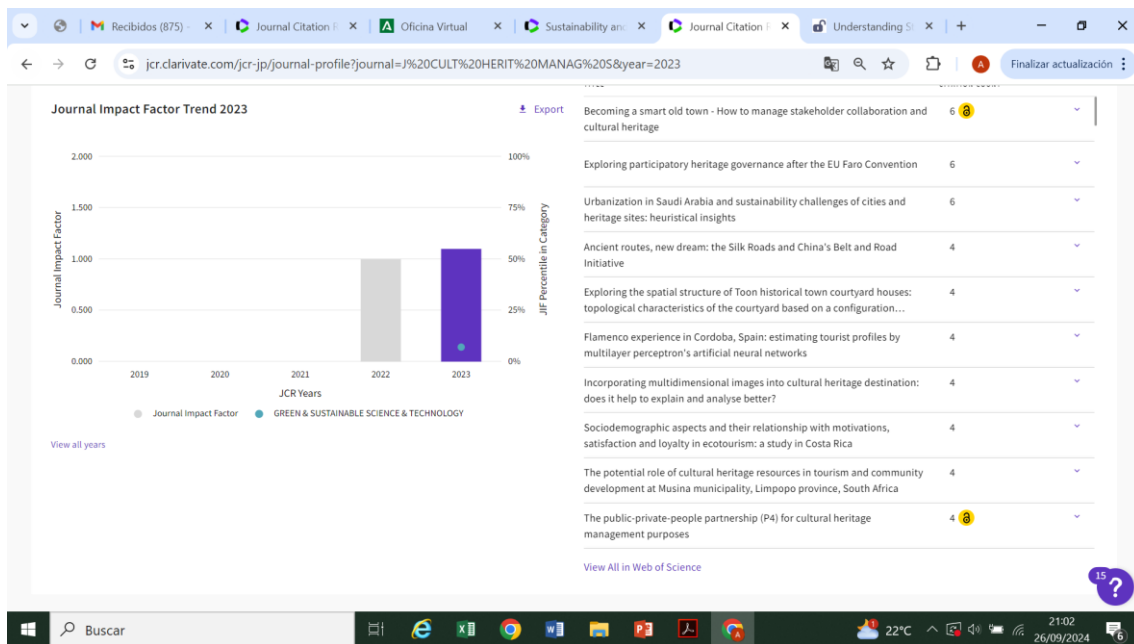
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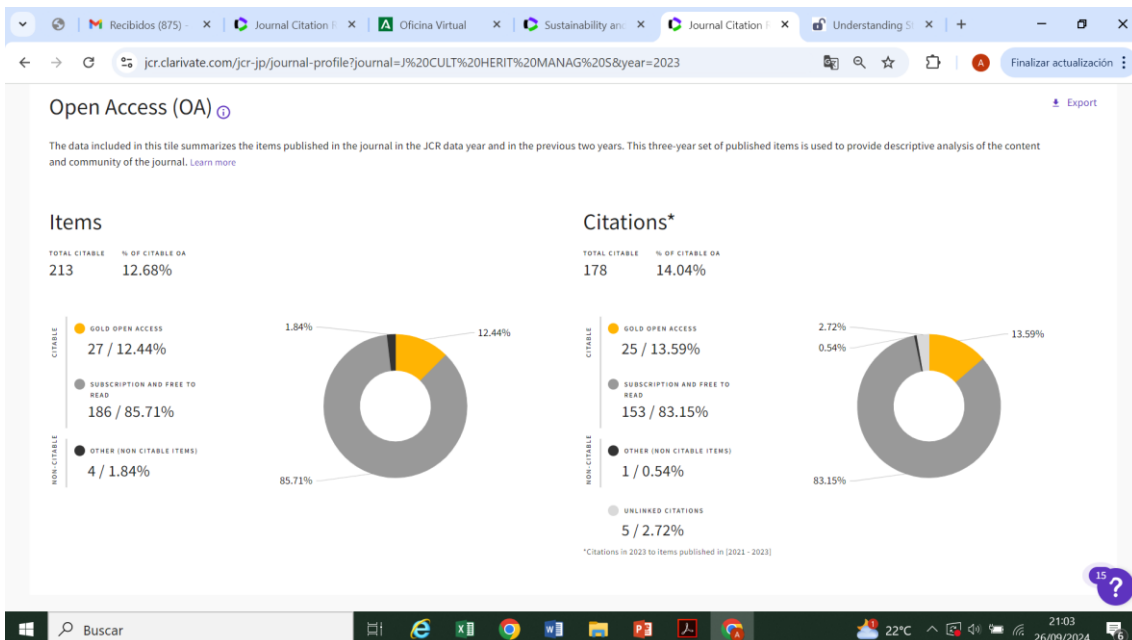
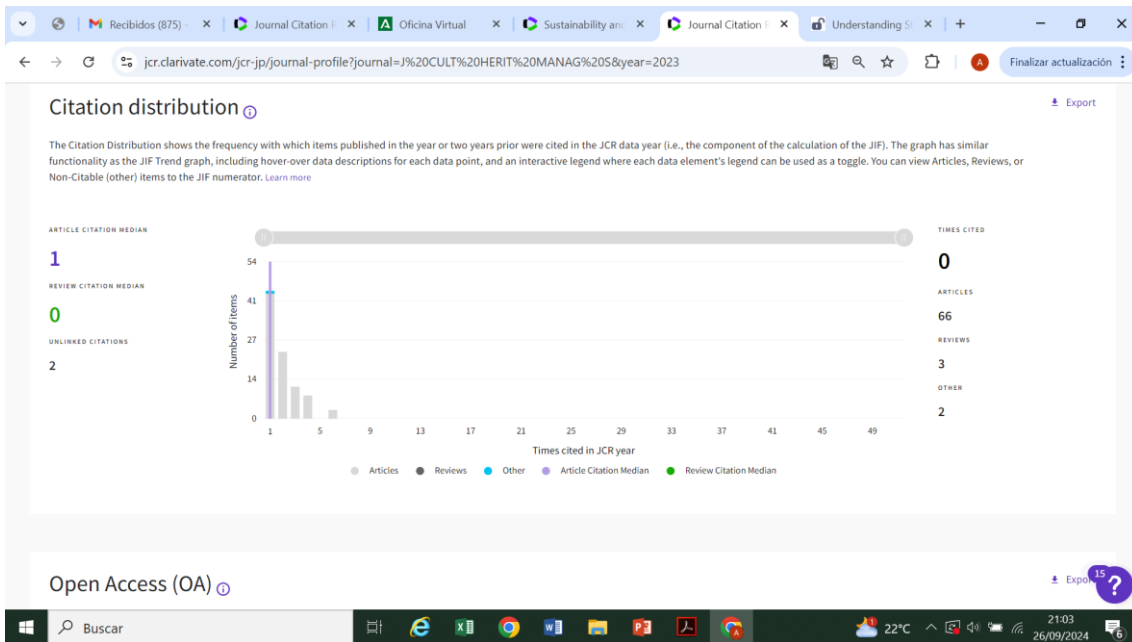
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JCR YEAR	JCI RANK	JCI QUANTILE	JCI PERCENTILE
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2022	79/84	Q4	6.55
2021	70/74	Q4	6.08
2020	61/66	Q4	8.33
2019	61/65	Q4	6.92
2018	55/63	Q4	13.49
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