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Assessment of the Tourism's Potential as a Sustainable Development Instrument in Terms of Annual Stability: Application to Spanish Rural Destinations in Process of Consolidation

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Abstract: Tourism has established itself as an instrument that supports the sustainable development of rural destinations and has both, negative and positive effects. The annual instability of the flow of visitors, known as tourist seasonality, contributes to the intensification of some of these negative effects. In this work, we perform an analysis on the evolution of the seasonality intensity during the process of consolidation of the Spanish rural destinations, designed to improve the knowledge about the tourist activity's capacity to generate a sustainable development alternative steady throughout the year. To guarantee an accurate measurement, we propose the use of a synthetic indicator as a methodological innovation, such as the Method of Distance Pena DP2, that brings together the supply and demand variables. We can observe that tourist seasonality is restrained in smaller destinations that experience a growth in terms of tourists' arrivals, so it is associated with the early stages of the consolidation process. However, the destinations with a lower seasonality level do not match with those that welcome a larger number of visitors. Those destinations with the potential to obtain more benefits because of their level of consolidation do not have the necessary annual stability to provide employment and income in a steady way throughout the year.

Keywords: rural tourism; sustainability; seasonality; sustainable development

1. Introduction

This study presents an analysis of the evolution of the tourism seasonality in rural destinations in process of consolidation. Consolidation is understood as the annual growth in the number of visitors until the destination reaches a stable and mature state. The aim is to determine how the seasonal intensity evolves during the process of consolidation of these destinations while we analyze whether the growth of the tourist activity implies a reduction of the seasonality. The need to know more about this process comes from the importance of the tourist activity's strengthening as a real option of development and creation of stable employment in rural destinations, conditioned by the seasonal trends.

The study begins with the analysis of the consequences that result from the effects that tourism seasonality has on rural development, so that the effects on rural destinations of these tendencies can be contextualized correctly. To do so, we present a bibliographic review based on tourist seasonality, its causes, impacts and the role of tourism in rural development. The work continues with a description

of the methodology used to reach the goals set. In this case, we propose, as a methodological innovation, the construction of a synthetic multivariable indicator, such as the Method of Distance Pena DP2, which is able to describe the seasonality phenomenon in a comprehensive way. This innovation could be used in different fields to compare the seasonal intensity of different countries, regions, cities or types of tourism. After explaining and justifying this alternative, we present the results obtained from its application to the Spanish rural tourist destinations.

We justify choosing Spain as the area of study because of its intense tourist activity: in 2015, it was responsible for the 11.7% of the national GDP—119 billion Euros—and helped create in a direct way 1.4 million jobs, above any other activity present in Spain's economy [1]. Spain ranked third in 2015 in terms of income coming from international tourism with USD 57 billion, below The United States with an income of USD 178 billion and China, with USD 114 billion [2].

Rural tourism in Spain drew 1.57 million tourists in 2016, which means a growth of 86.36% in the last 11 years [3] and therefore proves an excellent area to study the consolidation of the non-conventional destinations. We speak of non-conventional destinations since in this country in 2005 only 844,575 travelers were considered to be rural tourists, opposite to the 47.74 million coastal tourists [3]. The fact that now we can consider it a consolidated type of tourism is due to the increase in the number of tourists. Rural tourism in Spain revolves around 65 rural destinations, classified in this way by the National Statistics Institute (NSI) contingent upon the Spanish Government. For an establishment to be considered a proper rural accommodation, it must be in the official register and fulfill the requirements set by the laws of each regional government. The NSI uses the monthly data generated by the tourist activity developed in these establishments in each tourist area. These official data will also help to construct the base to develop our study.

A low degree of seasonality is a necessary or desirable condition, at least, since a steady flow of annual income, activity and employment is needed to position tourism as a real development alternative. Seasonality is a common phenomenon in several economic sectors but tourism is affected to a greater extent by this tendency [4]. If we focus on the tourism industry we, can consider Burtler's definition "a temporal imbalance in the phenomenon of tourism, [which] may be expressed in terms of dimensions of such elements as numbers of visitors, expenditure of visitors, traffic on highways and other forms of transportation, employment, and admissions to attractions" [5]. According to that, this phenomenon can be described using different variables, which would only hinder its measurement. This means, as argued by Martin et al., that the variable chosen to describe seasonality will condition the ranking of destinations based on their intensity [6]. Hence, to evaluate tourism's annual stability, a global system that allows us to analyze these tendencies considering the most descriptive information is needed. This system is the additional contribution presented in this paper: the proposal of a synthetic indicator of seasonality that provides us with a comprehensive supply–demand analysis.

The measurement of the tourist destinations' seasonal intensity is crucial when identifying how capable is the tourist activity to act as an element of development in rural areas. To know these tendencies is important to perform a tracking of the stability and to be able to compare between territories or the different types of tourism. Several authors have noted the lack of studies about some aspects of the tourist seasonality, necessary to enhance the comprehension of this phenomenon. Koenig-Lewis and Bischoff claimed that research gaps still remain in terms of both defining a solid theoretical framework and the need to adopt a more demanding quantitative perspective [7]. This last point is directly related with the contribution of this work: a comprehensive supply–demand approach that is able to provide a perception of the seasonality's intensity. The absence of synthetic indicators able to describe this phenomenon completely hinders its tracking.

The methodology proposed by this study to solve this problem has its roots in the construction of a synthetic indicator, that departing from a group of variables or partial indicators of the seasonality, quantifies several aspects of the phenomenon and aggregate them into a single data. In this case, an aggregation of information about seasonal trends expressed through several supply and demand variables is generated. The index produces a classification of the seasonality's intensity in the different

rural tourist destinations using the Method of Distance Pena (DP2), which allows for the measurement of disparities between different areas [8–10]. The reason for using the DP2 method and its advantages over other statistical methods are discussed below.

2. Seasonality and Sustainable Development in the Rural Environment

The concept of rural tourism is broad, which makes it necessary to accurately define the term. To do so, we consider the definition proposed by Blanco "The singular expression of the new forms of tourism, characterised by: being developed outside urban centres; occurring on a small scale; using—in a variety of ways—the natural, cultural, heritage and accommodation resources available, and the services belonging to the rural environment; and contributing to local development and to the diversity of tourism competitiveness" [11]. The starting premise of this work is the potential importance of the tourist activity in the rural development. Priskin deepens further in this idea and points out that tourism is a priceless tool for the sustainable development of the rural areas [12]. Several local communities in rural regions across the world are encountering serious economic crises resulting in out-migration of populations, particularly youth, deteriorating natural resources on which livelihoods—fishing, agriculture and mining—have depended for centuries; many of which may now be facing total collapse as a result. In response to these severe economic and societal threats, rural regions have been forced to re-examine their alternatives in an attempt to retain or attain economic survival and sustainability [13]. Tourism is known to have a far more visible effect in rural areas and developing countries than in urban and developed ones, and perhaps a greater effect on rural residents [14]. Moreover, tourism generates impacts on other sectors related to sustainable development, such as the local agriculture [15]. In both developed and less-economically developed nations, public sector attention has increasingly focused on the perceived economic benefits of tourism, which has progressively been adopted as a vehicle for the regeneration of rural areas suffering economic decline or deprivation [16–21]. In most industrialized countries, rural tourism is becoming an important tool for the economic and social regeneration of outlying rural zones [22,23]. The great advantage of rural tourism is that it can relatively develop without depending on firms or big companies from outside the local communities, or on their decisions [24]. Sustainable tourism aims to channel tourism to the advantage of all stakeholders—destination places and communities, tourists and all the associated activities and services [25]. It is increasingly important for the European economy [26], can be a key tool in diversifying activities in rural areas and represents a sustainable alternative to traditional resort-based tourism [27]. Current European rural policy is moving away from protectionism and towards a focus based on the market and global competition [28]. Considering this, it is of extreme importance to identify and analyze which factors can limit the effect of the tourism industry on rural development as this paper does in regard to seasonality.

Studies have identified both the positive and negative environmental impacts of tourism [29,30]. On the negative side, Puczkó and Rátz observed that inappropriate tourism development often leads to increased stress on destinations and in negative changes in the destinations' physical and sociocultural characteristics [30]. On the positive side, most conservationists have argued that tourism is a relatively environmentally benign activity and an economically viable alternative to extractive industries, such as mining and logging [31,32]. Doswell argues that tourism focuses attention on significant environmental issues and stimulates initiatives to conserve and enhance the environment [32]. Tourism draws attention to issues relating to biodiversity, endangered species and human impacts on the environment. Tourism is also often used to provide an economic rationale to preserve natural areas rather than to develop them for alternative uses, such as agriculture, forestry and mining [33]. As we will show later, the harmful imbalances derived from the tourism seasonality are due to the intensification of the tourism's negative effects in certain moments of the year as well as to the limitation of the positive ones during certain times, which makes it a factor of huge importance that should be monitored.

Sustainable development for community tourism should aim to improve the residents' quality of life by optimizing local economic benefits, protecting the natural and built environment and providing

a high-quality experience for visitors [34–39]. Rural tourism is based on the premise of sustainable environmental, economic and social development [40,41]. It can be used to foster the sustainability and regeneration of rural areas [42]. Rural tourism must also preserve the local culture and environment as well as support the rural economy while offering long-term sustainability in the context of a diversified economy [42]. Sustainable tourism development has to be economically viable and naturally and culturally sensitive at the same time [30]. In this work we analyze the tourist activity's viability to establish itself as an element of development, since its potential will be greater in cases where the annual stability has been proven and that is why the evolution of the seasonal intensity is studied during the process of consolidation of the rural destinations.

Rural tourism is largely a domestic phenomenon with a disparate nature across countries and continents [43,44]. This explains why the current literature in rural tourism has seen a significant number of case studies in terms of countries and rural tourism attractions in different countries [45]. Sharpley and Roberts also concluded that two other themes could be identified for rural tourism research [44]. They are rural tourism as "sustainable" activity and rural tourism as an agent of rural development. The disciplinary knowledge in rural tourism appears to have been accumulated in an inductive way by adding new cases from different countries. Continuing this trend, this work provides additional evidences applied to the case of Spain, since it generates an excellent framework considering the process of consolidation of this tourist activity, the number of destinations to analyze and the importance of rural tourism in terms of number of travelers.

To understand the effect that tourist seasonality has on destinations in process of development, it is imperative to know its causes, impacts and manifestations. One of the more widespread classifications is that of Hylleberg, which differentiates between three groups of determinants: weather (temperature, number of sunshine hours), calendar effects (dates of religious holidays, festivals) and timing decisions (school holidays, business holidays, fiscal years, accounting periods, etc.), these factors can also be classified into natural and institutional holidays [46]. The location of the destination is also a key factor when determining seasonality patterns, since less climate-dependent destinations capable of offering a stable or diversified product throughout the year will enjoy lower seasonal patterns [6]. Higham and Hinch described the main causes of seasonality as being due to restrictions associated with tourism [47]. In addition to these factors, other elements affecting tourism seasonality that are unrelated to these restrictions have also been described, such as social pressure or inertia [5], or the tourist's income and the evolution of the relative price [48].

The negative effects of tourism seasonality can be separated into these different categories: economic, ecologic, sociocultural and effects on the employment. The economic effects imply that the coexistence of peak and underutilization periods generate drops in the benefits [49] as well as inefficiency in the use of resources and utilities [48,50,51]. During the peak period, it may also be difficult to ensure service quality [52], and maintain facilities [53]. In addition, the local community must secure income to compensate for the rest of the year [54]. Ecological effects are associated with the concentration of visitors during the peak season. These include the congestion of rural roads, disturbance of wildlife, environmental degradation and the production of large volumes of waste, among others [55]. Some authors agree that in areas with a high tourist pressure, a period of rest is necessary to recover resources [56–58]. Socio-cultural effects include negative impacts on both the local community and visitors in peak seasons, such as road congestion and heavy traffic, lack of parking, lines for services or increases in the costs of services, among others [59,60]. During the peak season, extra staff must often be hired to provide certain public services, which requires increasing local taxes, since national governments allocate resources in relation to the resident population [54]. During the high season this means that tourists will not be provided adequate services, whereas in the low season many local companies may close [5], which affects the reputation and image of the destination [61]. Seasonal employment affects both the local community and the employers and is one of the most widely studied topics in tourism seasonality [61,62]. One of the effects of the tourism seasonality is the difficulty to recruit suitable staff [54] and to maintain an adequate quality standard [62], since

the impermanence affects the training of the staff. In addition, this type of employment tends to attract people with low qualifications [63]. However, highly seasonal jobs are very positive for other groups with discontinuous work needs, such as students, or to complement other areas of employment, such as agriculture [54,61].

Considering this, the positioning of tourism as a tool for development in rural areas must assume these limitations, although the limitations will be minor as long as the seasonal patterns are as well. Hereunder, we will analyze if the seasonal intensity tends to disappear in destinations that consolidate this activity, because even a certain degree of instability can be experienced in the early stages of the destination's development. Until seasonality is not under control and reduced, these effects will last and limit the developing possibilities of several regions. This observation calls for a comprehensive understanding of these tendencies, its measurement and tracking as a previous step to the definition of public or private policies to restrain the problem.

3. Materials and Methods

3.1. Alternatives and Measurement Proposal

The analysis of the seasonality's intensity in Spanish rural destinations in process of consolidation is set as the aim of this study. To do so, we propose to perform two measurements, one related to the year 2005, first point in time where monthly data for these destinations were available and the second one corresponds to 2016, eleven years later after the first data collection and last year with complete available data. The proposal of measurement involves the application of a multidimensional indicator able to measure the seasonality intensity in all of the 65 Spanish rural destinations and rank them by their intensity level. The repetition of this measurement process in the two reference years will generate an image of the evolution of the seasonal intensity in each destination, which will then be compared with the consolidation of said destinations, measured in the number or arrivals. Thus, the key of this work resides in the definition of a seasonality indicator able to offer a complete image of the levels of seasonality in each destination.

Koenig-Lewis and Bischoff argue that there is a lack of definitions to quantitatively describe the tourism seasonality phenomenon on issues such as the differentiation of tourist seasons or the comparison of seasonal trends between different regions or years [17]. These same authors conclude that different seasonality measures have been proposed in the literature without a single method being accepted. In this line, we propose an instrument capable of establishing a comparative ranking of the seasonal intensity in the different types of tourism and also able to compare different tourist destinations, regions or countries. The key of this indicator is to incorporate information resulted from different aspects of the tourism seasonality based on supply and demand variables so the measurement is as accurate as possible.

Relatively few authors have examined how to quantify and compare seasonal trends empirically [17]. The most common approach for measuring seasonality is to estimate seasonal factors in time series using deviations proportional to moving averages by means of dummy variables in multi-linear regressions, or other methods based on data series. There are several works based on this approach [17,49,52,64–67]. Seasonality is also a key element in tourism forecasting and modeling, which can be considered as a deterministic or stochastic component in a series of analyses [68]. Some studies have used deterministic or stochastic procedures for detecting seasonality [53,69–74]. Gil-Alana used fractionally integrated time series models and seasonal long memory models [75]. Chan and Lim used spectral analysis [76].

Moreover, a complementary approach is to estimate annual concentration indices such as the Gini Index (GI), Theil or the Coefficient of Variation, which provide a single measure of the seasonal concentration level for a year [48,77–79]. Each imbalance index has its own characteristics associated with their sensitivity. Researchers should choose, when necessary, the measurement formula that best fits their preferences and value judgments even though other alternatives can be used. The GI

is the most frequently used in this type of analysis [77]. Specifically, the GI fulfills the Pigon–Dalton condition. When applied to tourism seasonality, this implies that the transfer of monthly tourism supply or demand with higher availability or occupancy to another in which either of the two is lower, decreases the coefficients, that is, seasonality [80]. Similarly, Wanhill recommended applying this coefficient rather than other alternatives, since considers the distribution bias, and is less influenced by extreme values [79]. According to Lundtorp, the GI is the most stable seasonal indicator [78]. Reality is, the measure of a sole IG based on a specific variable only shows the phenomenon partially. For example, an IG of the number of annual arrivals will not provide information about the seasonality generated by the number of overnight stays, average length of stay, degree of occupancy, etc. The ranking of the seasonality's intensities will vary, making it difficult to establish a ranking or comparisons [6]. Therefore, it is useful to develop a synthetic indicator able synthesize the information provided by the different dimensions of the phenomenon.

In the economic literature of the last 30 years, the GI has been the most widely used tool for measuring tourism seasonality [79,81,82]. The GI measures the degree of inequality in the number of tourist trips over a year [83]. The index is constructed from the Lorenz curve, which shows the range of the cumulative frequency of observations starting with the lowest number [78]. The Gini Coefficient is equal to the area between the Lorenz curve and the 45-degree line that divides the area below the line, and can be expressed as follows:

$$IG = 1 + \left(\frac{1}{n}\right) - \left(\frac{2}{(n^2 \cdot x)}\right) \cdot (x_1 + 2x_2 + 3x_3 + \ldots \cdot nx_{n1})$$

where n is the number of observations (12 in the case of monthly data), 'x is the mean of the observations and x_1, x_2, x_3, ... , x_n are the individual observations in descending order of magnitude [84]. The minimum value of this index (0) indicates an equal distribution between the months of the year, while the maximum value (1) denotes the highest level of seasonal concentration.

We propose the construction of a synthetic indicator of seasonality that considers the estimation of partial GIs, which are calculated over the monthly number of domestic travelers, the monthly number of foreign travelers, the monthly number of overnight stays by domestic travelers, the monthly number of overnight stays by foreign travelers, the monthly number of employees in tourism activities and the monthly number of bed places available in different types of accommodation. The annual coefficient of variation (CV), which is calculated over the monthly data for mean length of stay, degree of occupancy and degree of occupancy on weekends, is added to this information. Given that is impossible to construct the GI using the above variables, an additional measure that is able to complete the set of variables is needed to complete the series of indicators of the synthetic indicator. The GI must be constructed using cumulative variables, which are calculated by the *CV*, and non-cumulative monthly ratios, such as the number of tourist arrivals or the number of overnight stays. The *CV* measures the extent of a data series around an annual average as a percentage of that average. Therefore, if S is used to denote the standard deviation and $\overline{x}$ for the mean of the observations for a given year, then:

$$CV = \frac{S}{\overline{x}}$$

As Koenig and Bischoff have shown, this is a particularly useful system for comparing the dispersion of data with different standard deviations and different means [81]. According to Lundorp, this measure also describes visitor fluctuations for one year [78]. An important feature of *CV* is its ability to take into consideration redistributive changes within the distribution. Therefore, it is irrelevant in relation to the specific location of the observations (the months in our case); a distributive neutrality which is quite useful for analyzing tourism seasonality.

Assuming that one of the most important aspects in the study of tourism seasonality is to find relevant indicators that can describe the phenomenon [85], the DP2 indicator of seasonal supply and demand is proposed to describe seasonal intensity and compare destinations. The evaluation of tourist seasonality requires that use of several indicators at the same time. One of the biggest issues of this multidimensional evaluation is agreeing on a system of aggregation of variables that

combines all the information in a synthetic indicator, [86]. Besides that, it is also important to define a proper method to select variables to make sure that the following factors are included in the selection procedure: the degree of information on the level of tourism seasonality in the group of regions provided by each variable, the proportion of new information provided by each variable [87] and the non-redundant information provided by each variable [88]. Several systems have been proposed to aggregate indicators when building composite indices using linear or nonlinear techniques [89]. The most complex issues when developing synthetic indicators are the treatment of units of measurement (since we work with variables denominated in different units) and the distribution of weights in the different variables of the synthetic indicator, that is, how to combine the variables into a single value [90].

In this work, we use the Distance Method (DP2) developed by Pena [8], which has been applied lately by academics in different areas of study [91–98]. This indicator solves some common problems such as the heterogeneity of the partial indicators' measurement units, the duplication of information within them and the impact related to each one of them, as guaranteed by the DP2 [10]. One of the improvements provided by this indicator is that it makes the criterion of aggregation of variables expressed in different units unbiased, as well as avoiding arbitrariness when determining the weights of the variables and the duplication of information [93,99]. The entry order of the partial indicators is obtained using the absolute value of the linear correlation coefficients between the values of each indicator and the synthetic indicator [8,100].

3.2. Main Properties of the DP2 Method

The construction of the DP2 method verifies a series of properties which ensure that the weight of the variables is defined objectively [98] and satisfies the conditions of distance in a metric space, such as non-negativity, competitiveness and triangular inequality [8,10,101], the DP2 verifies a set of "properties required for a good synthetic indicator" and as argued by Zarzosa and Somarriba, turns out to be adequate since it uses ad-hoc measurements which are specifically designed to measure distance between different situations [87]. Particularly, the synthetic indicator DP2 fulfills the following properties [102,103]: existence and determination, monotony, uniqueness, quantification, invariance, homogeneity of degree one, transitivity, exhaustivity, additivity, invariance in comparison with the base reference, conformity and neutrality [9].

Other authors have proposed using Data Envelopment Analysis (DEA) to achieve the same objectives [99,104,105], but this system has several restrictions compared to the DP2, such as the lack of subjectivity in the choice of variables [88]. DEA neither fulfills the principles of uniqueness and monotony in order to preserve variations in changes of origin and/or scale in units of measurement and to consider the interdependence of the indicators [106]. In addition, this method lacks discriminatory power to arrange the territorial units considered [86]. The DP2 method has a large number of advantages because it satisfies important properties in comparison with the DEA system. For example, the aggregation of indicators expressed in different measures, the lack of arbitrariness when determining the weights of the variables and also avoids the duplication of information [107–109] and the mathematical property of grade one homogeneity of DP2 that reflects cardinality [87,94].

The DP2 indicator is a cardinal measure that enables comparisons between units across space and/or time [10,110] and in which the weights allow for a clearer interpretation and inter-spatial comparisons [95,111]. In addition, by dividing the indicator by a standard deviation, it rules out the problem of heterogeneity in the measurement units of the original indicators, expressing the partial indicators in abstract units [92]. In short, this measure verifies a set of properties, which ensure that the weight of the partial indicators is determined in a non-arbitrary way, and that the weight obtained has an economic interpretation [89,99,101,112,113].

The DP2 a destination r is defined as follows [8,88]:

$$DP_2 = \sum_{i-1}^{n} \{d_i/\sigma_i)(1 - R^2_{i,\,i-1,\ldots.1})$$

where $R_1^2 = 0$, $d_i = d_i(\tau^*) = |\mathcal{X}_{ri} - \mathcal{X} * i|$ is the reference base, n is the number of variables, m is the number of regions, $\mathcal{X}_{ri}$ is the value of variable i in destination r, σ_i is the standard deviation of variable i and $R^2_{i,\, i-1,\ldots.1}$ is the coefficient of determination in regression X_i on, $X_{i-1},\ X_{i-2}, \ldots., X_1$ which is already included and expresses the part of variance or variation of X_i explained literally by the variables. Hence, if m is the number of destinations, the component X_i will reflect the situation of variable i in the region r in the observation matrix X. This coefficient is an abstract number which is independent of the units of measurement in which the different variables are expressed [113].

The coefficient of determination $R^2_{i,\, i-1,\ldots.1}$ measures the percentage of variance of each variable explained by the linear regression estimated using the preceding variables $X_{i-1},\ X_{i-2}, \ldots., X_1$ [8,112]. As a result, the factor $1 - R^2_{i,\, i-1,\ldots.1}$, which Pena calls the "correction factor" [8], avoids redundancy in the variables by leaving out information already contained in the preceding variables. That is, since $1 - R^2_{i,\, i-1,\ldots.1}$ expresses the part of the variance of X_i not explained by $X_{i-1},\ X_{i-2}, \ldots., X_1$, the part already explained by the preceding indicator is obtained by multiplying each partial indicator by the corresponding coefficient of determination $R^2_{i,\, i-1,\ldots.1}$ [114].

The value of the synthetic indicator of a dummy destination that reflects the best situation for every variable will be zero. We use as a reference a theoretical region that has the worst values for the seasonality variables considered. The DP2 indicator provides the distances from each region to that region [91,105]. A higher DP2 value therefore indicates a high level of seasonality in that region and represents a large distance from the least desired theoretical situation. The hypothetical unit from which the distances are measured would be zero and the DP2 would present the distances of each region from the reference region [8].

The order of entry of the original variable affects the relative weight of each one is defined by an algorithm that reaches convergence and stabilizes itself to verify the condition of conformity with a non-random, neutral method of classification of variables. Given that DP2 is a numerical value, this property is verified [87,109]. The variables are ranked in a in descending order, according with their correlation to the first indicator, whilst irrelevant information is removed at the same time [10]. The differences in the i-th variable between a region and the reference region are therefore weighted by the percentage of new information (i.e., information not provided by other variables) that this variable provides [98,115,116].

Finally, we estimate the relevance of each initial indicator and the correlation factor indicates the additional information incorporated into each variable. The value of the coefficient together with the correction factors are the true measures of the real impact of each social indicator on the disparities between the different regions obtained in the DP2 [117]. Finally, this procedure eliminates only the redundant information, which is one of the advantages of DP2 [94,100,106].

4. Results

4.1. Main Results

As shown before, the aim of this work is to analyze the possible alterations in the seasonality intensity of rural destinations in process of consolidation. To do so, we have applied the DP2 method to 44 out of the 65 rural tourism destinations in Spain, (as there are not enough reliable data for all of them), creating a synthetic indicator of seasonality that orders the destinations according to the intensity of their seasonality. The aforementioned set of nine variables offers an accurate image of the seasonality in the destinations, since it has an approach consisting of supply, demand and labor market variables and the international component of seasonality. The problem of the degrees of freedom has been solved validating the results obtained introducing a larger number of observations (analyzed destinations) than of variables [98–100,118] in the calculation of the DP2. Additionally, this method allows us to identify which variables of the group provide more relevant information to achieve our goal [112]. A higher value of the DP2 indicator involves a higher position in the ranking according to the group of variables [93]. Especially, regarding the order of the tourist areas defined by the DP2,

we must acknowledge that a higher value of the indicator involves a lower level of seasonality in the area and therefore, a better result in its seasonality patterns. This condition shows a large distance to the "least desired" theoretical scenario [100]. For that matter, the base line offers the result of an imaginary destination that shows the worst possible scenario for every simple indicator and thus, the value 0 of this indicator would be assigned to it [88].

In Table 1, we offer the results of the synthetic indicator for the years 2005 and 2016, showing the ordinal position of each destination in both years. The destinations with a lower level of seasonality occupy the first positions of the table according to this indicator. The last column of the table shows the gains in positions between the two years so that those destinations with a higher value have improved the most and reduced their seasonality. Meanwhile, the destinations that have fallen in the table have experimented an increase of the seasonality. This information provides a very descriptive value of the seasonal trends in the Spanish rural destinations but the value of this study is thought to be higher when the data are compared with the processes of consolidation of said locations. In the analyses of these data we have to consider that, for every year, the DP2 indicator generates its own scale based on the information provided by each sub-indicator, so the values cannot be compared in absolute terms between two years, instead, they can be compared in absolute or ordinal terms during the same year and in an ordinal manner when several periods are compared at the same time.

Table 1. Ranking of the Spanish rural destinations in terms of seasonal intensity according to the Method of Distance Pena DP2 synthetic indicator for 2005 and 2016.

Rural Destinations	DP2 2005	DP2 2016	Position in 2015	Position in 2016	Change in Their Position
Natural Park Serra de Mariola	11.3956	11.5100	42	15	27
Natural Park Alto Tajo	13.2241	11.2024	39	16	23
Natural Park Sierras de Tejeda, Almijara y Alhama	11.5536	10.4399	41	24	17
Natural Park Hoces del Duraton	10.9688	10.1770	43	27	16
Natural Park Las Batuecas-Sierra de Francia	13.3585	10.7325	36	20	16
Natural Park Arribes del Duero	15.5997	11.8869	22	10	12
Canarias: Isla De Gran Canaria	16.3973	12.4121	14	7	7
Natural Park Sierra Norte de Sevilla	16.2687	11.8841	18	11	7
National Park Cabañeros	14.5703	10.7251	27	21	6
Canarias: Isla De La Palma	17.5952	13.2845	6	2	4
National Park Aigüestortes	13.3581	9.5805	37	33	4
National Park Taburiente	17.6443	13.3587	5	1	4
Natural Park Fuentes del Narcea, Degaña e Ibias	6.4674	8.1601	44	40	4
Natural Park Sierra de Grazalema	16.3228	11.5839	17	14	3
National Park Picos de Europa	13.2973	8.6245	38	38	0
Natural Park Zona Volcánica de la Garrotxa	14.0406	9.2611	34	34	0
National Park Sierra Nevada	16.7373	11.7496	12	13	−1
Natural Park Aiako Harria	16.8786	12.2155	8	9	−1
Natural Park Pagoeta	14.3298	9.8245	29	30	−1
Natural Park Sierra de Aracena y Picos de Aroche	17.4525	12.3984	7	8	−1
Canarias: Isla De La Gomera	17.8967	12.4895	3	5	−2
Canarias: Isla De Tenerife	18.0728	12.7668	1	3	−2
National Park Garajonay	17.8967	12.4895	4	6	−2
National Park Teide	17.9028	12.6682	2	4	−2
Natural Park Sierra Nevada	16.8611	11.7928	10	12	−2
Cataluña: Costa Daurada	16.3273	10.8395	16	19	−3
Galicia: Costa A Mariña Lucense (Lugo)	12.0798	6.0706	40	43	−3
Natural Park Sierras de Cazorla, Segura y las Villas	16.3927	10.9525	15	18	−3
Natural Park Saja-Besaya	15.5000	9.9947	24	28	−4
Natural Park Calares y Cabeceras de los ríos Mundo, Tus y Guadalimar	14.1595	8.9333	31	36	−5
Natural Park Los Alcornocales	14.8499	9.6483	26	31	−5
Natural Park Fuentes Carrionas y Fuente de Cobre	16.2200	10.2955	19	25	−6
Pirineo Navarro	16.1752	10.2037	20	26	−6
Asturias (Principado De): Costa Verde	13.4493	6.6756	35	42	−7
Galicia: Rías Baixas (Pontevedra y A Coruña)	14.1985	8.8783	30	37	−7
Pais Vasco: Costa Bizkaia	15.2801	9.6165	25	32	−7
Natural Park Oyambre	14.0565	7.7985	33	41	−8
Pirineo Aragonés	15.6005	9.8621	21	29	−8
Pirineo Vasco	16.8664	11.1376	9	17	−8
Pais Vasco: Costa Guipuzkoa	16.4717	10.6415	13	23	−10
Baleares (Illes): Isla De Mallorca	14.3741	8.5743	28	39	−11
Natural Park Sierras Subbéticas	16.8326	10.6765	11	22	−11
Cataluña: Costa Brava	15.5834	9.2567	23	35	−12
Natural Park Alt Pirineu	14.1333	0.0638	32	44	−12

Source: own elaboration based on monthly data from the National Statistics Institute [3].

In Table 2, the rural destinations that have improved their position in the rankings of seasonality during the considered period have been highlighted. The first column comprises the percentage growth measured by the number of arrivals to each destination. These data allow us to conclude that all the destinations with a better position in the chart and an improvement in the levels of seasonality have also experimented a growth higher than average. Therefore, it seems like the consolidation of the destination, comprehended as the annual growth in the number of arrivals helps to reduce the seasonality trends. This information must be put into context using the data in the second column, which offers information about the number of annual arrivals to each destination and just as before, the destinations that have improved their position have been highlighted. The total of destinations that have improved their seasonal position matches with the destinations included in the quartiles 1 and 2 in terms of annual visitors. In other words, the improvements in the seasonality trends refer to smaller destinations with a faster growth rate, as indicated. Thus, we can affirm that the consolidation of the destination measured by the number or arrivals improves the seasonality levels in small destinations in early stages of consolidation. The third column completes this contextualization and in this case the information in the second column (number of arrivals in 2016) is repeated but the destinations which occupy the top positions in the seasonality chart in 2016 are highlighted while in the second column the highlighted destinations correspond to those that decreased their seasonality. In this table we can see how the most consolidated destinations (those with the larger number of visitors each year), do not occupy the first positions of the seasonality ranking. Only in the Canary Islands' destinations, this tendency is interrupted, since these destinations are influenced by unique and special weather conditions. Hence, it shows that the growth measured by the number of arrivals to the destinations improves seasonality in the early stages of the process of consolidation but in already consolidated locations, improvements in the seasonality trends are not experienced systematically. Thus, there is no relationship between the maturity of the destination and annual stability in the number of arrivals, which conditions the role of tourism as a tool for development since those destinations that are able to obtain better benefits due to their consolidated status do not possess the necessary annual stability able to offer income and employment in a stable manner throughout the year. This would make necessary to find alternative sources of income complementary to those derived from tourism as set out in other empirical studies [119,120]. However, the consolidation of the destination does contribute to the stability of medium-sized or already in process of growing, which can be considered as a positive element for these destinations since the inter-annual arrivals will gain in stability, making the tourist activity more stable as well.

Table 2. Relationship between seasonality and the consolidation of destinations.

Growth, 2005–2016 (the Destinations that Reduced Their Seasonality from 2005 to 2016 Are Highlighted)		Number of Annual Arrivals, 2016 (the Destinations that Reduced Their Seasonality from 2005 to 2016 Are Highlighted)		Number of Annual Arrivals, 2016 (the Destinations with Better Positions in the Ranking Are Highlighted)	
Natural Park Fuentes del Narcea, Degaña e Ibias	675.32%	Natural Park Alt Pirineu	3987	Natural Park Alt Pirineu	3987
Canarias: Isla De Gran Canaria	362.95%	Natural Park Serra de Mariola	4020	Natural Park Serra de Mariola	4020
Natural Park Arribes del Duero	246.53%	Canarias: Isla De La Gomera	6239	Canarias: Isla De La Gomera	6239
Natural Park Sierras de Tejeda, Almijara y Alhama	225.62%	National Park Garajonay	6239	National Park Garajonay	6239
National Park Teide	207.17%	National Park Cabañeros	6990	National Park Cabañeros	6990
Baleares (Illes): Isla De Mallorca	195.99%	Natural Park Fuentes del Narcea, Degaña e Ibias	7978	Natural Park Fuentes del Narcea, Degaña e Ibias	7978
Natural Park Sierras Subbéticas	181.90%	Natural Park Sierra Norte de Sevilla	8175	Natural Park Sierra Norte de Sevilla	8175
Natural Park Pagoeta	180.91%	Natural Park Alto Tajo	9033	Natural Park Alto Tajo	9033
Natural Park Hoces del Duraton	176.70%	National Park Taburiente	9102	National Park Taburiente	9102
Galicia: Rías Baixas (Pontevedra y A Coruña)	172.34%	National Park Aigüestortes	9596	National Park Aigüestortes	9596
Canarias: Isla De Tenerife	172.33%	Natural Park Sierras Subbéticas	10,701	Natural Park Sierras Subbéticas	10,701
Natural Park Alto Tajo	170.61%	Pais Vasco: Costa Bizkaia	10,703	Pais Vasco: Costa Bizkaia	10,703
Natural Park Sierra de Aracena y Picos de Aroche	162.63%	Natural Park Hoces del Duraton	12,147	Natural Park Hoces del Duraton	12,147
Natural Park Sierra de Grazalema	157.98%	National Park Sierra Nevada	12,532	National Park Sierra Nevada	12,532
Natural Park Las Batuecas-Sierra de Francia	138.58%	Natural Park Las Batuecas-Sierra de Francia	12,795	Natural Park Las Batuecas-Sierra de Francia	12,795
Canarias: Isla De La Palma	134.45%	Natural Park Sierra Nevada	12,936	Natural Park Sierra Nevada	12,936
Natural Park Sierra Norte de Sevilla	120.59%	Canarias: Isla De La Palma	14,178	Canarias: Isla De La Palma	14,178
Natural Park Zona Volcánica de la Garrotxa	120.31%	Galicia: Costa A Mariña Lucense (Lugo)	14,528	Galicia: Costa A Mariña Lucense (Lugo)	14,528
National Park Aigüestortes	119.74%	Natural Park Sierra de Grazalema	14,827	Natural Park Sierra de Grazalema	14,827
National Park Taburiente	111.45%	Natural Park Arribes del Duero	15,043	Natural Park Arribes del Duero	15,043
Natural Park Serra de Mariola	105.34%	Natural Park Aiako Harria	15,179	Natural Park Aiako Harria	15,179
Cataluña: Costa Brava	103.76%	Canarias: Isla De Gran Canaria	15,546	Canarias: Isla De Gran Canaria	15,546
National Park Cabañeros	101.15%	Natural Park Oyambre	15,576	Natural Park Oyambre	15,576
Asturias (Principado De): Costa Verde	100.41%	Natural Park Fuentes Carrionas y Fuente de Cobre	15,690	Natural Park Fuentes Carrionas y Fuente de Cobre	15,690
Natural Park Calares y Cabeceras de los ríos Mundo, Tus y Guadalimar	97.58%	Natural Park Sierras de Cazorla, Segura y las Villas	15,877	Natural Park Sierras de Cazorla, Segura y las Villas	15,877
Pirineo Navarro	92.88%	Natural Park Pagoeta	16,630	Natural Park Pagoeta	16,630
Pirineo Vasco	78.10%	Natural Park Calares y Cabeceras de los ríos Mundo, Tus y Guadalimar	17,814	Natural Park Calares y Cabeceras de los ríos Mundo, Tus y Guadalimar	17,814
Pais Vasco: Costa Guipuzkoa	75.57%	Natural Park Los Alcornocales	18,395	Natural Park Los Alcornocales	18,395
Galicia: Costa A Mariña Lucense (Lugo)	69.19%	Natural Park Zona Volcánica de la Garrotxa	18,806	Natural Park Zona Volcánica de la Garrotxa	18,806
Natural Park Los Alcornocales	64.99%	Natural Park Sierra de Aracena y Picos de Aroche	21,113	Natural Park Sierra de Aracena y Picos de Aroche	21,113

Table 2. *Cont.*

Growth, 2005–2016 (the Destinations that Reduced Their Seasonality from 2005 to 2016 Are Highlighted)		Number of Annual Arrivals, 2016 (the Destinations that Reduced Their Seasonality from 2005 to 2016 Are Highlighted)		Number of Annual Arrivals, 2016 (the Destinations with Better Positions in the Ranking Are Highlighted)	
National Park Picos de Europa	58.32%	Natural Park Saja-Besaya	21,812	Natural Park Saja-Besaya	21,812
National Park Sierra Nevada	54.58%	Cataluña: Costa Daurada	27,201	Cataluña: Costa Daurada	27,201
Natural Park Sierras de Cazorla, Segura y las Villas	53.25%	Natural Park Sierras de Tejeda, Almijara y Alhama	28,622	Natural Park Sierras de Tejeda, Almijara y Alhama	28,622
Pirineo Aragonés	45.53%	National Park Teide	29,095	National Park Teide	29,095
Natural Park Saja-Besaya	43.45%	Pais Vasco: Costa Guipuzkoa	32,543	Pais Vasco: Costa Guipuzkoa	32,543
Natural Park Aiako Harria	43.23%	Canarias: Isla De Tenerife	37,903	Canarias: Isla De Tenerife	37,903
Pais Vasco: Costa Bizkaia	34.17%	Pirineo Vasco	44,429	Pirineo Vasco	44,429
Natural Park Sierra Nevada	31.62%	Galicia: Rías Baixas (Pontevedra y A Coruña)	47,425	Galicia: Rías Baixas (Pontevedra y A Coruña)	47,425
Canarias: Isla De La Gomera	25.33%	National Park Picos de Europa	57,668	National Park Picos de Europa	57,668
National Park Garajonay	25.33%	Asturias (Principado De): Costa Verde	86,199	Asturias (Principado De): Costa Verde	86,199
Cataluña: Costa Daurada	5.41%	Pirineo Aragonés	87,396	Pirineo Aragonés	87,396
Natural Park Fuentes Carrionas y Fuente de Cobre	−0.75%	Cataluña: Costa Brava	89,587	Cataluña: Costa Brava	89,587
Natural Park Oyambre	−10.35%	Pirineo Navarro	125,759	Pirineo Navarro	125,759
Natural Park Alt Pirineu	−63.36%	Baleares (Illes): Isla De Mallorca	191,710	Baleares (Illes): Isla De Mallorca	191,710

Source: own elaboration based on monthly data from the National Statistics Institute [3]. The rural destinations that have improved their position in the rankings of seasonality during the considered period have been highlighted in color.

4.2. Order of the Partial Indicators

Next, we analyze the relative importance of the initial variables when constructing the synthetic indicator using the Correction Factor [89]. The correction factor shows the proportion of new information imputable to each initial variable and includes the new information provided by each one [117]. Using this method, as defined by Zarzosa and Somarriba, we can define the most important factors when characterizing the seasonal intensity, which is also an additional contribution of this work [87].

Table 3 shows the variables by order of entry, to say so, according to the absolute value of the coefficient of lineal correlation between the values of the indicator for each destination and the synthetic indicator. It should be reminded that one of the advantages of the DP2 is that it deletes the redundant information [98]. The DP2 verifies the characteristic of "impartiality" because the coefficients that correct the partial indicators only depend on the new information provided by each indicator through a scientific procedure [86,88,100]. This procedure allows us to be sure that the measurement system is objective [87,93,106].

According to the obtained results, the CV of the degree of occupancy during the weekend is the variable that contains the total of the information as it corresponds to a correction factor of 100% (Table 3). This value shows that this variable provides the largest amount of useful (new) information to the composition of the synthetic indicator. This proves to be coherent since the short-weekend travels are very important for this kind of tourism. The GI of the staff variable holds a 77.41% of the information. The GI variable of the number of foreign tourists arrivals contributes with a 75.03% of new information. These three variables are, therefore, decisive when describing the level of seasonality of a destination. Secondly, we see how the variable regarding the variation coefficient of the average stay withholds 20.41% of information, followed by the GI variable of the number of overnight stays by national tourists, which holds 19.08% of information not included in "superior variables". These variables and the next ones have a limited influence on the final estimated result since its information is widely included in other variables. Finally, we must point out that, since the criteria of the DP2 only removes one variable entirely when it does not add new information to the measurement of the seasonality, we keep every proposed indicator, although the last indicators retain little information not included in previous variables because of their low correction factors.

Table 3. Classification of the variables.

Position	Variable	Correction Factor
1	Occupancy during the weekend	1.0000
2	Staff	0.7741
3	Foreign tourists	0.7503
4	Average length of stay	0.2041
5	Overnight stays by national tourists	0.1908
6	Overnight stays by foreign tourists	0.1898
7	Places offered	0.1640
8	National tourists	0.1610
9	Occupancy	0.1203

Source: own elaboration based on data from the Spanish National Statistics Institute, 2015 [3].

4.3. Discriminatory Power of the Variables

In this line, the Ivanovic Discrimination Coefficient (IDC) allows us to measure the discriminatory power of the partial indicators considered in the group of regions taken into account [121] and discern if a variable withholds a large amount of new information about the level of seasonality. If two variables have the same correlation with the synthetic indicator, and this correlation is maximum, we can wonder what results provide the values closest to reality [9]. The most accurate decision is

to choose the indicator that provides more information [106,122], as this study does. The Coefficient shows the amount of information about the level of seasonality provided by the variable [122].

This part of the study uses the IDC results to reach these goals. Therefore, the Ivanovic Discrimination Coefficient determines the amount of information contained in the *i*-th variable. Table 4 shows the values of the IDC's variables; keeping in mind that the larger the volume of information not included in the total of the variables already introduced [9], the bigger the contribution of a single variable to the evaluation of tourism seasonality. This coefficient also quantifies the discriminatory power of every variable, where 0 shows that there is not discriminatory power (its information is not relevant to evaluate the level of seasonality) and a value above 0 shows a discriminatory power up to 2 only if the variable has a value other than zero for that region [123]. The lowest value is appreciated when all the variables have the same value and different from zero, whereas we can appreciate the highest value when one of the values of the variables is zero [86].

The discriminatory power of all of the variables has been estimated and the ranking of partial indicators that provide the larger amount of information (and are therefore, more discriminatory) are presented in Table 4. In this line, the indicators that best explain the differences in the levels of tourist seasonality are those related to the annual differences in the number of places offered, the employed staff, and the degree of occupancy. How the offer of accommodations reacts to the different tourist seasons largely explains the different intensities in the seasonality between regions, a very useful contribution of this indicator.

Table 4. Amount of information provided by the variables, 2015.

Position	Variable	IDC
1	Places offered	0.0341
2	Staff	0.0255
3	Occupancy	0.0238
4	Foreign travellers	0.0228
5	Occupancy during the weekend	0.0224
6	Overnight stays by foreign travellers	0.0210
7	Average length of stay	0.0174
8	National travellers	0.0138
9	Overnight stays by national travellers	0.0121

Source: own elaboration based on data from the Spanish National Statistics Institute, 2015 [3].

5. Conclusions and Discussion

The tourist activity establishes itself as an alternative of development for several rural locations, although a certain level of intra-annual stability is needed to ensure a flow of homogeneous income and stable employment. Similarly, the annual stability of the number of tourist arrivals involves a lower pressure on the environment and a better use of facilities and resources, which also affects the satisfaction of the tourist and the feeling of the citizens.

Developing anti-seasonal policies requires accurate and complete instruments able to measure the phenomenon's intensity among regions or countries as well as keeping track of its evolution. It is necessary to understand this phenomenon to mitigate it and to do so it is also necessary to develop complete measuring instruments. Koenig-Lewis and Bischoff argued that there is a lack of definitions to quantitatively describe tourism seasonality [7]. These same authors conclude that different seasonality measures have been proposed in the literature without a single method being accepted.

Depending on the variable used as a reference, the ranking of destinations may be altered depending on the seasonality trends' intensity [6]. Thus, it is necessary to define a comprehensive evaluation system of the seasonality that adopts a set of supply–demand variables as its reference. In this way, the phenomenon could be fully measured. The DP2 indicator is the best way to obtain synthetic indicators since it guarantees that the weight of the initial variables is determined objectively

and, therefore, it can avoid problems such as the aggregation of variables and the duplication of information [87,92,98,116,118,122].

Comparing the seasonal intensity in the Spanish rural destinations in the years 2005 and 2016 has permitted the comparison between the seasonal intensity of these two years and the consolidation process of said destinations. It can be determined that all the locations with improvements in their levels of seasonality have also manifested a high growth in the rate of annual arrivals. Hence, it seems that the consolidation of a destination helps restrain the seasonal trends. On the other hand, the destinations that noted an improvement in their levels of seasonality are those of a smaller size, which makes it seem like this effect only takes place in the early stages of the consolidation. In this regard, none of the destinations with a larger number of arrivals is included in the group of destinations with better seasonal trends, so the earnings are reduced in locations of a certain size already consolidated.

Consequently, the growing processes of rural destinations improve the levels of seasonality in the early stages but the consolidation of said destinations does not guarantee better seasonal patterns. When evaluating the tourism's capacity to act as an instrument of development in rural environments, a satisfactory number of visitors and a certain level of annual stability of said activity are needed. As noted in this analysis, these two characteristics appear to not take place simultaneously. The destinations able to obtain better profits because of their consolidation do not enjoy the annual stability needed to provide stable income and employment throughout the year. The results are consistent with previous studies where the rural tourism's high seasonality is noted [119]. This fact might condition the support that the tourism industry receives from the citizens, since said support is based on the assessment of potential benefits [124]. Nonetheless, the profits produced by the activities developed in rural environments include certain benefits besides the economical ones. As argued by Perić et al., there is a gap in the knowledge and understanding of mechanisms on how to deliver social and economic community benefits [125].

Complementary to the proposal of a synthetic indicator able to measure tourism seasonality, this study helps to enhance the knowledge about the impact of the analyzed variables related to the seasonality. Moreover, we can issue conclusions on which aspects are more relevant when explaining the disparities in the levels of seasonality among regions. The proposal to measure tourism seasonality must be interpreted as a scientific contribution seeking to create a methodological base that helps the analysis of a complex problem poorly studied. Future research should continue to work on a comprehensive assessment of the effects of rural tourism beyond economic ones. In relation to this work, the analysis of the seasonality's effect on rural environments should be completed with studies focused on the environment and social impacts.

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