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SUSTAINABLE TOURISM IN CAMPANIA REGION: STATISTICAL ANALYSIS AND METRICS FOR THE DEVELOPMENT OF TOURIST DESTINATIONS

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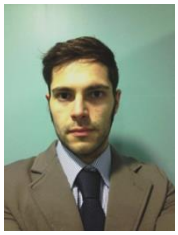

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Abstract
This paper deals with the issue of the sustainable tourism in Campania region and its touristic offer in the four territorial clusters: art cities, marine, thermal and hilly locations. In the paper it is pointed out that the way the regional authorities incentivize or assist farms to diversify into tourism may have implications for sustainability, examined in this study by the presence of 11 indicators. The Global Tourist Index (G) was estimated by the Global Tourism Index (G) for the region, obtained from the combination of structural variables (number of accommodation facilities and of beds) and of flows (arrivals and presences) registered in Campania tourism. Finally, some emerging territorial strategies are proposed for the integrated development of a tourist system in the Campania Region. That is, the tourist destinations and the territorial brand. The final aim of this research is to develop and test a global index (appropriately modified) for sustainable development in tourism industry context to address the integration of social, economic, and ecological elements of sustainable development and the contextual nature of sustainable development.

Keywords: *global tourist index; tourism performance measurement; sustainability; tourist destinations*

1. Introduction

1.1. Background

When, from the end of the 1960s to the beginning of the 1970s, it became clear not only among experts but also in the public opinion that the model of development undertaken by highly industrialized world was not sustainable on the planet because of its rhythm, its consumption of resources and the waste it generates, the issue is rational to the point of

appearing completely irreconcilable, on the one hand, the reasons for economic growth, and the "reasons of nature ", from the other. If studies and confirming the pressure of pressures exert on the natural environment from voracious economies such as European and North American ones, it is no less their model and is extending virtually no exceptions all over the world and so-called countries in the way of development essentially aspired to achieving the same levels of well-being, sufficient for energizers and high intensity resources, often with the use of even higher technology because of obsolete. Opposition has never been possible.

Since 1972, the data of the United Nations World Conference on the relationship between environment and development dates to the beginning of a long reflection path to overcome the drifts of is an alternative without a future. The concept of sustainable development is, to this day, one of the essential elements in the definition of economic and environmental policies on a global, national and local scale. All the activities that man undertakes, from economic to social and cultural ones, depend on the quality of relationships between society (Williams, 2001) and nature.

Nowadays, in a global context that is increasingly interdependent with every single reality, economic growth is not enough, development is complete and tangible only if it can improve the quality of life of a community. Development to be defined as sustainable cannot therefore renounce the conservation of natural equilibrium, the redefinition of criteria and cost / benefit analysis tools in the short, medium and long-term to reflect the consequences and the socio-economic value real consumption and conservation of natural assets and more equitable distribution and use of resources. 2015 was a favourable year for international tourism: According to the United Nations World Tourism Organization (UNWTO) data, international arrivals were 1,186 billion, an increase of 4.6%, or 52 million more than 2014

Almost all the world's macro-regions showed positive variations in arrivals: growth is highest for the Americas (5.9%) and for Asia and the Pacific (5.6%), followed by Europe (4.7%) and the Middle East (1.7%); only Africa declined (-3.3%). Europe - which is the most visited area in the world - has reached 607.7 million arrivals, with 27.5 million more tourists than in 2014; The increase is also appreciated in Southern Europe / Mediterranean with 10.4 million more arrivals (+ 4.8%)[3]. If we estimate the revenue from foreign travellers in our country: in the first half of the year, expenditure was 16.093 million euros, an increase of 3% over the same period of 2015 (476 million euros more).

For 2015, Banca d'Italia's final figures have been good: foreign travellers' spending in our country reached 35,556 million euros, an increase of 3.8% over the previous year (this is Euro 1,316 million more). The increase in spending is higher if you consider only the holiday motive (+ 5.8%) or just accommodation at hotels and villages (+ 5.5%)[4]. With reference to these economic data, in the current competitive environment it becomes essential to monitor and quantify the resources needed to manage a territory and its tourist dynamics. Despite the popularity of the strategy process which consists of formulation, implementation and evaluation, and various theories explaining the challenges of heterogeneity in firm performance, theoretical and empirical verification of the measurement concept has lagged practice (Phillips & Moutinho, 2014).

The following section seeks to create a theoretical platform for this study by summarizing the salient thematic characteristics of tourism performance measurement literature. The World Economic Forum has emphasised the need for a study that identifies and ranks the determinants of tourism performance. The Travel and Tourism Competitiveness Index is arguably the best-known instrument to rank nations according to their competitiveness but is

not a performance index (Assaf & Josiassen, 2012). The numbers continue to get larger with international tourism arrivals growing by 4% in 2012, exceeding the 1 billion marks for the first time (UNWTO, 2013). Despite the preoccupation with visitor arrivals, the underlying tourism model is becoming more complex, which necessitates new performance measurement approaches, tools and perspectives. More specifically, publication outputs in terms of books and articles on sustainable tourism, are not fully clear and findings are under-utilised (Cernat & Gourdon, 2012). Vila, Costa, and Rovira (2010) are supportive of these observations, by asserting that there is a need for a new family of models. The concept of tourism performance measurement has evolved from many perspectives e efficiency, competitiveness, tourism productivity and metrics in use. We provide a global index emerged from literature review to estimate a tourist destination. This latter, will be used as a statistical approach to analyse hypothesized relationships between the touristic indicators that are used in the research.

1.2. Scientific contributions on sustainable tourism

Several scholars offered contributions about sustainable tourism over the last decade. (Brown, 1991) has contributed to the recognised ambiguity in terminology (Beioley, 1995; De Kadt, 1990; Lanfant & Graburn, 1992; Murphy, 1994; Pearce, 1992, etc.) and the surfeit of labels. The concept of sustainable tourism development involves more dimensions showing the relationship of economic, social and cultural development and its compliance with the needs and constraints of the environment (Najdeska and Rakicevik, 2012). For example, ecotourism has no unequivocal usage. It has been expressed as a symbiotic relationship between tourism and nature conservation (Farrell & Runyan, 1991; Valentine, 1993), been equated with nature tourism (Boo, 1990), and constructed as a Venn diagram (Buckley, 1993; Wight, 1995). Occasionally, labels are combined to produce hybrids (see, for example, Dernoi, 1988; Wight, l995). As a concept, sustainable tourism is still evolving.

The most common definition of sustainable development says: *"Sustainable tourism is economically, socially and culturally sustainable tourism, whose socio-cultural and environmental impacts are neither permanent nor irreversible"* (Beech, Chadwick, 2005). Some meanings are even more minimalistic and include in sustainable tourism those activities and tourism structures that do not harm the environment or the lifestyles of local populations. More interesting is the definition proposed in 2002 by the Inter- National Council on Monuments and Sites (Icomos): *"Sustainable tourism refers to a level of tourist activity that can be maintained in the long term because it produces a net benefit for the social, economic, natural and cultural environments of its area"* (McKercher, 2003).

1.3. Purpose of the paper

The aim of this paper is to analyse some aspects of the sustainable tourism in Campania, studying, in particular, the regional receptive system in its demand and supply components, keeping in mind the impact that this sector has on the environment; It is also proposed to assess whether there are certain conditions for establishing a type of tourist industry aimed at a continuous renewal through measures and interventions by the public and private sector, which are suitable for preserving the tourist resources of the region. This paper analyses the tourist and tourist situation of Campania and its provinces and of the four main tourist areas, assessing, by applying some metrics, to what extent this economic sector affects the territory, and what is the impact that the tourist industry has on the environment.

The analysis concludes with the compilation of a composite index which has the function of obtaining an indicator that can provide a measure of the sustainability of tourism in the territories considered, starting from the individual results of the various indicators considered that, very different aspects. Based on the results obtained, we have compiled a list of the measure of the sustainability of the tourism sector both for the provincial territories and for the tourist areas considered. Tourism with its links with globalisation, governments, business and society has been caught up in this maelstrom and needs new forms of strategic thinking. In addition, competition among destinations continue to intensify (Bornhorst, Ritchie, & Sheehan, 2010), and the quest for competitive advantage can be elusive. Croes and Kubickova (2013) go further and state that competitive advantage could be a problematic concept. Its vagueness renders a multiplicity of meanings. Hence, the need for new performance measurement approaches is timely in terms of management control and organisational learning.

2. Methods

2.1. Population and data

The analysis of the sustainability of tourism in Campania has been carried out by analysing the general aspects of the tourism sector, both about the individual provincial territories and about the four tourist areas (art City, marine resorts, spa resorts and hilly areas) subject to analysis by ISTAT[5]. The latest available data were published in 2016 and concern the year 2015. The study of the accommodation offer, the density of the tourist facilities, the tourist demand of the five provinces and the four tourist areas, as well as the study of the tourist pressure in the structures of the various areas, paying particular attention to the period of minimal and maximum inflow of tourists and the study of the production of municipal solid waste (M.S.W.) in the same areas as well as the separate collection of M.S.W. (trying to quantify the amount of these attributable to the tourism sector as impact on the environment) are summarized in tables: appendix 1, 2, 3, 4, 5, 6, 7, 8 and in figures 1, 2 and 3.

These data are aimed at the construction of synthetic statistical indices, as described in the previous pages, which allow them to specifically assess the precipitous characteristics of the various territories and to construct a global index to be used to construct a ranking of the different territories based on tourism sustainability. These data are aimed at the construction of synthetic statistical indices that allow both the specific characteristics of the various territories and the construction of a global index to be used to construct a classification of the different territories based on the sustainability of tourism.

2.2. Inclusion criteria and variables

The index used to evaluate the quality of accommodation facilities is that of Attraction6, used for the first time by Mirloup (1974), based on the "star" classification of exercises in each territory. The formula for calculating the index is as follows:

$$A_i = \Sigma_c [(B_{ci}/ B_{ct}) \cdot C \cdot 100] \quad (2.1.)$$

i-th site's **Attractiveness Index**

where:

Bci = number of total beds of the hotel category C in the i-th site;
Bct = number of total beds of the hotel category C present in the complex (regional) of the investigated area;

C = 1 for 5-star hotels
C = 0.8 for 4-star hotels
C = 0.6 for 3-star hotels
C = 0.4 for 2-star hotels
C = 0.2 for 1-star hotels

The higher the value of the index, the higher the attractiveness of the territory. In addition, often the quality of the infrastructure is a source of greater respect for the environment. It is also necessary to evaluate the weight of infrastructures both on the physical territory and on the population. Two indexes of "tourist density" are used for this purpose.
The first, defined as Tourism Territorial Density Index, assesses the impact of tourism on physical territory and is given by the formula:

$$D = TB / S \qquad (2.2.)$$

Territorial Density of Tourism[7]
where:
TB = total number of beds in the territory
S = study area extensions

The meaning that is attributed to this index is as follows:
$0 \leq D < 8.80$ Nothing or negligible territorial pressure;
$8.80 \leq D < 25$ medium-high territorial pressure;
$25 \leq D < 50$ high-density tourist centres;
$50 \leq D < 100$ high density tourist centres;
$D \geq 100$ large tourist stations with considerable territorial loading to be monitored carefully.

The second index, however, defined as Defert's tourism function rate (1967), describes the impact of tourism on the resident population and gives information on the ability to absorb tourism in demographic terms.

The formula for the tourist function of Defert[8] is as follows:

$$F = (TB/P) \cdot 1000 \qquad (2.3.)$$

Defert Tourist Function Rate
where:
TB = total number of beds in the studied area
P = population of the studied area of Boyer (1972) provides the following values for the interpretation of the index (Boyer, 1976)*:*

$0 \leq F < 75.21$ centres with few tourist activities and functions and poor accidents in this area;
$75.21 \leq F < 100$ centres where tourism is a significant, but not dominant sub-sector;
$100 < F < 500$ centres where tourism is very important, but together with other activities;
$500 \leq F < 1000$ centres where tourism dominates the local economy, while scarce space is reserved for other sectors;
$F \geq 1000$ large tourist stations economically saturated from this sub fund.

To assess the tourist demand in Campania, the tourist pressure index was used at the time or gross utilization rate (Ferrari & Grugnali, 2003), which evaluated the pressure exerted on tourist facilities and, therefore, on the territories in different parts of the year. You can represent this index with the following report:

$$P_t = (Pr/TB \cdot Dt) \cdot 100 \qquad (2.4.)$$

Gross Use or Pressure (at time t)
where:
Pr = total presence in the territory at time t
TB = total beds available in the territory
Dt = days in t period

The index values can be interpreted as follows:
0 ≤ Pt <20 low pressure;
20 ≤ Pt <40 normal pressure;
40 ≤ Pt <60 relevant pressure;
60 ≤ Pt <80 very high pressure;
80 ≤ Pt <100 maximum pressure;
Pt ≥ 100 immanent environmental risk situations.

It is not easy to estimate the magnitude of the impact of tourism on the environment, as data that is suitable for this purpose is missing or difficult to find. Usually, two indices are used: the land use index and the urban solid waste production index. The Territorial Use Index aims to assess the use of land by the people (resident population and tourists). The formula is as follows:

$$S = (TA + P) / S \qquad (2.5.)$$

Surface Use Index
where:
TA = Tourist arrivals in the territory under consideration
P = Resident population in the territory concerned
S = Surface of the territory under consideration.

The second index, that of urban waste production, is frequently used since there are numerous data available, even at the level of detail. To obtain an indicator of the impact of tourism on the urban waste collection complex it is thought to add to the resident population the number of beds available for the accommodation offer: this is as if it were assumed that the beds were occupied by all year round and therefore, you can add to the local population several tourists equal to the beds available.

The resulting measure can be formalized as follows:

$$W_{tur} = (W_{tot} / P) - [W_{tot} / (P + TB)] \quad (2.6.)$$

Waste Production (by tourist bed: Ferrari and Grugnali, 2003)
where:
W_{tur}= *tourist waste*
W_{tot} = *total waste;*
P= resident population;
TB = total beds available.

By introducing in this formula, the gross utilization index (which measures the actual utilization of structures), where possible[9], the formula becomes:

$$W'_{tur} = (W_{tot} / P) - [W_{tot} / (P + TB \cdot P_t)] \quad (2.7.)$$

Weighted Waste Production (for occupied tourist bed)

This indicator provides an estimate of urban waste production attributable to the receiving sector; there is no data on urban waste production in the tourism sector, as this survey is not performed.

The production of solid urban waste is one of the phenomena, as is the increase in vehicular traffic, noise pollution and other phenomena, which have a significant impact on a territory where the tourism sector is significant. The analysis of urban waste production would not be complete if no measures were taken to minimize the impact of local governments. In this case, positive responses are provided solely by separate collection; therefore, an important valuation to be included in the overall assessment of a territory is the percentage of separate collection. A last index that was used within the elaborations we proposed in this thesis is the index of tourism relations, whose formula is as follows:

$$T = (P/Pr) *100 \quad (2.8.)$$

Index of Tourist Relations
where:
P = population in the studied area
Pr = tourist presence in the area studied

This index describes the impact of tourism on resident natural persons. Low index values are significant for a high fruition between the two variables considered. All statistical

indexes studied have their own specificity and value. For this reason, it is thought that starting from the value of the individual indices, it is possible to obtain a balanced indicator summarizing the sustainability features of a territory synthetically.

2.3. Statistical analysis: methodological approach

The first step in building a synthetic indicator is to transform the starting variables into simple, dimensional and then aggregable indicators, linear transformations[10] such as standardization (Palumbo, Lauro & Greenacre, 2010) are usually preferred[11]. Since you want to give 1 (or 100) to the province with the best performance and you have observed an X variable that positively supports sustainability, the transformation to be used can be:

$$T(x_i) = \frac{\min\{x_i\}}{x_i} 100 \qquad (2.9.)$$

or

$$T(x_i) = \frac{x_i}{\max\{x_i\}} 100 \qquad (2.10.)$$

where:

Xi = index value for each territory

$T(x_{ij})$ = normalized index value with one of the two formulas, chosen from time to time depending on the characteristics of the index.

The underlying logic is that negatively correlated variables with sustainability are first transformed into each other and then normalized (Terzi & Moroni, 2004) by rapping to the maximum. However, this process changes the form of distribution and alters (not just in the sign) the original correlation structure of the variables. A ranking of the different territories is then compiled for each index analysed. The average of all the indices considered is the composite indicator which will describe in summary the characteristics of tourism sustainability in different territories. The data we consider in subsequent compilations have a reference period of the year 2015, both in terms of accommodation consistency and tourist flows (provided by ISTAT, using the latest available data) as well as in terms of the disposal of solid urban waste and the separate collection. The data on this last issue are contained in the report provided by the O.R.R.[12] "Annual production of urban waste and percentage of separate collection of the Campania's municipalities ", published on Campania Region website. The index values referring to regional data allow you to make other estimates and to obtain static calculations and other metrics that measure the competitiveness of a territory.

The statistical Index of Attractiveness A (2.1) is calculated by assigning a score to all hotel structures present in each territory divided by category ("star" classification). The higher the quality of the hotels, the higher the value of the statistical index, as the scores attributed to the different hotels, or rather their accommodation capacity, are higher for the 5-star hotels. In the formula, in fact, factor C is 1 for 5-star hotels, 0.8 for 4-star hotels, 0.6 for 3-star hotels, 0.4 for 2-star hotels, 0.2 for 1-star hotels. The application of the formula to the five Provincial Territories and the four Tourist Areas considered, considering the number of beds divided by categories in the different territories and shown in tables 9 and 10, leads to the results shown in Tables 11 and 12.

3. The modified Global Tourism Indicator

All the statistical indexes analysed show a discrete validity taken individually, even in their specificity. None of them, however, alone can be taken as an indicator of the measure of the sustainability of tourism developed in a territory. An attempt to approach this goal is to build a composite indicator composed of the sum of the mean values of all these normalized indices, as suggested by Giacalone, La Tona, Marino (2005, 2013). To better balance the three different components - social, economic and environmental - the global tourism indicator G_{mod}, inspired by McGuy's "G" indicator from the statistical literature, was constructed in a weighted way using the indices already introduced in this paper, obtaining the following formula:

$$G_{MOD} = \frac{T(D_i)+T(TP_i)+T(A_i)+T(\%)}{12} + \frac{T(F_i) + T(AS_i) + T(S_i) + T(SI_i) + T(L_i)}{15} + \frac{T(T_i) + T(Wtur_i)}{6}$$

The weighting considers the three areas that define the G_{MOD} indicator (appendix tab. 15), namely the environmental, economic and social indicators. Each has been given a 1/3 weight by deploying it among the transformations of the simple indicators that define each scope (e.g., in the social sector, two simple indicators are used, so that the "social" transformations have been given a weight of 1 / 3: 1/2 = 1/6), the results obtained by applying are given in tables 15 (provinces) and 16 (touristic areas). Within these tables we find in the last column the rankings of the territories considered. For the calculation of the global indicator, all the indices presented in this chapter have been used, except for the W_{tur} Index (Waste Production Index per bed), given the use of a very similar index W'_{tur} (weighted waste index for occupied tourist bed). In addition, the index of the percentage of differential collection on the total urban waste produced, as indicated in the tables with "%", has been included, which has replaced the seasonal index St. Observing the data of the two tables together, the highest scores of the global indicator were obtained between the provinces of the Benevento and Salerno territories and among the tourist areas of the marine and hilly areas. The Province of Benevento is one of the most prominent in the area and therefore it is the most sustainable tourist area, especially for the efficiency of organizing separate collection but also for low tourist density in a wide area. Moreover, the province in question has a low tourist function of low Defert[13], just of centres with few tourist activities that have little impact on the economy of the area. The province of Salerno is immediately behind Benevento and has its second place in the quantity and quality of its hotel services, for maximum integration between tourists and resident population and for a good response in terms of percentage of differentiated collection in front of a remarkable waste production.

These results are also achieved in the territory that has the highest tourist function of Defert, where tourism has a certain bearing on the local economy. As far as the tourism sectors concerned are concerned, the data are different from those for the provinces as there is a clear difference in values between the first grouping of the ranking and the others. We can notice that the marine environment is markedly marked by the hilly areas that occupy the second position in this ranking. The marinas reach the highest score due to the quality and quantity of hotels in the area, for the maximum integration between tourists and resident population and for the marked connotation of the municipalities that are part of this group. After changing the Global Index, it is then done by building the rankings of the different areas (Horn, 1993). The hill country, on the other hand, has the second place with the

same indicators that have made the Province of Benevento the most sustainable tourism, mainly the remarkable efficiency of the differentiated collection and the low environmental impact that tourism has on the environment. Moreover, its Defert rate of 37.79 is very low, just in an area where tourism is a scarce sub-fund relevant.

4. Main results in Campania region

As can be seen from the tables in the appendix, in 2015 in Campania were recorded 5.258.081 arrivals and 18.855.907 attendances. The long-established distribution of tourist resorts sees the prevalence of marine resorts (40% of arrivals and 44% of attendance) followed by art cities (26% arrivals and 19% attendance). SPA resorts account for 4% of arrivals and 5% of attendance while the hilly areas end up being ranked in a totally residual manner with about 1.5% of arrivals and attendances. Municipalities excluded from these four tourist areas account for 29% of arrivals and 31% of attendance. Regarding the provincial territories, however, the primacy of the Province of Naples is highest, reaching only 66% of arrivals and 64% of attendance.

The lowest movements are recorded in Benevento province, which records 0.5% of arrivals and attendances. Stopping on the distribution of the tourist movement over the course of the year, the inflow flows are mainly concentrated in May-September, with 63.8% of arrivals concentrated in this period, higher than the national average. The distribution of the tourist movement by country of origin sees the prevalence of Italian tourists representing 56% of arrivals and 54% of attendance. The preferred accommodation types are 3 and 4-star hotels, while in extra hotel preference goes to bed and breakfast. Tables 9 and 10 shows that almost all high-end structures are concentrated in the coastal areas of the region as well as in the two main provinces of Naples and Salerno, emphasizing the tourist concentration on the coastal zone.

These data also confirm the strong tourist concentration of the structures along the coastal slopes and in the cities of art coinciding with the provinces of Naples and Salerno for the most part. The standardization of 100 of this statistical index, carried out with formula $T(x_i)$ (1.10), leads to the values transcribed in tables 11 and 12. By comparing the table data together, there is a very clear gap, as the provinces of Naples and Salerno, together with the marine areas and art cities, show very high values of the attractiveness index, while significantly lower values of the other territories, due to the quality and quantity of the present exercises. This phenomenon has several explanations, one of the most important of which is the peculiarity of the territories under consideration, the celebrity of the sites considered, world-famous as a destination of universal and qualitatively superior tourism, as is confirmed by the high number of 4 and 5 stars.

5. Managerial Implications

Within the data analysed, it was possible to identify significant differences that could be critical to intervening and managing. In particular:

- Not all provinces have the same degree of attractiveness and this is already a departure misalignment, and Naples and Salerno are the premier as they are rich in tourist attractions, both cultural and natural.

• The Tourism Reporting Index is not just an index that measures an environmental impact, but an index that measures the impact tourism has on the resident population, probably the difference in values between provinces is justified by a different "aptitude for all 'welcome', most definitely present by those who are more inclined to welcome tourists, but certainly also contribute to the behavioural features inherent in the population, as well as a number of factors that link tourists to the area, such as the sharing of customs and traditions, strongly rooted in the Neapolitan province.

• In addition, Naples and Salerno are given higher scores than the tourist function index, indicating that these two provinces are the most well-equipped to accommodate tourists and in that the tourist sector is therefore of greater importance, while the rest have, for example, a low amount of beds.

• Analysis on weighted waste production for busy tourist bedding show an inverted ranking, as tail lights are Naples and Salerno, while the most virulent ones are Avellino and Benevento who manage to dispose of a larger percentage of trash

In relation to what has been said, it is worth thinking about the possible managerial implications. Campania tourism is almost entirely represented by the tourism of the seaside resorts and art cities that are concentrated in the provinces of Naples and Salerno, which are the main bells for this purpose. However, considering the global G(mod) indicator, which measures sustainability of tourism according to statistical parameters, Naples is ranked one of the worst because despite high scores in some indices, such as the attractiveness, it fails to reach acceptable levels in the collection differentiated. There are, in fact, very low values in the weighted waste production analysis for busy tourist bedding, because there are some objective difficulties in managing large tourist flows on which there is still a need to improve despite the efforts of the region. Same speech also for Caserta, which is penultimate in this ranking. A possible strategy to be implemented to improve the situation could be further awareness-raising action towards differentiated collection and implementation of the special baskets, to make the city more up to date and then bridge this gap with other provinces.

From the global indicator G (mod) the best province is Benevento, thanks to the high values in the weighted waste production analysis for occupied tourist bed, but on the other hand its regional tourism share equals 0.5% of the of total tourism, so it is imaginable that sustainable tourism is of such a small size. Like Benevento also Avellino, which unfortunately registers low tourist flows.

In this case, however, it would be necessary to make the territory more attractive to increase its percentage of regional tourism, perhaps through actions to create a "territorial brand", to enhance its natural and cultural resources, all of which was supported by the development of some functional infrastructures where needed. Salerno is second in the list according to the composite G (mod) indicator due to the good degree of attractiveness it possesses, the better functioning of the differentiated collection and the low weighted percentage of waste produced. This city can better represent the concept of sustainability, considering its tourism inflows almost like Naples.

6. Final remarks

Campania has a tourist destination of excellence, the Gulf of Naples, one of the favourite destinations for mass tourism. This is countered by an internal Campania that remains practically unknown both to the historical currents of national and international tourism, as to regional tourism, with blurred visibility from the Gulf of Naples (Sorrento, Capri and Ischia). From the results obtained, the situation is characterized by a very uneven tourism sector within the regional territory, both about the characteristics of the territory and the concentration of the tourist facilities. The receptive sector is concentrated mainly in the coastal part of the region, in the provinces of Naples and Salerno, where most of the beds are also concentrated. Most high-end structures are concentrated in the coastal areas of the region, 51% of the total, which also coincides with localization in the two main provinces of Naples and Salerno. This phenomenon has several explanations, one of the most important of which is the peculiarity of the territories under consideration, the celebrity of the sites considered, world-famous as a destination of universal and qualitatively superior tourism, as is confirmed by the high number of 4 and 5 stars.

The regional density index also scores high scores for the cities of Naples and Salerno, respectively, 78.28 and 16.32, respectively, because surely a larger number of structures will correspond to a higher number of beds, 60% for precision but also because the two provinces are territorially more exploited, for example, for the province of Naples there are 91,000 beds approximately for a density of 1711 sq. km. while for the province of Avellino we observe 6,500 beds for a surface of 2 ' 800 sq. km., far more extensive than the Neapolitan province. It is also noted that, compared to a regional average of 14.68, the provinces of Caserta, Avellino, Benevento have very low values of the 2 to 5, low-pressure or negligible due to the low demand for beds; the province of Salerno, on the other hand, reaches values in line with those of the regional average, which is a territory of medium to high territorial pressure, the province of Naples is the only one showing an index of a very high-density tourist area. If, however, we look at the four tourist areas considered in our analysis, we note that everyone easily overcomes the regional average: the hilly areas, located in the province of Salerno, show values of the index of a high-density tourism area, value of 47.72, while all other areas reach very high figures of the index:

- Spa resorts 312.08
- Marine sites 241,30
- Art Cities 116.16

which means that they have a considerable territorial burden and that most of this tourism develops within the two main provinces, so that all aspects of tourism, from seaside resorts to art cities, are valued. As far as tourism relations with the territory are concerned, together with the data of the tables, compared to a regional average of 31.3, all the tourist areas considered and the provinces of Naples and Salerno have lower values, while the provincial provinces of Caserta , Avellino and Benevento values are much higher, probably this difference in values is justified by a different "welcome attitude", which is definitely greater than those who are more inclined to welcome tourists, but certainly also contribute to the behavioural features inherent in the population , as well as a number of factors that link tourists to

the area, such as the sharing of customs and traditions, strongly rooted in the Neapolitan province.

Other topics on which to reflect is certainly the separate collection, the data of the Region are quite comforting, as the regional average is 47.58%, in line with the national average of 45% and above the average value of 31% for southern regions. Values above the regional average are recorded in four provinces (Salerno, Caserta, Avellino, Benevento) and three areas (marine, thermal and hilly areas), while in the province of Naples, the area producing more waste than all 'art, the percentage of differentiation is well below the regional average. These results are not surprising, in fact even though Naples and Salerno in absolute value have the highest differentiation rates among all provinces, putting the same in relation to the amount of waste produced, they are the tail ring of the provinces for virtuosity. This result is certainly justified by the high inflows and the difficult management of these, but data is improving, and the policies of the region are continually improved and implemented.

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Appendix

Table 1. Accommodation offer in Campania provinces 2015

PROVINCES	INHABITANTS	HOTELS					EXTRA-HOTELS				
		N° FIRMS	%	TOTAL BEDS	%	T.B. X 1000 INHABITANTS	N° FIRMS	%	TOTAL BEDS	%	T.B.X 1000 INHABITANTS
Napoli	3.113.900	947	55,12	70.723	58,71	22,71	1.112	28.08	20.938	26,13	6.72
Salerno	1.106.506	539	31,37	34.565	28,69	31,24	1.737	43.87	46.286	57,77	41.83
Caserta	924.412	101	5,88	8.942	7,42	9,67	330	8.34	6.754	8,43	7.31
Avellino	425.325	80	4,66	3.956	3,28	9,30	268	6.77	2.552	3,19	6.00
Benevento	280.707	51	2,97	2.279	1,89	8,12	512	12.93	3.590	4,48	12.79
Regione	5.850.850	1.718	100	120.465	100	20,59	3.959	100	80.120	100	13.69

Source: Our elaboration of ISTAT's data for the year 2015

Table 2. Accommodation offer in the four tourist areas in 2015

PROVINCES	INHABITANTS	HOTELS					EXTRA-HOTELS				
		N° FIRMS	%	TOTAL BEDS	%	T.B. X 1000 INHABITANTS	N° FIRMS	%	TOTAL BEDS	%	T.B.X 1000 INHABITANTS
Art City	1.022.242	221	24,56	16.989	24,49	16,62	270	21,00	11.206	45,20	10,96
Marine resort	353.866	551	61,22	43.230	62,33	122,16	911	70,84	12.572	50,71	35,53
SPA resort	79.658	102	11,33	7.680	11,07	96,41	28	2,18	353	1,42	4,43
Hilly areas	56.149	26	2,89	1.463	2,11	26,06	77	5,99	660	2,66	11,75
Total	1.511.915	900	100	69.362	100	45,88	1.286	100	24.791	100	16,40
Region	5.850.850	1.718		120.465		20,59	3.959		80.120		13,69

Source: Our elaboration of ISTAT's data for the year 2015

Table 3. Tourist demand by firm's type and relative average stay in Campania provinces in 2015

PROV.	ARRIVALS					ATTENDANCES					MEDIUM PERMANENCE			MEDIUM PERMANENCE TOT. IDEXED MP
	Hotel	%	Extra Hotel	%	Tot.	Hotel	%	Extra Hotel	%	Tot.	Hotel	Extra Hotel	Tot.	
Napoli	3.214.388	69,1	262.037	43,2	3.476.425	11.265.318	72,2	859.361	26,4	12.124.679	3,50	3,28	3,49	81,88
Salerno	1.010.540	21,7	328.818	54,2	1.339.358	3.346.064	21.4	2.359.148	72,4	5.705.212	3,31	7,17	4,26	100
Caserta	320.386	6,89	5.985	0,99	326.371	766.185	4.91	12.801	0,39	778.986	2,39	2,14	2,39	56,03
Avellino	77.583	1,67	3.249	0,54	80.832	149.019	0.96	6.704	0,21	155.723	1,92	2,06	1,93	45,23
Benevento	28.467	0,61	6.626	1,09	35.093	73.006	0.50	18.301	0,56	91.307	2,56	2,76	2,60	61,08
Regione	4.651.364	100	606.715	100	5.258.079	15.599.592	100	3.256.315	100	18.855.907	3,35	5,37	3,59	84,19

Source: Our elaboration of ISTAT's data for the year 2015

Table 4. Tourist demand by source and relative average stay in the Campania provinces in 2015

TOURIST AREA	ARRIVALS	ATTENDANCES	MEDIUM PERMANENCE	MEDIUM PERMANENCE TOT. IDEXED MP
Art City	1.360.887	3.626.882	2,67	57,59
Marine resort	2.106.687	8.228.805	3,91	84,41
SPA resort	203.590	942.131	4,63	100
Hilly areas	71.708	238.547	3,33	71,89
Region	5.258.081	18.855.907	3,59	77,49

Source: Our elaboration of ISTAT's data for the year 2015

Table 5. Tourist demand by source and relative average stay in the Campania provinces in 2015

PROV.	ARRIVALS					ATTENDANCES					MEDIUM PERMANENCE		
	Italians	%	Foreigners	%	Tot.	Italians	%	Foreigners	%	Tot.	Italians	Foreigners	Tot.
Napoli	1.722.700	58.6	1.753.726	75.6	3.476.426	5.672.139	55.6	6.452.540	74.4	12.124.679	3.3	3.7	3.5
Salerno	843.973	28.7	495.385	21.4	1.339.358	3.712.951	36.5	1.992.261	22.9	5.705.212	4.4	4	4.3
Caserta	272.000	9.3	54.372	2.3	326.372	592.117	5.8	186.869	2.2	778.986	2.2	3.4	2.4
Avellino	70.205	2.4	10.627	0.5	80.832	129.873	1.3	25.850	0.3	155.723	1.8	2.4	1.9
Benevento	30.668	1.0	4.425	0.2	35.093	76.388	0.8	14.919	0.2	91.307	2.5	3.4	2.6
Region	2.939.546	100	2.318.535	100	5.258.081	10.183.468	100	8.672.439	100	18.855.907	3.5	3.7	3.6

Source: Our elaboration of ISTAT's data for the year 2015

Table 6. Tourism demand by origin and their average stay in the four tourist areas in 2015

TOURIST AREA	ARRIVALS					ATTENDANCES					PERMANENZA MEDIA		
	Italians	%	Foreigners	%	Tot.	Italians	%	Foreigners	%	Tot.	Italians	Foreigners	Tot.
Art City	721.015	39,5	639.872	33,4	1.360.887	1.834.233	30,4	1.792.649	25,6	3.626.882	2,54	2,80	2,67
Marine resort	941.674	51,5	1.165.013	60,8	2.106.687	3.449.369	57,1	4.779.436	68,3	8.228.805	3,66	4,10	3,91
SPA resort	139.941	7,7	63.649	3,3	203.590	683.867	11,3	258.264	3,7	942.131	4,89	4,06	4,63
Hilly areas	24.460	1,3	47.248	2,5	71.708	72.795	1,2	165.752	2,4	238.547	2,98	3,51	3,33
Total	1.827.090	100	1.915.782	100	3.742.872	6.040.264	100	6.996.101	100	13.036.365	3,31	3,65	3,48
Region	2.939.544	62,2	2.318.535	82,6	5.258.079	10.183.468	59,3	8.672.439	80,7	18.855.907	3,46	3,74	3,59

Source: Our elaboration of ISTAT's data for the year 2015

Table 7. Urban waste production and recycling in the Campania provinces in 2015

PROVINCES	WASTE PRODUCTION IN TONS			WASTE PER CAPITA (kg/Inhab.)		
	M.S.W.*	Recycling	Incidence %	Inhabitants	M.S.W./Inhab.	Recycling /Inhab.
Napoli	1.452.115	608.021	41,87	3.113.900	466,33	195,26
Salerno	438.982	251.999	57,41	1.106.506	396,73	227,74
Caserta	433.532	212.839	49,09	924.412	468,98	230,24
Avellino	144.062	82.208	57,06	425.325	338,71	193,28

Benevento	91.795	63.245	68,90	280.707	327,01	225,31
Region	2.560.486	1.218.312	47,58	5.850.850	437,63	208,23

Source: Our elaboration of ISTAT's data for the year 2015

*MSW stands for Municipal Solid Waste

Table 8. Urban waste production and recycling in the four tourist areas in 2015

TOURIST AREA	WASTE PRODUCTION IN TONS			WASTE PER CAPITA (kg/Inhab.)		
	M.S.W.*	Recycling	Incidence %	Inhabitants	M.S.W./Inhab.	Recycling /Inhab.
Art City	529.251	124.307	23,49	1.022.242	517,74	121,60
Marine resort	191.921	119.046	62,03	353.846	542,39	336,44
SPA resort	33.781	19.432	57,52	79.681	423,95	243,87
Hilly areas	22.853	14.595	63,86	56.149	407,01	259,93
Total	777.806	277.380	35,66	1.511.918	514,45	183,46
Region	2.560.486	1.218.312	47,58	5.850.850	437,63	208,23

Source: Our elaboration of ISTAT's data for the year 2015

*MSW stands for Municipal Solid Waste

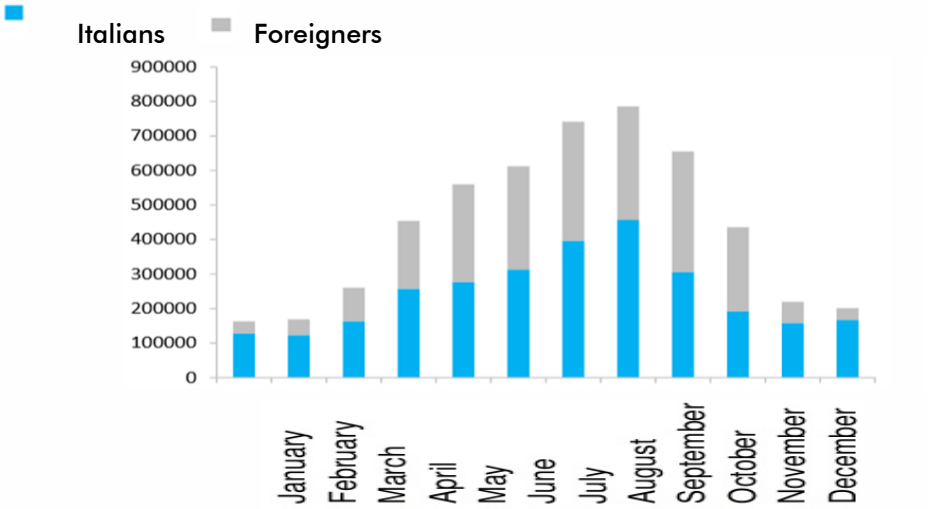

Figure 1. Tourist arrivals in Campania in 2015

Source: ISTAT 2015 data

Table 9. Beds in hotels of Campania provinces in 2015

PROVINCES	5 STARS HOTEL	4 STARS HOTEL	3 STARS HOTEL	2 STARS HOTEL	1 STARS HOTEL
Napoli	4.156	35.732	23.541	4.074	1.556
Salerno	2.381	12.210	11.951	1.740	466
Caserta	0	4.179	2.684	314	0
Avellino	0	1.521	1.949	424	62
Benevento	30	1.162	854	156	77
Region	6.567	54.804	40.979	6.735	2.161

Source: Our elaboration of ISTAT's data for the year 2015

Table 10. Beds seats in the four tourist areas divided by hotel category

TOURIST AREAS	5 STARS HOTEL	4 STARS HOTEL	3 STARS HOTEL	2 STARS HOTEL	1 STARS HOTEL	RESIDENCE
Art City	972	8.616	5.567	640	461	733
Marine resort	3.771	22.744	12.828	1.709	719	1.459
SPA resort	720	3.482	2.236	1.092	150	0
Hilly areas	293	872	168	50	0	79
Total	4.784	27.098	15.232	2.851	869	1.538
Region	6.567	54.804	40.979	6.735	2.161	9.219

Source: Our Elaboration of ISTAT's data for the year 2015

Table 11. Attractiveness Index for Campania Provinces in 2015

PROV.	5 STARS HOTEL CONTRIBUTION	4 STARS HOTEL CONTRIBUTION	3 STARS HOTEL CONTRIBUTION	2 STARS HOTEL CONTRIBUTION	1 STARS HOTEL CONTRIBUTION	ATTRACTIVESS INDEX A	NORMALIZED INDEX	SCORE
Napoli	63,29	52,16	34,47	24,20	14,40	188,51	100	1
Salerno	36,26	17,82	17,50	10,33	4,31	86,23	45,74	2
Caserta	0	6,10	3,93	2,03	0	12,06	6,40	3
Avellino	0	2,22	2,85	2,52	0,57	8,17	4,33	4
Benevento	0,46	1,70	1,25	0,93	0,71	5,04	2,67	5
Region						300		

Source: Our elaboration of ISTAT's data for the year 2015

Table 12. Attractiveness Index for Tourism Areas in 2015

TOURIST AREAS	5 STARS HOTEL CONTRIBUTION	4 STARS HOTEL CONTRIBUTION	3 STARS HOTEL CONTRIBUTION	2 STARS HOTEL CONTRIBUTION	1 STARS HOTEL CONTRIBUTION	ATTRACTIVESS INDEX A	NORMALIZED INDEX	SCORE
Marine resort	78,83	67,15	50,53	23,98	16,55	237,03	100	1
Art City	20,32	25,44	21,93	8,98	10,61	87,27	36,82	2
SPA resort	15,05	10,28	8,81	15,32	3,45	52,91	22,32	3
Hilly areas	6,12	2,57	0,66	0,70	-	10,06	4,25	4

Source: Our elaboration of ISTAT's data for the year 2015

Table 13. Index of tourist relations in the Campania provinces in 2015

PROV.	INHABITANTS	ATTENDANCE	T	NORMALIZED INDEX	SCORE
Napoli	3.113.900	12.124.679	25,68	75,52	2
Salerno	1.106.506	5.705.212	19,39	100	1
Caserta	924.412	778.986	118,67	16,34	3
Avellino	425.325	155.723	273,13	7,10	4
Benevento	280.707	91.307	307,43	6,31	5
Region	5.850.850	18.855.907	31,03	62,50	

Source: Our elaboration of ISTAT's data for the year 2015

Table 14. Index of tourist relations in the four tourist areas in 2015

TOURIST AREA	INHABITANTS	ATTENDANCE	T	NORMALIZED INDEX	SCORE
Art City	1.022.242	3.626.882	28,19	15,26	4
Marine resort	353.866	8.228.805	4,30	100,00	1
SPA resort	79.658	942.131	8,46	50,86	2
Hilly areas	56.149	238.547	23,54	18,27	3
Region	5.850.850	18.855.907	31,03	62,50	

Source: Our elaboration of ISTAT's data for the year 2015

Table 15. Global Index in the Campania provinces in 2015

Prov	Florence[14] Specialization Index SI	Lundgren[15] Tourist Connotation Index L	Average Stay AS	Attractiveness Index A	Tourism Territorial Density Index D	Defert[16] Tourist Function F	Tourist Pressure Index TP	Surface Use Index S	Weighted Waste Production For Occupied Tourist Bed W'_{TUR}	Waste Collection %	Tourist Relations Index T	Total	Global Index G	Score
Napoli	40,29	32,15	81,88	100	2,96	40,29	11,76	2,70	11,11	60,77	75,52	459,42	***42,06***	*4*
Salerno	100	100	100	45,74	14,21	100	22,05	30,75	11,51	83,32	100	707,58	***61,22***	*2*
Caserta	23,24	22,67	56,03	6,40	39,18	23,24	31,35	32,18	30,40	71,26	16,34	352,27	***30,64***	*5*
Avellino	20,94	39,78	45,23	4,33	100	20,94	65,02	84,15	86,56	82,82	7,10	556,87	***51,01***	*3*
Benevento	28,61	97,51	61,08	2,67	82,21	28,61	100	100	100	100	6,31	707,01	***62,51***	*1*

Source: Our elaboration of ISTAT's data for the year 2015

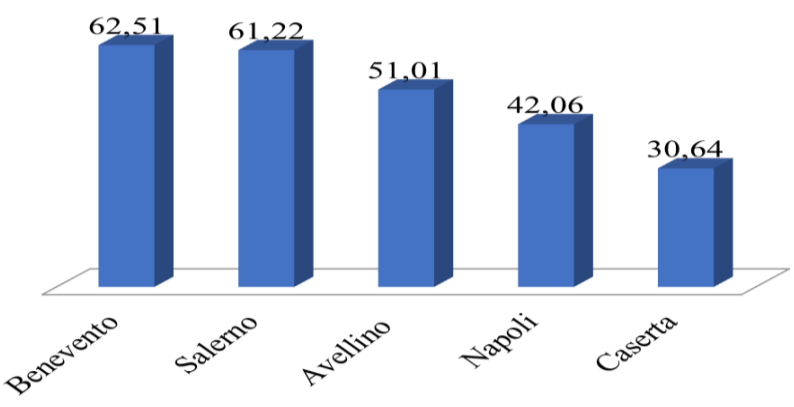

Figure 2. G_{mod} Sustainability Index for Campania Provinces
Source: Our elaboration of ISTAT's data for the year 2015

Table 16. Global Index in the four tourist areas in 2015

Tourist Area	Florence Specialization Index SI	Lundgren Tourist Connotation Index L	Average Stay AS	Attractiveness Index A	Tourism Territorial Density Index D	Defert Tourist Function F	Tourist Pressure Index TP	Surface Use Index S	Weighted Waste Production For Occupied Tourist Bed W'_{TUR}	Waste Collection %	Tourist Relations Index T	Total	Global Index G	Score
Art City	17,49	11,63	57,59	36,82	41,08	17,49	54,98	29,28	85,79	36,78	15,26	404,18	***39,45***	*4*
Marine resort	100	100	84,41	100	19,78	100	62,27	27,02	46,70	97,13	100	837,31	***74,56***	*1*
SPA resort	63,95	39,50	100	22,32	15,29	63,95	100	26,13	67,56	90,07	50,86	639,63	***57,05***	*3*
Hilly areas	23,98	44,40	71,89	4,25	100	23,97	71,12	100	100	100	18,27	657,87	***60,76***	*2*

Source: Our elaboration of ISTAT's data for the year 2015

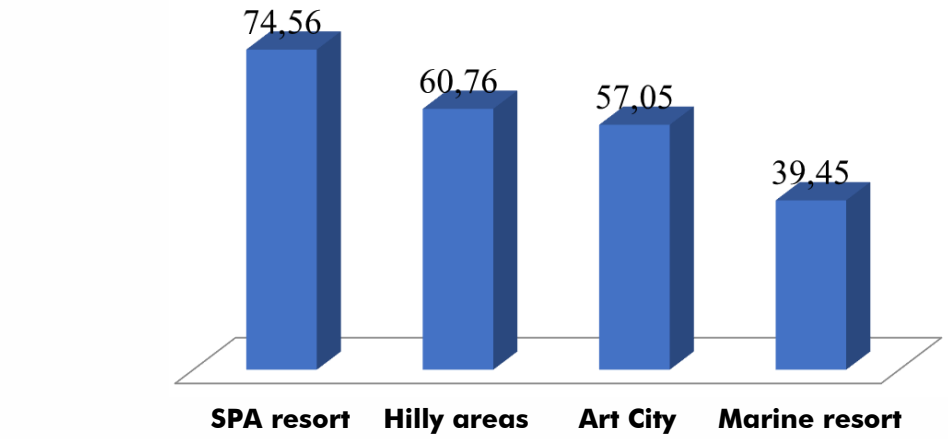

Figure 3. G_{mod} Sustainability Index for Touristic Areas
Source: Our elaboration of ISTAT's data for the year 2015

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[3] UNWTO, World Tourism Barometer – July 2016.

[4] Elaboration of ENIT (National Tourism Agency) on data of the Bank of Italy.

[5] The Italian National Institute of Statistics, a public research organisation, is the main producer of official statistics in the service of citizens and policy-makers. It operates in complete independence and continuous interaction with the academic and scientific communities.

[6] Mirloup J., Éléments méthodologiques pour une étude de l'équipement hôtelier: l'exemple des départements de la Loire Norois, Poitiers, 1974.

[7] Ferrari, Grugnale: "La sostenibilità del turismo nella regione Abruzzo", Università "G. d'Annunzio" Chieti, 2003 (www.unich.it/labgeogr/ric2003).

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[9] It is not possible in the case of centres where there are at least three accommodation structures of the same type, in which case the data are not provided based on the provisions of Art. 9 of Legislative Decree 322/1989 and subsequent amendments.

[10] Terzi, S. (2009).

[11] Wöber, K. W. (2000).

[12] Regional Waste Observatory (Osservatorio Regionale Rifiuti - O.R.R.).

[13] Défert, 1967.

[14] Florence, 1948.

[15] Lundgren, 1966.

[16] Défert, 1967.