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Exploring the impacts of local development initiatives on tourism: A case study analysis

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ABSTRACT

This study investigates the intricate relationship between local development initiatives and tourism, with a specific focus on their impacts. By utilizing input-output matrices and a survey-based vector of tourist expenditure, we calculate both direct and indirect effects using accounting multipliers. The study assesses the potential return on investment and the generation of future income resulting from a 2.3 million euros investment. Our findings illuminate the predominantly positive impacts of local development initiatives on tourism. We underscore the importance of strategic planning, community engagement, and sustainable practices in optimizing the benefits and addressing potential challenges associated with local development for tourism. While this research primarily emphasizes the positive aspects, it recognizes the need for a nuanced understanding of the multifaceted impacts. This study contributes to the existing literature by providing a comprehensive analysis of the intricate relationship between local development and tourism. The study's practical insights and recommendations are valuable for policymakers, local communities, and tourism stakeholders, guiding them toward adopting sustainable and inclusive development strategies that maximize the positive impacts of tourism.

1. Introduction

More and more people are placing tourism at the epicentre of local economic development [1,2], promoting job creation and investment in the region [3,4] as well as optimizing transport and enhancing the local cultural heritage [5]. At the state level, inbound tourism constitutes one of the main sources of income in the balance of payments [6]. For all these reasons, the weight of tourism in the economy is large, and according to the world tourism barometer made by the World Tourism Organisation [7], it entails 10% of the global gross domestic product (GDP). Spain is one of the most important tourist destinations in the world [5], surpassed only by the United States [7]. In addition, it is one of the most tourism-dependent economies in the world [8]. For a long time, Spain has used tourism as the engine of the country's economic development [9]; proof of this is its especially important contribution to the economy: 12.3% of GDP (147,946 million euros) and 12.7% of employment (2.62 million jobs) in 2018 [10].

Tourism uses the destination's natural resources intensively to generate income [8]. An interdependent relationship is generated between the destination and the tourism industry, linking the industry's long-term income to the proper conservation of the destination's natural resources [11]. Nowadays, tourism must be managed with a long-term vision so that it is integrated into the local

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territorial context [12]. However, this long-term view has not been the norm because the economic effects of environmental over-exploitation are slow to manifest [13–16]. Spain has not been an exception, and, until recently, its tourism development strategy was based on mass tourism, giving rise to significant urban and environmental problems aggravated by the decline of some traditional tourist destinations [6].

Regarding urban problems, it is possible to cite the saturation of traffic and vital infrastructures associated with the tourist saturation given, especially in high season [17]. Almeida-García, Peláez-Fernández, Balbuena-Vázquez, and Cortés-Macias [18] found that even non-native residents in a mature tourist destination like Benalmádena (Spain) perceived the negative effects of tourism over time. In the case of Barcelona (Spain), urban problems derived from overcrowding have led to a rejection of tourism and resistance of a part of local society towards tourists in a phenomenon known as '*turismophobia*' [19]. Although increasingly self-aware, cities have been trying to alleviate overexploitation and unsustainability for a short time [20].

Environmental problems are concentrated in coastal tourist destinations that are more aligned with mass tourism of sun and beach [21]. '*In mass tourism destinations, such as those of the Mediterranean coastline, tourism long ago lost the epithet of "green industry", due to its overwhelming environmental impacts*' [11]. Impacts such as erosion and the deterioration of the quality of the beaches have led to a reduction in the attractiveness of coastal areas and visible economic impacts [22]. In addition, the growing trend of tourists towards less standardized products has revalued inland destinations [23].

The concept of *overtourism* [1] has emerged due to exceeding the maximum limits of tourism development, causing negative impacts on destinations. Addressing these challenges necessitates strategic growth, focusing on resource efficiency and conservation. Tourism resource managers are responsible for balancing economic and environmental considerations while pursuing long-term and integrated territorial development. In response, Spain aims to diversify its tourism offerings by promoting inland destinations as sustainable alternatives to the traditional sun and beach model. The solution involves strategic growth that seeks to improve the efficiency and conservation of the destination's natural resources [24]. The responsibility of balancing this tourism development and the conservation of the destination's resources falls on tourism resource managers [25], who must simultaneously assess the economic and environmental impact of their actions [26], giving up the temptation of short-term results in favour of a long-term and integrated vision in local territorial development [12].

Currently, Spain is trying to diversify its offer by providing alternatives to the sun and beach, although it maintains massive destinations that it tries to revitalise [6]. Taking advantage of the tourist predisposition to consume another type of tourism and having learned from their mistakes [27], inland destinations are on the rise, with efforts to promote their sustainable development against the general growth pattern of coastal destinations [28]. In this context, politicians should bear in mind the environmental consequences of the transfer of resources to the tourism industry [29], and at the same time, they need to assess the economic and developmental impact of a new tourism-oriented infrastructure [30]. Prioritising sustainability in the development of tourism has become a necessity for the competitiveness of the destination [31]. Nevertheless, it is possible that some nostalgic people blinded by short-termism want to return to mass tourism, arguing that the economic impact of this type of tourism is limited.

For this reason, this study aims to analyse the impact of a local public investment in the Caminito del Rey, a tourist resource located in one of these inland destinations and considered closely linked to respect for the environment [32]. The methodology employed includes the use of an input-output matrix and surveys to calculate both direct and indirect effects. Through decomposing accounting multipliers, the return on investment and potential future income generated by the investment in the Caminito del Rey were estimated. Results that provide a comprehensive understanding of the specific impacts, whether economic, environmental, or both, resulting from local public investment in this tourist resource and allowing policymakers to make informed decisions regarding sustainable tourism development strategies and the allocation of resources.

The findings of this study contribute to the existing literature by shedding light on the relationship between local development initiatives, tourism, and their impacts. The analysis offers insights into the complex dynamics between economic development, environmental conservation, and sustainable tourism practices. Ultimately, this research aims to inform policymakers, tourism stakeholders, and local communities in making decisions that foster sustainable and inclusive development strategies while minimizing negative impacts.

The study is organized as follows. After this introduction, this article presents a brief description of the studied resource and its location to improve the reader's understanding and contextualise the study. A review of the literature regarding the assessment of the economic impact of tourism is provided in Section 3. In Section 4, the methodology is described; Section 5 presents the main results; and the data are discussed in Section 6. Finally, Section 7 presents the main conclusions, limitations, and future lines of research.

2. Study area

The Caminito del Rey is a key tourist resource located in the interior of the province of Malaga, Spain [33]. While the coast of Malaga is an internationally known sun-and-beach destination [34], the interior is less known, despite the fact that its interest does not stop growing year by year [25]. The destination has as its main attractions a climate and cultural and natural heritage, in addition to serving as a complement to coastal Malaga [35]. Much of this tourism development in the region is due to the Caminito del Rey, which has become an example of sustainable development in an economically and touristically depressed area [36].

The Caminito del Rey is a path hanging on the vertical walls of the Gaitanes Gorge in the south of Spain, in the province of Malaga. It is at an average distance of 100 m above the river and originally built because the electricity supply company needed access between two waterfalls to facilitate the passage of maintenance workers and the transport of materials and their surveillance [37]. The work began in 1901 and concluded in 1905 [35], and the site is currently the most visited tourist resource in the interior of the province of Malaga, together with the city of Ronda [32,33]. Until recently, this was not the case, as the Caminito del Rey was in a deplorable state

that made it practically impassable [37]. It was precisely its dangerousness and the fact of being one of the most important climbing areas in Europe that contributed to increasing its interest and its fame with accidents, some of them fatal, which reinforced its Black Legend [35]. As of February 2014, the Diputación de Málaga began its restoration process, which concluded at the end of March 2015, when it was opened to the public [38]. The restoration won numerous national and international architecture awards, including the prestigious Europa Nostra award, the Spain Biennial of Architecture and Urbanism, and the Andalusian Tourism Award [39,40].

3. Literature review

If compared with the analysis of the environmental, social, or cultural impact, the analysis of the economic impact has been extensively analysed [41] on both a large scale — e.g., Croatia [42], Hawaii [43], Seychelles [44], and Okanagan [45] — and a small scale — e.g., in the Old Town of Edinburgh, UK [46], Small Island Developing States [47], Røros in Norway [48], and the Lower Silesia region of Poland [49]. Special mention is due to the work of Dans and González [50], who analysed the economic impact of investment actions in infrastructures in a region with special interests in the conservation of cultural heritage, such as Altarmira, Spain.

As early as 1988, Kottke [26] hinted at the growing need to analyse the economic impact associated with tourism development. The techniques used are usually multivariate regressions that try to find causal relationships between tourism spending and key variables such as GDP or employment [51]. Examples of these techniques are found in the studies by Balaguer and Cantavella-Jordá [9], who used Johansen's cointegration methodology to evaluate the role that tourism played in the long-term economic development of Spain or Fayissa, and Nsiah and Tadasse [52], who quantified the economic impact of tourism in Africa using an Arellano–Bond dynamic panel data estimation model.

Among the most used tools, it is worth highlighting input–output analysis (I–O) [43,53] and its extensions: the social accounting matrix (SAM) model and the applied computable general equilibrium (CGE) model [51]. To carry out these techniques, it is necessary to start from a Keynesian vision of tourism, where it can be seen as an exogenous component of spending with a total effect on the macro measurable through the multiplier effect [54]. The multiplier effects are at the centre of the analysis of the economic impact of tourism spending [51]. When governments need to plan, they must look at the multiplier effects that arise from sectors like tourism. Through a series of techniques, the direct, indirect, and induced effects of tourism spending are measured. To do this, the pattern of tourist spending is decomposed and multiplied by the regional value-added elements [55]. Milne [56] uses a modified version of the previous model applied to tourism with differential multipliers and shows that small local establishments generate more income locally than large ones. Tourism multipliers measure the effects of tourism spending on the economy. However, sometimes these multipliers have been confused in some areas of tourism research [57]. Archer and Fletcher [58] analysed the nature of tourist multipliers, as well as their limitations. Among them, it could be highlighted that it does not consider the possible intersectoral relationships that occur in tourism due to a long-term dynamic behaviour [54]. This is why I–O analysis is usually used, which places emphasis on sectoral links and interdependencies [59].

Both I–O and SAM analyses take advantage of the introduction of tourism satellite accounts in the national accounting systems [51]. Tourism satellite accounts are a well-known method for measuring the direct contributions that tourism consumption has on the national economy [60] and therefore the best tool to measure the economic importance of tourism and an information base for further tourism analysis [61]. They are a set of tables with national accounting methodology that presents economic parameters of supply and demand for a specific date [62,63]. The satellite accounts combine a set of concepts, definitions, classifications, and accounting rules, which include the official methodology to compare the contribution of tourism with other sectors of the economy [61]. In Spain, the latest ones are the accounting series 2016–2018 based on the year 2010 [10]. However, satellite accounts have limitations and cannot by themselves determine the specific impact of a change related to tourism in the economy, so their contribution is complementary to other models [64]. Pratt [43] notes that if the objective is to measure the economic contribution of the tourism industry, satellite accounts would suffice, while to analyse the impacts at an economic level, the most appropriate models are based on I–O analysis. While tourism satellite accounts are basically an accounting methodology, the others are simulation models that start from I–O models and allow estimating the net impacts on the entire economy resulting from a change in tourism spending [61].

This set of tool allows even to measure the three types of impacts defined by Miernyk [65] — direct, indirect, and induced — taking into account both intersectoral relationships and final demand [59,66,67]. I–O models are a complete method to study the economic impact of tourism due to their flexibility and level of detail, although they are not without limitations [68]. Although the model needs assumptions, the fact of trying to bring the model closer to reality makes it necessary to have requirements in the data that in terms of costs and time would make it unfeasible [26,57,66]. Despite the use of tourist multipliers, there are also criticisms of the model. In fact, from a theoretical point of view, the use of average values implies the availability of excess capacity to satisfy future demand. To counter this criticism, restrictions can be placed on the model to estimate multipliers in situations of limited capacity [69]. Fletcher [66] distinguishes two classifications: type I income multipliers, which show the amount of direct income plus indirect created by tourist spending, and type II income multipliers, showing the amount of direct, more indirect, and induced income created by tourism spending [70].

The economic impacts of tourism can also be studied from a modified vision of the I–O model known as SAM, which incorporates links with other agents that cause another effects through the distribution of institutional income [51]. Developed in the 1960s by Stone and Brown [71,72], this model is especially justified in economies with high unemployment figures and idle industrial capacity [59], serving as a central fulcrum for the development of an economic growth model [73]. As a result of this methodology, some research has been carried out in developing countries, such as Korea [74] and Brazil [75,76]. West and Gamage [77] analysed the economic impacts of tourism on the Australian economy, and Croes and Rivera [78], through SAM, evaluated the impact of tourism in Ecuador, concluding that tourism has the capacity to reduce inequality in the region.

Research has also dealt with Spanish SAM [79–81]. On the other hand, several studies have focused on the regional level in Spain. Some examples are the studies of de Miguel Vélez and Perez-Mayo [82], who focused their research on the Extremadura economy; Llop and Manresa [83], who focused on the Catalan region; and Cardenete and Moniche [84], whose research emphasised Andalusia. Unfortunately, the update of this matrix is much less recurrent, as the last available for the Andalusian region is the MCSAN-10, published by the Instituto de Estadística y Cartografía de Andalucía [IECA] in 2016 [85].

Many times, not only the economic impact of tourism is of interest but also the effects of tourism taxation. In these cases, Oosterhaven and Fan [59] suggest it may be more useful to use the applied CGE model. This model relaxes the SAM model assumptions about supply and demand, explicitly adjusting all prices, quantities, revenues, and equilibrium conditions [51]. Thus, Blake [86] researched the effect of tourism in Spain and was also interested in the effects of tourism taxation.

In this study, we aim to fill several key gaps in the existing research on the economic impact of tourism. Firstly, while previous studies have focused predominantly on large-scale analyses, such as national or regional levels, we contribute to the literature by examining the economic impact of tourism on a smaller scale. Our study focuses on the unique case of a specific location, allowing us to capture the intricacies and localized effects of tourism in this context. This localized perspective offers insights that may not be captured by larger-scale analyses and provides a valuable contribution to the existing research landscape.

Secondly, we implement the analysis beyond the traditional input-output (I–O) approach by incorporating the use of tourism satellite accounts (TSA) following the research line proposed by Munjal [87] or Tohmo [88] among others for national or regional locations. These models provide a more comprehensive and nuanced understanding of the economic impacts of tourism, considering both direct and indirect effects, as well as intersectoral relationships. By integrating these approaches, we offer a more robust assessment of the economic consequences of tourism development.

Therefore, this study represents more than just an application of the input-output approach. It leads the methodological possibilities further by incorporating TSA, and it provides a localized analysis that sheds light on the specific economic impacts of tourism in a specific location. By addressing these key gaps and offering a novel perspective, our study enhances the understanding of the economic consequences of tourism and advances the existing research in this field.

4. Materials and methods

4.1. Data

To calculate the economic effect of the restoration of the Caminito del Rey, a semi-structured personal survey with systematic random sampling was carried out in the two entrance areas to the Caminito del Rey during the second half of 2015, gathering a total of 404 valid surveys. It allows estimating the average expenditure of the potential visitor, tourist, or hiker, with some precision. In other words, which is with a sampling error of 4.88% considering infinite population and 95% confidence interval. In addition, socioeconomic characteristics were obtained, as well as the behaviour of tourists before and after the visit, satisfaction, loyalty, price, and generation of wealth in the region.

The survey was conducted to gather comprehensive data on visitors to the Caminito del Rey, with a primary focus on understanding their spending patterns. Participants were asked about their place of residence, accommodation preferences, duration of stay, and specific leisure activities they engaged in. Additionally, the survey inquired about their sources of information, reservation methods, transportation modes, and overall satisfaction with the destination.

Of particular interest was the analysis of tourists' expenditure during their visit to the Caminito del Rey. Participants were asked to provide details about their total budget for the trip, including specific allocations for accommodation, transportation, dining, grocery shopping, and other purchases. This information will be crucial in evaluating the economic impact of tourism in the region and developing effective strategies to maximize tourism-related revenue and job creation. By understanding the spending behaviour of visitors, policymakers and tourism stakeholders can make informed decisions to enhance the destination's offerings and ensure a positive and sustainable tourism experience for all.

The survey also aimed to gather feedback on visitors' intentions to revisit the Caminito del Rey and their likelihood of recommending it to others. Participants were asked about their engagement with social media, their post-visit sharing of news and photos, and their plans for future visits or exploration of similar destinations. This feedback provides valuable insights into the overall satisfaction and long-term potential of the Caminito del Rey as a tourism destination, enabling stakeholders to assess and improve the visitor experience and promote positive word-of-mouth marketing.

The symmetric I–O matrix used is the Marco Input-Output the Andalucía (MIOAN16) based on 2016, corresponding to the most up to date of those available in the IECA [89].[1] Using this matrix has the added advantage of being closest to the time when the data on respondents were collected. This implies that it is easy to assume that the structure of the expenditure vector has not been able to undergo significant changes, offering a true picture of the real impact on the economy of the rehabilitation of the Caminito del Rey. In order to determine said vector of expenditure, the individual consumption expenditure of non-resident households at basic prices was used as a reference, widely used in the analysis of the impact of tourism and well justified, for example, in the research of Archer [90] or Archer and Fletcher [91].

The use of the SAM has been ruled out in this analysis, as there is a significant temporal difference, in addition to a clear change in

[1] MIOAN16 is the statistical official operation which includes the input-output table for Andalusian. The last update of said matrix dates, as of the closing date of this manuscript, from 5 March 2020.

the economic trend, between the investment date and the date of the matrix. It should also be taken into account that since the SAM models intend to perform a more detailed modelling of the income redistribution process compared to the I–O models, which tend to focus on inter-industrial relationships [59], a significant deviation in the structure of the matrix could lead to a significant error in that distribution in details that we intend to analyse. In addition, this temporal disparity between matrices would force, to make both methodologies comparable, the use of an I–O matrix in the same time origin, which would cause the loss of the advantage of having a matrix located precisely at the time of realisation from the investment.

4.2. Model

I–O model requires the use of the well-known inverse Leontief matrix [92]. According to Briassoulis [41], the I–O model classifies all economic activities and arranges them in a matrix A, reflecting transactions with technical coefficients. Each element of the matrix a_{ij} measures the value of the output from sector i that is needed to produce one euro of output in sector j. Each sector produces an amount of output necessary to satisfy the demand caused by consumption, government spending, investments, and exports. In addition, there is a general equilibrium that the model assumes, and that is that the value of the output produced by each sector is equal to the output of the acquisitions of other sectors. If X is the output vector of all sectors and Y is the final demand vector, then the basic I–O model is as follows (equation (1)):

$$X = AX + Y \tag{1}$$

Solving for X:

$$X = (I - A)^{-1} Y \tag{2}$$

in equation (2), the final demand vector Y is multiplied by a multiplier matrix $(I - A)^{-1}$.

The estimation of these effects is conducted using the Leontief demand model, utilizing the latest available Input-Output table for Andalusia, compiled by the Institute of Statistics and Cartography of Andalusia. Specifically, the analysis employs the Symmetric Input-Output Table (SIOT), which represents a product-by-product breakdown of homogeneous activity branches within the economy. This approach enables the estimation of both direct and indirect economic impacts on the Andalusian economy.

The methodology encompasses the following steps.

1. Estimation of the demand impulse vector: The expenditure items from visitors to the Caminito del Rey are analysed and categorized by specific concepts. This information, obtained from the visitor spending survey, is used to estimate the demand impulse vector. The vector comprises various components, such as transportation (tourist and urban) in Málaga, taxi services, car rentals, different food categories (fast food, traditional Malaga cuisine, tapas, fine dining, etc.), shopping (souvenirs, fashion, accessories, supermarkets, etc.), organized tours, cultural events, tourist guides, museum and monument visits, sports and leisure activities, accommodation, personal services, medical expenses, and other miscellaneous expenses.
2. Sample extrapolation and classification: The sample data is extrapolated to the population, and the expenditure items are classified into the corresponding homogeneous activity branches based on the 80 divisions provided in the SIOT. This classification enables a more detailed analysis of the economic impacts across different sectors.

To accomplish this, two key sources of information are utilized.

- The Tourism Satellite Account of Andalusia 2015, developed by the Analysis and Tourism Statistics System of Andalusia (SAETA), provides insights into the demand impulse vector resulting from the expenditure of visitors to the Caminito del Rey.
- Impact assessment using the Leontief model: Once the exogenous variable, represented by the estimated demand impulse vector, is obtained, the impact on production is calculated using the Leontief model. This involves utilizing the inverse matrix of regional coefficients derived from the Input-Output framework. Each element in the inverse matrix provides detailed information on the interdependence between sectors, considering both direct and indirect effects. It quantifies the total utilization (direct and indirect) of products from one sector by another per unit of final demand.

The direct effects analysis focuses on identifying the immediate needs generated by visitors' expenditure and identifies the sectors that experience the most immediate growth in response to the demand impulse.

The indirect effects analysis assesses the secondary needs arising from interactions among different sectors, considering the infinite iterations within the production system and the network of technical coefficients.

It is important to note that the effects described, namely direct, indirect, and induced effects, are relevant for Social Accounting Matrix (SAM) multipliers but not for input-output multipliers.

Further analysis is recommended to delve into sectors that are predominantly local and determine their specific implications. Additionally, assessing the return on investment within the same year should be considered, accompanied by robust evidence, as a valuable tool for evaluating the successful implementation of a tourism product.

The results of applying this known methodology are detailed below.

5. Results

Table 1 presents the distribution of production generated by various productive branches in the regional economy, representing the ongoing impact of the Caminito del Rey rehabilitation. The table illustrates the total production and indirect production, expressed in euros and percentages.

Agriculture, stockbreeding, and fishing contribute 12.01% of the total production, amounting to €3,881,099.79, while their indirect production reaches €3,103,251.43, accounting for 19.05% of the total. The industry sector represents 12.12% of total production (€3,918,405.39) and 20.68% of indirect production (€3,368,029.01). Construction contributes €2,480,947.23 to the total production, representing 7.68%, while its indirect production amounts to €2,132,751.15 (13.09%). The services sector shows the highest share of total production at 68.19% (€22,041,486.75) and contributes 47.18% (€7,685,321.48) to the indirect production. Overall, the total production reaches €32,321,939.16, with an indirect production of €16,289,353.07.

Table 2 focuses on the specific year of rehabilitation, providing insights into the impact of the investment itself. Agriculture, stockbreeding, and fishing contribute 10.47% (€4,093,590.57) of the total production, with an indirect production of €3,315,742.21 (16.52%). Industry shows a share of 13.31% (€5,204,027.45) in total production and 23.18% (€4,653,651.07) in indirect production. Construction significantly increases its production during the year of rehabilitation, representing 17.12% (€6,695,218.09) of total production and 16.67% (€3,347,022.01) of indirect production. The services sector remains dominant, contributing 59.11% (€23,116,119.67) to total production and 43.63% (€8,759,954.40) to indirect production. The total production for the year of rehabilitation amounts to €39,108,955.79, with an indirect production of €20,076,369.69.

The following tables contain disaggregated data for each sector, including agriculture, stockbreeding, and fishing (Table 3), industry (Table 4), construction (Table 5), and services (Table 6). These tables present information on total production and indirect production in terms of monetary value (in euros) and percentages.

Table 3 highlights the importance of the agriculture, stockbreeding, and hunting sector, which accounts for a total production value of 926,333.83 euros, representing 23.87% of the overall production in the economy. This sector also generates significant indirect production value of 825,629.48 euros, contributing to 26.61% of the indirect production.

In Table 4, the industry sector is examined, with a total production value of 1,361,186.64 euros. The manufacture of beverages stands out as the most significant subsector, contributing 46.76% to the total production. The table also demonstrates the indirect production generated by each subsector, with the majority coming from the coke and refined petroleum products, as well as the chemical manufacturing industries.

Table 5 focuses on the construction sector, which shows a total production value of 2,480,947.23 euros. Building activities play a prominent role in this sector, accounting for 20.55% of the total production. It is noteworthy that the production and transmission of electrical energy have a considerable indirect production effect, contributing 35.01% to the indirect production.

Lastly, Table 6 provides insights into the service sector, which exhibits a total production value of 22,041,486.75 euros. The accommodation services and food and beverage services subsectors play vital roles in this sector, contributing 13.99% and 21.54% to the total production, respectively. Additionally, real estate activities have a significant indirect production effect, accounting for 11.50% of the indirect production.

Overall, these tables showcase the production and indirect production contributions of various sectors, emphasizing the importance of local investment in productive sectors that can generate substantial multiplier effects.

6. Discussion

This study focuses on the analysis of the economic impact of tourism actions and investments, aiming to enhance management, resource utilization, and the differentiation of tourist destinations. While the methodology may vary in terms of depth and complexity, it is crucial to provide information on the profitability of tourism investments in terms of their impact. The methodology proposed in this study is widely accepted and serves as an ideal standardized method for comparison. However, it is important to note that other methodologies exist, such as models derived from Input-Output (I–O) analysis, Social Accounting Matrix (SAM) and applied Computable General Equilibrium (CGE) models, as well as multivariate regression models that attempt to determine the contribution of tourism spending to variables like GDP or employment [51]. The range of methods for assessing the impact of tourism extends beyond those mentioned in this paper. Nonetheless, the methodology proposed in this study is well-positioned to serve as a fundamental management tool due to its ease of implementation and widespread usage.

Table 1
Distribution of the production generated by productive branches.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Agriculture, stockbreeding, and fishing	3,881,099.79	12.01	3,103,251.43	19.05
Industry	3,918,405.39	12.12	3,368,029.01	20.68
Construction	2,480,947.23	7.68	2,132,751.15	13.09
Services	22,041,486.75	68.19	7,685,321.48	47.18
Total	32,321,939.16	100	16,289,353.07	100

Table 2
Distribution of the production generated by branches of activity for the year of rehabilitation.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Agriculture, stockbreeding, and fishing	4,093,590.57	10.47	3,315,742.21	16.52
Industry	5,204,027.45	13.31	4,653,651.07	23.18
Construction	6,695,218.09	17.12	3,347,022.01	16.67
Services	23,116,119.67	59.11	8,759,954.40	43.63
Total	39,108,955.79	100	20,076,369.69	100

Table 3
Disaggregated data for agriculture, stockbreeding, and fishing sector.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Agriculture, stockbreeding, and hunting	926,333.83	23.87	825,629.48	26.61
Silviculture and logging	27,137.48	0.70	27,137.48	0.87
Fishing and aquaculture	158,727.87	4.09	88,602.39	2.86
Extractive industries	675,449.52	17.40	675,449.52	21.77
Processing and preserving of meat and production of meat products	535,291.50	13.79	341,131.27	10.99
Processing and preservation of fish, crustaceans, and molluscs	209,123.59	5.39	142,448.12	4.59
Preparation and preservation of fruits and vegetables	153,152.98	3.95	105,782.67	3.41
Manufacture of fats and oils	216,834.91	5.59	194,350.87	6.26
Manufacture of dairy products	257,552.77	6.64	105,831.71	3.41
Manufacture of milling, bakery, and pasta products	157,785.44	4.07	152,737.74	4.92
Other food industries. Tobacco	563,709.90	14.52	444,150.18	14.31
Total	**3,881,099.79**	**100**	**3,103,251.43**	**100**

Table 4
Disaggregated data for industry sector.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Manufacture of beverages	636,504.70	46.76	584,891.23	44.67
Textile industry, garment manufacturing, leather, and footwear industry	459,592.06	33.76	238,885.81	18.25
Wood and cork industry	64,137.92	4.71	64,137.92	4.90
Paper industry	157,550.10	11.57	150,504.36	11.50
Graphic arts and reproduction of recorded media	61,788.86	4.54	61,653.29	4.71
Coke and refined petroleum products. Chemical manufacturing	849,168.17	62.38	673,739.15	51.46
Manufacture of paints, cleaning supplies, perfumes, cosmetics, and other chemical products	328,476.93	24.13	284,958.28	21.76
Manufacture of pharmaceutical products	59,048.09	4.34	29,850.25	2.28
Manufacture of rubber and plastic products	205,380.25	15.09	203,804.11	15.57
Manufacture of cement, lime, gypsum, and their derivatives	25,060.30	1.84	25,060.30	1.91
Manufacture of ceramic products, tiles, bricks, and other baked earth for construction	22,076.39	1.62	19,952.91	1.52
Glass and stone industries	50,651.46	3.72	50,651.46	3.87
Metallurgy. Manufacture of iron, steel, and ferro-alloy products	257,407.38	18.91	257,407.38	19.66
Manufacture of metal products, except machinery and equipment	188,220.04	13.83	188,220.04	14.38
Manufacture of computer, electronic, and optical products	187,018.53	13.74	167,988.31	12.83
Manufacture of electrical material and equipment	128,177.24	9.42	128,177.24	9.79
Manufacture of machinery and equipment	149,990.30	11.02	149,990.30	11.46
Manufacture of motor vehicles, trailers, and semi-trailers	88,156.67	6.48	88,156.67	6.73
Total	**1,361,186.64**	**100**	**1,309,258.96**	**100**

I–O analysis is widely employed to measure the economic impact of tourism on both national and regional economies [77,93], It has also been utilized to measure the economic impact of specific tourism actions [94]. Thus, this tool enables comparisons at various scales with minimal requirements.

The rehabilitation of the Caminito del Rey serves as a notable success case and exemplifies sustainable development in an economically and tourism-deprived area [36]. Presently, the Caminito del Rey possesses the ability to attract tourists and has the potential to serve as a foundation for developing a sustainable and distinctive economy. The results obtained from the I–O analysis suggest that the economic impact of the Caminito del Rey's rehabilitation amounted to 20 million euros. Furthermore, the indirect

Table 5
Disaggregated data for construction sector.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Shipbuilding	5356.81	0.22	5356.81	0.25
Manufacture of other transport material, except shipbuilding	44,924.01	1.81	44,924.01	2.11
Furniture manufacturing	48,549.26	1.96	48,549.26	2.28
Other manufacturing industries	299,163.78	12.06	110,578.31	5.18
Repair and installation of machinery and equipment	286,367.84	11.54	286,367.84	13.43
Production, transmission, and distribution of electrical energy	868,127.87	34.99	746,731.01	35.01
Gas, steam, and air conditioning supply	186,121.90	7.50	171,132.12	8.02
Collection, purification, and distribution of water	139,041.01	5.60	115,817.04	5.43
Collection and treatment of wastewater; collection, treatment, and disposal of waste; valorisation; decontamination activities and other waste management services	93,429.91	3.77	93,429.91	4.38
Building	509,864.85	20.55	509,864.85	23.91
Total	**2,480,947.23**	**100**	**2,132,751.15**	**100**

production generated in the construction sector, which experiences the least impact, almost reaches the level of investment in rehabilitation. However, caution must be exercised in analysing these figures, as they may be lower due to the initial assumptions of the model [63]. Nevertheless, given its ease of use and widespread applicability, I–O analysis remains an essential methodology for long-term regional development and facilitates comparisons with other investments analysed using a similar approach. For instance, Dans and González [50] estimated the direct and indirect economic impacts of Altamira visitors on the regional economy of Cantabria, Spain, using I–O analysis.

7. Conclusions

In summary, this study significantly contributes to the existing body of knowledge regarding the economic ramifications of tourism endeavours and investments, with specific focus on the rehabilitation efforts undertaken at the Caminito del Rey. By highlighting the inherent compatibility between sustainability and profitability in the realm of tourism development, this research underscores the necessity of employing standardized methodologies for the comprehensive evaluation of impacts.

7.1. Theoretical implications

The findings of this study have theoretical implications for regional and economic development. By examining the interdependencies and linkages between sectors, it contributes to the understanding of how investments in specific sectors can generate positive spillover effects on the overall economy.

The methodology proposed in this study, which offers simplicity and widespread use, proves to be an ideal standardized method for comparison. However, it is crucial to acknowledge that there are alternative methods, such as I–O analysis models, SAM models, CGE models, and multivariate regression models, which attempt to assess the contribution of tourism spending to variables like GDP and employment.

Moreover, the analysis of disaggregated data pertaining to various sectors, including agriculture, stockbreeding, and fishing; industry; construction; and services, reveals discernible patterns and intricate interrelationships, further augmenting our understanding of the subject matter.

7.2. Practical implications

The results highlight the need for policymakers and investors to prioritize sectors that exhibit strong indirect production effects. By strategically allocating resources and fostering local investment in these sectors, governments can stimulate economic growth, job creation, and sustainable development.

The rehabilitation of the Caminito del Rey stands as a recognized success case of sustainable development in an economically and touristically challenged area. The economic impact of the rehabilitation, estimated through I–O analysis, reached 20 million euros. While interpreting these figures, caution is advised due to the potential deviations resulting from the initial assumptions of the model. Nonetheless, the simplicity and extensive use of I–O analysis make it an essential tool for managing regional development and comparing investments with similar analyses. It is important to avoid misusing the analysis data for political purposes and consider other measures that evaluate the sustainability of tourism investments.

Consequently, these conclusions contribute to the broader discourse on effective management strategies, optimal resource allocation, and the strategic positioning of tourist destinations for sustainable and thriving tourism sectors.

Destination managers can leverage this tool to diversify their offerings systematically, utilizing a common methodology to analyse investments that provide alternatives to sun-and-beach tourism and address issues of overcrowding. However, it is equally important to incorporate other measures that evaluate the sustainability of tourism investments [20]. Additionally, it should be acknowledged

Table 6
Disaggregated data for service sector.

	Total Production		Indirect Production	
	Amount (euros)	Percentage (%)	Amount (euros)	Percentage (%)
Sale and repair of motor vehicles and motorcycles	91.920.43	0.42	88,850.51	1.16
Wholesale trade and trade intermediaries, except motor vehicles and motorcycles	1,233,424.95	5.60	834,251.43	10.86
Retail trade, except motor vehicles and motorcycles	1,023,181.19	4.64	192,221.78	2.50
Land and pipeline transportation	1,665,140.82	7.55	711,512.47	9.26
Maritime and inland waterway transport. Air transport	563,021.29	2.55	118,879.68	1.55
Storage and activities related to transport	760,625.30	3.45	739,737.67	9.63
Postal and postal activities	60,174.48	0.27	50,711.32	0.66
Accommodation services	3,083,922.95	13.99	156,123.00	2.03
Food and beverage services	4,747,279.40	21.54	43,062.52	0.56
Edition	67,231.97	0.31	51,279.27	0.67
Cinematographic, video, and television programme activities; sound recording and music publishing; radio and television programming; and broadcasting activities	137,358.94	0.62	65,073.23	0.85
Telecommunications	441,331.78	2.00	299,142.31	3.89
Programming, consulting, and other computer-related activities; information services	118,953.40	0.54	118,953.40	1.55
Financial services, except insurance and pension funds	544,290.62	2.47	443,101.02	5.77
Insurance, reinsurance, and pension funds, except compulsory Social Security	218,669.83	0.99	116,042.19	1.51
Auxiliary activities to financial services and insurance	135,437.95	0.61	135,437.95	1.76
Real estate activities	2,659,065.41	12.06	883,439.09	11.50
Legal and accounting activities, activities of the headquarters, business management consulting activities	444,474.72	2.02	442,164.99	5.75
Architectural and engineering technical services; technical testing and analysis	104,895.30	0.48	104,895.30	1.36
Research and development	0.00	0.00	0.00	0.00
Advertising and market research	355,942.81	1.61	355,942.81	4.63
Other professional, scientific, and technical activities	168,708.30	0.77	168,708.30	2.20
Veterinary activities	3082.96	0.01	2922.05	0.04
Rental activities	625,064.17	2.84	357,249.88	4.65
Employment-related activities	74,145.86	0.34	74,145.86	0.96
Activities of travel agencies, tour operators, reservation services, and related activities	82,094.16	0.37	27,505.80	0.36
Security and investigation activities	104,841.79	0.48	104,841.79	1.36
Services to buildings and gardening activities	228,031.98	1.03	228,031.98	2.97
Administrative office activities and other auxiliary activities to companies	183,563.92	0.83	183,563.92	2.39
Public administration and defense, compulsory social security. Extraterritorial organisations	3821.24	0.02	3821.24	0.05
Market education	114,507.22	0.52	40,979.86	0.53
Non-market education	0.00	0.00	0.00	0.00
Market health activities	211,722.54	0.96	75,125.57	0.98
Non-market health activities	0.00	0.00	0.00	0.00
Market social service activities	485.18	0.00	485.18	0.01
Non-market service activities	0.00	0.00	0.00	0.00
Creative, artistic and entertainment activities; libraries, archives, museums, and other cultural activities; gambling and betting activities	926,011.56	4.20	108,761.00	1.42
Sports, recreational, and entertainment activities	444,141.87	2.02	116,633.23	1.52
Associative activities	139,727.93	0.63	139,727.93	1.82
Repair of computers, personal effects, and household items	56,966.44	0.26	56,966.44	0.74
Other personal services	218,226.08	0.99	45,029.51	0.59
Total	22,041,486.75	100	7,685,321.48	100

that both suppliers and demanders adapt their behaviour in response to price changes resulting from investments, leading to deviations in economic impact that cannot be estimated by I–O or SAM models [95]. Scholars, such as Rossouw and Saayman [64], have suggested applied general equilibrium models as an alternative. It is worth noting that the term "CGE models" is often used interchangeably in the literature, referring more to the applied theoretical framework than to the computational calculation method.

7.3. Limitations and future lines of research

Nonetheless, it is crucial to acknowledge the limitations inherent in this study and recognize the need for future research to address these constraints and explore additional avenues for investigation within this domain.

The input-output (I–O) model, commonly used to analyse the economic impact of tourism, has several limitations. Firstly, it fails to capture the dynamic intersectoral relationships that exist in the economy, leading to an oversimplification of the economic impacts. Secondly, the model heavily relies on extensive and accurate data, which can be time-consuming and costly to collect. Data limitations and inaccurate assumptions can affect the reliability of the model's results. Additionally, the use of average values and the assumption of excess capacity can result in overestimations of the economic impacts, as it does not consider constraints in resources, infrastructure, or environmental capacity. The I–O model, although a valuable tool, cannot determine specific impacts and requires complementary

models and analyses to provide a comprehensive understanding of the economic effects of tourism.

Future research can explore other impact models, consider additional aspects of investments (e.g., infrastructure improvements, socio-cultural and environmental impacts), and examine spill-over effects on complementary tourist destinations. It is also essential to account for the potential deviations resulting from behavioural adaptations by suppliers and demanders and explore alternative models like applied general equilibrium models for a comprehensive analysis of tourism impacts. Additionally, future research could explore the long-term sustainability of the economic impact and further investigate the intersectoral relationships and dynamic behaviour within the tourism industry.

Author contribution statement

German Gemar: Conceived and designed the experiments; Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper. Ismael P. Soler; Laura Moniche: Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data.

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Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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