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The Tourist Potential of the Minho-Lima Region (Portugal)

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1. Introduction

It is generally recognised that tourism plays an important role in the economic development of some territories, providing long-term benefits to local economies, primarily when implemented on a sustainable base. The capacity of tourism to establish synergies with other services, such as lodging, food, transport and entertainment for tourists, makes it a structuring industry in many economies.

In many developed countries and in many developing ones too, tourism is now a strategic activity. This is the case in Portugal, where tourism has been managed as a strategic cluster by the government since the implementation of the *Economic and Social Development Plan for 2000/2006*. In this document, tourism was officially claimed to be one of the activities pivotal to achieving economic and social development of the country and its regions.

Tourism, as a socioeconomic activity, does not occur randomly and its success differs from region to region, destination to destination or site to site, depending on the real potential for attracting tourists (Formica & Uysal, 2006).

To evaluate tourism potential or destination attractiveness, researchers have devised assessment tools from a supply side and/or a demand side perspective (Cha & Uysal, 1995; Ferrario 1979; Formica & Uysal, 2006; Gunn, 1988; Kusen & Tadej, 2003; Leno Cerro, 1992; Smith, 1987; Var et al., 1977). The object of analysis in the supply side perspective is the number and quality of available tourism attractions at a given destination. In the demand side perspective, it is tourists' perceptions and interests in a territory that constitute the centre of the analysis.In some cases, researchers have focused on a single aspect of region destination attractiveness (Ritchie & Zins 1978; Sheng & Lo, 2010).

In the case of the Minho-Lima region, an important tourism potential exists in the variety and singularity of the region's resources - the beauty of its landscapes, the architectonic wealth of its secular buildings, and the exuberance of its gastronomy and many cultural events**.**

Assuming an analysis of the available tourism resources is crucial to defining the tourism vocation of a territory, and, above all, to select the best tourism alternative within the range of available possibilities (Formica & Uysal, 2006; Leno-Cerro, 1993; López-Ochoa & Lufin-

Varas, 2010), this investigation aims to present a preliminary evaluation of the tourism resources of the Minho-Lima region, as well as an analysis of the complementary elements at this destination. In this particular analysis of tourism potential, we have adopted both the demand and the supply side perspective. In our evaluation of the resources in the region, we have incorporated the opinions of tourists (demand side) and those of the tourism agents (public and private) charged with the design of the territory's promotional materials (supply side), in order to establish a balanced vision of the tourism destination.

In this way, the evaluation of the tourism potential of all municipalities in Minho-Lima aims to establish indicators that can be useful for both private and public use in terms of planning decisions.

The article is organized as follows: in Section 1, we review the concept of tourism potential of a territory and put forward a possible general formula to pursue its evaluation; in Sections 2, 3 and 4, the partial components to use in the general formula, that is, the value of resources, accessibilities and equipment, respectively, are discussed and calculated; the tourism potential index is estimated in the last section, followed by a summary of our final conclusions.

2. Tourism potential evaluation

The tourism potential or the elements that configure a tourist destination depend, basically, on the amount and quality of the tourism resources, although other aspects such as accessibility or the equipments/infrastructures available also determine this potential (López-Ochoa & Lufin-Varas, 2010; Murphy, 1983; Ritchie & Crouch, 2005). In other words, to characterize a destination it is necessary to evaluate resources (Formica & Uysal, 2006; Gunn, 1988; Kusen & Tadej, 2003; Smith, 1987) as well as to analyze the geographical space that configures this territory, not just as a resource but also as a location factor for those activities (López-Ochoa & Lufin-Varas, 2010; Pardellas & Padín, 2001).

We are all well aware that the resources that attract tourists are limited in number, and vary in their features, distribution and degree of development. Consequently, increasing the tourism attractiveness of a territory implies careful planning of their use, taking into account their nature, diversity and location, and the profile of potential visitors. Empirical data show that tourism activities follow singular space location behaviour. As such, a general location theory can apply to these kinds of studies, but the specificity of particular tourism activities and related service sectors must be considered. In particular, one should account for the circumstance of the consumption of tourism products taking place in the locale where they are produced. This specificity implies, on the one hand, a direct and physical relation between tourism resources and the goods produced from them and, on the other hand, the displacement of tourists from their usual residence to satisfy that demand.

Establishing methods of classification and an inventory of the available resources constitutes a first step in the analysis of tourist potential, but the real value of the potential of a territory is not only measured by the number of attractions it possesses but also by their variety and quality. The use of evaluation techniques will establish a measure of the value of the resources available, and thus, provide support for the decisions taken in planning processes. As underlined by López-Ochoa & Lufin-Varas (2010), any attempt to improve the performance of a tourism industry in any regional context requires the strict identification of

the set of resources available, and of their nature and level of conservation, as well as the existence of supporting infrastructures.

Even so, the attractiveness of a territory does not depend solely on this supply of resources and infrastructures but, mainly, on the relationship that can be established between the available resources or tourism attractions and the importance given to such attractions by tourists (Iatu & Bulai, 2011).

The evaluation of the tourism potential of all municipalities in the Minho-Lima region aims to establish indicators that can be useful for the private and public actors in planning decisions. Following the findings of the above mentioned authors, namely, that in order to analyze the real value of the tourism potential of a territory one cannot only measure the number of resources and attractions but, most importantly must also, measure their quality, as well as other features like accessibility and equipment endowment, researchers have investigated the use of different indexes to evaluate the potential of tourism destinations. Iatu & Bulai (2011), for example, put forward a general index comprised of the two components "network quality" and "service quality". One major problem of such a formula is the inherent difficulty of finding the values of those variables, in addition to the problem of defining the attraction rating index, itself.

For the purposes of this paper, we adopt the formula suggested by Leno-Cerro (1992 and 1993) to calculate the Tourist Value Index or Tourism Potential of a certain territory, which is as follows:

$$\mathbf{IPTi = \alpha Fri + \beta Fai + \delta Fei}$$

where,

IPTi = Tourism Potential Index of the municipality "i".
Fr, Fa, Fe = values of the "resources", "accessibilities" and "equipments" of the municipality "i".
α, β, δ = weighting factors.

The weighting factors attributed to each one of the elements in the elaboration of the model are justified by the fact that not all of them have equal importance in the calculation of the tourist value of a destination.

3. Resources value

From the tourist point of view, not all the inventoried resources have the same value. This value depends on the nature of the resource (natural, historical, ethnographic) and on its characteristics relating to singularity, availability, etc. Therefore, as discussed above, in order to establish the attractiveness of a place, it is not enough to count the number of resources available. The individual importance of each one and the way it meets the needs of the visitors must also be considered; they must therefore be evaluated.

With this aim, we selected the methodology for evaluation of resources suggested by Leno-Cerro (1992 and 1993). This author believes that the tourist value of a particular resource should attend to its nature and singularity, in agreement with the following equation:

$$Vri = Jpi * \mu i$$

where,

Vri= tourist value of resource "i"
Jpi = primary hierarchy of the resource "i"
μi = weighting factor, attending to the nature of the resource "i"

Following this methodology, the tourist value of a resource will depend on the hierarchy that it occupies, derived from its importance and/or singularity, as well as on the weighting factor attributed to the category to which it belongs, according to its nature.

However, before progressing with an evaluation of the diverse resources, it is necessary to classify them in large groups. As a preliminary task, they must be classified within homogeneous groups.

Taking into consideration the proposals of Defert (1996), Padín (2004) and Vera (1997), we decided to classify the resources into 3 main categories: RN - natural resources; RH - historical resources; and RE - ethnographical resources. Other classifications could be adopted, such as one that differentiates between natural and cultural resources (besides the infrastructural ones), as found in Iatu and Bulai (2011); or Murphy (1983), who advocate a basic distinction between their natural or cultural nature, complemented by the infrastructures and services supplied.

The methodology we follow in this paper allows a greater differentiation of cultural resources, separating those endowed with a more material component from those with a more immaterial component.

3.1 Resources rankings

An evaluation of resources implies establishing rankings. Those rankings are a function of the importance and singularity of each resource, which can be classified as being of international, national, regional or local interest. This involves, of course, the resources attractiveness to tourists, who are coming from diverse origins and distances (López-Ochoa & Lufin-Varas; 2010).

To approach these hierarchies of resources, we considered the various references we were able to find to them in electronic supports and in published paper materials (that is, brochures, tourist guides, itineraries, etc.). In this procedure (Table1), following other authors, namely Leno-Cerro (1992 and 1993) and López-Ochoa and Lufin-Varas (2010), we attributed a scale of 1 to 4 points to the importance and/or singularity of each of the resources identified, being:

Hierarchy 1: local interest.
Hierarchy 2: regional interest.
Hierarchy 3: national interest.
Hierarchy 4: international interest.

To be of international interest means a tourism resource is capable of attracting international visitors. A similar approach is used to classify resources as being of national, regional or local interest.

Hierarchy/Category	Natural Resources	Historical Resources	Ethnographical Resources	Total	Total %
Hierarchy 1	56	103	**86**	**245**	**24,43**
Hierarchy 2	79	314	**166**	**559**	**55,73**
Hierarchy 3	21	74	**25**	**120**	**11,96**
Hierarchy 4	15	49	**15**	**79**	**7,88**
Total	**171**	**540**	**292**	**1003**	**100**
Total %	**17,05**	**53,84**	**29,11**	**100**	

Table 1. Resources by category and hierarchy, in Minho-Lima

On the other hand, the evaluation of resources implies consideration of a factor that weights the nature of the resource[1], given that the ranking does not indicate the tourist value of the resource, but its importance inside its own category. The weighting factor will allow the transformation of that hierarchy into an economic graduation. With this purpose, we made use of two different methodologies, which are presented in the next sections.

This approach to the valuation of resources is similar to that followed by the body for the Spatial Planning of the National Territory Romania, in 2008, which adopted a method of applying points (scores) to both quantitative and qualitative data referring to the tourism and infrastructures resources (Iatu & Bulai, 2011). There is of course criticism of these evaluation methods but, as underlined by the before mentioned authors, every system or method will always raise debate.

3.2 Demand-based coefficients

Leno-Cerro's proposal (1993) is based on the empirical work done by authors such as Cinelli (1985), Ferrario (1980) and Var et al. (1977). In order to solve the problems arising from the space scope being different to those used in previous studies, Leno-Cerro conducted a questionnaire on the Spanish tourists' motivations (Leno-Cerro, 1992).

Following this initiative, we tried to obtain these weighting coefficients by questioning the tourists who visit Minho-Lima about their preferences regarding the type of tourism resources. From our analysis of their preferences[2] it was possible to estimate the relative importance of tourism resources, by large categories/groups of resources (Table 2) which were then adjusted to a 5 points scale of values, to approximate the scale on which the results are expressed in the supply side analysis (Table 3):

[1] The establishment of weighting factors is made not for each resource but for major groups of resources, according to their nature, which, in our case, will correspond to the three categories inventoried.
[2] This analysis can be found in Vareiro, L., Ribeiro, J. & Pardellas, X. (2009). Preferências dos turistas que visitam o Minho-Lima: Uma análise com base nas preferências declaradas. *Estudos Regionais*, Vol. 22 (3º Quadrimestre): 35-46.

	Relative importance	Weighting factors
- Natural resources:	49%	5
- Historical resources:	32,4%	3,308
- Ethnographical resources:	18,6%	1,897

Table 2. Demand based resources coefficients

Although the numerical values obtained do not coincide, our results concur with those of the authors mentioned above in identifying the natural resources as those that generate the greater interest among tourist demand, far above the rest.

One possible explanation for this lies in the evolution of the demand in close relation to the change in the hierarchy of motivations of tourists. Recently, there has in fact been a remarkable change in social values, showing a growing concern about the environment, that is, about its preservation and conservation. As a result of this evolution, we have seen an increasing demand and recovery of lesser known destinations, with tourists seeking enjoyment of natural beauty and a more intense contact with nature.

3.3 Supply-based coefficients

Besides the tourists' opinion, we also decided to consider that of the agents (public and private) charged with the elaboration of the territory's promotional material. From this, we envisaged obtaining a vision of the tourist destination through the eyes of its promoters, that is, from a supply side approach.

Starting from their mention in the various promotional materials, we made an estimation of linear regression (annex1), in order to determine the implicit importance of each category of resources.

We took the number of references made to the resource in the various promotional supports (websites, brochures, tourist guides, itineraries, etc.) as the dependent variable. And, as independent variables, we used: i) the number of natural resources; ii) the number of historical resources; and iii) the number of ethnographical resources existing in each one of the parishes of the municipalities considered in our study.

The results we obtained were:

	Weighting factors
- Natural resources:	2,682
- Historical resources:	5,342
- Ethnographical resources:	4,493

Table 3. Supply based resources coefficients

As previously mentioned, these coefficients expose the importance that the agents (public and private) responsible for the promotional material consistently give to the built heritage, as well as to the festivals, pilgrimages and gastronomy. This approach to the marketing of the territory is, of course, related to the image the agents think the potential visitors have of the tourism destination and/or the profile of the tourists they envisage attracting to the destination.

3.4 Results of the resources evaluation

After the estimation of the parameters that define the tourism value of each type of resource, it is possible to evaluate the potential of each municipality in Minho-Lima. The resources factor[3] for each municipality is given by the sum of the scores obtained by the **n** resources with which it is endowed (Table 4).

$$Fri = \Sigma Vri$$

where,

Vri= tourist value of each resource of the municipality "i".
Fr = value of the "resources" attributes of the municipality "i".

Municipality	Vr (Demand)	Weighed value (Demand)	Vr (Supply)	Weighed value (Supply)
Arcos de Valdevez	678,74	58,56	1031,07	62,88
Caminha	651,98	56,25	872,66	53,22
Melgaço	451,57	38,96	681,10	41,54
Monção	510,57	44,05	796,71	48,59
Paredes de Coura	480,81	41,48	697,06	42,51
Ponte da Barca	529,51	45,68	774,03	47,21
Ponte de Lima	1034,01	89,21	1564,96	95,44
Valença	592,65	51,13	890,41	54,30
Viana do Castelo	1159,09	100	1639,74	100
V.N. Cerveira	446,01	38,48	578,69	35,29
Minho-Lima	**6534,94**		**9526,43**	

Table 4. Resources value, by municipality

In order to compare the different factors inside the tourist potential index, we must standardise the values, since they present themselves in different scales. For the purposes of this paper we decided to express the results in a scale from 0 to 100 points, the maximum value corresponding to the one of the municipality that attains the biggest value after the addition of resources.

Even though the coefficients (weighting factors) we obtained by using the two methodologies are quite different, it is interesting to note that the final results obtained in terms of tourist ranking of the municipalities are similar.

We should consider these results from two perspectives: the one of the territory's present reality; and the one envisaging the future evolution of the territory. The former depends on the present situation and current characteristic of each municipality included in the analysis,

[3] The results shown in Table 4 are the final results; the intermediate calculations and the weighting scales were not incorporated in this paper due to limitations of space.

establishing the potential at the present moment. Accordingly, we could observe large disparities between the better endowed municipalities and others occupying less central geographical positions and being less endowed with natural and historical resources.

The second perspective concerns changes in the initial parameters. This means, in strict terms, the election of planning alternatives with defined objectives for the improvement of the economic and social situation of the municipalities worst placed. It also means that a desirable future scenario should be properly defined.

Resource category	Vr (Demand)	Weighed value (Demand)	Vr (Supply)	Weighed value (Supply)
Natural Resources	1685,00	25,78	903,83	9,49
Historical Resources	3800,88	58,16	6138,00	64,43
Ethnographic Resources	1049,06	16,05	2484,60	26,08
Total	**6534,94**	**100**	**9526,43**	**100**

Table 5. Resources value, by resource category

4. Accessibilities value

The accessibilities factor refers to the conditions that facilitate or make difficult the tourists' displacement from the emitting markets to the destination.

To calculate this factor properly consider internal and external accessibility should be considered separately. Internal accessibility relates to the real and ideal distance between the municipalities. In this case, there will be a qualitative approach only, through the consideration of the main communication infrastructures and accesses to each of the municipalities.

Given that within the concept of external accessibility, we should capture the space-distance and the space-time vectors, we will assume that the whole area of the study benefits from the same network of high-speed motorways (see Figure 1 and 2), approaching the issue from the point of view of the area's overall accessibility for visitors coming from the remaining domestic and European territory. This is a simplifying hypothesis which we believe is acceptable as a preliminary approach.

In order to obtain an indicator of accessibility for a certain destination, other approaches could be followed. For example, in their empirical research regarding *Autofagasta*, in Chile, López-Ochoa and Lufin-Varas (2010) adopted the Euclidian concept of distance to locate tourism resources vis-à-vis the main town of the region.

The maps shown in the next page (Figures 1 and 2) allow us to conclude that our area under study presents conditions of physical access by motorway similar to those of other better known tourism destinations. This is a favourable factor that should be considered in the planning of the set of tourism offers, as well as in the marketing strategies.

Fig. 1. National Road Plan (PNR): Portugal

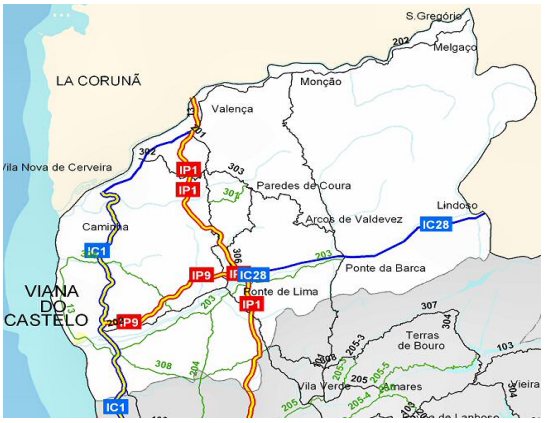

Fig. 2. National Road Plan: Minho-Lima

Regarding internal accessibility, the type of road infrastructures available to reach each municipality will be the basic element for its estimation, establishing a schematic and simplified structure based on the following scores:

- Municipalities accessed exclusively by city roads: 1 point.
- Municipalities accessed exclusively by regional roads: 2 points.
- Municipalities accessed by national roads: 3 points.
- Municipalities accessed by complementary high-speed roads: 4 points.
- Municipalities accessed by main itineraries/ motorways: 5 points.

Municipality	Total Value	Fai
Arcos de Valdevez	4	80
Caminha	4	80
Melgaço	3	60
Monção	3	60
Paredes de Coura	3	60
Ponte da Barca	4	80
Ponte de Lima	5	100
Valença	5	100
Viana do Castelo	5	100
Vila Nova de Cerveira	3	60

Table 6. Accessibility Value, by municipality

Although we recognise that "great access does not mean great tourism" (Iatu & Bulai, 2011: 173), an analysis of Table 6 shows two differentiated situations: on the one hand, the municipal axis which includes Viana do Castelo, Ponte de Lima and Valença, served by motorways; and, on the another hand, the situation of the municipalities of Melgaço, Monção, Paredes de Coura and V.N. Cerveira, whose internal communication is served mainly by national roads. This second case signifies greater difficulties in terms of accessibility, which is further reinforced if the levels of identification (markers and informative signs) for the destinations and resources on the routes of access are taken into consideration.

5. Equipment value

The equipment factor is the most complex and also that with smaller specific weight in the final value of the IPT (Pardellas et al., 2005). This factor is defined as a synthetic indicator of three basic elements: the tourism infrastructure; the commercial infrastructure; and the recreational-sport infrastructure, applying the formula:

$$FEi = f (Iti, Ici, Irdi)$$

where,

FEi = equipment factor in the municipality "i".
Iti = tourist infrastructure in the municipality "i".
Ici = commercial infrastructure in the municipality "i".
Irdi = recreational-sport infrastructure in the municipality "i".

Regarding the tourism infrastructure, we considered two variables: lodging services and restaurants[4], being defined as:

[4] Leno-Cerro (1993) suggests a third variable in this factor, the number of secondary residences, calculated by approaching the quotient between the number of telephones and its inhabitants. With the proliferation of mobiles, we considered that this variable could adulterate the results.

$$Iti = (aci + ri)/2$$

where,

aci = accommodation capacity in the municipality "i".
ri = restaurants capacity in the municipality "i".

Each one of these variables was expressed in a scale of five points, although in this case they can also take the value zero. In Table 7 we can see that the results obtained reflect a widespread lack of tourist infrastructure, particularly in the areas already referred to as "poor" in terms of accessibilities.

Municipality	**Iti = (aci+ri)/2**			
	aci	**ri**	**(aci+ri)**	**Iti**
Arcos de Valdevez	3,09	1,4	4,49	2,245
Caminha	4,45	2,4	6,85	3,425
Melgaço	2,14	1,22	3,36	1,68
Monção	0,74	1,84	2,58	1,29
Paredes de Coura	0,41	0,21	0,62	0,31
Ponte da Barca	1,91	1,75	3,66	1,83
Ponte de Lima	2,15	3,66	5,81	2,905
Valença	0,64	2,05	2,69	1,345
Viana do Castelo	5	5	10	5
V. N. Cerveira	1,22	0,93	2,15	1,075

Table 7. Tourist Infrastructures, by municipality

The retail and wholesale infrastructure was calculated from data of the Commercial Cadastre Database of *DG Trade and Competition*, concerning the number of retail and wholesale establishments in the area of study. For this variable, as in the previous ones, a location coefficient was used in a scale of 0 to 5 points, applying the equation:

$$Ici = (Estci*5)/Estcm$$

where,

Ici = commercial infrastructure in the municipality "i".
Estci = number of commercial establishments in the municipality "i".
Estcm = number of retail and wholesale establishments in the municipality with the maximum number of commercial establishments.

Municipality	Estci	Eci
Arcos de Valdevez	315	1,23
Caminha	283	1,10
Melgaço	111	0,43
Monção	373	1,46
Paredes de Coura	116	0,45
Ponte da Barca	152	0,59
Ponte de Lima	478	1,87
Valença	128	0,50
Viana do Castelo	1281	5
Vila Nova de Cerveira	108	0,42

Table 8. Commercial Infrastructures, by municipality

It is worth mentioning the strong disparity among the number of retail shops in Viana do Castelo (the more urban municipality) and the other municipalities, with this city obtaining the maximum value (5), against values of just over 0,4 in V.N. Cerveira, Melgaço and Paredes de Coura.

The estimation of the recreational-sport infrastructure is based on the facilities of this type that each municipality possesses, transforming the existent establishments into a scale of 0 to 5 points. The inclusion of this variable in the IPT is justified by the more or less active nature of the tourists who visit the area encompassed in our research.

Analyzing the results obtained using the data from the city councils and RTAM, one can conclude that the scarcity of this type of infrastructure was strongly verified, not only from the tourism point of view, but also if the support to the local population is considered.

Municipality	Eqrdi	Erdi
Arcos de Valdevez	9	2,14
Caminha	21	5
Melgaço	11	2,62
Monção	5	1,19
Paredes de Coura	6	1,43
Ponte da Barca	11	2,62
Ponte de Lima	18	4,29
Valença	16	3,81
Viana do Castelo	20	4,76
Vila Nova de Cerveira	11	2,62

Table 9. Recreational-Sport Infrastructure, by municipality

As in the previous variable, a relative location coefficient was used, expressed in a scale of 0 to 5 points, applying the formula:

$$Irdi=(Eqrdi*5)/Eqrdm$$

where,

Irdi = recreational-sport infrastructure in the municipality "i".
Eqrdi = number of recreational-sport establishments in the municipality "i".
Eqrdm = number of recreational-sport establishments in the municipality with the maximum number of recreational-sport establishments.

The three analyzed indicators, tourist infrastructure (It), commercial infrastructure (Ic) and recreational-sport infrastructure (Ird) are synthesized in only one factor (FE), which is the third component of the Tourism Potential Index (IPT).

In this way, the equipment factor is the result of the weighed sum of the values obtained from the individual components. The sum is weighed by the different specific weights of the values, the tourism infrastructure being the one that better reflects the tourism importance of the municipality, marked with a coefficient 2. Thus, the equipment factor is expressed as:

$$FEi=2Iti + Ici + Irdi$$

where,

FEi = equipment factor of municipality "i".
Iti = tourism infrastructure of municipality "i".
Ici = commercial infrastructure of municipality "i".
Irdi = recreational-sport infrastructure of municipality "i".

As these variables are expressed in a scale from 0 to 5 points, the theoretical limit of this factor would be between 0 points, for the municipality that does not have any equipment or infrastructure, and 20 points, for the one best endowed. To allow for the comparability of this factor with the others analyzed, these initial results should be transformed into a scale of 0 to 100 points (FEiPond).

Municipality	2Iti	Ici	Irdi	FEi	FEiPond
Arcos de Valdevez	4,5	1,23	2,14	7,87	39,83
Caminha	6,86	1,10	5	12,96	65,59
Melgaço	3,36	0,43	2,62	6,41	32,44
Monção	2,58	1,46	1,19	5,23	26,47
Paredes de Coura	0,62	0,45	1,43	2,5	12,65
Ponte da Barca	3,66	0,59	2,62	6,87	34,77
Ponte de Lima	5,82	1,87	4,29	11,98	60,63
Valença	2,7	0,50	3,81	7,01	35,48
Viana do Castelo	10	5	4,76	19,76	100
Vila Nova de Cerveira	2,16	0,42	2,62	5,2	26,32

Table 10. Equipment Factor, by municipality

6. The tourism potential index

As previously stated, resources, accessibility and equipments and infrastructures are the factors that strongly determine the tourism value of a particular territory. Although it is difficult to measure the value of a perception, in this paper we intend to attempt this by applying the theoretical concepts suggested by a few authors (Iatu & Bulai, 2011; Leno-Cerro, 1992 and 1993; Pardellas et al., 2005).

At the same time, it is important to keep in mind that not all elements in the index have the same importance in the estimation of this value. In the theoretical formulation, we must, therefore, include weighting factors for the different elements. For the quantification of these weighting coefficients, the basic hypothesis relates to the human intervention level of each one of the factors. As a consequence, the resources will have the highest coefficient because if they did not exist, it would be very difficult to create them. The accessibility factor is the second in importance, since we can improve the quality of the accesses, but it is impossible to reduce the physical distances. Finally, the equipments constitute the less critical factor, since their lack is relatively easy to solve. In this regard, the Tourism Potential Index (IPT) would be expressed by the following equation:

$$IPTi = 1,5\ FRi + 1,25FAi + 1,00FEi$$

Thus, the IPT of a given municipality will vary between a maximum of 375 and 0[5]. To maintain the homogeneity of the scales used in the estimation of each factor, we transformed the index into a scale of 0 to 100 points (IPTiPond), taking the 375 possible points as a basis. The results obtained are presented in Table 11:

Municipality	**1,5 Fri**		**1,25FAi**	**1,00FEi**	**IPTi**		**IPTiPond**	
	Demand	Supply			Demand	Supply	Demand	Supply
Arcos de Valdevez	95,06	94,32	100	39,83	234,89	234,15	62,64	62,44
Caminha	87,53	79,83	100	65,59	253,12	245,42	67,50	65,45
Melgaço	60,75	62,31	75	32,44	168,19	169,75	44,85	45,27
Monção	70,97	72,89	75	26,47	172,44	174,36	45,98	46,50
Paredes de Coura	63,69	63,77	75	12,65	151,34	151,42	40,36	40,38
Ponte da Barca	74,51	70,82	100	34,77	209,28	205,59	55,81	54,82
Ponte de Lima	136,2	143,16	125	60,63	321,83	328,79	85,82	87,68
Valença	81,29	81,45	125	35,48	241,77	241,93	64,47	64,51
Viana do Castelo	150	150	125	100	375	375	100	100
Vila Nova de Cerveira	59,06	52,94	75	26,32	160,38	154,26	42,77	41,14

Table 11. Tourism Potential Index, by municipality

[5] The result 375 is obtained from: 1,5x100 + 1,25x100 + 1,00x100, which are the maximum values of each one of the factors. The minimum value is close to zero, for each one of the factors.

The Tourism Potential Index allows analysing the possibilities for the industry's development and, by extension and integration, for the set of productive activities in a certain territory (Pardellas et al., 2005). In our research, we obtained significant information about the differences among municipalities, and this will allow adjusting the mechanisms and planning alternatives to each situation, modifying those factors considered less favourable.

Given the aim of this paper to compare the perspectives of the supply and demand sides on the importance of resources, it is worth underlining here that the results obtained from the two different perspectives are very similar, with no impact on the final ranking.

7. Conclusion

In this study we suggest a new Tourism Potential Index derived from the empirical approach we developed, and supported by established analytical tools and similar investigations previously conducted by other authors. Using this approach, we were able to derive a few main conclusions.

The first concerns the high value presented by the resources factor in Viana do Castelo and Ponte de Lima. In the case of Viana do Castelo, this is the result of the municipality's singular endowment of natural resources (sea, river and mountain) and its wealthy ethnographic heritage. In the Ponte de Lima case, the potential comes from the important built heritage, not only civilian but also religious, as well as from the relevant ethnographic resources. In the case of some municipalities in the region, it is worth noting the small importance given to natural resources, even though they are endowed with excellent examples, as is the case of Paredes de Coura, with its Protected Landscape of Corno do Bico.

A second conclusion concerns the accessibility factor which, due to the simplification adopted in the analyses, presents more elevated values in Ponte de Lima, Valença and Viana, and lower values in the other municipalities. If we add this result to the previous one, we can verify that the rectification of the deficiencies identified at the infrastructures level is a crucial factor for the improvement of the economic position and the tourism potential in the less favoured territories.

The third concerns the equipments and infrastructures, where the differences are greater between the municipalities under analysis. Partially, this situation is linked to the differences found between the population densities. As a consequence, the highest equipment values are attained by the more urban areas, allowing comparative distances of 2,5 and 19,76 points, if we take the minimum (Paredes de Coura) and maximum (Viana do Castelo) values.

Clearly, this factor, on the one hand, highlights the need for public policies, given that it is the factor more easily modifiable in the short-term and, on the other hand, makes clear the market tendency to an asymmetric growth path. This is the result of the circular effect between (less) offer/(more) production costs and (less) demand.

As a final conclusion, it is possible to say that the analysis mentioned above verified that an important tourism potential exists, but that the consolidation of the territory as a tourist

destination will imply all the agents, public and private, involved in the different components of the tourism supply, taking action in order to attain a more efficient use of the available endogenous resources. A first step in that direction will be the definition and consequent promotion of an image of the region as common tourism destination.

Although the goals envisaged by this kind of investigation seem to be meritorious, the authors of the article recognize the need to address some of its limitations. To this purpose, we intend to rely less on the Leno-Cerro index in future empirical work and, thus, we intend to explore alternative methodological approaches to appraise the tourism potential of a destination.

Regarding accessibility, we are aware of the need to incorporate the ways in which tourists can access the territory (air transportation, railways, and motorways – by car or bus). With regard to infrastructures, the authors will also seek to determine the weighting factors for each of its internal components (tourism, commercial and recreational-sport infrastructures).

A further limitation of the approach followed for the evaluation of the tourism potential of a territory arises from its supply side bias, that is, the index is derived from looking at the available territorial resources as tourism attractions. This can have the effect of establishing a dangerous relationship between territorial attributes and tourism products and services. To overcome this potential pitfall, we see no alternative apart from simultaneously looking at the demand market and checking what its tendencies are in terms of tourist behaviour and product demand.

8. Annex

Dep. Var. Ind. Var.	NRef
RN	2,682 (7,243)***
RH	5,342 (40,400)***
RE	4,493 (17,272)***
Constant	- 1,394 (-2,822)**
R^2	0,965
Adjusted R^2	0,965
F	2093,805
N	228

Notes: *p<0,05; **p<0,01; ***p<0,001. The values in parenthesis are t-statistics.

** statistically significant at the 0,01 level; *** statistically significant at the 0,001 level.

Annex 1. Linear regression used to estimate the weighting factors, attending to the nature of the resource

Municipality	Tourist Infrastructures					CETi	Aci = (CETi*5)/CETm
	EH	TER	TN	MCAT	PC		
Arcos de Valdevez	0,94	1,61	5	0	1,28	8,83	3,09
Caminha	2,2	1,14	0	5	4,36	12,7	4,45
Melgaço	1,14	0,19	3,33	0	1,44	6,1	2,14
Monção	0,92	1,18	0	0	0	2,1	0,74
Paredes de Coura	0,16	1	0	0	0	1,16	0,41
Ponte da Barca	0,16	0,59	3,33	0,09	1,28	5,45	1,91
Ponte de Lima	1,15	5	0	0	0	6,15	2,15
Valença	1,29	0,54	0	0	0	1,83	0,64
Viana do Castelo	5	3,42	0	0,86	5	14,28	5
V. N. Cerveira	1,51	0,18	0	0,83	0,96	3,48	1,22
Minho-Lima	14,47	14,85	11,66	6,78	14,32	62,08	

EH – Hotel accommodation capacity weighted by categories.
TER – Tourism establishments' capacity available in rural areas weighted by categories.
TN – Tourism establishments' capacity available in natural areas weighted by categories.
MCAT – Extra-Hotel accommodation capacity weighted by categories.
PC- Camping capacity weighted by categories
CETi – Tourist infrastructures capacity weighted by categories.
CETm – Municipality value with higher CETi.
Aci - Accommodation capacity in the municipality "i".

Annex 2. Tourist Infrastructures Value by Municipalities

Municipality	Capacity	CRi	Ri = (CRI*5)/CRm
Arcos de Valdevez	2416	6383	1,40
Caminha	4145	10931	2,40
Melgaço	2095	5533	1,22
Monção	3126	8367	1,84
Paredes de Coura	337	941	0,21
Ponte da Barca	2795	7960	1,75
Ponte de Lima	5794	16654	3,66
Valença	3361	9356	2,05
Viana do Castelo	7796	22767	5,00
Vila Nova de Cerveira	1444	4226	0,93
Minho-Lima	33309		

CRi - Restaurant capacity in the municipality "i" weighted by categories.
CRm - Municipality value with higher CRi.
Ri - Restaurants value in the municipality "i".

Annex 3. Restaurants Value by Municipality

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