New approach in evaluating tourism attractiveness in the region of Moldavia (Romania)

Corneliu Iatu, Mihai Bulai

***Abstract*—** This study opens some question marks over the actual tourism concepts and methods used in the evaluation of tourism phenomena in Romania. Overused and misused syntagms such as "tourism potential" have created gaps in understanding how supply elements reflect in tourist demand, as *potential* only expresses some territorial capabilities. The concept of "tourism attractiveness*"* as formulated by Formica, S. is a better instrument to explore the relationship between supply and demand. Thus, knowledge of mechanisms which produce benefits at regional scale is often poor, if we take a glance at the evaluation method used by the Space Planning of National Territory of Romania. By using principles utilized in regional analysis by Smith or Lovingwood, this paperwork tries to build a new approach in identifying key role of tourism resources and infrastructures (potential and existent supply) in attracting important amounts of tourists in Moldavia. The results confirm for this region of Romania a great role of presence of cultural resources as proximity factor of tourist registration and lack of strength of natural resources in producing overnights when not correlated with good access. Our approach shows the need for a paradigm shift in Romanian conceptual instruments used in the evaluation of tourism.

***Keywords*—**tourism attractiveness, regional analysis, tourism potential, tourist demand, Moldavia

I. Introduction

EVALUATION of tourism phenomena over a territory has always been a very difficult task. Many explanations are to be found in its spontaneous and sometimes unpredictable nature. Initial studies have widened their research field from the "existent" (*in terms of supply and demand*) to the "possible" (*in terms of tourism resources* or *tourism potential* [1]. This paradigm shift was needed in order to give the possibility to predict the appearance of tourism blossoms in an area or to envisage the further evolution of existent structures.

In Romania, harmony and smooth slope of relief "steps" (mountains, hills and plains) like in a natural amphitheatre, as well as centrality of Carpathian Mountains was enough for the communist regime before 1990 to glorify our country's natural resources, next to cultural and historical heritage. Furthermore, the idea of a so-called "strong tourism vocation" of Romania was spread, in order to give confidence to citizens. Main "assets" in that period were only people's security and relatively low prices. State has totally controlled conception and localization of tourism infrastructure, often disadvantaging potentially promising destinations.

In Romanian geographical literature of those times, Sandru, I. [2] envisaged evaluating tourism potential only through material tourism infrastructures (lodging, catering, treatment or leisure facilities). Later on, Swizewski C., et al. [3] proposed the study of so-called *tourism base* (*"fond turistic",* a very outdated concept today, as of Muntele, I., Iatu, C., [4] as the sum of natural, social, cultural and historical resources which support the potential supply of a territory. Snak, O. [5] instead, makes reference more to *primary tourism supply*, as main condition in planning and in emergence of some forms of tourism.

Then, after 1990, the syntagm *tourism potential* has flooded geographical or economical literature without a proper contextualization of its meaning and purpose. The well-known expression - "Romania has great tourism potential but it is not exploited" - has become almost meaningless, masking serious gaps and continuing an insipid self-glorifying approach.

There are two main trends in defining *tourism potential*. Glăvan V. [1] defines it as "the sum of possibilities that the natural and social environment puts at disposal of tourism activities", in according with Hall C.M. [6] – "basic condition of the development", or with Muntele I., Ia□u, C. [4] – "sum of objective or subjective conditions" etc., their main approach focusing on its immaterial nature, on the conditioning or the activating role of it. This immaterial approach emphasizes on the fact that *tourism potential* is preliminary and precedes certainty, as *"potential"* or "*possible"* expresses only the capability of occurring.

There is also a "material" trend which considers *tourism potential* as "a sum of natural and human resources" as of Ielenicz M. [7]. This author is also proposing a mathematical expression of *tourism potential: TP = Ta + Ai + Ni + Di + Si,* where *Ta* is the sum of tourist attractions, *Ai* is an attraction rating index, *Ni* is a network quality index, *Di* is a distance index to great urban agglomerations and *Si* is an index of service quality. This expression is somehow contradictory as they previously considered *tourism potential* (natural or cultural resources) as being in opposition with *material structures* (i.e. infrastructures).

The tourism study for Spatial Planning of National Territory

completed in 2009 [8] is also using a mathematical expression in order to evaluate *tourism potential* in Romania, by taking into consideration resources as well as tourism and general infrastructures (very close to the vision of Cocean, P. [9] who also considered location as an asset of resources). Unfortunately they are not explicitly defining *tourism potential* in their dictionary index. We notice that it pertinently excludes services, as services are more an expression of the "existent", and not of the "possibility". It includes, though, an evaluation of tourism infrastructures (lodging, different facilities such as ski slopes or conference halls etc.) which are also, more likely, part of the "existent" and an immediate expression of the *supply*. This methodological blur calls for a certain questioning: *What is, exactly, tourism potential and to what necessity it responds? How do "existent" and "possible" interact and where is the separation line? What is the most accurate way to evaluate resources and infrastructures over a territory?*

LEADER European Observatory Program [10], by its *Evaluation of Tourism Potential* addresses to European small local rural entrepreneurs and defines *potential* in terms of relationship between *supply, demand, market trends* and *competition.* Our task of conceptual clarification becomes even more difficult as its definition of *supply* – as part of tourism potential approach) – includes natural, cultural or socio-economic factors and then infrastructures and services, just like Goeldner, C., Ritchie, J.R.B. [11], that divide tourism supply into four main components: natural resources, built environment, operating sectors, cultural resources.

When depicting relationships within a sustainable tourism system, Boers, B. and Cottrell, S. [12] separate, though, natural and cultural resource base from the attraction, transportation or service supply. We are questioning whether tourism resource base is part of a system of possibilities rather than of an actual supply system. The answer comes with Hall, C.M., Page, S.J. [6] that noticed the fact that traditionally, there has been "a tendency to apply concepts and models from economic geography" in regards with the study of *tourism supply* and "less concern for the distribution of recreational and tourism resources which shape the activity patterns and spectrum of opportunity for leisure pursuit". However, since the mid-90's, they notice that there has been an occurrence of "more sophisticated cultural geographies of leisure" with more interest in choosing to include *resources* among explanatory elements of *tourism supply and demand*. In this perspective, *tourism potential* resides more in the possibility that a natural or human element is recognized by the society's subjective evaluation "as a resource to satisfy human wants and needs" [13].

We conclude that *tourism potential* is a qualitative, immaterial measure of certain subjective possibilities and conditions whilst *tourism supply* may include both existent and possible components, depending on the researcher's approach or on the territorial evaluation project. *Tourism supply* alone, does not explain, though, tourism development nor the amplitude of *demand*.

Formica, S. [14] defines the interaction between supply and demand as *tourism attractiveness* which "depends on the relationship between the availability of existing attractions and the perceived importance of such attractions". Unlike *potential* (now part of the *supply*), *tourism attractiveness* includes an approach on the dependency between the possible and existent elements and *tourist demand* [15].

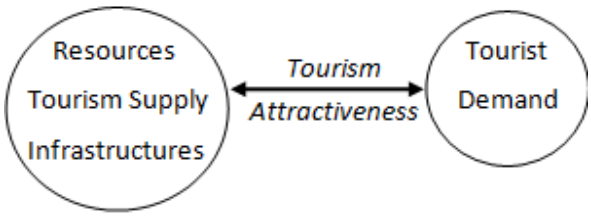

Fig. 1 Tourism attractiveness as function of supply and demand interaction

Attractiveness is actually derived from the model of gravity force and enables to evaluate territorial impact of inner forces (*supply*) on outer forces (*demand*) and vice-versa as there is consistent feed-back. *Tourism attractiveness* as measurement instrument of the *tourism system* [14] seems to better express the relationships between possible and existent and between existent and consumed (Fig.1).

II. AN OVERVIEW ON SPATIAL PLANNING OF NATIONAL TERRITORY (SPNT)

Actual studies in Romanian geographical literature on *tourism potential* of a certain territory have more concern in summing up indices representing resources or infrastructures or even services than analyzing their degree of correlation or of significance. This overuse and misuse of *tourism potential* as analysis instrument has limited the knowledge of true impact of all this static or active tourism territorial elements on the regional economy. This limitation of knowledge is due to a lack of consistence of *tourism potential* which ignores the effects on *tourist demand* (tourist arrivals, no of overnights, mean stay duration, visitor tax, overall budget, motivation etc.). This is why this study will bring a new approach on the relationship between, on one hand, existent and possible supply elements and, on the other hand, tourist demand, though the concept of *tourism attractiveness.*

Our research is concerned by the way that Romanian national policy on tourism strategy and development takes into account importance of different possible or existent elements related to tourism. The Spatial Planning of National Territory (SPNT) [8], approved by law 190 from May 26th, 2009 indents to identify *tourism areas,* which are, by its definition, those territorial units (rural communes or municipalities) that have a "high concentration of natural and cultural resources which might generate tourism activities". In those "high-"and "very high" potential *tourism areas* identified by SPNT, "tourism activity will have priority among other economic activities and

future investments in tourism will have priority there". We assume that the way of identifying tourism areas and their magnitude is determinant for future development of tourism.

Table 1 Variables and Indicators used in the evaluation of tourism potential for all administrative units of Romania

Type	Variables	Basic Indicators	Max pt.
Natural Resources (max. 25p)	Natural environment	Relief/Topography	4
		Geomorphology	1
		Vegetation	1
		Wildlife	1
		Waters	1
		Landscape	2
	Natural factors	Mineral spa waters	10
		Therapy lakes	
		Therapy mud	
		Mophets, sulphurous	
	Protected areas	Biosphere reserves	5
		National parks	
		Natural parks	
		Other reserves	
Cultural Resources (max. 25p)	Historical monuments	Archaeology	8
		Architecture	
		Monuments	
		Memorials	
	Museums	Museums/ Public collections	9
	Arts and crafts	Traditional events, customs, handcrafts	8 or 4
	Cultural institutions	Philharmonics, orchestras, choirs etc	8 or 4
	Events	Festivals, holidays	0 /4
Tourism infrastructure (max.20p)	Lodging	Hotels, guesthouses, camping, campsites, motels, bungalows, etc.	7
	Treatment	Installations	5
	Conference halls	Conferences, congress, exhibition halls	6
	Leisure facilities	Ski slopes Cable transportation	1
	Other leisure facilities	Golf courses, water-ski entertainment parks, horse riding, beaches	1
General infrastructure (max. 30p)	Accessibility to transport network	Harbour /Airport	1/5
		European road	5
		National road and/or railways	5
	Household equipment	Running water, sewerage	5
		Natural gas	4
	Telecom	Mobile phone coverage, Landlines	5

Four main indices have been retained when the study was done in 2007, by the UrbanProiect Institute of Bucharest, (with the support of national specific institutions): natural resources, cultural resources, tourism infrastructures and general infrastructures, within a system of points (score), as in Table 1 (many of the secondary base indicators have been simplified for an easier reading).

This evaluation methodology has many pluses such as using a unitary system for the whole national territory, having a high level of detail when summing up components of indices or including a great number of attraction indicators, in accordance with the destination attraction elements proposed by Mazilu, M. [16] (pp 46).

A lot of criticism comes to light though when seeing such an evaluation method, especially regarding disproportions in scoring each index, under- /over-representations of certain indicators or lack of taking into consideration new tourism attractions or facilities. Misuse of certain terms (i.e. accessibility, potential etc.) is also a big minus. Criticism may continue but every system or method in general raises debate. We will retain though, the massive amount of data collected for all Romanian territorial-administrative units and the unitary evaluation method as determinant for a good degree of relevance of the data.

A second focus of the SPNT is on identifying territorial "problems" of these tourism areas, understood as lack of correlation between resources and tourism infrastructures and resources and general infrastructures. Two main objections are raised. First, summing up natural and cultural resources might not be relevant as their degree of impact on the territory (such as visitor overnights or currency incomes) is completely different. Second, a resource (i.e. mountain gorges or a protected area) does not always need tourism infrastructures (such as accommodation facilities) on the same territorial unit as their significance for tourism often relies on their relative isolation or wildness. The goal when using such indices is not only to aggregate measures for each territorial unit but to compare overall territorial significance of each index.

III. PARTICULARITIES OF MOLDAVIA

What would be a best geographical definition for Moldavia? Its main topography is characterized by a series of parallel hills and Subcarpathians going along main river direction from NW to SE (Fig.2). These average high hills (200 to 600m) are bordered by Oriental Carpathians at west and they gradually descend to the Low Danube Plain at south-east. This main valley direction (from NW to SE) has privileged in the past commercial ties between the Baltic Sea and the Black Sea harbours, going along Oriental Carpathians down to Galati, Chilia or Cetatea Alba (Bilhorod Dniestrovsk, now both in Ukraine), as relays of sea trade. Border redraws and emergence of new geopolitical frontiers in the past two centuries has severely limited its possibilities as the new spatial vectors have met difficulties in terms of accessibility or even effective access.

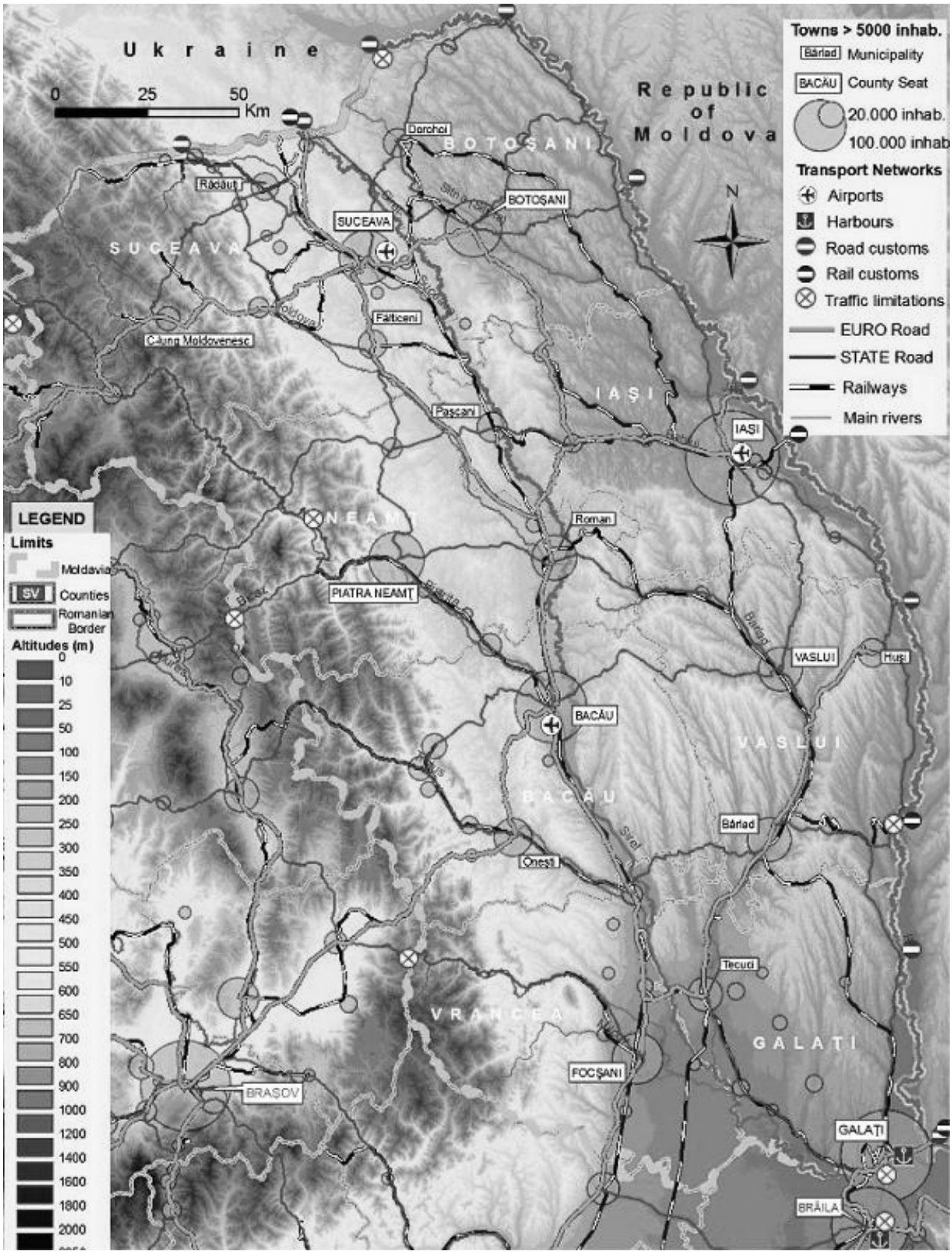

Fig. 2 Physical and Human map of Moldavia

First forms of tourism appeared when there was a higher need for transiting territories, for rest and catering or for protection of good during overnights. Tourism development is also conditioned by a series of social factors, as not all communities easily accept strangers on their territory. Next to initial transit needs, people in large cities have created a need for leisure activities, for health and no-stress time, out of their regular places, in contrast with work or restrictions. Thus, mountainous territories, water bodies, green or protected areas [18], main transport axis or high cities have become attractive factors for the localisation of tourism activities.

Moldavian tourism shares the same trends than the national tourism:

- tourism is almost exclusively generated by the private sector, with almost no support and no control from public authorities;
- hotel, motel, student camp or small-chalet structures are in deep decline; generally, large inflexible structures are constantly replaced by emerging rural or urban guesthouses, with better profile on hospitality [17];
- low international arrivals, mostly from neighbouring countries (over 75%); their motivations are related to transit or commercial needs, with low consumption of specific tourist products;
- national arrivals come from large cities, mostly at weekends, Bank holidays or summer/winter school holidays, their main motivations being pleasure, social-religious events or health;
- tourism is often considered as a risk, often rejected by deep rural communities; public authorities make often confusions between tourism and heritage or recreation activities in the proximity and often use it as a *sine qua non* cliché in their development strategies.

As for the specific consumption of tourist product in Moldavia, international visitors (non-transit) prefer the northern cultural and religious UNESCO heritage as well as mountainous rural landscapes in the west or the great cities. National visitors often dissociate tourism into a. Mountainous and b. Seaside. Most of the time, they transfer recreational activities (specific to their residing area) into a Moldavian rural and/or mountain environment, often with low consumption of typical local products.

A region-scale measurement of tourism phenomena in Moldavia implies a quantitative approach on main indicators, put into national context. The access to data from the online-based "Tempo" database of National Statistics Board as well as a series of spatial interrogations using GIS techniques have lead to an inventory of indicators. Table 2 is a synthesis of these indicators, on three different levels: general (territory) indicators, tourism potential and supply/demand indicators.

General indicators show that Moldavia is a quite unitary territory. We may note a slight higher population density (as natural and total population grown being one of the highest in Romania) or a higher rural rate (as only 18% of the population live in cities). The administrative structure (dimension of counties or territorial units) is also near the average (around 19%). We will retain the parameter of 19% as a comparative mark for our study on tourism.

The Spatial Planning of the National Territory elaborated in 2008 by a research join team of UrbanProiect Institute of Bucharest and national institutions and local public authorities identifies four main component of the tourism potential, divided by resources and infrastructures, by Territorial Unit (3170 communes and towns), using a method of applying points for both qualitative and quantitative data.

By calculating the part of Moldavia in resource and infrastructure quantitative indicators retained by the SPTN and confront it with the average value of 19%) we may notice that natural resources are a great asset of this region (+6%) as well as general infrastructures (around mean value). Untouched nature, forested mountains or the good quality of main roads are indeed praised usually by visitors or researchers [18]. Cultural resources, show less-than-average values (-14%), the presence of 5 UNESCO sites in Moldavia not being able to carry this region to a better positioning. Tourism infrastructures, instead, show a huge comparative gap to average (-43%), which considerably impedes attracting great number of tourists. This is an important indicator of the inferior development and investment in tourism in Moldavia, despite its good level on resources. The causes of this situation might go back in the communist era, when there was a lower interest in investments in Moldavia. An overview on tourist offer and demand might also bring to light some explanations.

The indicators of tourism supply seem to be correlated with the scarce equipment. Only 7,7% (over 60% below average) of the accommodation places were found in this region in 2007 and they seem to be shrinking in time, over the national dynamics (7,5% in 2009). Even though we eliminate the discrepant Constanta and Bucharest (50% of the gross accommodation places in Romania), the region still situates around 14% (a fourth below average). The workforce in tourist-oriented services such as accommodation and restaurants (15,5%) shows a difficulty in finding great role on the work market. The rate of owners or self-employed people in this sector is, though, higher (18%) which might indicate a more numerous family owned- or smaller businesses.

Most probably, a negative dynamics on accommodation facilities (comparing to national average) might find a perfect explanation in lower net occupation index (only 28% comparing to 34% in Romania) as a lower occupation rate does not push investors in widening their supply. The demand figures are confirming, once more, our concern. Not only the number of declared visitors is way below average (12% - in straight correlation with the number of beds), but the number of overnights in the region are even more concerning (only 6,9%). The overall conclusion is that tourist do not find enough tourist activities as they spend more than 1,2 days below the national average. Of course, the seaside might weight over the national average, but a fact is certain: Moldavia struggles in keeping tourists more than one day.

Table 2 Comparative tourism indicators for Moldavia and Romania

	Scale / Indicator	RO	Moldavia		Gap to average	Source of Data/ year
		Data	Data	% of RO		
General	*Surface (km^2)*	*238.000*	*45.700*	*19,3%*	**AVERAGE ~19%**	Official Data
	Population (millions)	*22*	*4,7*	*21,3%*		Statistics 2007
	Urban population (millions)	*12,8*	*2,3*	*17,9%*		Statistics 2007
	Population in cities > 10.000 inhabitants	*11,5*	*2,1*	*18,1%*		Statistics 2007
	No. of Counties	*41+B*	*8*	*19,5%*		Official Data
	No. of Administrative Territorial Units	*3172*	*677*	*21,3%*		Statistics 2007
Tourism Potential	Score Natural Resources[1] (points)	21.604	4.353	20,2%	**+ 6%**	SPTN2007
	Score Cultural Resources[2] (points)	12.931	2.079	16,1%	**-14%**	SPTN2007
	Score Tourism Infrastructures[3] (points)	238	25	10,4%	**-43%**	SPTN2007
	Score Technical Infrastructures[4] (points)	32.571	6.178	19,0%	**0%**	SPTN2007
Supply and Demand indicators	Accommodation structures (no places)	290.719	22.410	7,7%	**– 60%**	I.N.S. 2007
	Accommodation structures (no places)	297.304	22.463	7,5%↘	**– 61%**	I.N.S. 2009
	Accommodation str. (no places) except **CT (**Constanta) **+ B (**Bucharest)	159.478	22.463	14,1%	**–26%**	I.N.S. 2009
	Number of employees, owners and self-employed in restaurants and accommodation structures	121.719	18.950	15,5%	**–18%**	(Census 2002)
	Net occupation index for accommodation structures (%)	34%	-	28%	**–18%**	(Ministry of tourism 2006)
	Number of visitor arrivals (registrations at desks)	6140296	737264	12%	**–35%**	Stat Report 09
	Number of visitor overnights (as of registrations)	17325410	1193765	6,9%	**–64%**	Stat Report 09
	Average stay length (number of days	2,82	1,61	-	**–1,2days**	Derived Info

[1] Such as topography, vegetation, landscape, therapy factors, natural reserves etc.
[2] Architecture, monuments, museums, traditions, concerts, philharmonics, theatres etc.
[3] Accommodation, treatment facilities, conference halls, leisure parks, ski slopes, beaches etc.
[4] Presence of harbours, airports, road infrastructures, railways, water or gas pipes, telecom etc.

This analysis is certainly not the only instrument to measure the gap between Moldavia and Romania or other regions, but there are some constant data that seem to confirm the following pluses and minuses for Moldavia:

+ it is a relatively unitary territory holding a structure, organisation and demography very close to its dimension;

+ natural resources are definitely consistent and might be the focus of tourist arrivals in the future;

+ cultural resources are important, though they gravitate around punctual attractions: urban (cities of Ia□i, Gala□i, Bacău or Boto□ani) or cultural-religious heritage (UNESCO sites);

+ fair technical infrastructures, including quality main road network which mostly attracts car-owners;

– an extremely low level of supply in accommodation and specific tourism infrastructures which does not push mass tourists to visit the region.

– a below-average benefits from tourist activities into local economy, especially social and welfare benefits;

– a definitely low tourist demand for the region as well as a low interest in spending a longer period of time.

We will now try to find out, in the next chapter, how regional tourism inner elements are structured and what exactly creates gaps or pushes tourism forward.

IV. NEW APPROACH ON STUDYING *POTENTIAL* THROUGH *ATTRACTIVENESS* APPLIED TO MOLDAVIA

Many regional studies on tourism have attempted to bring more understanding of regional patterns in tourism development through the analysis of tourism resources. Methods developed by Smith S. [19] and redrawn by Lovingwood, Mitchell [15] use a wide range of data on tourism (such as hotel rooms, restaurants, campsites, Natural Sites, etc) for the states of Ontario, CA or South Carolina, US. Their study method implied a definition of a series of indices describing the basic structure of tourism resources (through a Principal Component Analysis), then the calculus of a scoring for each territorial unit (county), the identification of regional patterns and then a grouping of counties with similar resource patterns. At the end, the regional pattern of county clusters was compared with data on *tourist demand,* in order to illustrate the economic importance of tourism in each county.

Our study proposes a new perspective in interpreting data on so-called *tourism potential.* The focus for a portion of Romania (the historical region of Moldavia, in eastern Romania), as part of our field research, is to identify spatial tourism structures as well as role of each resource category in producing *tourist demand* and implicitly tourist consumption (as general approach on *tourism attractiveness*).

The general proposed frame is as following:

A. Analysis of supply inner forces

- Analysis of variables grouping (through a Principal Component Analysis)
- Analysis of spatial cluster grouping (through a Hierarchical Ascendant Classification)

B. Correlation between supply and demand

- Contribution of each variable of the supply within demand (through simple regressions)
- Role of overall supply features within demand and prediction of future fluctuations within demand (within a multiple regression).

This structural framework is necessary in order to bring a better understanding to all involved statistic indicators.

A. Analysis of supply inner forces

Knowledge of supply inner forces as independent but interdependent factors is a required step in our approach.

A1. Analysis of variables grouping (PCA)

In order to identify more closely the way tourism indicators are correlated, we used Principal Component Analysis (PCA) of the four variables in SPNT at the scale of the 677 territorial units of Moldavia. First two components (factors) only have been retained as they explain together around 70% of the total variance due to the 4 variables (Fig.3).

Table 3 Value of variable intercept on the factorial axis

Variable / Factor	**F1**	**F2**	F3	F4
Natural Resources	-585	-668	-416	-195
Cultural Resources	-733	-108	626	-245
Tourism Infrastructure	-766	95	-43	634
General Infrastructure	-592	671	-307	-324

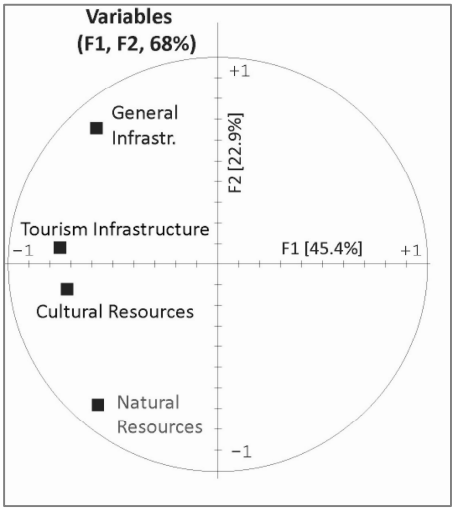

Fig. 3 Representation of the first two factorial axis

The matrix of correlations show strong dependency (>0,75) between Cultural Infrastructures, Tourism Infrastructures and the first factorial axis (component) as in Table 3. There is also a high correlation (>0,65) between Natural resources and General infrastructures with the second factorial axis, but in opposition, as in the join figure. This reiterates key role of Tourism infrastructure in variance of overall supply figures as well as an important role played by the cultural resources, in spite of its lesser weight in Moldavia (as of the evaluation of the SPNT). Natural resources, instead, seem to participate to second factorial axis in opposition with the general infrastructure which shows poor level of accessibility to green areas, which usually show

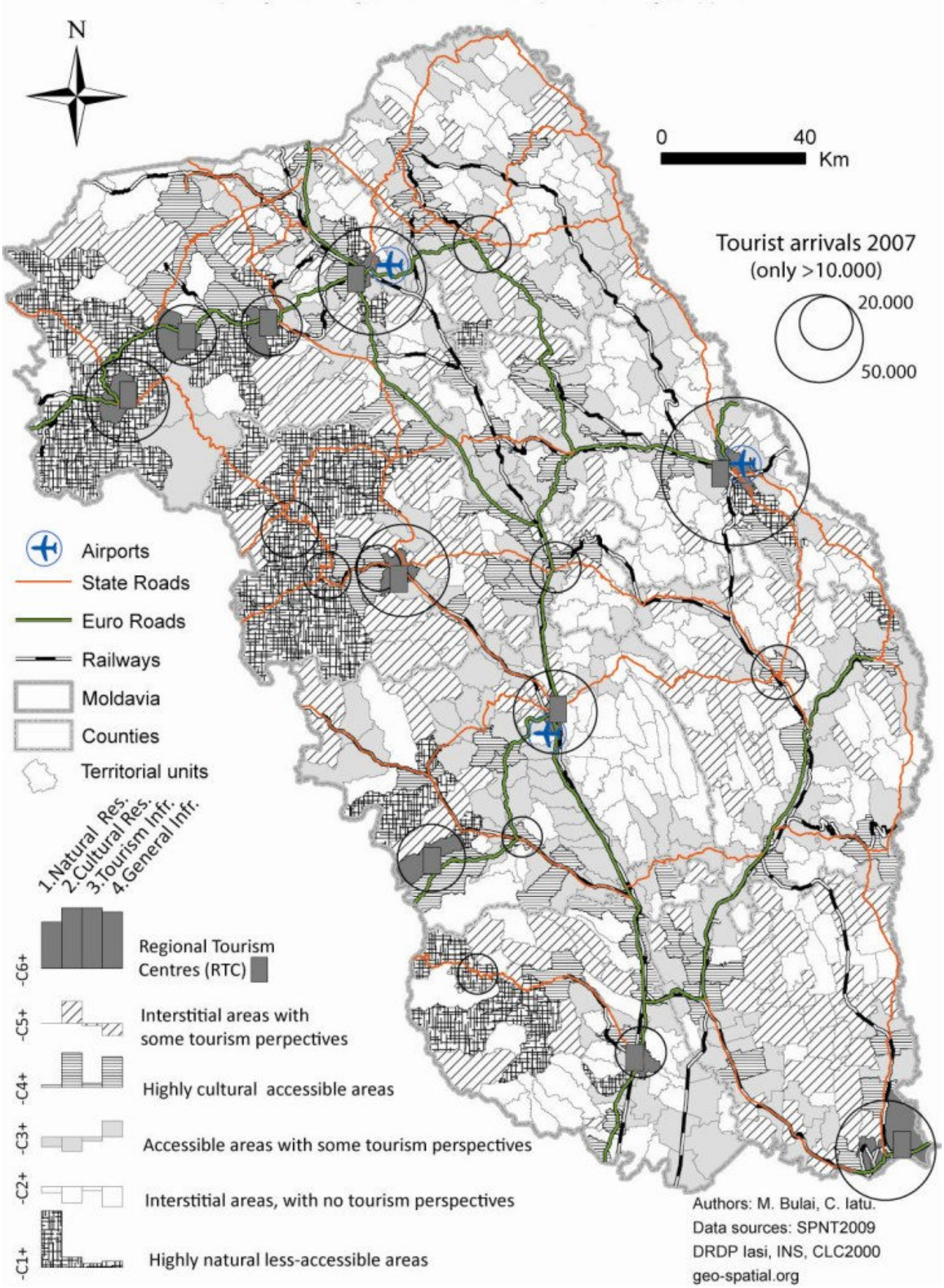

Fig. 4 Classification of tourism areas in the region of Moldavia

A2.Analysis of cluster grouping (HAC)

Hierarchical Ascendant Classification (HAC) provides, instead, a better evaluation of "population" clustering – in this case, the 677 territorial units – by following the behavioural aspects of the four tourism indicators provided by the SPNT.

Six classes have been identified (Fig. 4), which offer a better image on the cluster grouping of supply figures at the regional scale. Highly-above-average overall indicators for some territorial units have allowed us to identify the regional tourism centres (Class C6) in Moldavia (Ia□i, Suceava, Gala□i, Vatra Dornei, Slănic Moldova, Piatra Neam□, Câmpulung M., Gura Humorului, Bacău, Foc□ani). Data on demand (tourist arrivals) provided by National Statistics Institute INS come to confirm their *attractiveness*. SPNT studies do not show any interest in these regional engines, instead, they are pointing out only state-recognized tourist localities ("*sta□iuni turistice"*). Unfortunately, the centralist vision continues to dominate tourism policies in Romania.

Two other classes (C1 and C4) provide interesting information as of spatial clustering of tourism resources. Predominant natural resources seem confined in the western part of the region, less accessible. Cultural resources, apart from a particular concentration in the northern Moldavia (UNESCO medieval monasteries), show a much dispersed spatial distribution but are highly correlated with general infrastructure (including access to transportation networks or other amenities). This correlation is validated when superposing transport networks to the regional classification in a GIS environment, as in the previous figure.

Great access does not mean great tourism. Next two classes (C3 and C5) show those areas with some tourism possibilities in the future that may count or not on access. No-tourism-perspective label (C2) has been assigned to territorial administrative units that presented serious gap in all tourism supply indicators.

B. Correlation between supply and demand

B1. Contribution of each variable of the supply within demand

As we have noticed, the classification has allowed identifying contiguous and dispersed tourism areas as well as main nodes and predicted main tourist arrivals in Moldavia. Finally, our goal is to clearly identify which part of the *tourism supply* (potential or existent) stated in the SPNT essentially contributed to tourist demand (arrivals or overnights) in order to produce *attractiveness*. Unfortunately, the national statistics does not provide many indicators on *demand* (other than arrivals and overnights) such as origin, expenses, main motivations etc., which are of a great use. Simple regressions (SR) have been iterated for the 122 territorial units that have been officially reported tourist arrivals in 2007, the year of the SPNT study.

Table 4 Correlation matrix between supply indicators and tourist arrivals

Correlation matrix	Natural Res.	Cultural Res.	Tourism Infrastr.	General Infrastr.
Number of Arrivals in 2007	**R^2= 0,02 (P value > 0,05)**	R^2=0,24 (P value < 0,05)	R^2=0,87 (P value < 0,05)	R^2=0,23 (P value < 0,05)

The dependant variable "Number of arrivals" shows no correlation (and no significance) with natural resources (Table 4) which revalidate our previous results that natural resources though having a great role in *tourism potential*, do not produce tourist consumption in their vicinity because of scarce tourism infrastructures and access. Good general infrastructure and presence of cultural resources contribute about the same (though values are very low) to explain variation rate in tourist arrival figures, which confirms that tourism in Moldavia is still dependant on centrality, access and equipment. The high correlation with tourism infrastructure is normal as this variable includes accommodation.

B2. Role of overall supply features within demand

Multiple regression (MR), instead, offers a better view on the variance explained by all four SPNT indices in the variance rate of the tourist arrivals (**R^2**= 0,9 = very strong dependency). The polynomial equation describing the trend is as following: $y = -1384-345x_1+275x_2+29551x_3+222x_4$, where y is the dependant variable "tourist arrivals" and x_1 to x_4 are described in the following table (Table 5):

Table 5 Values of the coefficients on the polynomial function and degree of significance of each component

	Coefficients	**tStat**	**P-value**
Intercept	*-1384*	*-0,61*	*0,537*
Natural Res. (x_1)	-345	-2,33	0,021
Cultural Res.(x_2)	275	3,04	0,002
Tourism Infrastr. (x_3)	29551	21,1	0,000
General Infrastr. (x_4)	222	2,18	0,030

Three out of four variables (last three) of the supply system bring a theoretical contribution to explain tourist arrivals, as a tStat > 2 and a high degree of significance (P-value < 0,02) are met. The scale of the possible effect is, instead, predicted by the coefficients. Their size reflects how much tourist arrivals is expected to increase when one of the four independent variables increases by one, holding all the other independent variables constant. Thus, the negative value of natural resources coefficient reflects that in theory, without an infrastructural context, they don't have enough possibilities to attract economically and statistically significant tourists. Cultural resources are, instead, a great factor of localisation of tourist arrivals. In theory, declaring in Moldavia a historical or architectural site as UNESCO heritage (25 points) should bring 25*275 = ~ 7000 (more) tourists a year. A rise of 0,02 points in tourism infrastructure (let's imagine showing up in a

town a 20-places guesthouse or a 200-places conference hall might produce a rise of 0,02*29551 = ~ 600 new statistic tourist arrivals over one year.

We applied this prediction method to a concrete situation – a change in quality of cultural resources. Our case study was the Moldavian town of Targu Neamt, famous for its medieval fortress. This town received a score of only 7 points on cultural resources in 2007, when 8850 tourist arrivals were registered within its accommodation structures. In 2008, the town completed the full restoration of its medieval fortress, which modifies the score on cultural resources with extra 2 points. As of our prediction tool, the town should receive 3*275 = 825 more tourists when a qualitative change produced. Indeed, in 2009, despite the overall decline in Moldavian tourism (10,77% less tourists in the whole region comparing to 2008) caused by the economical crisis, the town of Targu Neamt receives 9214 registered tourists, which is around 975 extra tourists comparing to 2008 (8239 tourists), which validates at some point the statistical relevance of the tool.

In theory, if the fortress of Targu Neamt, in the actual state and regional trends, would receive the UNESCO heritage site status, there would be an increase of 15 points, which translate in over 4000 more registered tourist a year with measurable overall effects on the local economy.

V. CONCLUSIONS

Our study confirms that *tourism potential* as passive sum of elements of the *supply system* does not bring benefits to the territory if not correlated with good adapted infrastructures [20], able to provide high accessibility and visibility. Tourism is a great resource consumer but instead can generate great currency.

The present paperwork leads, as well, to the idea that general infrastructures are actually determinant for main tourist arrival to cultural attractions. Actual social, political and economic difficulties in Romania impede tourism from making big steps. No investments in both tourism and general infrastructures will still keep syntagms as *tourism potential* meaningless. More exploration of new functions such as *tourism attractiveness* will bring more awareness upon benefits. Multivariate analysis and correlations along with a better detail of statistic indicators [21] can offer actors and stakeholders the possibility to predict further evolutions.

Actual predominance of private sector is a chance but might create gaps in tourism cycle or environment if still not controlled and not supported by public specialized institutions. The transition continues in Romanian tourism as it still represents a spontaneous and immature sector of economy.

Finally, there is a need of a paradigm shift in Romania – abandon the idyllic cultural profile of *tourism* (a tool to build fake national pride) and perceive it more like an *industry,* an economic tool for the territorial development. Tourism potential must be perceived more like as a sum of governing forces and less as a territorial inventory.

REFERENCES

[1] Glăvan, V., *Tourism potential and its development*, Ed. Funda□iei România de Mâine, Bucharest, 2006

[2] Şandru I., "Problems in geography of tourism", Natura, vol. XVIII, nr. 3, Bucharest, 1966.

[3] Swizewski, C., Chiriac D., "Funcţia turistică – factor de dezvoltare a unor aşezări rurale din Moldova", in *Analele ştiinţifice ale Universităţii „Alexandru Ioan Cuza" din Iaşi,* vol. XXIV, 135-136, 1978.

[4] Muntele, I., Ia□u, C., *Tourism geography-Concepts, methods, spatial patterns*, Sedcom Libris, Ia□i, 2006

[5] Snak O., *Economy and organisation of tourism*, Ed. Sport-Turism, Bucharest, 1976.

[6] Hall, C.M., Page, S.J., *The Geography of Tourism and Recreation*, Routledge, New York, 2004

[7] Ielenicz, M., Comănescu L., *Romania, Tourism Potential*, Ed.Universitară, Bucharest, 2006

[8] ***Spatial Planning of National Territory - *Law 190 from 26th May 2009,* UrbanProiect Institute

[9] Cocean P., *Geography of tourism*, Carro, Bucureşti, 1996

[10] ***LEADER European Observatory – *Evaluating a territory's tourism potential, 2005*

[11] Goeldner, C., Ritchie, J.R.B., *Tourism – Principles, Practices, Philosophies*, Wiley & Sons., NJ, 2003

[12] Boers, B., Cottrell, S., "Sustainable Tourism infrastructure Planning: A GIS-Supported Approach", in *Tourism Geographies*, 9:1, 1-21, 2007

[13] O'Riordan, T., *Perspectives on Resource Management,* London: Pion Press, 1971

[14] Formica, S., "Destination attractiveness as a function of supply and demand interaction", PhD Dissertation, Virginia Polytechnic Institute and State Univ., 2000

[15] Lovingwood, P. E., Mitchell, L. E. , "Regional analysis of South Carolina tourism", *Annals of Tourism research*, Vol 16, 1989, pp. 301-317

[16] Mazilu, M., "Key elements of a Model for Sustainable Tourism", in *NAUN Journal of Energy and Environment*, Issue 2, Vol. 4, 2010 pp 45-54

[17] Bulai, M., "Geographic study on the evolution of rural guesthouses after 2000 in Romania", în vol. *„Turismul Rural Românesc în contextul dezvoltării durabile. Actualitate şi perspectivă",* vol. XVI, coord. I. Talabă et al., Ed. Tehnopress, Iaşi, 2009

[18] Iatu, C., Boghinciuc, M, Coca, A., Ibanescu, B., Munteanu, A., "Preliminary Study of Active Tourism Stages in Dornelor Basin, Romania", in *WSEAS Economy and Management Transformation*, Vol. I, Timisoara, 2010, pp. 113-119

[19] Smith, S.L.J., *"Regional Analysis of Tourism Resources", Annals of tourism research,* 14(2), , 1987, 254-273

[20] Gruescu, R., Croitoru, G., Stegaroiu I, Popescu, C., "Ways of Raising Finance for the Improvement of Tourism Potential and Tourism Services", in *WSEAS Economy and Management Transformation*, Vol. I, Timisoara, 2010, pp. 207-212

[21] Bala, D., Mazilu, M., Marinescu, R.C., "Tourism and statistics, Inseparable Binomial", in *WSEAS Economy and Management Transformation,* Vol. I, Timisoara, 2010, pp. 39-43