sustainability

MDPI

Article

Evaluating the Efficiency of Public Spending on Tourism as a Driver of Institutional Sustainability: Evidence from Southern Italy's Municipalities

Giuseppe Parete, Giovanni Ottomano Palmisano *, Annalisa De Boni, Rocco Roma and Claudio Acciani

Department of Soil, Plant and Food Sciences (DiSSPA), University of Bari Aldo Moro, Via Amendola 165/a, 70126 Bari, Italy; giuseppe.parete@uniba.it (G.P.); annalisa.deboni@uniba.it (A.D.B.); rocco.roma@uniba.it (R.R.); claudio.acciani@uniba.it (C.A.)

* Correspondence: giovanni.ottomanopalmisano@uniba.it

Abstract

Tourism is a key driver of regional economies, but concerns are often raised about the effectiveness with which public resources are managed and translated into tangible outcomes. Despite its importance, research on the efficiency of public spending on tourism remains scarce and mostly confined to national scales. Therefore, this study examines how Apulian municipalities (Italy) convert public tourism expenditure into measurable tourism results, providing new evidence on the efficiency of local governance in this sector. The analysis applies a two-step econometric framework combining Stochastic Frontier Analysis (SFA) and Multiple Linear Regression to data from 247 municipalities over the period from 2020 to 2023. The results reveal generally low average efficiency levels, with only a few coastal destinations achieving high performance. The regression analysis identified key structural and territorial drivers of efficiency, including accommodation capacity, cultural production, coastal and environmental quality, and the presence of agritourism and campsites. The findings suggest that efficiency depends more on the ability of local administrations to coordinate tourism, cultural, and environmental policies than on the amount of spending. Overall, the study provides empirical evidence that an efficient allocation of tourism funds is crucial for achieving long-term sustainability goals, offering practical insights for designing more effective tourism policies.

Keywords: local governance; regional development; territorial planning; tourism policy; tourism efficiency; efficiency analysis; Stochastic Frontier Analysis (SFA); multiple linear regression

Academic Editor: Tsung Hung Lee

Received: 30 October 2025
Revised: 21 November 2025
Accepted: 28 November 2025
Published: 1 December 2025

Citation: Parete, G.; Ottomano Palmisano, G.; De Boni, A.; Roma, R.; Acciani, C. Evaluating the Efficiency of Public Spending on Tourism as a Driver of Institutional Sustainability: Evidence from Southern Italy's Municipalities. *Sustainability* **2025**, *17*, 10768. https://doi.org/10.3390/su172310768

1. Introduction

Tourism is a complex economic sector that interacts with many other industries and generates a significant impact on local development [1]. Its contribution extends beyond direct revenues from hotels, restaurants, and attractions, to encompass a broad network of related sectors such as transportation, agriculture, crafts, culture, and retail [2–5]. This interconnection makes tourism a priority for public administrations, who recognize its economic potential but must also address its vulnerabilities.

When managed properly, tourism can generate long-term growth and well-being for local communities. However, in the absence of effective governance, short-term economic benefits often coexist with negative social, environmental, and economic externalities [6].

The essence of sustainable tourism lies in the balance between opportunity and risk managing tourism in a way that maximizes the benefits while limiting the negative impacts, ensuring equitable and lasting development that is compatible with the preservation of local resources [7]. In this regard, integrating sustainability principles into tourism management and policy has become a central challenge at both local and international levels [8]. Over the past two decades, this shift has driven a profound rethinking of tourism models and their impacts, leading to new approaches that prioritize climate mitigation and adaptation, cleaner and smarter technologies, the safeguarding of cultural and natural heritage, rural development, and the adoption of sustainability standards [9,10]. These changes reflect a growing recognition that tourism cannot be seen merely as an engine of economic expansion but must evolve into a system capable of balancing growth with ecological and social responsibility.

Despite this growing awareness, the incorporation of scientific evidence into tourism policy remains strongly limited [11]. As Aall [12] observes, many public strategies are still designed to "support tourism" rather than making tourism itself more sustainable. The focus often remains on increasing arrivals and investment rather than on improving the governance, efficiency, and accountability in the use of public resources. This gap highlights the persistent challenge of translating sustainability principles into concrete, long-term policy actions. Furthermore, fragmented or uncoordinated management actions are rarely sufficient to address the complex challenges of modern tourism [13]. Achieving sustainable growth requires structured public policies that operate at different governance levels—from accommodation regulation to service management and destination promotion.

However, the actual effectiveness of public management in tourism remains debated and relatively underexplored [14,15]. As Aguinis et al. [15] note, many tourism policies are based on the neoclassical concept of market failure, which assumes that market mechanisms alone cannot allocate resources efficiently. Public intervention thus aims to correct such inefficiencies through financial, regulatory, informational and partnership-based instruments involving both the private sector and third-sector actors [15,16]. Public promotion, in particular, is one of the main instruments through which tourist destinations seek to strengthen or maintain their competitiveness, and to ensure a steady or increasing flow of visitors [17]. Yet, the literature provides conflicting evidence regarding the effectiveness of public promotion, as travellers' perceptions are influenced by multiple and often interrelated factors [18,19]. Therefore, the key issue is efficiency: public spending on promotion and structural interventions should contribute to collective well-being by improving the distribution of tourist flows and resources [20].

The efficient use of public tourism resources should not only enhance the economic competitiveness of destinations but also contribute to achieving the Sustainable Development Goals (SDGs) within the UN 2030 Agenda for Sustainable Development [21]. Although tourism is not explicitly mentioned among the SDGs, numerous studies highlight its cross-cutting role in promoting economic, social, and environmental sustainability [22–24]. Particularly, the strongest connections are typically found with

- SDG 8—Decent Work and Economic Growth: public spending and promotion can support local employment and enterprises, especially in rural and marginalized areas [25,26];
- SDG 11—Sustainable Cities and Communities: targeted investments can foster responsible travel behaviour and reduce pressure on host communities [27];
- SDG 12—Responsible Consumption and Production: tourism communication can promote sustainable practices, enhance local culture, and encourage the use of endogenous resources [28].

Despite its relevance, studies on the efficiency of public spending on tourism remain limited and focusing mostly on macroeconomic scales, national or regional, rather than local contexts [29,30]. Yet, efficiency at the local level is essential to understand how effectively public resources are transformed into measurable outcomes such as arrivals and overnight stays.

Although public spending can have a positive effect on tourism flows, its efficiency depends on multiple contextual factors that can amplify or weaken its impact [29,31]. Local drivers of efficiency remain poorly understood; most studies address structural or economic dimensions, overlooking the micro-level dynamics that shape tourism systems. There is a lack of evidence on how local administrations, which are primarily responsible for managing tourism promotion, differ in their ability to use public funds efficiently. Developing analytical tools capable of identifying efficient and inefficient spending patterns, and explaining why some municipalities perform better than others, is therefore essential. Such evidence could inform financial planning, improve accountability, and guide local development strategies. By helping to allocate resources where they can generate the highest impact, these analyses can contribute to more effective and sustainable tourism governance.

This research contributes to the ongoing debate through a two-step econometric approach. Firstly, it identifies which municipalities are more or less efficient at converting public spending into tourism outcomes. Second, it examines which structural and territorial factors explain the observed differences. The analysis first applies the Stochastic Frontier Analysis (SFA), a well-established method for estimating efficiency when observed outputs differ from their potential frontier [32], and than applies the multiple linear regression to identify the main drivers of efficiency.

The case study focuses on the Apulia region (Southern Italy), where municipalities are the main administrative units responsible for tourism management and promotion. Apulia is well-suited to this analysis: the tourism sector has grown rapidly in recent years, contributing around 10% to the regional GDP [33], and benefiting from coordinated promotion policies led by the regional agency "Pugliapromozione". However, persistent imbalances remain between coastal and inland areas [34], making Apulia an ideal context to assess local differences in public spending efficiency and their implications for sustainable tourism development.

2. Materials and Methods

2.1. The Apulia Region: A Southern Italian Tourism Hub

Apulia is a major tourist region in southern Italy whose appeal has grown steadily due to targeted promotional campaigns and public investments in infrastructures, culture, and services [33,35]. Its recent success stems from a shift away from purely conservation-oriented strategies towards an integrated approach to managing and enhancing the cultural and natural heritage [35].

Despite this growth, Apulia region faces pronounced seasonality and spatial concentration of tourism. Indeed, visitor flows peak in summer (June–August) and most demand focuses on the Adriatic coast [34]. This uneven distribution creates environmental and economic challenges, including over-tourism in coastal destinations and underdevelopment of inland areas.

To address these imbalances, the creation of the agency "Pugliapromozione" in 2011 and the regional tourism plan "Puglia365" in 2016 aimed to diversify tourism and encourage off-season travel through destination marketing and stronger local coordination [36].

The Apulia region is divided into 257 municipalities. Beyond the provincial capitals, the largest urban centres are mostly located along the Adriatic coast, with smaller concentrations in central and southern inland areas (Figure 1).

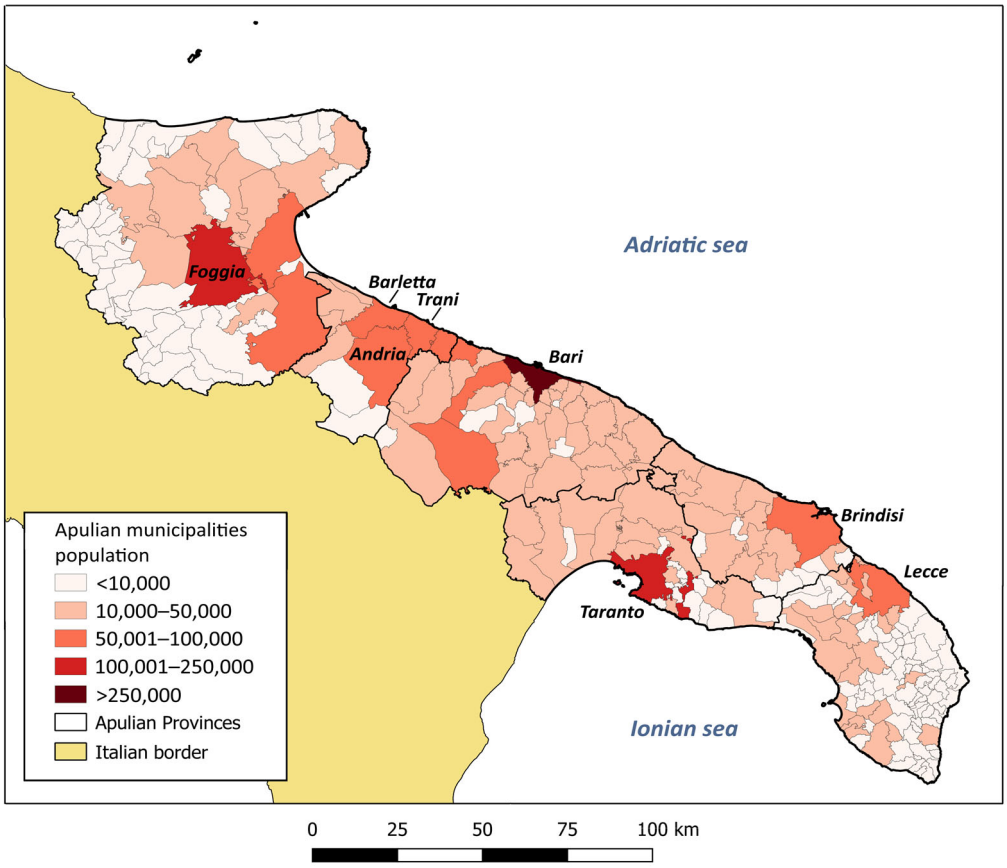

Figure 1. Map of the Apulia region showing administrative boundaries and classes of municipal population (authors' elaboration).

The role of municipalities in managing and promoting tourism is formally recognized by the Italian law. According to the Tourism Code (Legislative Decree No. 79/2011 [37], as amended by Legislative Decree No. 62/2018 [38]), the state and regions delegate to the local administrations key responsibilities for implementing tourism policies, in accordance with the principle of subsidiarity. Municipalities are thus responsible for developing cross-sectoral and infrastructural policies that improve the quality of tourism supply, in coordination with the private actors involved in promotion and sectoral development. The municipal tourism functions can be grouped into two main areas:

- Basic tourism services—information, hospitality, entertainment, and visitors' assistance activities, with a particular focus on the "Tourist Information Offices", which serve as essential contact points for tourists;
- Local tourism promotion initiatives—projects and campaigns implemented by municipalities to enhance and strengthen the image of local tourism products.

To support these activities, the municipalities may allocate part of their budgets to tourism promotion and enhancement. The Glossary of Missions and Programmes (ARCONET, Italian Ministry of Economy and Finance—MEF) provides a detailed description of the range of interventions available to local administrations, from management to promotion and monitoring (Figure 2) [39].

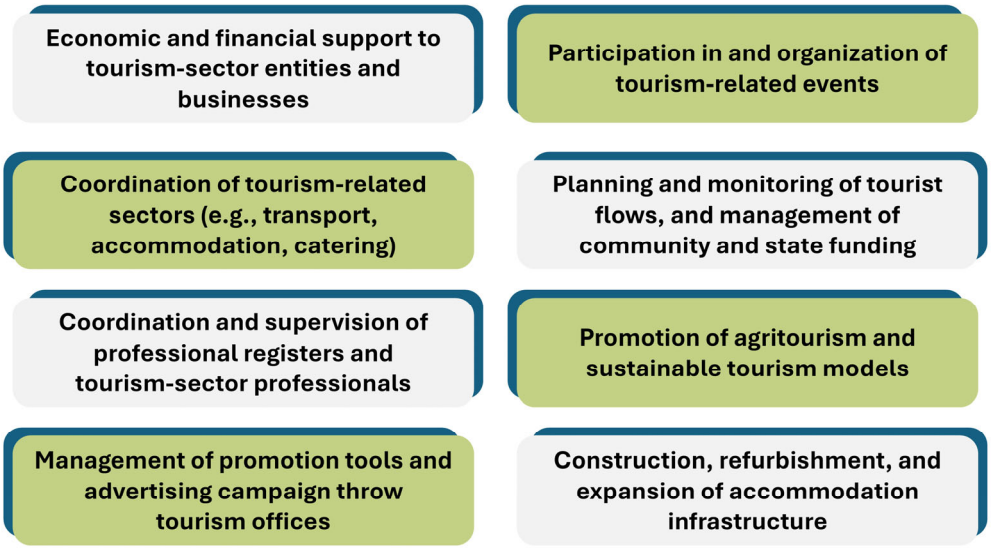

Figure 2. Development and promotion actions for tourism in Italian municipalities (authors elaboration from MEF [39]).

Although the regulatory framework assigns a central role to municipalities, local tourism management often suffer from a lack of financial and human resources. Therefore, assessing the quality and efficiency of public spending is essential, i.e., the ability to achieve planned goals with the least use of resources. This principle supports more equitable and effective tourism governance, and contributes to the fiscal sustainability of local administrations [40], which is a core objective of Italy's public finance framework established by Law No. 196/2009 [41] and subsequent amendments [42].

2.2. Methodological Framework

This research evaluates the efficiency of public spending on tourism in Apulian municipalities, pursuing two main objectives: (i) identifying which municipalities are the most and least efficient at converting public expenditure into tourism outcomes (arrivals and overnight stays); and (ii) to analyzing the structural, territorial, and qualitative factors that explain differences in efficiency.

To achieve these goals, a two-step econometric framework combining the Stochastic Frontier Analysis (SFA) and the multiple linear regression was applied. This approach is widely used in efficiency studies, because it enables the estimation of technical efficiency levels while exploring the underlying drivers across decision-making units, distinguishing them from random variation. This method has been successfully used to evaluate public sector performance [43–45], confirming its versatility and replicability in diverse policy contexts.

The analysis covered 247 of Apulia's 257 municipalities. However, the following ten municipalities were excluded due to data confidentiality restrictions: Anzano di Puglia (FG), Binetto (BA), Casalvecchio di Puglia (FG), Castelluccio Valmaggiore (FG), Faggiano (TA), Monteiasi (TA), Montemesola (TA), Monteparano (TA), Panni (FG), and Stornarella (FG).

2.3. The Stochastic Frontier Analysis (SFA)

SFA is a well-established technique for estimating the technical efficiency of production units when observed outputs deviate from their potential maximum potential due to inefficiency and random shocks [46]. Unlike deterministic approaches, SFA explicitly separates inefficiency from statistical noise, providing more robust and realistic performance estimates [47]. Originally developed for analyzing firm-level productivity [46,48],

SFA has been increasingly applied to evaluate the efficiency of public spending, helping to determine how effectively resources are transformed into policy outcomes [45,47].

In this study, each municipality is treated as a production unit, where the input is the public expenditure on tourism (Figure 2), and the tourism flows, measured separately as arrivals and overnight stays are the output [42].

As the effects of public investment typically occur with a time lag, a one-year delay was introduced between spending and outcomes, namely the expenditures for the period 2020–2023 were matched with the tourist flows for the period 2021–2024.

While the literature shows that public expenditure may generate both short and long-term effects, the temporal structure of these effects varies considerably on institutional settings, policy domains, and national contexts [49]. In the case of Apulia region, the tourism sector is strongly seasonal [34], and the regional monitoring system operates on an annual basis [50]. Given these features, assuming a one-year lag between public tourism expenditure and observed performance represents a reasonable and empirically coherent approximation of the delayed impact of such policies. This choice reflects a context-specific methodological compromise based on the structure of the sector and the available data.

To manage zero values and avoid distortions in distribution, all continuous variables were transformed using a log $(x + 1)$ function, which ensures consistency in datasets with heterogeneous scales and occasional zero entries. The production function follows a log–log Cobb–Douglas specification (1), which has two main advantages: (i) the coefficients can be directly interpreted as elasticities of output with respect to input, and (ii) it yields stable estimates with relatively few parameters, making it suitable for analyses involving diverse local contexts [51,52].

$$\ln(Y_{it}) = \beta_0 + \beta_1 \ln(X_{it}) + v_{it} - u_i \quad (1)$$

where Y_{it} is the tourism flow, X_{it} is the public tourism expenditure, v_{it} is the random error term, and u_i is the technical inefficiency associated with municipality i. The resulting efficiency scores range from 0 to 1, where 0 indicates minimum efficiency and 1 represents full efficiency.

Although the Translog specification generally offers more flexibility, its advantages are less meaningful when only one input is available—as in this research, where municipal public spending on tourism represents the sole production factor. Under this condition, a Translog model collapses into a simplified form and does not enable the estimation of interaction or second-order terms, which is one of its main strengths. Considering the structure of the available data, and the view that functional-form selection should reflect the objectives and practical constraints of the analysis [53], the Cobb–Douglas specification was retained as the most appropriate choice for this application. More flexible functional forms may be suited to future research involving multi-input settings.

Moreover, the SFA adopts a time-invariant inefficiency model [52], whereby each municipality is assigned a constant inefficiency value for the duration of the study period (2021–2024). This choice is supported by two main considerations: firstly, the observation period is relatively short (four years) and does not include major structural shocks in the regional tourism system; secondly, the analysis aims to capture structural inefficiency rather than transient variations caused by temporary imbalances, such as adverse climatic events, residual effects of COVID-19 restrictions, or changes in local administrations. Therefore, estimating a single inefficiency value for the entire period helps to isolate long-term performance patterns in municipalities. In addition, the time-invariant specification aligns the efficiency scores with the territorial indicators used in the regression analysis, many of which are available as multi-year averages or for specific years.

To investigate whether public spending and tourism outcomes might influence each other, we performed Durbin–Wu–Hausman (DWH) tests using a two-year lag of municipal

tourism expenditure as an instrumental variable (IV) [54]. The tests indicated the presence of endogeneity for both arrivals and overnight stays. To address this issue, we adopted a control-function approach (CFA): first, we estimated an IV regression, extracted the residuals, and then, we included these residuals as an additional regressor within the SFA model [52]. The first-stage results show an F-statistic above the conventional threshold of 10, confirming that the lagged expenditure variable acts as a strong instrument. This procedure enabled the frontier model to capture the component of spending that correlates with unobserved shocks, yielding more reliable elasticity estimates under endogeneity [54].

Finally, we conducted robustness tests on the distributional assumptions for the inefficiency term by comparing a truncated-normal with a half-normal specification. These tests were used to identify the most suitable distribution for this study; the truncated-normal model showed better statistical performance and was therefore retained.

All SFA estimations and robustness tests were conducted using the Package "Frontier" (version 1.1-8 2025), implemented into the "R programming language for statistical computing" [55] (see Supplementary Materials).

2.4. Regression of Structural and Territorial Factors

In the second stage, the average efficiency scores obtained from the SFA were used as the dependent variable in two separate multiple linear regression analyses, one referring to tourist arrivals and the other to overnight stays.

The independent variables included a wide range of structural, geographic, and qualitative indicators describing Apulian municipalities. A stepwise regression procedure was employed to progressively include the variables based on their statistical contribution to the analytical fit [56]. This approach is well suited to datasets with numerous potentially correlated predictors, as it identifies the most relevant factors while improving interpretability and reducing overfitting risks. Before estimation, multicollinearity was checked using both the Variance Inflation Factor (VIF) and the Pearson's correlation coefficient to ensure robustness and minimize spurious associations among predictors.

All regression analyses were performed by using "JASP" software (version 0.19.3) [57].

Finally, Univariate Moran's I tests were conducted on the regression residuals, using Queen contiguity weights, to estimate the spatial autocorrelation of the regression residuals. This diagnostic test was performed to verify whether spatial autocorrelation might bias the estimated relationships, using the open-source software "GeoDa" (version 1.22.0.21) [58,59].

In order to identify the drivers of efficiency, a comprehensive dataset was compiled that described the tourism and territorial characteristics of Apulian municipalities was compiled. The variables were grouped into two categories:

- Simple indicators (SI): these are direct, elementary measures of municipal characteristics (e.g., number of beds per 1000 inhabitants, distance to the nearest UNESCO site).
- Composite indicators (CI): these aggregate several simple indicators representing the same conceptual dimension (e.g., economic level, naturalness of the territory), to capture multidimensional phenomena and enhance interpretability.

The joint use of both simple and composite indicators served two complementary purposes: (i) mitigating the multicollinearity by summarizing shared variance among the correlated variables; and (ii) preserving the richness of information contained in the dataset, avoiding arbitrary exclusions while maintaining fine territorial granularity.

Table 1 reports the list of simple indicators (SI) included in the regression analysis.

Table 1. Simple indicators (SI) used as predictors in the regression analysis.

Simple Indicator (SI)	Description	Unit of Measure	Reference Year and Data Source
SI1—Accommodation density per 1000 residents	Number of accommodation beds per 1000 residents	No.	Mean (2021–2024)—Puglia DMS [50]
SI2—Density of accommodation facilities per 10 km^2	Number of accommodation facilities per 10 km^2	No.	Mean (2021–2024)—Puglia DMS [50]
SI3—Tourism-related services per 1000 residents	Average number of tourism-related services per 1000 residents (excluding accommodations)	No.	2023—Puglia DMS [50]
SI4—Length of pedestrian and cycling routes per 10 km^2	Total length of pedestrian trails, hiking paths, and cycle routes per 10 km^2	No.	2024—SIT Puglia and Web research [60]
SI5—Geosites and hiking destinations within 15 km of the urban centre	Number of geological sites (e.g., caves, dolines) and excursion destinations within 15 km of the municipal centre	No.	2024—"Geositi della Puglia" Project; Federation of Apulian Speleology and Puglia DMS [50,61,62]
SI6—Agritourism facilities and campsites per 10 km^2	Number of agritourism facilities and campsites per 10 km^2	No.	2024—Puglia DMS [50]
SI7—Distance from the nearest coastal area	Rank of travel time to the nearest coastal zone	Ranking 1–4 (from longest to shortest distance)	2024—Google Maps
SI8—Density of architectural heritage sites per 10 km^2	Number of architectural heritage sites in good condition per 10 km^2	No.	2024—"CartApulia" Project [63]
SI9—Museums and archeological parks per 1000 residents	Number of archeological parks and museums per 1000 residents	No.	2024—Puglia DMS and Google Maps [50]
SI10—Certified agri-food products	Number of certified PDO/PGI/TSG products and Slow Food Presidia produced in the municipality	No.	2024—MASAF [64–67]
SI11—Distance from the nearest UNESCO site	Rank of travel time to the nearest UNESCO site	Ranking 1–5 (from longest to shortest distance)	2024—Google Maps

The composite indicators were developed using a two-step procedure for each municipality and thematic group:

- Standardization: each simple indicator was converted into a Z-score based on the regional mean and standard deviation. For negatively oriented variables (e.g., distance to airports), the values were reversed so that higher scores consistently reflected more favourable conditions [68,69].
- Aggregation: composite indices were computed as the arithmetic mean of standardized values, assigning equal weight to each component within the group [68,69].

The Z-score standardization allows for cross-variable comparability and emphasizes the dimensions in which the municipalities differ most. Consequently, the composite indi-

cators highlight territories that deviate significantly from the regional average, revealing local strengths and weaknesses that may not emerge from the raw data alone [68]. The use of the simple arithmetic mean was guided by the following three principles: (i) ensuring methodological transparency and replicability; (ii) avoiding arbitrary weighting unsupported by theory; (iii) maintaining internal consistency for cross-municipal comparison. As noted by Mazziotta and Pareto [69], while more complex methods can be applied, such as the Mazziotta–Pareto Index (MPI) or Principal Component Analysis (PCA)—the arithmetic mean remains a reliable and widely accepted choice, especially in small-scale territorial analyses. In summary, the construction of composite indicators maximized data usability while providing a clear and interpretable framework for identifying the structural and territorial drivers of efficiency. Table 2 lists the composite indicators (CIs) and their respective component variables.

The selection of simple and composite indicators was guided by both conceptual and practical considerations, and it was tailored to the specific features of the Apulian tourism system and the availability of reliable municipal data. These indicators capture the multidimensional nature of local tourism development—cultural, natural, economic, and infrastructural, in line with the strategic priorities outlined in the regional tourism plan "Puglia365" [36]. This alignment is also reflected in the themes and products promoted through the official regional tourism platform "ViaggiareinPuglia.it" [70]. Most indicators are derived from official datasets provided by the "Pugliapromozione" agency and the National Institute of Statistics (ISTAT), ensuring transparency and replicability. At the same time, the inclusion of economic and accessibility variables is based on broader evidence from the literature, which highlights their key role in influencing tourism performance and territorial attractiveness [71,72]. Overall, the indicator framework provides a comprehensive and realistic representation of the local tourism system, balancing the analytical accuracy with the practical constraints of data availability.

Table 2. Composite Indicators (CI)—and relative Simple Components—used as predictors in the regression analysis.

Composite Indicator (CI)	Simple Components	Unit of Measure	Reference Year and Data Source
CI1—Composite indicator of economic development	Average employment rate—Positive polarity	%	Mean (2019–2021–2022)—ISTAT [73]
	Value added of local production units—Positive polarity	€	Mean (2019–2021–2022)—IPRES Puglia [74]
	Number of local business units per capita—Positive polarity	No.	Mean (2019–2021–2022)—IPRES Puglia [74]
	Average taxable income per capita—Positive polarity	€	Mean (2019–2021–2022)—ISTAT [73]
CI2—Composite indicator of accessibility	Minimum average travel time to the nearest long-distance railway station—Negative polarity	Minutes	2022—ISTAT [75]
	Minimum average travel time to the nearest airport—Negative polarity	Minutes	2022—ISTAT [75]
	Minimum average travel time to the nearest passenger port—Negative polarity	Minutes	2022—ISTAT [75]
	Minimum average travel time to the nearest motorway exit—Negative polarity	Minutes	2022—ISTAT [75]
CI3—Composite indicator of natural value	Share of municipal area covered by natural land—Positive polarity	%	2018—Corine Land Cover [76]
	Share of municipal area under environmental protection—Positive polarity	%	2015—SIT Puglia [60]
CI4—Composite indicator of coastal tourist and environmental quality	Share of coastline in natural condition—Positive polarity	%	2020—ISPRA GeoDB2020 [77]
	Total beach surface area—Positive polarity	hectares	2020—ISPRA GeoDB2020 [77]
	Number of years with "Blue Flag" beach certification in the last three years—Positive polarity	No.	2024—www.bandierablu.org [78]
	Density of beach establishments per km of sandy coastline—Positive polarity	No.	2024—Puglia DMS [50]
	Presence of a Marine Protected Area adjacent to the coast—Positive polarity	Yes/No	2024—SIT Puglia [60]
	Presence of a Coastal Protected Natural Area—Positive polarity	Yes/No	2024—SIT Puglia [60]
	Presence of tourist marinas or docking facilities—Positive polarity	Yes/No	2024—Puglia DMS [50]
CI5—Composite indicator of average cultural production	Number of cultural events organized by the municipality	No.	Mean (2022–2023)—Puglia DMS [50]
	Number of cultural events lasting two or more consecutive days	No.	Mean (2022–2023)—Puglia DMS [50]

3. Results

3.1. Efficiency of Public Spending for Tourist Arrivals and Overnight Stays

As detailed in Section 2.3, a control-function approach (CFA) was adopted to correct the endogeneity detected between public tourism expenditure and tourism outcomes. It is crucial to address this issue, as unobserved shocks or reverse causality can distort the estimated elasticity of expenditure in stochastic frontier models [54]. After applying

the CFA correction, both frontier estimations (for arrivals and overnight stays) provided statistically consistent efficiency measures no longer affected by the endogeneity.

The SFA results for the efficiency of public spending in generating tourist arrivals (Table 3) indicate strong overall model significance ($\chi^2 = 30.243$; $p < 0.001$). The coefficient associated with public tourism expenditure ($\beta = 0.080$; $p < 0.001$) is positive and statistically significant, showing a direct—though inelastic—relationship between municipal spending and tourist arrivals. The parameter γ (0.949) suggests that about 95% of the unexplained variance is due to technical inefficiency rather than random noise, indicating substantial heterogeneity among the municipalities in the efficient use of public resources. The variance terms ($\sigma^2 = 7.451$; $\sigma_u{}^2 = 7.070$; $\sigma_v{}^2 = 0.381$) further confirm that most of the residual variation stems from inefficiency. Finally, the parameter μ (4.507) is statistically significant ($p < 0.001$), pointing to a non-negligible average level of inefficiency within the sample.

Similarly, the SFA results for the model of public spending efficiency using tourist overnight stays as the output (Table 4) also show strong overall significance ($\chi^2 = 30.457$; $p < 0.001$). The coefficient of public tourism expenditure ($\beta = 0.090$; $p < 0.001$) is again positive and significant, indicating consistent effects across both models. The value of γ (0.944) confirms that over 94% of the unexplained variance is attributable to inefficiency, strengthening the idea that there are marked performance disparities among municipalities. The total variance ($\sigma^2 = 8.995$) is largely dominated by the inefficiency component ($\sigma_u{}^2 = 8.491$) compared to random noise ($\sigma_v{}^2 = 0.504$). The μ parameter (4.374) has a similar magnitude and level of significance that in the previous model, confirming the presence of structural inefficiencies in local tourism expenditure.

Table 3. Results of the Stochastic Frontier Analysis—Public Expenditure (2020–2023) and Tourist Arrivals (2021–2024).

$\chi^2 = 30.243$ ($p < 0.001$)					
Log Likelihood = −1422.021					
AIC = 2856.042			**BIC = 2885.412**		
ln_Tourist_Arrivals	**Coefficient**	**Std. Error**	**2.5% CI**	**97.5% CI**	**$p > \|z\|$**
Intercept	11.747	0.341	11.079	12.416	<0.001
β—ln_Public_Expenditure	0.080	0.015	0.051	0.109	<0.001
β—Residual	−0.045	0.012	−0.067	−0.021	<0.001
μ	4.507	0.420	5.592	9.310	<0.001
σ^2	7.451	0.948	0.936	0.962	<0.001
γ	0.949	0.007	3.682	5.332	<0.001
$\sigma_u{}^2$	7.070				
$\sigma_v{}^2$	0.381				

Overall, both models display consistent coefficient signs, strong significance levels, and γ values approaching one, all of which attest to the robustness of the Cobb–Douglas specification and the reliability of the estimated efficiency scores. These findings provide a quantitative foundation for analyzing the structural and territorial factors that explain efficiency variations among Apulian municipalities.

For both models, the coefficient of the control-function residual (β—Residual) is negative and statistically significant (Arrivals: −0.045; Overnight stays: −0.054; $p < 0.001$). This indicates that the portion of public expenditure linked to unobserved factors is associated with lower tourism performance. Including the residual enables the absorption of the endogeneity bias, ensuring that the estimated elasticity of public spending is interpreted in a consistent and unbiased manner [54].

3.2. Distribution of Municipal Efficiency Levels

The efficiency scores derived from both models (arrivals and overnight stays) reveal a generally heterogeneous but predominantly low-efficiency pattern. As shown in Figure 3, the majority of municipalities have efficiency values below 0.50, meaning that only a small share of administrations effectively convert public tourism spending into measurable tourism outcomes. The slightly right-skewed form of the distributions suggests the existence of a few highly efficient municipalities (efficiency close to 1) and a large majority with below-average performance. The similarity between the two curves indicates that municipal efficiency patterns remain largely the same regardless of whether outcomes are measured through arrivals or overnight stays.

Table 4. Results of the Stochastic Frontier Analysis—Public Expenditure (2020–2023) and Overnight stays (2021–2024).

$\chi^2 = 30.457$ ($p < 0.001$)					
Log Likelihood = −1547.682					
AIC = 3107.364			**BIC = 3136.734**		
ln_Tourist_Stays	**Coefficient**	**Std. Error**	**2.5% CI**	**97.5% CI**	**$p > \|z\|$**
Intercept	12.835	0.307	12.232	13.436	<0.001
β—ln_Public_Expenditure	0.090	0.016	0.059	0.123	<0.001
β—Residual	−0.054	0.014	−0.081	−0.027	<0.001
μ	4.374	0.438	6.355	11.635	<0.001
σ^2	8.995	1.346	0.927	0.959	<0.001
γ	0.944	0.008	3.515	5.233	<0.001
σ_u^2	8.491				
σ_v^2	0.504				

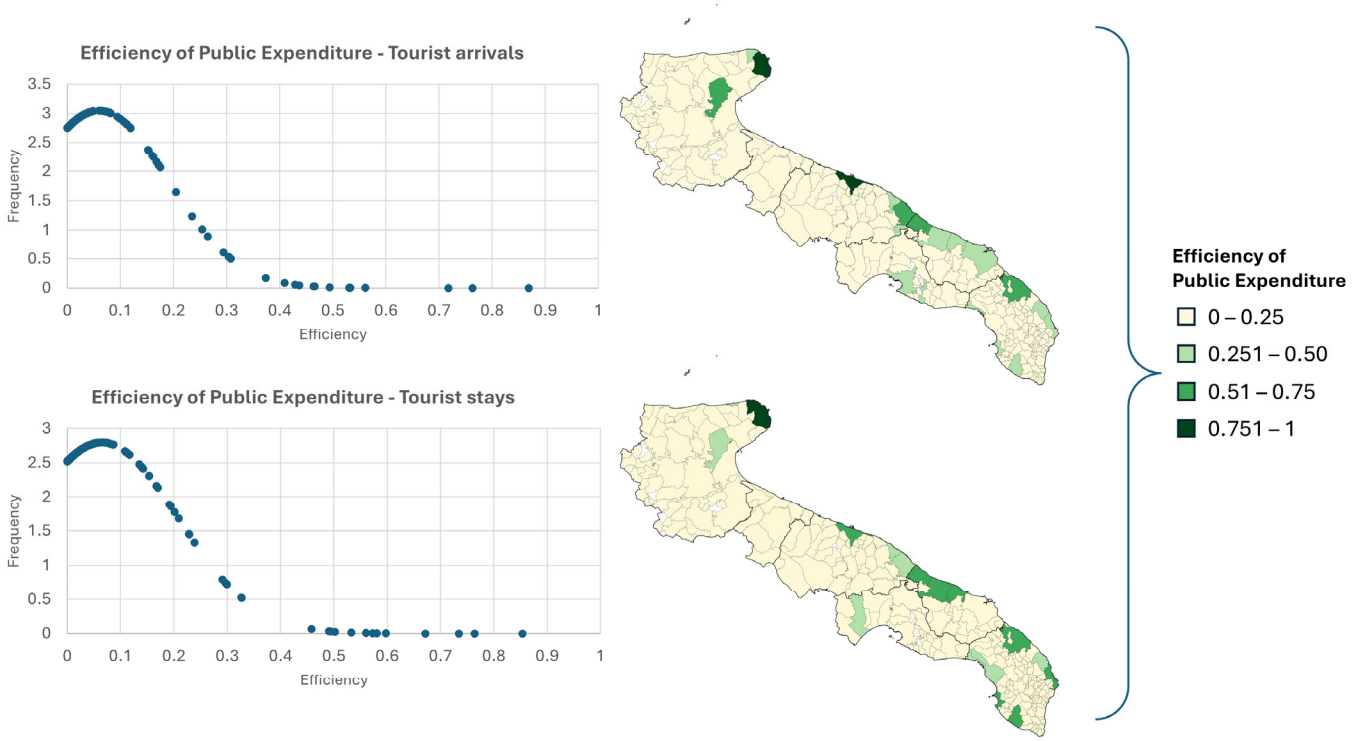

Figure 3. Distribution curves of municipal efficiency values and territorial distribution (authors elaboration).

3.3. Drivers of Public Spending Efficiency

The preliminary correlation analysis between simple and composite indicators helped to identify potential multicollinearity issues. The Pearson correlation coefficients (r) across

all variable pairs never exceeded 0.7, indicating generally moderate correlations among the indicators (Figure 4). The strongest associations ($|r| > 0.5$) were observed between

- the number of beds per 1000 inhabitants (SI1) and density of accommodation facilities per 10 km^2 (SI2) (r = 0.574);
- the number of beds per 1000 inhabitants (SI1) and the number of tourism services per 1000 inhabitants (SI3) (r = 0.668);
- the composite economic development index (CI1) and average cultural production index (CI5) (r = 0.635).

These patterns suggest the existence of a group of municipalities with a strong tourism specialization, characterized by higher concentrations of accommodation, services, and cultural activities. Given these findings, no variables were excluded a priori. Instead, the stepwise regression procedure was used to automatically select the most statistically significant predictors, minimizing subjective choices while preserving the completeness and robustness of the dataset.

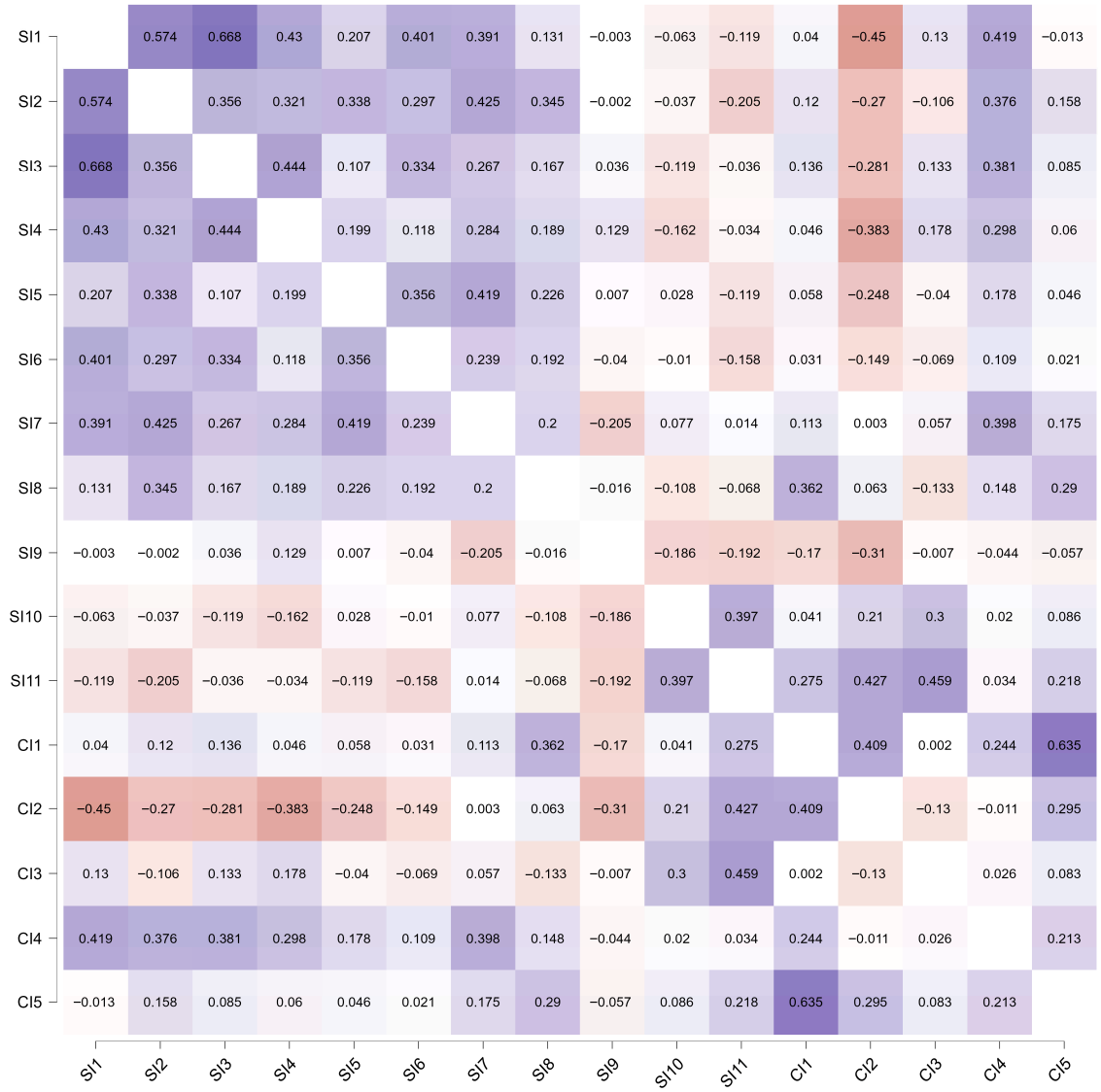

Figure 4. Pearson's correlation heatmap. Shades of blue indicate positive correlations, while shades of red indicate negative correlations. Darker tones represent stronger correlation values.

3.3.1. Multiple Regression Results—Efficiency and Tourist Arrivals

To explain the estimated average efficiency levels obtained through the SFA (2021–2024), two separate stepwise multiple linear regressions were performed, namely one for tourist arrivals and one for overnight stays. The dependent variable is the efficiency score obtained from the SFA, expressing the municipalities' ability to transform public tourism spending into arrivals or stays. The independent variables include simple and composite indicators (Tables 1 and 2) describing structural and territorial features.

Table 5 reports the best-fitting regression model for tourist arrivals, which explains about 70% of the observed variance (R^2 = 0.698; Adj. R^2 = 0.690), indicating strong explanatory power. The root square error (RMSE) value (0.073) suggests a low average deviation between observed and predicted efficiency values, supporting the model's reliability. The selected predictors include

- average cultural production (CI5): it is the strongest predictor (β = 0.497), confirming the strategic role of cultural and creative activities, especially longer events, in attracting visitors;
- accommodation density (SI1): it is positively associated with the capacity to attract tourists (β = 0.397), indicating that a higher number of available beds improves the conversion of public spending into tourism flows;
- coastal quality and natural value indicators (CI4, CI3): they both show positive and significant effects (β = 0.155 and β = 0.112, respectively), highlighting the contribution of environmental and landscape assets to efficiency;
- economic development level (CI1): it shows a positive effect (β = 0.106), suggesting that stronger local economies manage public resources more effectively;
- agritourism and camping facilities (SI6): it shows a less but significant positive effect (β = 0.082), underlining their complementary role in the regional tourism system;

All VIF values are <2, confirming the absence of significant multicollinearity and supporting the model's statistical robustness.

Table 5. Regression analysis results—Efficiency related to Tourist Arrivals.

Model	R^2	Adjusted R^2	RMSE	AIC		BIC	
M7	0.698	0.690	0.073	−582.967		−551.383	
Coefficients							
(Intercept)	**Std. Error**	**Standardized (β)**	**t**	***p***	**2.5% CI**	**97.5% CI**	**VIF**
CI5	0.003	0.497	10.655	<0.001	0.028	0.041	1.727
SI1	<0.001	0.397	8.939	<0.001	<0.001	<0.001	1.562
CI4	<0.001	0.155	3.793	<0.001	0.002	0.005	1.326
CI3	0.063	0.112	2.665	0.008	0.044	0.294	1.393
CI1	0.009	0.106	2.211	0.028	0.002	0.039	1.835
SI6	0.003	0.082	2.076	0.039	<0.001	0.011	1.232

3.3.2. Multiple Regression Results—Efficiency and Tourist Overnight Stays

The second stepwise regression used the average efficiency relating to overnight stays (2021–2024) as the dependent variable, to measure the ability of municipalities to convert public tourism spending into longer visitor stays.

The final regression model (Table 6) demonstrates high explanatory power (R^2 = 0.725; Adj. R^2 = 0.717) and a strong fit (RMSE = 0.076), indicating that the regression effectively captures data variability. The most relevant predictors are:

- Accommodation density (SI1): it is the strongest coefficient (β = 0.633), confirming that the availability of lodging capacity is the most important condition for maximizing the impact of public tourism spending on stays;

- Average cultural production (CI5): it is significantly positive (β = 0.406), suggesting that a rich cultural offering, especially multi-day events, enhances tourists' length of stay;
- Coastal quality (CI4) and natural value (CI3): both positive and significant (β = 0.180 and β = 0.122, respectively), showing that the combination of coastal and environmental resources increases spending efficiency;
- Accessibility (CI2): it shows positive effect (β = 0.114), indicating that better connectivity supports longer tourist stays;
- Agritourism and camping facilities (SI6): show positive effect (β = 0.074), highlighting their role in promoting a more locally rooted tourism model;
- Cycling and pedestrian paths (SI4): it is the only with negative coefficient (β = −0.090), possibly reflecting niche tourism specialization less connected to traditional accommodation-based tourism.

All VIF values < 2, confirming the absence of significant multicollinearity and ensuring statistical validity.

Table 6. Regression analysis results—Efficiency related to Tourist Overnight Stays.

Model	R^2	Adjusted R^2	RMSE	AIC		BIC	
M7	0.725	0.717	0.076	−562.855		−531.271	
Coefficients							
(Intercept)	**Std. Error**	**Standardized (β)**	**t**	***p***	**2.5% CI**	**97.5% CI**	**VIF**
SI1	<0.001	0.633	13.367	<0.001	<0.001	0.512	1.952
CI5	0.003	0.406	10.953	<0.001	0.025	0.838	1.193
CI4	<0.001	0.180	4.518	<0.001	0.002	0.725	1.379
CI3	0.058	0.122	3.463	<0.001	0.087	0.933	1.072
CI2	0.334	0.114	2.675	0.008	0.236	0.630	1.586
SI4	0.001	−0.090	−2.235	0.026	−0.006	0.715	1.398
SI6	0.003	0.074	1.972	0.050	<0.001	0.814	1.228

3.3.3. Comparing the Two Regression Analyses: Complementary Insights into Efficiency

The comparison between the two regression analyses shows a strong consistency in the structural factors driving the efficiency of public tourism expenditure. In both cases, accommodation capacity, environmental quality, and cultural vitality stand out as key drivers. Public funds are therefore most effective when embedded within a well-developed local tourism network that combines natural and cultural assets. The main difference lies in the relative influence of predictors: accommodation capacity has a stronger effect on efficiency related to overnight stays, while cultural production plays a larger role in explaining efficiency linked to tourist arrivals. Overall, the two analyses capture complementary stages of the efficiency process (from attracting visitors to retaining them), offering a more comprehensive picture of the territorial dynamics shaping the effectiveness of public spending on tourism.

Finally, Moran's I tests indicate a statistically significant but very weak spatial autocorrelation in the regression residuals (Arrivals model: I = 0.077, p = 0.034; Overnight stays model: I = 0.110, p = 0.005). Although spatial dependence is present, its magnitude is minimal and does not distort the estimated relationships, suggesting that the models are not materially affected by spatial clustering.

4. Discussion

The findings provide new empirical evidence on the efficient use of public resources in tourism, which is a key dimension of the economic and institutional sustainability of destinations [42,79].

This research aligns with public finance reforms introduced in Italy by Law No. 196/2009 [41], which emphasize the need to measure and improve public spending efficiency within planning and decision-making processes [42]. However, assessing efficiency solely through financial or quantitative indicators offers only a partial view, as it neglects the multidimensional nature of public policy outcomes [80]. In this perspective, the two-step econometric approach adopted here extends the analysis beyond the direct relationship between expenditure and outcomes (tourist arrivals and stays). Indeed, it incorporates territorial and qualitative dimensions that influence effectiveness, enabling efficiency to be interpreted as the outcome of complex interactions between resources, institutions, and local territorial systems, rather than merely as a technical capability.

4.1. Technical Efficiency and Marginal Returns of Public Tourism Spending

The SFA is one of the most well-established methodologies for evaluating efficiency of public spending [44]. It distinguishes between technical inefficiency and random error, enabling robust and comparable estimates across administrative units. The results indicate generally low average efficiency levels among most Apulian municipalities, for both tourist arrivals and overnight stays. This widespread inefficiency in tourism-related public spending (average efficiency below 0.5) aligns with evidence from other studies on Italian local administrations, such as Agasisti and Porcelli [44], who identified substantial efficiency gaps even in the management of essential public services.

As the International Monetary Fund notes [81], inefficiencies in public expenditure often stem from resource misallocation or waste, with negative implications for policy quality and local development sustainability [82]. Furthermore, these results are consistent with broader national evidence showing structural inefficiencies in Italy's public tourism expenditure [31,42]. The issue appears to be systemic, linked more to weaknesses in planning and governance processes than to localized shortcomings.

The SFA also confirms that public spending on tourism has a positive but limited impact on tourism outcomes. In a Cobb–Douglas framework, elasticities below one indicate diminishing returns, meaning that increases in expenditure yield proportionally smaller gains in tourism flows. For example, a 10% increase in public tourism expenditure is expected to generate a 0.8% rise in arrivals, while doubling the spending would yield an 8% increase. Although the effect remains positive, the low elasticity shows that tourism demand responds weakly to changes in public investments. This pattern is consistent with the broader evidence of fragmented or poorly coordinated programming highlighted by Colaizzo et al. [35], which limits the cumulative benefits of past and present investments and, ultimately, reduces overall efficiency.

Technically, the γ values close to 1 indicate that most observed variability is due to structural inefficiency rather than random fluctuations. Therefore, efficiency differences among municipalities stem mainly from territorial, infrastructural, and organizational factors [31]. A practical example comes from the comparison between the municipalities of Bari and Vieste: despite significantly higher public expenditure in Bari (EUR 5.9 million vs. EUR 1.3 million in 2023 [83]), Vieste achieved higher efficiency in terms of overnight stays in 2024. This finding highlights how targeted management and local environmental assets can amplify the impact of limited financial resources [31].

In summary, higher public spending does not automatically ensure better results [47]. In some cases, excessive spending can even reduce efficiency by distorting resource allocation [29]. The key lies in a municipality's ability to integrate financial resources with territorial assets and governance capacity [35]. These insights, consistent with broader evidence on public efficiency [47,84], stress the importance of strategic, sustainable, and place-based tourism policies.

4.2. How Local Factors Shape the Efficiency of Public Tourism Spending

The regression analyses identified a limited but meaningful set of factors shaping the effectiveness of public spending on tourism in Apulian municipalities.

The accommodation capacity (SI1) emerges as the most influential structural factor, with a positive association with both arrivals and overnight stays –the latter more strongly. This suggests that a well-developed and organized hospitality system can convert public spending into positive and measurable tourism outcomes. In accordance with previous findings [85], greater accommodation capacity correlates with higher tourist number and longer stays. Conversely, limited hospitality infrastructure constrains a territory's ability to absorb demand, reducing the overall effectiveness of public spending. This evidence supports both municipal and regional priorities, which promote expanding accommodation capacity to rebalance tourism flows and strengthen inland competitiveness, as outlined in the "Puglia365" Strategic Plan [36]. However, unregulated growth of hospitality structures can trigger overtourism and environmental degradation [86,87]. In this respect, expansion must therefore be accompanied by clear planning and regulatory frameworks to protect landscape quality and local liveability [88]. Moreover, improving efficiency requires not only quantitative growth but a balance between economic development and territorial sustainability, in line with the principles of responsible tourism and the UN 2030 Agenda for Sustainable Development [24].

Among qualitative factors, average cultural production (CI5) exerts a strong positive influence, particularly on arrivals. This confirms the strategic role of cultural events as tourism attractors and levers of local development [3]. CI5 incorporates both the frequency and duration of events, emphasizing multi-day initiatives such as festivals and exhibitions that generate stronger and longer-lasting appeal [89]. In this regard, cultural programming not only boosts demand but also strengthens local economies, enriches social life, and promotes year-round tourism, reducing seasonality [3]. Moreover, a stable and year-round cultural programme contributes to mitigate the impact of seasonal tourism [90,91]. In this context, municipal investments in cultural events, listed among the main eligible measures in local budgets, are fully justified on both economic and social grounds [92]. Natural and landscape factors also play a central role. Both coastal and environmental quality (CI4) and natural value of the territory (CI3) show positive effects on efficiency. The quality of coastal areas remains a key driver of efficiency, confirming the enduring importance of Apulia's coastal tourism [34]. However, the indicator of simple distance to the sea (SI7) was excluded, suggesting that it is not proximity itself but rather the quality of coastal management and infrastructure that drives efficiency [93]. Proximity to the coast without adequate services or governance does not guarantee efficiency [94,95]. Similarly, protected and natural areas also contribute positively, though to a lesser extent, to tourism spending efficiency. Landscape and natural resources remain strategic component of Apulia's tourism [96] and require sustainable management and valorisation policies to realize their full potential [97,98].

Among other positive predictors, agritourism and campsites (SI6) stand out as key to diversifying tourism and revitalizing rural areas. These structures combine hospitality with local food systems, reinforcing sustainable and community-based tourism models [99]. Interestingly, the indicator for local certified food products (SI10, PDO/PGI/TSG and Slow Food) was excluded from the stepwise model, likely due to its uniform distribution across the region. Nevertheless, the significance of agritourism suggests that it indirectly channels the attractiveness of local agri-food heritage. In contrast, cycling and pedestrian paths (indicator SI4) show a negative coefficient specifically related to overnight stays. This suggests that, while these resources are increasingly appreciated within sustainable and outdoor tourism [97,100], they do not seem to currently contribute to extend the length duration of tourism stays. Moreover, their niche nature means that their effects are not

easily captured by standard tourism indicators such as arrivals or overnight stays [101]. Local economic development (indicator CI1) shows a moderate but positive effect on arrivals, confirming that economically dynamic territories tend to be more attractive [102]. On the contrary, accessibility (indicator CI2) shows a positive and significant effect on overnight stays, indicating that better public connectivity supports longer visits, although the predominance of private car travel in Apulia region still limits its overall impact [71].

Overall, the model selection process favoured composite indicators over simple ones, suggesting their effectiveness in summarizing relevant multidimensional information. While this does not imply an intrinsic superiority, it demonstrates their practical value in reducing redundancy and enhancing the model stability [69].

4.3. Implications for Sustainability and Local Policies

Tourism is one of the most economically significant yet resource-intensive sectors worldwide [103]. This dual nature makes achieving sustainability goals particularly challenging [104], particularly in policy planning [11].

As observed by Alonso-Muñoz et al. [23], research on tourism sustainability remains fragmented and methodologically diverse, underscoring the need for shared indicators and coherent policy frameworks. Evaluating the efficiency of public tourism expenditure offers a valuable pathway towards more sustainable tourism governance. Efficient spending promotes rational resource allocation, guiding policy planning toward interventions that are both impactful and sustainable [105]. Here, sustainability extends beyond the environmental and social dimensions to include economic and institutional sustainability, as efficient resource management strengthens local budgets and governance capacity [31].

Public spending on tourism often represents a small part of municipal budgets, particularly in rural areas where the sector is not seen as priority [106]. In Apulia region tourism spending represents only a small share of municipal budgets (an average of around 1% of total revenues), with few municipalities exceeding 10% [83]. However, even limited funds can generate significant impacts if invested strategically and efficiently. The literature on public intervention in tourism remains extensive and heterogeneous [14,15]. Nevertheless, evidence suggests that well-designed public policies focused on coordination, support, and regulation, can enhance sectoral performance [107–109].

Therefore, the results of this research provide local administration with practical insights for, helping less efficient municipalities to identify priority areas for investment, such as infrastructure, hospitality, and cultural programming. Aligning these investments with sustainability objectives not only improves resource efficiency but also enhances the territorial capacity to attract and retain balanced tourism flows. Moreover, municipal efforts should be integrated into regional tourism strategies, within a multi-level governance framework where the Region can use such evidence to calibrate support measures and promote territorial equity. Finally, the findings reveal a public support system still uneven and fragmented, with a strong divide between highly specialized coastal areas and less developed inland municipalities. This persistent spatial imbalance, also reflected in broader assessments of tourism sustainability, highlights the need for more inclusive and territorially integrated policies [110].

4.4. Methodological and Empirical Limitations

The Cobb–Douglas time-invariant frontier model adopted in this study provided robust and easily interpretable estimates but also entails some methodological limitations. Although it is particularly effective for estimating input elasticities, it assumed log-linear relationships and constant returns to scale [51], thus simplifying the complexity of real-world tourism dynamics. In addition, the time-invariant inefficiency specification does

not account for potential variations resulting from external shocks or changes in local management practices.

A further limitation concerns the nature of the output indicators. This study emphasizes the quantitative aspect of tourism performance—measured through arrivals and overnight stay—with the specific goal of evaluating the effectiveness of public spending from institutional and economic perspectives. However, qualitative outcomes such as visitor satisfaction, profitability, or broader sustainability impacts require different data and methods that are unavailable at the municipal level and therefore fall outside the scope of this analysis.

From an empirical standpoint, the analysis focused on the post-pandemic period (2020–2023), when Apulia's tourism sector had largely returned to pre-COVID levels [111]. Although this minimized the risk of bias from exceptional disruptions, recovery dynamics may still have differed between coastal and inland municipalities, which could have influenced the observed efficiency patterns.

5. Conclusions and Future Research Directions

This study assessed the efficiency of public tourism expenditure in Apulian municipalities over the period 2020–2023. It applied the SFA combined with multiple linear regression to identify the main structural and territorial drivers of efficiency. The results revealed generally low efficiency levels, suggesting substantial room for improvement in the use of public funds devoted to tourism. Only a small share of municipalities—mostly coastal destinations with well-established tourism systems—achieved satisfactory levels of efficiency, while most inland and less-developed areas lagged behind. This pattern highlights a structural divide between consolidated tourist destinations and emerging or peripheral territories.

Several factors were found to influence efficiency positively: accommodation capacity, cultural production (particularly multi-day events), tourist and environmental quality of coastal areas, natural endowment, and the presence of agritourism and campsites. Together, these elements outline an integrated model of tourism development, where infrastructure, culture, and environmental resources operate in synergy to generate territorial value. The efficiency of public spending thus depends largely on the ability of local policies to coordinate these interconnected dimensions, transforming them into a cohesive and competitive territorial system. From a policy standpoint, the findings stress the need to address public resources toward targeted and well-coordinated interventions that balance economic efficiency with territorial sustainability.

Efficiency in public spending on tourism represents a neglected yet crucial component of tourism sustainability: a more responsible use of public funds can strengthen the economic and institutional sustainability of local administrations while enhancing the tourism sector's capacity to deliver measurable and lasting outcomes. In particular, the results show that higher efficiency in the use of public tourism funds is closely linked to local accommodation capacity, which plays a key role in attracting and retaining visitors. However, this factor should not be interpreted merely in quantitative terms (such as the total number of beds or facilities), but rather as the outcome of a balanced and context-appropriate development of the hospitality sector, consistent with each municipality's demographic and territorial scale. Likewise, attention to cultural and environmental resources emerges as a strategic investment: policies aimed at protecting and enhancing these assets not only support tourism competitiveness but also improve the overall efficiency of public spending.

Looking ahead, future research could extend the time horizon of the analysis and adopt dynamic frontier models to capture changes in efficiency over time. When more detailed datasets are available, different functional forms—such as the Translog—may also be

explored to investigate potential non-linearities and interactions between multiple inputs. This would allow a deeper assessment of how public policies, sustainability initiatives, and local development factors jointly shape the efficiency of tourism spending. Additionally, alternative methods for constructing territorial indicators or weighted aggregation techniques could be tested and/or applied, in order to check the robustness of results and refine the representation of multidimensional factors.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su172310768/s1, Microsoft Excel File S1: dataset for application of the SFA; Microsoft Word File S1: R script for application of the SFA.

Author Contributions: Conceptualization, G.P., G.O.P. and C.A.; methodology, G.P., G.O.P. and C.A.; validation, G.P. and G.O.P.; formal analysis, G.P., A.D.B., R.R. and C.A.; investigation, G.P.; resources, G.O.P.; data curation, G.P.; writing—original draft preparation, G.P.; writing—review and editing, G.P., G.O.P., A.D.B. and R.R.; visualization, G.P.; supervision, G.O.P., A.D.B., R.R. and C.A.; project administration, C.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The datasets presented in this article are not readily available because the data are part on an ongoing study. Request to access the datasets should be directed to giovanni.ottomanopalmisano@uniba.it.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Schubert, S.F.; Brida, J.G.; Risso, W.A. The Impacts of International Tourism Demand on Economic Growth of Small Economies Dependent on Tourism. *Tour. Manag.* **2011**, *32*, 377–385. [CrossRef]
2. Tyrrell, T.J.; Johnston, R.J. The Economic Impacts of Tourism: A Special Issue. *J. Travel Res.* **2006**, *45*, 3–7. [CrossRef]
3. Torre, A.; Scarborough, H. Reconsidering the Estimation of the Economic Impact of Cultural Tourism. *Tour. Manag.* **2017**, *59*, 621–629. [CrossRef]
4. Antolini, F. Transport and Tourism, an Inseparable Alliance: The Importance of the Transport Sector. *Qual. Quant.* **2023**, *57*, 465–480. [CrossRef]
5. Thommandru, A.; Espinoza-Maguiña, M.; Ramirez-Asis, E.; Ray, S.; Naved, M.; Guzman-Avalos, M. Role of Tourism and Hospitality Business in Economic Development. *Mater. Today Proc.* **2023**, *80*, 2901–2904. [CrossRef]
6. Butler, R. Tourism Destination Development: The Tourism Area Life Cycle Model. *Tour. Geogr.* **2024**, *27*, 599–607. [CrossRef]
7. Angelkova, T.; Koteski, C.; Jakovlev, Z.; Mitrevska, E. Sustainability and Competitiveness of Tourism. *Procedia Soc. Behav. Sci.* **2012**, *44*, 221–227. [CrossRef]
8. Guo, Y.; Jiang, J.; Li, S. A Sustainable Tourism Policy Research Review. *Sustainability* **2019**, *11*, 3187. [CrossRef]
9. Higham, J.; Miller, G. Transforming Societies and Transforming Tourism: Sustainable Tourism in Times of Change. *J. Sustain. Tour.* **2018**, *26*, 1–8. [CrossRef]
10. Roblek, V.; Drpić, D.; Meško, M.; Milojica, V. Evolution of Sustainable Tourism Concepts. *Sustainability* **2021**, *13*, 12829. [CrossRef]
11. Hall, C.M. Policy Learning and Policy Failure in Sustainable Tourism Governance: From First- and Second-Order to Third-Order Change? *J. Sustain. Tour.* **2011**, *19*, 649–671. [CrossRef]
12. Aall, C. Sustainable Tourism in Practice: Promoting or Perverting the Quest for a Sustainable Development? *Sustainability* **2014**, *6*, 2562–2583. [CrossRef]
13. Milano, C.; Novelli, M.; Cheer, J.M. Overtourism and Tourismphobia: A Journey Through Four Decades of Tourism Development, Planning and Local Concerns. *Tour. Plan. Dev.* **2019**, *16*, 353–357. [CrossRef]
14. Jenkins, J.M.; Hall, C.M.; Mkono, M. Tourism and Public Policy. In *The Wiley Blackwell Companion to Tourism*; Lew, A.A., Hall, C.M., Williams, A.M., Eds.; John Wiley and Sons: Hoboken, NJ, USA, 2014; pp. 542–555. ISBN 978-1-118-47448-8.
15. Aguinis, H.; Kraus, S.; Poček, J.; Meyer, N.; Jensen, S.H. The Why, How, and What of Public Policy Implications of Tourism and Hospitality Research. *Tour. Manag.* **2023**, *97*, 104720. [CrossRef]
16. Fayos-Solá, E. Tourism Policy: A Midsummer Night's Dream? *Tour. Manag.* **1996**, *17*, 405–412. [CrossRef]

17. Dwyer, L.; Forsyth, P. The Case for Tourism Promotion: An Economic Analysis. *Tour. Rev.* **1992**, *47*, 16–26. [CrossRef]
18. Govers, R.; Go, F.M.; Kumar, K. Promoting Tourism Destination Image. *J. Travel Res.* **2007**, *46*, 15–23. [CrossRef]
19. Pan, X.; Rasouli, S.; Timmermans, H. Investigating Tourist Destination Choice: Effect of Destination Image from Social Network Members. *Tour. Manag.* **2021**, *83*, 104217. [CrossRef]
20. Smeral, E. Aspects to Justify Public Tourism Promotion: An Economic Perspective. *Tour. Rev.* **2006**, *61*, 6–14. [CrossRef]
21. Walsh, P.P.; Banerjee, A.; Murphy, E. The UN 2030 Agenda for Sustainable Development. In *Partnerships and the Sustainable Development Goals*; Murphy, E., Banerjee, A., Walsh, P.P., Eds.; Sustainable Development Goals Series; Springer International Publishing: Cham, Switzerland, 2022; pp. 1–12. ISBN 978-3-031-07460-8.
22. Rasoolimanesh, S.M.; Ramakrishna, S.; Hall, C.M.; Esfandiar, K.; Seyfi, S. A Systematic Scoping Review of Sustainable Tourism Indicators in Relation to the Sustainable Development Goals. *J. Sustain. Tour.* **2023**, *31*, 1497–1517. [CrossRef]
23. Alonso-Muñoz, S.; Torrejón-Ramos, M.; Medina-Salgado, M.-S.; González-Sánchez, R. Sustainability as a Building Block for Tourism—Future Research: Tourism Agenda 2030. *Tour. Rev.* **2023**, *78*, 461–474. [CrossRef]
24. Mason, P.; Augustyn, M.; Seakhoa-King, A. Tourism Destination Quality and the UN Sustainable Development Goals: Tourism Agenda 2030. *Tour. Rev.* **2023**, *78*, 443–460. [CrossRef]
25. Ammirato, S.; Felicetti, A.M.; Raso, C.; Pansera, B.A.; Violi, A. Agritourism and Sustainability: What We Can Learn from a Systematic Literature Review. *Sustainability* **2020**, *12*, 9575. [CrossRef]
26. Hutárová, D.; Kozelová, I.; Špulerová, J. Tourism Development Options in Marginal and Less-Favored Regions: A Case Study of Slovakia's Gemer Region. *Land* **2021**, *10*, 229. [CrossRef]
27. Paskaleva-Shapira, K.A. New Paradigms in City Tourism Management: Redefining Destination Promotion. *J. Travel Res.* **2007**, *46*, 108–114. [CrossRef]
28. Devkota, N.; Gajdka, K.; Siwakoti, R.; Klimova, M.; Dhakal, K. Promoting Sustainable Tourist Behavior through Promotional Marketing. *J. Tour. Serv.* **2023**, *14*, 219–241. [CrossRef]
29. Deskins, J.; Seevers, M.T. Are State Expenditures to Promote Tourism Effective? *J. Travel Res.* **2011**, *50*, 154–170. [CrossRef]
30. Corne, A. Benchmarking and Tourism Efficiency in France. *Tour. Manag.* **2015**, *51*, 91–95. [CrossRef]
31. Cellini, R.; Torrisi, G. Regional Public Spending for Tourism in Italy: An Empirical Analysis. *Tour. Econ.* **2013**, *19*, 1361–1384. [CrossRef]
32. Koop, G.; Osiewalski, J.; Steel, M.F.J. The Components of Output Growth: A Stochastic Frontier Analysis. *Oxf. Bull. Econ. Stat.* **1999**, *61*, 455–487. [CrossRef]
33. Quercia, P.; Potito, S. Evoluzione Del Turismo in Puglia Nell'ambito Delle Politiche di Sviluppo Regionale. *Reg. Econ.* **2023**, *7*, 14–24.
34. Parete, G.; Bruno, M.F.; Calabrese, P.; Carlucci, R.; Chiarulli, M.; D'Onghia, G.; Fiore, A.; Fratino, U.; Longo, C.; Longo, F.; et al. Climate Impacts and Adaptation Strategies for Coastal Erosion, Aquaculture, and Tourism along the Adriatic Side of Apulia Region. *Front. Clim.* **2024**, *6*, 1378253. [CrossRef]
35. Colaizzo, R.; Letta, M.; Montalbano, P. L'efficacia delle politiche di valorizzazione culturale in Puglia. Analisi fattuale e controfattuale sull'attrazione turistica. *Econ. Della Cult.* **2018**, *4*, 491–508. [CrossRef]
36. Regione Puglia Piano Strategico del Turismo 2016–2025—Puglia365. Regione Puglia. 2016. Available online: https://partecipazione.regione.puglia.it/uploads/decidim/attachment/file/2860/Piano-Strategico-del-Turismo-Puglia365_2016_2025.pdf (accessed on 1 June 2025).
37. Decreto Legislativo 23 Maggio 2011, n. 79. Codice Della Normativa Statale in Tema di Ordinamento e Mercato del Turismo. 2011. Available online: https://www.mimit.gov.it/images/stories/documenti/dlgs23maggio2011turismo_multiproprieta.pdf (accessed on 28 August 2025).
38. Decreto Legislativo 21 Maggio 2018, n. 62. Attuazione Della Direttiva (UE) 2015/2302 del Parlamento Europeo e del Consiglio, del 25 Novembre 2015, Relativa ai Pacchetti Turistici e ai Servizi Turistici Collegati. 2018. Available online: https://www.astrid-online.it/static/upload/decr/decreto-legislativo-21-maggio-2018--n.pdf (accessed on 28 August 2025).
39. MEF—Ministero Dell'economia e Delle Finanze. Glossario Missioni e Programmi Fino al 2024. 2024. Available online: https://www.rgs.mef.gov.it/VERSIONE-I/e_government/amministrazioni_pubbliche/arconet/index.html (accessed on 28 August 2025).
40. Barrios Cobos, S.; Schächter, A. *The Quality of Public Finances and Economic Growth*; European Commission, Ed.; European Commission: Brussels, Belgium, 2008; ISBN 978-92-79-08262-7.
41. Legge 31 Dicembre 2009, n. 196. Legge di Contabilità e Finanza Pubblica. 2009. Available online: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2009;196 (accessed on 28 August 2025).
42. Antolini, F. Italy Evaluating Public Expenditures on Tourism: The Utility of the Italian Public Accounting Reforms. *Natl. Account. Rev.* **2021**, *3*, 179–203. [CrossRef]
43. Antonelli, M.A.; De Bonis, V. The Efficiency of Social Public Expenditure in European Countries: A Two-Stage Analysis. *Appl. Econ.* **2019**, *51*, 47–60. [CrossRef]

44. Agasisti, T.; Porcelli, F. Local Governments' Efficiency and Its Heterogeneity—Empirical Evidence from a Stochastic Frontier Analysis of Italian Municipalities 2010–2018. *Appl. Econ.* **2023**, *55*, 2902–2927. [CrossRef]
45. Saji, D.R.; Madheswaran, S. Public Expenditure Efficiency on Health in Indian States: Generalised Stochastic Frontier Approach. *J. Asia Pac. Econ.* **2025**, 1–24. [CrossRef]
46. Liu, Y.; Myers, R. Model Selection in Stochastic Frontier Analysis with an Application to Maize Production in Kenya. *J. Product. Anal.* **2009**, *31*, 33–46. [CrossRef]
47. Afonso, A.; Kazemi, M. Assessing Public Spending Efficiency in 20 OECD Countries. In *Inequality and Finance in Macrodynamics*; Bökemeier, B., Greiner, A., Eds.; Dynamic Modeling and Econometrics in Economics and Finance; Springer International Publishing: Cham, Switzerland, 2017; Volume 23, pp. 7–42, ISBN 978-3-319-54689-6.
48. Aigner, D.; Lovell, C.A.K.; Schmidt, P. Formulation and Estimation of Stochastic Frontier Production Function Models. *J. Econom.* **1977**, *6*, 21–37. [CrossRef]
49. Arpaia, A.; Turrini, A. Government Expenditure and Economic Growth in the EU: Long-Run Tendencies and Short-Term Adjustment. *SSRN Electron. J.* **2007**. [CrossRef]
50. Il Turismo in Puglia—Osservatorio. Digital Management System. Available online: https://osservatorio.dms.puglia.it/knowage-vue/document-composite/Homepage_public (accessed on 6 June 2025).
51. Goldberger, A.S. The Interpretation and Estimation of Cobb-Douglas Functions. *Econometrica* **1968**, *36*, 464. [CrossRef]
52. Lee, Y.H.; Schmidt, P. A Production Frontier Model with Flexible Temporal Variation in Technical Efficiency. In *The Measurement of Productive Efficiency: Techniques and Applications*; Oxford University Press: Oxford, UK, 1993; pp. 237–255.
53. Umar, H.S.; Girei, A.A.; Yakubu, D. Comparison of Cobb-Douglas and Translog Frontier Models in the Analysis of Technical Efficiency in Dry-Season Tomato Production. *Agrosearch* **2017**, *17*, 67. [CrossRef]
54. Hou, Z.; Ramalho, J.J.S.; Roseta-Palma, C. Dealing with Endogeneity in Stochastic Frontier Models: A Comparative Assessment of Estimators. *Energy Econ.* **2025**, *151*, 108922. [CrossRef]
55. Coelli, T.; Henningsen, A. Package "Frontier", Version 1.1-8 2025. Available online: https://cran.r-project.org/web/packages/frontier/frontier.pdf (accessed on 19 November 2025).
56. Johnsson, T. A Procedure for Stepwise Regression Analysis. *Stat. Pap.* **1992**, *33*, 21–29. [CrossRef]
57. Goss-Sampson, M.A. Statistical Analysis in JASP. A Guide for Students. 2025. Available online: https://jasp-stats.org/wp-content/uploads/2025/07/Statistical-Analysis-in-JASP-A-guide-for-students-2025.pdf (accessed on 1 September 2025).
58. Anselin, L. *An Introduction to Spatial Data Science with GeoDa: Volume 1: Exploring Spatial Data*, 1st ed.; CRC Press: Boca Raton, FL, USA, 2024; ISBN 978-1-032-22918-8.
59. Anselin, L. *Introduction to Spatial Data Science with Geoda: Volume 2: Clustering Spatial Data*; Chapman & Hall CRC: Boca Raton, FL, USA, 2024; ISBN 978-1-040-02873-5.
60. S.I.T. Puglia. Available online: https://pugliacon.regione.puglia.it/web/sit-puglia-sit/pptr-piano-paesaggistico-territoriale-regionale (accessed on 6 June 2025).
61. Geositi Della Puglia. Available online: https://geositipuglia.uniba.it/geoportal/download.php (accessed on 6 June 2025).
62. Federazione Speleologica Pugliese—Catasto Puglia. Available online: https://fspuglia.it/catasto/catasto-puglia/31 (accessed on 6 June 2025).
63. CARTApulia—La Carta Dei Beni Culturali Pugliesi. Available online: https://www.cartapulia.it/ (accessed on 16 June 2025).
64. MASAF—Ministero Dell'agricoltura, Della Sovranità Alimentare e Delle Foreste. *Elenco Delle Denominazioni Italiane, Iscritte nel Registro Delle Denominazioni di Origine Protette, Delle Indicazioni Geografiche Protette e Delle Specialità Tradizionali Garantite*; MASAF: Rome, Italy, 2024.
65. MASAF—Ministero Dell'agricoltura, Della Sovranità Alimentare e Delle Foreste. *Elenco Alfabetico dei vini DOP Italiani*; MASAF: Rome, Italiy, 2024.
66. MASAF—Ministero Dell'agricoltura, Della Sovranità Alimentare e Delle Foreste. *Elenco Alfabetico vini IGP*; MASAF: Rome, Italy, 2024.
67. Fondazione Slow Food per La Biodiversità Onlus. Available online: https://www.fondazioneslowfood.com/it/ (accessed on 30 June 2025).
68. Nardo, M.; Saisana, M.; Saltelli, A.; Tarantola, S. *Tools for Composite Indicators Building*; European Commission, Directorate-General, Joint Reseasrch Centre: Brussels, Belgium, 2005; JRC31473.
69. Mazziotta, M.; Pareto, A. Synthesis of Indicators: The Composite Indicators Approach. In *Complexity in Society: From Indicators Construction to Their Synthesis*; Maggino, F., Ed.; Social Indicators Research Series; Springer International Publishing: Cham, Switzerland, 2017; Volume 70, pp. 159–191, ISBN 978-3-319-60593-7.
70. Available online: https://www.viaggiareinpuglia.it/it/homepage (accessed on 3 June 2025).
71. Bergantino, A.S.; Buonarota, M.; Buongiorno, A.; Intini, M. Regional Multimodal Accessibility: Policies and Strategies for Sustainable Tourism Destinations in Coastal Areas. *Res. Transp. Bus. Manag.* **2023**, *48*, 100872. [CrossRef]

72. Alcalá-Ordóñez, A.; Segarra, V. Tourism and Economic Development: A Literature Review to Highlight Main Empirical Findings. *Tour. Econ.* **2023**, *31*, 76–103. [CrossRef]
73. Istat—A Misura di Comune. Available online: https://www.istat.it/statistica-sperimentale/aggiornamento-degli-indicatori-del-sistema-informativo-a-misura-di-comune/ (accessed on 14 July 2025).
74. Fondazione Istituto Pugliese di Ricerche Economiche e Sociali Risultati Economici Imprese 2017_2022. Available online: https://dati.puglia.it/ckan/dataset/risultati-economici-delle-unita-locali-di-imprese-in-puglia (accessed on 28 August 2025).
75. L'accessibilità dei Comuni Alle Principali Infrastrutture di Trasporto. Available online: https://www.istat.it/comunicato-stampa/laccessibilita-dei-comuni-alle-principali-infrastrutture-di-trasporto/ (accessed on 14 July 2025).
76. CORINE Land Cover 2018. Available online: https://land.copernicus.eu/en/products/corine-land-cover/clc2018 (accessed on 6 June 2025).
77. ISPRA Portale Delle Coste. Available online: https://sinacloud.isprambiente.it/portal/apps/sites/#/coste (accessed on 23 June 2025).
78. Programma Bandiera Blu. Available online: https://www.bandierablu.org/common/index.asp (accessed on 30 June 2025).
79. Tufănoiu, I.; Toma, C. The Role of Public Administration Expenditures in Tourism Development—A Comparative Analysis of Two Valuable Geoheritage Areas. *Eur. J. Sustain. Dev.* **2024**, *13*, 525. [CrossRef]
80. Caldas, P.; Dollery, B.; Marques, R.C. Measuring What Matters in Local Government: A Municipality Sustainability Index. *Policy Stud.* **2022**, *43*, 738–758. [CrossRef]
81. Gaspar, V.; Amaglobeli, D.; Garcia-Escribano, M.; Prady, D.; Soto, M. Fiscal Policy and Development: Human, Social, and Physical Investments for the SDGs. *Staff Discuss. Notes* **2019**, *19*, 1. [CrossRef]
82. Cristóbal, J.; Ehrenstein, M.; Domínguez-Ramos, A.; Galán-Martín, Á.; Pozo, C.; Margallo, M.; Aldaco, R.; Jiménez, L.; Irabien, Á.; Guillén-Gosálbez, G. Unraveling the Links between Public Spending and Sustainable Development Goals: Insights from Data Envelopment Analysis. *Sci. Total Environ.* **2021**, *786*, 147459. [CrossRef]
83. OpenBDAP—Banca Dati Amministrazioni Pubbliche 2023 Rendiconto SDB Spese Riepilogo Missioni Puglia. Available online: https://openbdap.rgs.mef.gov.it/ (accessed on 26 May 2025).
84. Moreno-Enguix, M.D.R.; Lorente Bayona, L.V. Factors Affecting Public Expenditure Efficiency in Developed Countries. *Polit. Policy* **2017**, *45*, 105–143. [CrossRef]
85. Mirea, C.-N.; Nistoreanu, P. Existing accommodation capacity, factor of influence on tourist arrivals. Case study: Calarasi county, Romania. *Tour. South. East. Eur.* **2021**, *6*, 467–478. [CrossRef]
86. Sharpley, R. The Influence of the Accommodation Sector on Tourism Development: Lessons from Cyprus. *Int. J. Hosp. Manag.* **2000**, *19*, 275–293. [CrossRef]
87. Fernández Gallardo, J.A.; Caridad, Y.; Ocerín, J.M.; Genoveva Millán Vázquez De La Torre, M. Evaluation of the Reception Capacity of a Certain Area Regarding Tourist Housing, Addressing Sustainable-Tourism Criteria. *Sustainability* **2019**, *11*, 6422. [CrossRef]
88. Sarantakou, E.; Terkenli, T.S. Non-Institutionalized Forms of Tourism Accommodation and Overtourism Impacts on the Landscape: The Case of Santorini, Greece*. *Tour. Plan. Dev.* **2019**, *16*, 411–433. [CrossRef]
89. McKercher, B.; Mei, W.S.; Tse, T.S.M. Are Short Duration Cultural Festivals Tourist Attractions? *J. Sustain. Tour.* **2006**, *14*, 55–66. [CrossRef]
90. Zhang, J.; Yu, Z.; Miao, C.; Li, Y.; Qiao, S. Cultural Tourism Weakens Seasonality: Empirical Analysis of Chinese Tourism Cities. *Land* **2022**, *11*, 308. [CrossRef]
91. Chen, X.; Bao, K.; Gao, C.; Wen, Y.; Zhang, T. Towards Corporate Sustainability: Can the Cultural and Tourism Consumption Promotion Policy Enhance Corporate ESG Performance? *Sustainability* **2025**, *17*, 8402. [CrossRef]
92. Felsenstein, D.; Fleischer, A. Local Festivals and Tourism Promotion: The Role of Public Assistance and Visitor Expenditure. *J. Travel Res.* **2003**, *41*, 385–392. [CrossRef]
93. Gallegati, S.; Masiá, P.; Fanelli, E.; Danovaro, R. The Impact of Natural Capital Loss on Blue-Tourism Economy: The Red Sea Case Study. *Mar. Policy* **2025**, *172*, 106507. [CrossRef]
94. McKenna, J.; Williams, A.T.; Cooper, J.A.G. Blue Flag or Red Herring: Do Beach Awards Encourage the Public to Visit Beaches? *Tour. Manag.* **2011**, *32*, 576–588. [CrossRef]
95. Mooser, A.; Anfuso, G.; Pranzini, E.; Rizzo, A.; Aucelli, P.P.C. Beach Scenic Quality versus Beach Concessions: Case Studies from Southern Italy. *Land* **2023**, *12*, 319. [CrossRef]
96. Castellana, F.; Zupo, R.; Corbo, F.; Crupi, P.; Catino, F.; Petrosillo, A.M.; Giannico, O.V.; Sardone, R.; Clodoveo, M.L. Exploring Apulia's Regional Tourism Attractiveness through the Lens of Sustainability: A Machine Learning Approach and Counterfactual Explainability Process. *Sustainability* **2024**, *16*, 6287. [CrossRef]
97. Buongiorno, A.; Intini, M. Sustainable Tourism and Mobility Development in Natural Protected Areas: Evidence from Apulia. *Land Use Policy* **2021**, *101*, 105220. [CrossRef]

98. Gaffar, V.; Tjahjono, B.; Abdullah, T.; Sukmayadi, V. Like, Tag and Share: Bolstering Social Media Marketing to Improve Intention to Visit a Nature-Based Tourism Destination. *Tour. Rev.* **2022**, *77*, 451–470. [CrossRef]
99. Ait-Yahia Ghidouche, K.; Nechoud, L.; Ghidouche, F. Achieving Sustainable Development Goals through Agritourism in Algeria. *Worldw. Hosp. Tour. Themes* **2021**, *13*, 63–80. [CrossRef]
100. Morgese, F.; Giuffrida, N.; Ottomanelli, M. Analysis of Bike-Friendly Services for Sustainable and Resilient Tourism: The Case of Apulia Region. *Transp. Res. Procedia* **2025**, *90*, 27–34. [CrossRef]
101. Wolf, I.D.; Hagenloh, G.; Croft, D.B. Visitor Monitoring along Roads and Hiking Trails: How to Determine Usage Levels in Tourist Sites. *Tour. Manag.* **2012**, *33*, 16–28. [CrossRef]
102. Yang, Y.; Wong, K.K.F. A Spatial Econometric Approach to Model Spillover Effects in Tourism Flows. *J. Travel Res.* **2012**, *51*, 768–778. [CrossRef]
103. Hall, C.M. Constructing Sustainable Tourism Development: The 2030 Agenda and the Managerial Ecology of Sustainable Tourism. *J. Sustain. Tour.* **2019**, *27*, 1044–1060. [CrossRef]
104. Seraphin, H.; Gowreesunkar, V.G.B. Tourism: How to Achieve the Sustainable Development Goals? *Worldw. Hosp. Tour. Themes* **2021**, *13*, 3–8. [CrossRef]
105. Matos, S.; Jorge, S.; Moura, E.S.P. Measuring Local Public Expenditure Effectiveness Using Sustainable Development Goals. *Int. J. Public Sect. Manag.* **2023**, *36*, 440–462. [CrossRef]
106. Almstedt, Å.; Lundmark, L.; Pettersson, Ö. Public Spending on Rural Tourism in Sweden. *Fenn. Int. J. Geogr.* **2016**, *194*, 18–31. [CrossRef] [PubMed]
107. Lemos Baptista, J.M.; Pocinho, M.; Nechita, F. Tourism and Public Policy. *Ser. V Econ. Sci.* **2019**, *12*, 77–86. [CrossRef]
108. Torres-Delgado, A.; López Palomeque, F.; Elorrieta Sanz, B.; Font Urgell, X. Monitoring Sustainable Management in Local Tourist Destinations: Performance, Drivers and Barriers. *J. Sustain. Tour.* **2023**, *31*, 1672–1693. [CrossRef]
109. Wang, Y.; Zhang, H.; Gao, W.; Yang, C. COVID-19-Related Government Interventions and Travel and Leisure Stock. *J. Hosp. Tour. Manag.* **2021**, *49*, 189–194. [CrossRef]
110. Perchinunno, P.; L'Abbate, S.; Massari, A.; Antonucci, L. Statistical Indicators for the Identification of Sustainable Territories and Environmental Tourism. *Qual. Quant.* **2025**. [CrossRef]
111. Pugliapromozione L'impatto Economico del Turismo in Puglia: I Primi Trend Del 2024. 2025. Available online: https://aret.regione.puglia.it/dati-e-ricerche/rapporti-e-statistiche/dettaglio/-/asset_publisher/c2UOAprz5aIk/content/id/4682302/impatto-economico-del-turismo-in-puglia-il-trend-degli-otto-mesi-2024 (accessed on 28 August 2025).