

Transport Accessibility as Factor for the Development of Tourist Accommodation. The Case of Health Resorts in Romania

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ABSTRACT

The Romanian health tourism has had all the necessary premises for development and for registering some of the most efficient revenues. We therefore used a complex methodology aiming to highlight the current transport accessibility level in the case of each of the Romanian health resorts. We scored each type of accessibility (land and aerial transport) while considering the geographical position of the resorts and the connections with any European, National roads, primary and secondary railways, airports, and also the way in which the accessibility level of a resort influences the development of accommodation. Our second goal was to reveal the influence of transport accessibility level on tourist accommodation facilities in the Romanian health resorts, by performing several correlations between accessibility and accommodation facilities of each health resort. The conclusions showed that the health resorts situated in Carpathian area present the lowest level of transport accessibility and subsequently the influence on tourist accommodation facilities is very low, except for the health resorts situated at the seaside along the Black Sea coast, along Prahova Valley and in Crişana region, which were developed in locations where health factors were discovered, and under different historical circumstances and in which case the specific nature of health tourism requires a more secluded placement.

1. INTRODUCTION

One of those tourism types which possesses the most realistic development premises in Romania is the curative one (balneary and climatic), this statement being based on the existence of 3000 sources of mineral and thermal water springs, of many local bioclimatic types which therapeutic values manage to cover all kinds of known affections [1].

Moreover, Romania disposes by many areas that are characterized by big curative potential which occupy 2/3 from administrative territory and from its therapeutic factors can be conceived and ensured treatments for all known affections [2], [3];

Likewise, curative tourism in Romania is characterized by medium and large periods of stay,

depending on type of affection which should be treated; for example, Băile Govora and Băile Tuşnad resorts were at top with 9.7, respectively 9.6 days, in 2009 [4];

It is also distinguished by reduced seasonality whereas the need of health recovery is continuous, and due to multifunctional and complex character and to modern equipment of treatment facilities from health resorts, balneotherapy and climatotherapy actions can be less addicted to climatic and weather conditions;

Lately, can be observed the character of addressing to an increasingly higher number of persons and to an increasingly younger tourist segment, all of these due to a more stressful and sedentary lifestyle, a growing need of rest and relaxation, professional diseases, and, by contrast, on the strength of standard of living increasing and of leisure raising.

According to 852/2008 Government Decision, Romania has 46 local and 37 national resorts,

meanwhile in 2010, Băile Figa, near Beclean settlement, has appeared as a local resort [5].

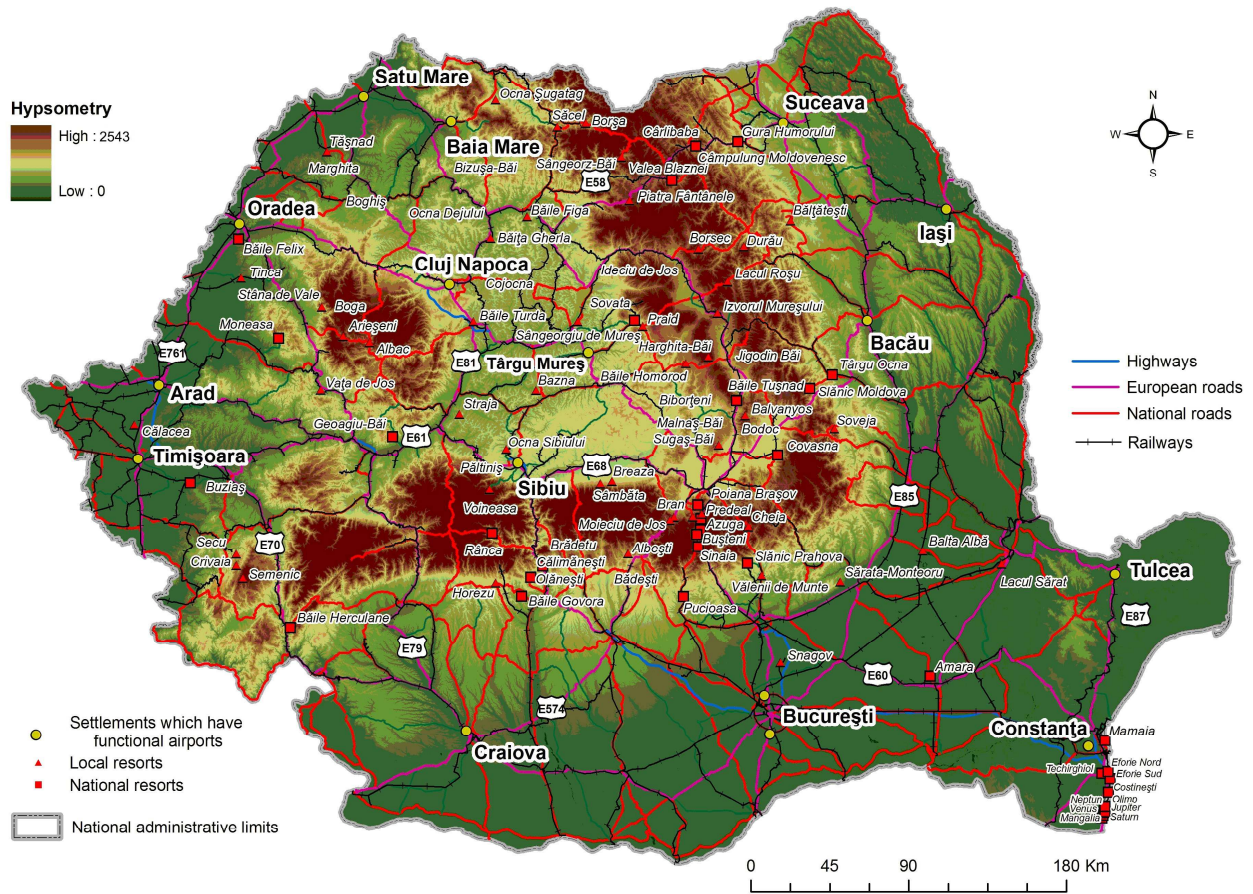


Fig. 1. Territorial distribution of Romania's health resorts.

Analysing the territorial repartition of Romanian health resorts, can be observed a concentration along Carpathian Mountains (45), on Transylvanian Plateau (7), Western Plain (8), Getic Subcarpathians (8), Moldavia Subcarpathians (2), nord-western part of Romanian Plain (4) and Black Sea seaside (10). Noteworthy is that only climateric resorts are totally based on therapeutic valences of local bioclimate, being equipped with tourist facilities which allow aerotherapy, heliotherapy and terrain cure performing. But the health resorts which also benefit from therapeutic values of mineral and thermal water springs, are not focused on climatic part, therefore it cannot be shaped the best curative offer for patient-tourists: an efficient and diversified one.

With a simple glance on the history of Romanian health resorts, can be easily observed that the territory taken in study had more resorts than nowadays. In this sense, Romans were the initiators, existing 11 health resorts during Antiquity. After Aurelian withdrawal, during Middle Ages until 18th century, all health resorts were disappearing and only one was founded (Felix Baths). The beginning of 18th century coincided with Habsburg domination which had a great influence over tourism's situation of

Romania, 20 resorts appearing, most of them being situated in Eastern Carpathians [6].

The next period in which had been registering important changes was between middle of 19th century and 1918, when Romania enumerated 77 health resorts, most of its being situated in mountain area (44) and being based on climate therapeutic values [7].

The interwar period was characterized by a unitary development as a result of union from 1st December 1918. In this sense, before the Second World War, 179 health resorts had existed in Romania, the greatest investment being made among seaside resorts [8]. A period of total regress existed after The Second World War on account of socio-economic life recession. The biggest shock registered by health resorts was in 1948, when had place the nationalization of means of production (including tourism infrastructure). Thus, these were taken over by state, the effect being calamitous for most of existing health resorts, the total number of these decreasing at 85 [9]. The effects of The Second World War had been felt until 1960. Beginning with this year, a lot of investments were done especially on seaside, on acknowledged health resorts and on mountain areas, the number of these increasing at 138, until 1995 [10].

Once with fall of communism, the investments had ceased and many little health resorts dissappeared. Moreover, well-known ones have met a moral and physical deterioration, which is maintained even now.

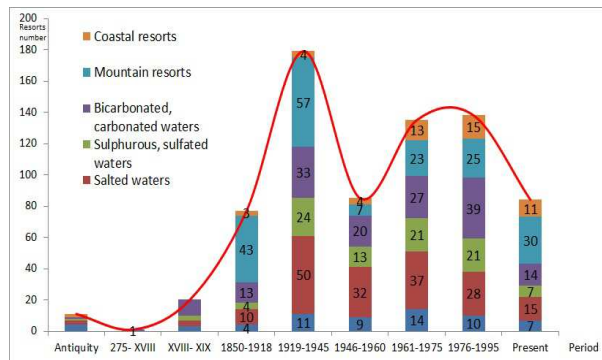


Fig. 2. Numerical evolution of Romanian health resorts, taking into account the therapeutic factor type.

Taking into account the history and the multitude of therapeutic factors, curative tourism is one of the most realistic chances for Romania's economic growth, therefore the attention must be centered especially on actual health resorts, because it represents the engine of this phenomenon, having the ability to gather all patient-tourist flows. In order to fulfill this aspect, the health resorts must receive the necessary attention from authorities in charge, most of its facing with moral and physical degradation due to lack of investments.

So, the activities plan of authorities, for a superior development process of therapeutic factors, must need to focus on treatment, accommodation, catering, entertainment facilities and last but not least, transport infrastructure. In this sense, many health resorts presents malfunctions regarding the accessibility. The first aim of this paper was to reveal the transport accessibility of each Romanian health resort, then to present the territorial reality from this point of view at national scale. An important role in an efficient curative tourist system is owned by transport infrastructure (road, rail, air) which assure a certain level of accessibility for any resort. Despite this, the relationship between tourism and transport infrastructure is rarely discussed, because it is poorly understood [11]. Since old times, the transport infrastructure has played an important role on urban and rural settlements' socio-economic evolution, because it represents the only way of movement, mobility and direction of material, informational and energy flows, its quantity depending of support capacity and quality of it. Therefore, the level of a society development is direct proportional with the degree of development and diversification of transport infrastructure. In a society which disposes of modern transports, characterized by big speed and high capacity, the socio-economic development is inevitable, especially in 21th century conditions [12].

Like other tourism products, the curative type offers more services including transport ones, the movement from requirements to offer place being the single aspect that tourist can not renounce. Transport services quality depend on means of conveyance (swiftness, convenience), on transport infrastructure quality, distance, on level of multidirectional penetrability of health resorts. However, the progresses and improvements in transport infrastructure are notable in more economically advanced areas [13].

Regarding the conditions which are imposed by actual society, the tourism phenomenon evolution is closely dependent on level of modernization and diversification of transport routes, on this line, isolated tourist attractions could be accessed and the movement could be shortened by overcoming of natural obstacles which will lead to tourist stay increasing (inverse relationship with time of movement).

The second aim of this study was to make a connection between transport accessibility and accommodation facilities of each health resort, taking into account defining indicators like number of accommodation units, number of total accommodation places, number of 3 and 4 stars accommodation structures, number of hotels, to observe if transport accessibility had any influence over accommodation structures, even if the development of a health resort determined the construction of a transport link. In a normal situation, transport accessibility should dictate the tourists flow, therefore the accommodation facilities were used for correlation. The tourism' unprecedented development has attracted the attention of several researchers who enriched the theoretical view of this phenomenon, analyzing not only the endogenous elements of tourism (primary and derived offer), but also the exogenous ones which conditionate it: geology (spa resorts' cases), soils, hypsometry, urban technical infrastructure (transports network, sewerage, electricity, water supply). The first scientific papers which centered its attention upon transport and tourism appeared at the late of 19th century and at the early of 20th century: *The theory of Transportation* by Cooley H., *History and Economics of Transport* by Kirkcaldy A. and Dudley Evans and *Imperial air routes* by Sykes F. By a great notoriety have enjoyed scientific papers like *The Tourist Movement* by Ogilvie I. (1933), *The tourist industry of a modern highway* by Eiselen E. (1945), *The Geography of Air Transport* by Sealy K. (1966) and *On some patterns of international tourism flows* by Williams and Zelinsky (1970).

2. THEORY AND METHODOLOGY

Transports represent the possibility of people, merchandises and information to move in a certain space, making possible the transfer between two different locations, in this way being the main factor in production and distribution processes [14]. The

transport importance was assayed from several perspectives: historical (development of countries and civilizations), social (access to healthcare, welfare, culture), political (government implication, state unity and nation building), environmental (air, water quality, public health), economic (an essential part of the economy) [15].

The transport system represents the spine of activities that have place especially in an urban settlement, despite the fact that it is the source of most important „urban” problems (pollution, lack of free spaces, decreasing of green space in order to increase the roads’ support capacity, traffic congestion), considering the fact that rural settlements are based only on agriculture [16].

Geographer Derycke Pierre Henri realised several surveys from which has resulted, at a medium scale, the importance of transport factor for some economic activities which have place in an urban settlement, especially in industrial ones, considering the fact that for primary and tertiary sector was fairly difficult to appreciate. On this line, transports represented an importance of 20% for metallurgy, 18% for food industry, 15% for wood industry, 11,3% for mechanics, 9,4% for stationery, 9,3% for textile industry, 8,1% for chemical industry, 7,5% for leather industry and 6,8% for glass industry [17].

Nowadays, transport is one of the main branches of national economy, given the fact that it assumes the movement of raw materials and semi-products from manufacturers to industrial or public consumers and if it is assigned a part of the human and material resources of society (workforce, technical means, fuels, energy and materials), all of these being conditioned by technical transport subsystems’ situation (rail, road, river, maritime, air, pipeline). In this meaning, the technical infrastructure of Romania’s transport system is formed by railway network (rails, technical and comercial stations, bridges, viaducts, tunnels), national, county, local roads network with bridges, viaducts and tunnels afferent, navigable waters network, harbor network (Danube, fluvial and seaports), airports network [18].

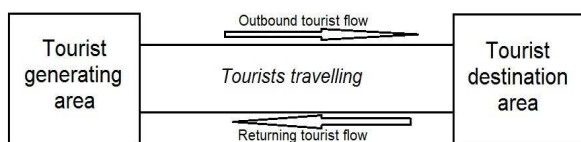


Fig. 3. A tourism system [20].

The transport is recognized as one of the most important factors which have contributed on tourism development, on interrelations and interconnections strengthening that exist inside this phenomenon. Without a transport infrastructure, the tourists movement can not be possible, the demand and supply

would not longer meet, because tourism means travel and travel implies transport [19].

Because the number of tourists and tastes have been increasing, the researches over *vacation* concept showed an important role of transport upon tourists decisions, highlighting 3 types: stay-put vacations (a single destination), arranged touring vacations (several destinations in multiple locations), freewheeling touring vacations (few stops pre-planned) [21].

A detailed research on the relationship between transport accessibility and tourism development in the Carpathians was through the project "Cross-border Cooperation Programme Poland-Slovak Republic 2007-2013", which focused on the influence of transport infrastructure over the development of economy and tourism, given that transport infrastructure development would improve the border transit traffic and would ensure the territorial cohesion of the border area between Poland and Slovak Republic, the major part of it being situated in mountain areas. In this sense the main measures were referred to the modernization and construction of local roads leading to the border, in order to create a coherent cross-border system. The tourism phenomenon of Slovak Republic and Poland is based on ecotourism, agrotourism, international cultural and sports events, festivals, exhibits, folklorist events that reinforce the relations between local communities and self-governments of these two countries. In this case, the investments of transport infrastructure could have bigger results on tourism development than the case of Romanian health resorts, because the transport network appeared after the discovery of therapeutic factors and the historical circumstances of a health resort occurrence were different. Where the appearance and development of tourism phenomenon was influenced by transport infrastructure, the further measures of its modernization would bring major changes on this sector [22].

Another study with related topic that has been found has Southern Italy study area. The purpose of it was to test, in an empirical way, several hypothesis about the relation between transport accessibility, geographic marginality and tourism development, which had many similarities with the present study, taking into account the marginal effect produced by Romanian health resorts appearance and development. Therefore, on the base of a matrix on the origin and destination of tourism flows, was developed a traffic forecasting model showing the distribution of flows in two different transport modes (air travels and car travels), and the circulation of flows through a network distinguished in high and low-speed routes, which allowed the calculation of an accessibility indicator measuring the potential average travel-time to reach de locality and an access indicator measuring the effective average travel-time to reach the destination (based on

the origin of tourism flows for each provincia of Mezzogiorno). Then, was created a correlation between access and accessibility to verify the weight of accessibility on the distribution of tourism flows, and another one between total tourist and accessibility, which resulted extremely low (-0,33). The result highlighted that tourists seem to choose their destination in Southern Italy with little reference to accessibility and travel-times [23].

A study named *"Public transport accessibility of Alpine resorts from major European origin regions and cities"* was centered also on the link between transport and tourism, but it pointed out the quality of services, pricing and ticketing, intermodality, quality of information which should level up the transport accessibility. It also highlighted the transport system in the Alps that was characterised by a limited number of corridors for reaching the Alpine regions, unfavorable territorial repartition of major airports that are located outside the Alpine convention area, and the major difficulty for tourists regarding the change of trains. This study saw the co-operation between transport and tourism as a strong relation between transport operators and national incoming agencies for national level, between local transport operators and local tourism authorities for regional and local level, and it contained reliable solutions that could be efficient for Romanian health resorts once with problem resolution of transport infrastructure [24].

Last example but not least, is about a strategy done by CUSTODES (Cultural Sites and Tourism Development of European Strategies) which aimed to raise awareness and sensitivity amongst local and regional administrations and tourist industry companies in order to implement a sustainable accessibility to small tourist areas. The strategy was centered on soft mobility (walking, bike, car rental, carsharing, taxi, public transport) and was focused on offering a free bike rental service, avoiding, reducing and limiting volumes of road and air transport, creating pedestrian and cycling areas along the cultural itineraries, improvement of the connection nodes to the urban centre (airport, station, cultural centre transport, park and ride services close to urban areas), improving bicycle lanes and pedestrian zones, linked to public transport options, with an integrated transport plan for creating a connectivity between the different modes of transport, between transport and visitor attractions, and creating touring routes, itineraries and interpretative trails [25].

Finally, a new method used to determine the accessibility level of a tourist attraction was developed by Saad Kahtani, Jianhong Xia and Bert Veenendal, within they took into account three accessibility indices which were based on tourist attraction functionalities (open hours, entrance fees, availability of brochures and internet website about attraction, car parking

capacity, staff numbers), attraction facilities (toilets, drinking water, rubbish bins, shades, gates, picnic area, food outlets, public transportation) and quality of road networks in Ningaloo Coast region in Western Australia. The equation expressed mathematically included these indices, being based on tourist perceptions. However the tourist responses might be subjective and the results might not be realistic. Conclusive in this respect are the answers given on quality of network; in the same time, a part of tourists classified it as being „very poor”, and the major part of them classified the road network as being „good”. On this sense, the answers were very diversified and the results were not so stable [26].

Because the present study focused on three ways of transport (road, rail, air), noteworthy is that the road one is used by tourists at a rate of 77%, but the air transport records the highest levels of increase among and dominates the international tourism, being the main factor in the expansion and multiplication of destinations. We admitted it because air transport plays an important role in several countries' economy like Maldives, Malta, Cyprus, Greece, Tunisia, on this way being created millions of jobs. Regarding the rail transport, some increases were registered upon high-speed passenger rail and inside of big population density areas, where gas is expensive [27].

Regarding the previsions, the transport services gained more and more importance and consumer occupies a more central place, as far as that goes a greater understanding of their needs and tastes, principles of sustainable development by encouragement of energy reduction, and minimisation of externalities as its are written in Agenda 21. Moreover, the cycle tourism will strongly develop, being the second most common for of non-motorised transport across the world, among walking, wheeled carriages, animals such as camels and horses, water based transport such as canoes, kayaks and rowing boats [28].

For reaching the goal of this paper, were used several methods, including the analysis method which centered on quantitative and qualitative aspects of transport and accomodation infrastructure of each resort (road, railway, air, respectively number of accommodation units, of 3 and 4 stars accomodation structures, total number of accommodation places, number of hotels), on territorial repartition of Romania's health resorts, the cartographic method that has a role which is becoming more and more important in the research and presentation of touristic phenomenon, representing a spatial and temporal synthesis of it. In what concerns this paper, the respective method was used for showing the territorial distribution of Romanian health resorts, considering its local and national level, of transport infrastructure, and for highlighting the accessibility level of each Romania's

health resort, by using an interpolation operation (Kriging) within ArcGis 9.3 software, the graphic method that holds an analytical character and highlights, the evolution and structure of touristic phenomenon, usually. Within this paper, thanks to Microsoft Excell 2013 software, this method showed, through some charts, the correlation between level of accessibility and accommodation infrastructure, the accessibility degree of influence on number of accommodation units, number of 3 and 4 stars structures, total number of accommodation places and number of hotels, the comparative method which has an important role in the purpose of this paper, which aims to the examination of each resorts's accessibility level and accommodation base. Through this study were highlighted the resorts which are most accessible by route, railway, respectively by air, the accommodation base indicator which has the biggest influence upon the level of accessibility, and the resorts whose accommodation base are most influenced by accessibility, the mathematical method that was used for calculating several distances like from a resort to closest European road, National road, railway station, airport, for revealing the total number of accommodation units, places and hotels of each resort and for appraisal of final score which represented the level of accessibility, the statistical method which consisted in revealing the average number of accommodation units, 3 and 4 stars structures, total number of tourist places and hotels in Romanian health resorts, and the geographical method that resulted from geographic integration of studied elements through a territorial and touristic functional system, given the spatial (expansion, form, complexity), positional (geographic seating), functional, causal, approach of Romania's health resorts and transport infrastructure.

3. RESULTS AND DISCUSSION

For an efficient use of therapeutic factors, the first measure is to ensure, for a resort, a multidirectional penetrability in order to allow a fluent mobility of tourist flows. This means that the accessibility of a health resort can influence its fate.

The present paper aims to calculate the level of accessibility for each Romanian resort and to highlight the influence which accessibility possesses upon accommodation infrastructure.

3.1. Determination of accessibility level

3.1.1. Road accessibility level

In this case, the reference element is represented by European roads, but were taken into account also County and National roads. Therefore, it was agreed that the level of road accessibility of each

resort must be directly proportional with the distance of the closest European road and conditioned by the other roads which are linked with these important routes.

In order to calculate the road accessibility of each health resort, was taken into account the following special features: according to distance between resort and the closest European road, the ratings were given thus: three points (0-15 km), two points (15-50 km) and one point (>50 km); were given 0,5 points for those resorts which are connected with an European road through a National one, but only in case if the distance between resort and European road measures 15-50 km; were decreased 0,5 points for those resorts which have as a link a County road in case if the distance between resort and European road measures 15-50 km and in case of the link consists of a National and a County road, the score remains the same;

After calculating those results, was created on ArcGis 9.3 software a point theme which consisted in all Romanian resorts digitizing, followed by insertion of these results for each of its. Subsequently, using this data, through Kriging interpolation GIS operation, has been created a map that showed the areas with health resorts that present a low or a high level of road accessibility. Analyzing the map above, the health resorts which present a low road accessibility are situated in Maramureş Depression, in western part of Romania, excepting Western Plain (Apuseni, Poiana Ruscă, Banat Mountains), in northern and central side of Eastern Carpathians and in the western side of Southern Carpathians.

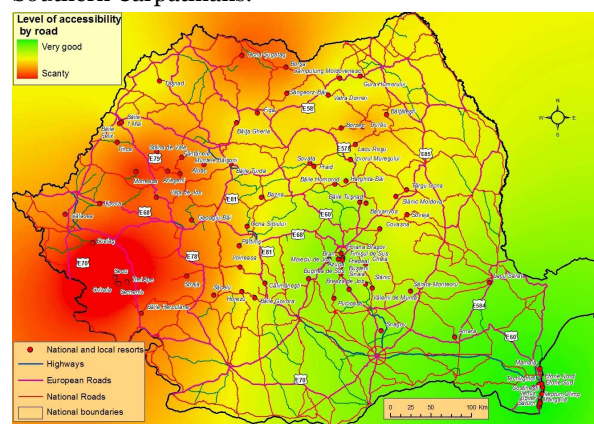


Fig. 4. Road accessibility of Romania's health resorts.

The resorts which dispose of a high degree of road accessibility are positioned in Prahova Valley, Romanian Plain, and Black Sea seashore.

3.1.2. Railway accessibility level

In order to calculate the railway accessibility of each health resort, was taken into account the following special features: were given three points for the health resorts that have access to a primary railway, two points

for those which have access to a secondary railway, and no point for those that don't have access to any kind of railway; if the distance between a health resort and the closest railway was less than 30 km, one point was given only if these kinds of settlements have connections through European or National roads; if the distance between a resort and the closest railway is less than 30 km, for those which dispose by European/National and County roads connections, 0,5 points were given.

Analyzing the map above, the health resorts which present low railway accessibility are positioned in Apuseni, Poiana Ruscă Mountains, in western part of Southern Carpathians, northern of Oltenia, Eastern Carpathians, Moldavia Plateau, Transilvania and Maramureş Drepression, Curburii Carpathians and Subcarpathians, south-western side of Romania. The resorts which dispose of a high degree of railway accessibility are situated in Western Plain, Prahova Valley, eastern part of Romanian Plain and Dobrogea.

Table 1. The road, railway, aerial, general accessibility situation of each Romanian health resort.

No.	Resort name	RA	RWA	AA	GA	No.	Resort name	RA	RWA	AA	GA
1.	Albac	1	0	0	0,3	43.	Lacu Sărat	3	3	0	2
2.	Albeştii de Muscel	2,5	0	0	0,8	44.	Lipova	3	3	3	3
3.	Amara	3	1	0	1,3	45.	Mamaia	3	3	3	3
4.	Arieşeni	2	0	0	0,7	46.	Mangalia	3	3	3	3
5.	Azuga	3	3	0	2	47.	Moieciu	3	1	0	1,3
6.	Balványos	2,5	0	0	0,8	48.	Moneasa	0,5	0	2,5	0,8
7.	Bazna	2,5	0,5	3	2,0	49.	Neptun-Olimp	3	3	3	3
8.	Băile 1 Mai	3	2	3	2,7	50.	Ocna Sibiului	2,5	2	3	2,5
9.	Băile Băiţa	3	2	3	2,7	51.	Ocna Şugatag	1	0,5	3	1,5
10.	Băile Felix	3	2	3	2,7	52.	Pârâul Rece	2,5	1	0	1,2
11.	Băile Figa	2,5	0,5	3	1,8	53.	Păltiniş	1,5	0	3	1,5
12.	Băile Govora	2,5	0,5	1,5	1,5	54.	Poiana Braşov	3	1	0	1,3
13.	Băile Herculane	3	3	0	2	55.	Praid	2,5	1	1	1,5
14.	Băile Homorod	2,5	0,5	2,5	1,8	56.	Predeal	3	3	0	2
15.	Băile Olăneşti	1,5	1	1,5	1,3	57.	Pucioasa	2,5	2	1,5	2
16.	Băile Turda	3	2	3	2,7	58.	Sângeorz-Băi	2,5	2	0	1,5
17.	Băile Tuşnad	3	2	0	1,7	59.	Saturn	3	3	3	2,8
18.	Băltăteşti	2,5	0	3	1,7	60.	Săcelu	2	0,5	0	0,8
19.	Borsec	2,5	1	0	1,2	61.	Sărata Monteoru	2,5	0	1,5	1,3
20.	Borşa	1	1	0	0,7	62.	Secu	0	0,5	0	0,2
21.	Bran	3	1	0	1,3	63.	Semenic	1,5	0	0	0,5
22.	Breaza	3	3	2,5	2,8	64.	Sinaia	3	3	0	2
23.	Buşteni	3	3	0	2	65.	Slănic	1,5	2	1,5	1,7
24.	Buziaş	1,5	2	3	2,2	66.	Slănic Moldova	2	1	2,75	1,8
25.	Câmpulung Moldovenesc	3	2	2,5	2,5	67.	Snagov	3	3	3	3
26.	Cap Aurora	3	3	3	3	68.	Sovata	1,5	2	3	2,2
27.	Călacea	2,5	0,5	3	2	69.	Soveja	1,5	0	0	0,5
28.	Călimăneşti-Căciulata	3	2	2,5	2,5	70.	Stâna de Vale	1,5	2	1	1,5
29.	Cheia	2,5	1	0	1,2	71.	Straja	2,5	0	0	0,8
30.	Costineşti	3	3	3	3	72.	Târgu Ocna	3	2	2,75	2,5
31.	Covasna	2,5	0	0	0,8	73.	Tăşnad	3	2	3	2,7
32.	Crivaia	1,5	0,5	0	0,7	74.	Techirghiol	3	3	3	3
33.	Durău	0	0	1	0,3	75.	Timişu de Sus	3	3	0	2
34.	Eforie Nord	3	3	3	3	76.	Tinca	1,5	2	3	2,2
35.	Eforie Sud	3	3	3	3	77.	Trei Ape	1,5	0	0	0,5
36.	Geoagiu Băi	2,5	0,5	2,5	1,8	78.	Vatra Dornei	3	2	1,5	2,2
37.	Gura Humorului	3	3	3	3	79.	Vaţa de Jos	3	2	0	1,7
38.	Harghita Băi	3	3	0	2	80.	Vălenii de Munte	2,5	2	2,5	2,3
39.	Horezu	2,5	0	1,5	1,3	81.	Venus	3	3	3	3
40.	Izvorul Mureşului	3	2	0	1,7	82.	Voineasa	2,5	0	1,5	1,3
41.	Jupiter	3	3	3	3	83.	Fântânele Zone	2,5	1	2,5	1,8
42.	Lacu Roşu	2,5	1	1	1,5	84.	Muntele Băişorii Zone	1,5	0	3	1,5

(RA=road accessibility; RWA=railway accessibility; GA=general accessibility)

3.1.3. Air accessibility level

The air accessibility level consists in distance of the closest airport, respectively in the connection road type with that airport, but also in number of destinations served by direct flights and total number of passengers. In order to calculate the air accessibility of each resort, it was taken into account the following

features: were given three points for the health resorts from which the closest airport is situated at a distance of 0-60 km, two points for those from which the closest airport is situated at a distance of 61-100 km, and no point for a distance of 101-120 km. If the distance between a resort and the closest airport is less than 121 km, to these kind of settlements which has connections through European or National roads were given 0,5

points; if the airport situated at distance of maximum 100 km has at least 1 million passengers and it has the total number of destinations served by direct flights by 30, to respective health resort it will be given 0,5 points; if the airport situated at distance of maximum 100 km has at least 500.000 passengers and it has the total number of destinations served by direct flights at least 10, to respective health resort will be given 0,25 points;

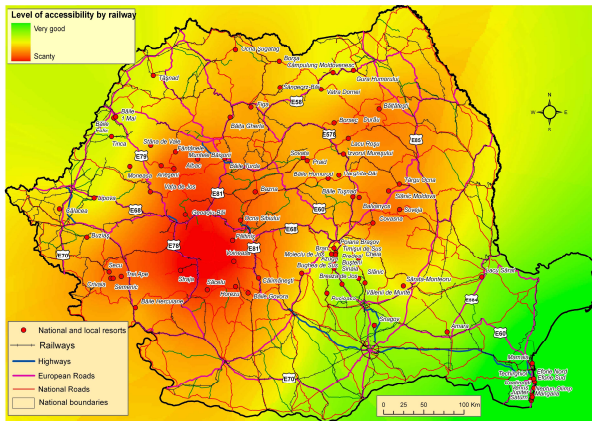


Fig. 5. Railway accessibility of Romania' health resorts.

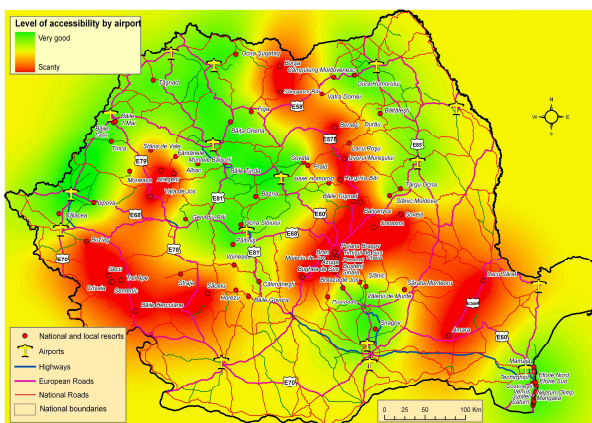


Fig. 6. Air accessibility of Romania' health resorts.

Analyzing the upper map, the resorts which present low air accessibility are situated in the central part of Apuseni Mountains, Poiana Ruscă and Banatului Mountains, western and eastern part of Southern Carpathians, northern side of Oltenia, Maramureş Depression, Eastern Carpathians, Curburii Carpathians and Subcarpathians, Bărăgan Plain.

The resorts that dispose of a high air accessibility are positioned in Western Plain, northwestern part of Romania, Transylvania Depression, the east part of Moldavia Plateau, central part of Romanian Plain and the seashore of Black Sea.

3.1.4. The general accessibility level

The general accessibility level of each Romanian health resort was obtained by using the

arithmetic average between road, railway and air accessibility values.

Observing the situation that is evidenced by the map below, the low-accessible health resorts are positioned in Apuseni, Poiana Ruscă, Banat Mountains, in western and eastern part of Southern Carpathians, in Curburii and Moldavia Subcarpathians, in western part of Romanian Plain, in western part of Moldavia Plateau and in eastern part of Transylvania Plateau.

The health resorts that are in favorable situation are situated in Western Plain, in western part of Transylvania Plateau, in northern part of Moldavia Plateau, in center and eastern part of Romanian Plain and in Dobrogea.

3.2. The accessibility level influence on accommodation base of Romanian resorts determination

In a logical meaning, the accessibility level of each resort should be the decisive element in tourist flow increasing, phenomenon that should lead to a planned and harmonious development of tourist infrastructure. The present paper aims to evidence every connection than can exists between accommodation base indicators (number of accommodation units, three and four stars structures, total number of accommodation places and number of hotels) and general level of accessibility of each resort.

3.2.1. Number of accommodation units

According to the obtained information from Economy Minister website with reference to all Romania's accommodation structures recognized and classified, the average number of these kinds of units per resort is approximately 31. Eforie Nord is the resort which has the highest number of accommodation facilities (214), while Voineasa, Tinca, Lipova have one structure by this type.

By using the graphic method, and Microsoft Excel 2010 instrument, it was attempted to establish a correlation between the accessibility level results and the accommodation units' number.

By processing this information, has been revealed a chart which have evidenced a correlation coefficient by 0,0695, through which it was proved that in Romania is almost no common element between a health resort general accessibility and the number of accommodation units.

Nevertheless, there are some exceptions like Eforie Nord, Costineşti, Mamaia, Sinaia, Predeal, Băile Felix, Albeştii de Muscel, Arieşeni, Săcel, Secu, and Semenic.

For example, in a normal case, Costineşti has 126 accommodation units (1 rent apartment, 7 bungalows, 3 touristic cottage, 61 rooms for rent, 1

camping, 10 hostels, 13 hotels, 9 guest houses, 21 villas) and it's accessibility level is maximum, being crossed by E87 road, 800th main railway and having the nearest airport at a distance of 32 km.

On the another side, Poiana Braşov has 77 structures of this type (4 rent apartments, 3 bungalows,

2 touristic cottage, 20 hotels, 1 apartment hotel, 24 guest houses, 2 holiday villages, 21 villas), but it's accessibility level has a value of 1,3, because it is crossed by 1E National Road, is at a distance of 14 km by a railway and the closest airport is situated at a distance of 153 km.

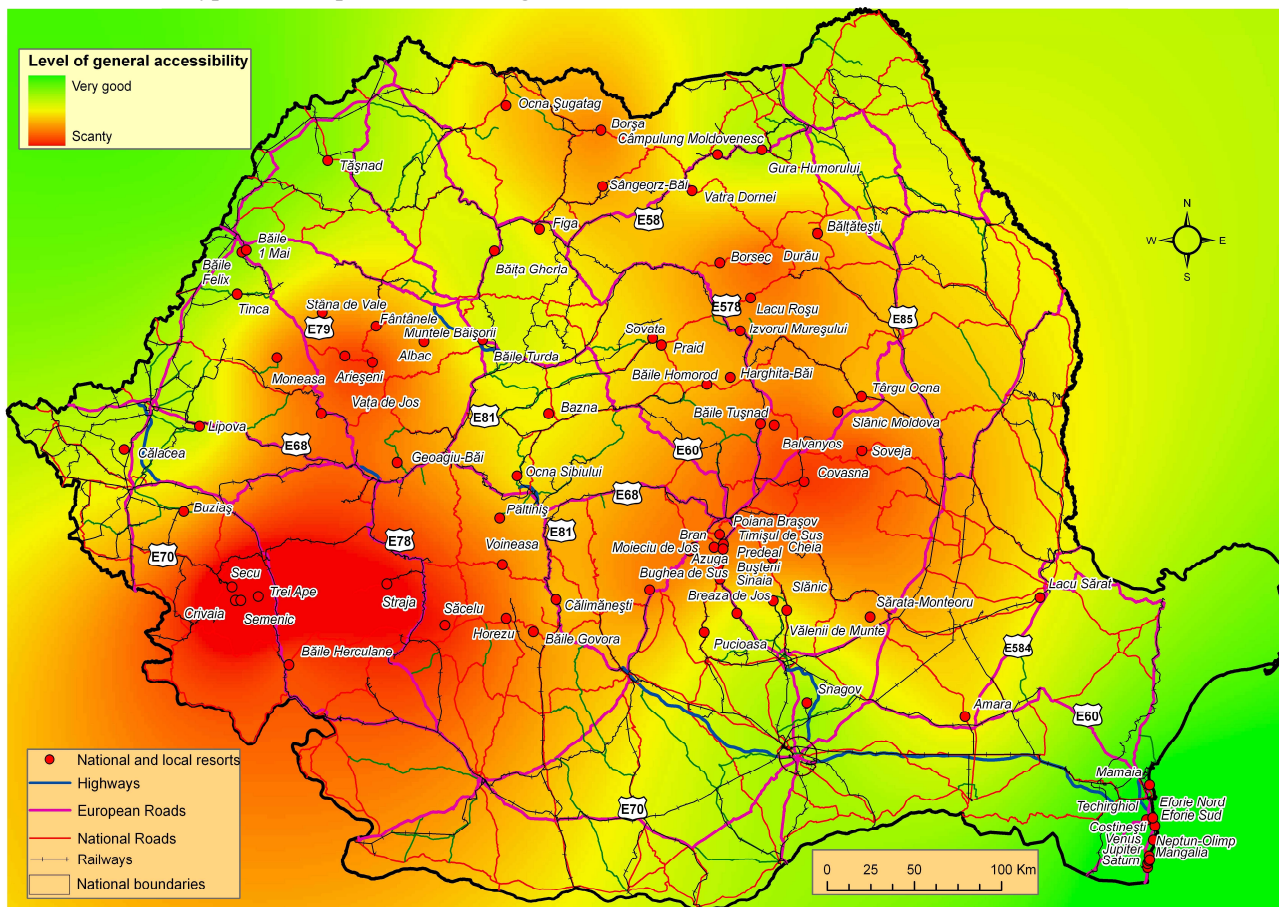


Fig. 7. General accessibility of Romania' health resorts.

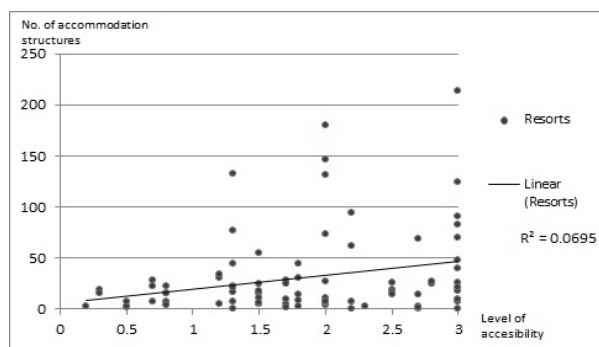


Fig. 8. The correlation result between each health resort general level of accessibility and total number of accommodation units.

In most situations, in Romania exists health resorts that dispose by low accessibility but have many accommodation units (Moieciu, Fântânele Zone, Băile Olăneşti), but in the same time exist health resorts with high accessibility level, but few accommodation

structures (Băile 1 Mai, Băile Băiţa, Tâşnad, Cap Aurora).

3.2.2. Three and four stars accommodation structures

This indicator was chosen to demonstrate if the health resorts with the highest level of comfort have a high level of accessibility also.

Analyzing the same information source, was calculated that the average number of three and four stars accommodation in a Romanian resort is approximately 17. Noteworthy is that Predeal is the most "comfortable" resort, enumerating 105 accommodation facilities of this quality. In the opposite situation can be found Voineasa, Tinca, Trei Ape, Semenic, Lipova, Lacul Sărăt, and Băltăteşti.

After processing this data, resulted a chart that showed a correlation coefficient by 0,0433, lesser than in the first situation. Therefore, the quantitative aspect

of accommodation base is more influenced than the qualitative one by the general level of accessibility, but both of them have too modest values in Romania's health resort case. Like in the first situation, there are some exceptions: Băile Felix, Băile Herculane, Sovata, seashore and Prahova Valley resorts, Săcel, Secu, Semenic, Băltătești, Crivaia.

For example, Băile Felix has a total number of three and four stars accommodation structures of 44, and its accessibility level has a value of 2,7 (it is crossed by E79 road, the 314th main railway and the nearest airport is situated at a distance of 8 km).

A negative example is Breaza, because is a health resort with a high level of accessibility (it is crossed by E60 road, the 300th main railway and the nearest airport is situated at 99 km) but it disposes by 2 accommodation units of three and four stars.

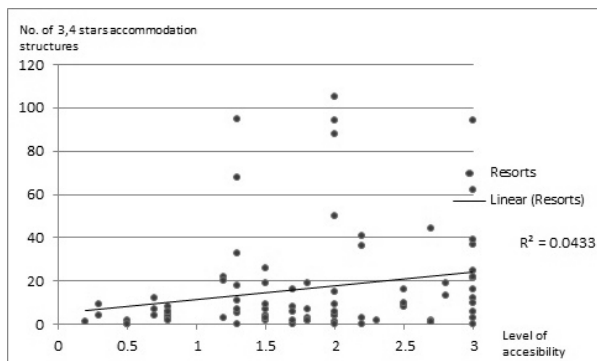


Fig. 9. The correlation result between each health resort general level of accessibility and number of 3 and 4 stars of accommodation units.

Unfortunately, in Romania can be found low level accessibility resorts but having many three and four stars accommodation facilities (Arieșeni, Băile Olănești, Borsec, Cheia, Moieciu, Ocna Șugatag), but in the less favorable situation exists Tinca, Tășnad, Snagov, Lipova, Cap Aurora, Băile 1 Mai, Băile Băița.

3.2.3. The total number of accommodation places

This indicator was chosen to demonstrate if the health resort with vertical accommodation units' development is influenced by level of accessibility.

After a rigorous analysis of these quantitative information, was noticed that the average number of accommodation places in a Romanian resort is approximately by 1733, Mamaia (20148) and Băile Băița (2) being situated at extremities.

After processing this data, has resulted a chart which have revealed a correlation coefficient of 0,1791, the realized calculations showing that the total number of accommodation units is the indicator which is the most influenced by the level of accessibility in what concerns a Romanian health resort.

In this case, some exceptions are related to Băile Felix, Băile Herculane, Sinaia, Predeal, Sovata, Secu, Semenic, Sărata Monteoru, Balványos.

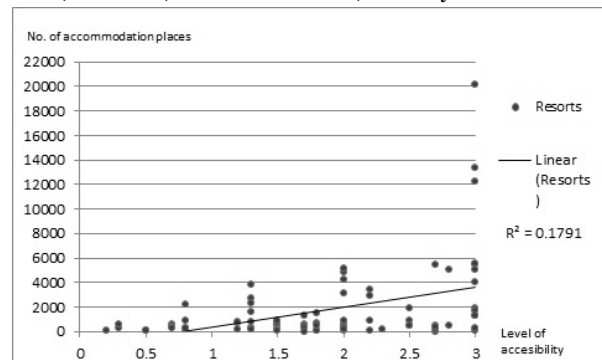


Fig. 10. The correlation result between each health resort general level of accessibility and total number of accommodation capacity.

Like in the last cases, there can be found low level accessibility resorts but with high number of accommodation places (Amara, Băile Olănești, Băile Tușnad, Moieciu, Moneasa, Slănic Moldova), but can be revealed the contrary situation also with examples like Tășnad, Târgu Ocna, Snagov, Pucioasa, Lipova, Breaza, Băile Turda, Băile 1 Mai, Băile Băița.

A positive example is represented by Sinaia which has a total number of accommodation places of 5158, and its accessibility level has a value of 2,7 (it is crossed by E60 road, the 300th main railway and the nearest airport is situated at a distance of 123 km).

A negative example coincides with Moieciu, this settlement being a resort with a high number of accommodation places (2364) but with a low level of accessibility (it is crossed by E574 road, but the nearest railway and airport are situated at 15 km, respectively 141 km).

3.2.4. The number of hotels

The hotel represents the accommodation unit that appeared in 1960, which revolutionized the Romanian resorts, thanks to its vertical development and big level of comfort, all of these leading to a tourist flow increasing.

Analyzing the same information source, the average number of hotels in a Romanian resort is about 6,5, Eforie Nord being at the positive extremity (63), and 17 resorts being in the opposite situation, like Albac, Arieșeni, Băile Homorod, Borsec, Bran, Lipova, Praid.

Using Microsoft Excel 2011 software, it was created a chart which revealed a correlation coefficient of 0,1628, being the second indicator as importance until now, but insignificant like others, regarding the general situation. Like in the last cases, it were found some exceptions like seashore and Prahova Valley

resorts, Băile Felix, Băile Herculane, Arieșeni, Albac, Balványos, Bran, Săcelu, Secu, Semenic, Trei Ape.

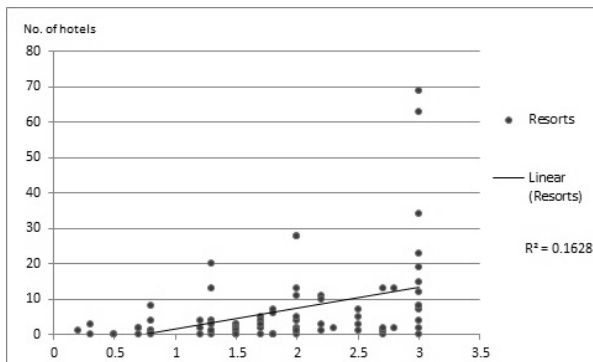


Fig. 11. The correlation result between each health resort general level of accessibility and number of hotels.

As a result, in Romania exist health resorts with low level accessibility, but with a high number of hotels (Băile Olănești, Poiana Brașov, Vatra Dornei) and health resorts with high level accessibility, but less hotels (Azuga, Băile 1 Mai, Bazna, Băile Turda, Câmpulung Moldovenesc, Buziaș, Călimănești, Mangalia).

As a relevant example, Neptun-Olimp resort has a total number of 34 hotels, and its accessibility level has a value of 3 (it is crossed by E87 road, by the 800th main railway and the nearest airport is situated at a distance of 42 km).

On the other side, is Lipova, this resort having a high level of accessibility (it is crossed by E68 road, the 200 main railway and the nearest airport is situated at 33 km) but it has only 5 accommodation units and no hotel.

4. CONCLUSION

The results obtained through this study highlighted that most health resorts that present impairments regarding general accessibility, are situated in Carpathian Mountains (Apuseni, Banat, Poiana Ruscă Mountains, Southern, Eastern Carpathians, Maramureș Depression) because of orographic features, and in Moldavian, Getic, Transylvanian Subcarpathians, northern and southwestern part of Oltenia because of ineffective transport infrastructure repartition.

Regarding the correlation results, a strong argument is that Romanian health resorts appeared and have developed different than other type of resorts. In many cases, the development of a health resort determined the construction of a transport link, better located health resorts being able to develop faster. Therefore, a health resort developed thanks to values of its therapeutical factors. The favored resorts regarding the transport accessibility are situated in Western Plain because its are crossed by 200th, 900th main railways

and E70 European Road, in Prahova Valley thanks to E60, E68, E578, E574 European Roads and to 200, 300, 400 main railways, in Romania's seashore due to 800 main railway and E87 major road and in eastern part of Romania's Plain thanks to E85, E584, E60 roads and to 500th, 700th, 800th, 1000th main railways.

Through this paper, it has been proved that the railway accessibility is the major lack in Romanian transport infrastructure's integrity, because most of resorts which presents problems in this situation have the largest territory spread, besides the aforementioned areas: Transilvanian Depression, Moldavian Plateau, western part of Romania Plain.

The present study achieved its goal, highlighting the influence of accessibility level upon infrastructure base of each health resort. Even if it seems quite normal to be a true influence in this sense, the Romania's health resorts represent a special case of which less than 1/3 of these settlements face with a normal situation: Romania's seashore (Mamaia, Eforie Nord, Eforie Sud, Neptun-Olimp, Mangalia, Jupiter), Prahova Valley (Poiana Brașov, Bran, Azuga, Sinaia, Predeal), Băile Felix, Băile Herculane, Sovata, Vatra Dornei, Straja, Semenic, Trei Ape, Soveja, Secu, Durău, last six presenting low accessibility level and poor accommodation base. Therefore, the health resorts which are situated in a normal situation, are disposing of a high level of accessibility and rich accommodation base, or low accessibility degree and less accommodation structures.

The health resorts which are not belonging in the above situation, either don't benefit by a favorable geographical position, despite the fact that its have had many investments (Băile Olănești), or present an auspicious localization but haven't had major investments (Slănic Moldova, Târgu Ocna, Tinca, Tășnad, Băile 1 Mai), either are situated near major urban settlements (Băile Turda, Băile Băița, Băile Figa, Snagov).

Therefore, the obtained results regarding the accessibility level of each Romanian resort and the correlation coefficient between this and quantitative and qualitative aspects of accommodation infrastructure correspond to reality and present a logical structure following the observations on cartographic materials and correlation charts realised.

REFERENCES

- [1] Teodoreanu, Elena (1984), *Bioclima stațiunilor balneoclimaterice din România [Balneoclimatheric resorts' bioclimate from Romania]*, Academia Română Publishing, Bucharest.
- [2] Muja, S. (1984), *Spațiile verzi în sistematizarea teritoriului și localităților [The green spaces in localities and territory systematization]*, Ceres Publishing, Bucharest.

- [3] **Glăvan, V.** (1978), *Studii de turism, Vol 1- Turism Balnear [Tourism studies, 1st Volume- Balneary Tourism]*, IPREC Publishing, Bucharest.
- [4] *** (2009), *Strategia de Dezvoltare a Oraşului Slanic Moldova, perioada 2010-2020 [Development Strategy of Slănic Moldova for 2010-2020 period]*.
- [5] *** 852/2008 Government Decision.
- [6] **Berlescu, Elena** (1971), *Staţiunile balneare de-a lungul timpului şi azi [Over time and today Spa resorts]*, Medical Publisher Bucharest.
- [7] **Şaabner-Tuduri, Alexandru** (1906), *Apele minerale şi staţiunile climaterice din România [Mineral water spring and climateric resorts from Romania]*, Bucharest.
- [8] **Țeposu, E.** (1932), *România Balneară şi turistică [Balnear and tourist Romania]*, Cartea Românească Publisher, Bucharest.
- [9] **Stefănescu, C.** (1967), *Staţiunile balneare şi climaterice din România [Balnear and climateric resorts from Romania]*, Sport-Turism Publisher, Bucharest.
- [10] **Dan, G.** (1993), *Resorts and spas*, Enciclopedic Publisher, Bucharest.
- [11] **Stephen, P.** (2009), *Transport and Tourism*, Ashford Colour Press, Edinburgh.
- [12] **Coccan, P.** (2010), *Geografie Regională [Regional Geography]*, Cluj-Napoca University Press, Cluj-Napoca.
- [13] **Jan, G.** (2012), *Oraşe pentru oameni [Cities for people]*, Igloomedica Publishing, Bucharest.
- [14] **Mathe, C.** (2011), *Studiul geografic al reţelelor de transport în Regiunea de Dezvoltare Centru [Geographical study of transport networks from Center Development Region]*, Cluj-Napoca.
- [15] **Rodrigue, J-P** et al (2009), *The Geography of Transport Systems*, Hofstra University, Department of Global Studies and Geography.
- [16] **Hanson, Susan, Genevieve, G.** (2004), *The Geography of Urban Transportation, 3rd Edition*, The Guilford Press, London.
- [17] **Derycke, P.** (1977), *Transports et aménagement du territoire: réflexions sur le rééquilibrage Est-Ouest: décembre 1976 [Transports and spatial planning: reflections over Est-West rebalancing: December 1976]*, La Documentation Française Press, Paris.
- [18] **Turbuţ, Gh.,** et al (1988), *Inginerie de sistem, automatizări şi informatică în transporturi [System engineering, automation and information technology in transport]*, Ed. Tehnică, Bucharest.
- [19] **Stephen, P.** (2009), *Transport and tourism. Global perspectives*, Pearson Longman Press, Edinburgh.
- [20] **Stephen, P.** (1999), *Transport for tourism*, Cengage Learning EMEA, UK.
- [21] **Hyde, K. F., Laesser, C.** (2009), *A structural theory of the vacation. Tourism management*, Elsevier Press, Lane Kidlington.
- [22] *** (2007), *Republic of Poland – Slovak Republic Cross-border Co-operation Operational Programme 2007-2013*.
- [23] **Ministère de l'Écologie, de l'Énergie, du Développement durable et de l'Aménagement du Territoire, Paris, Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Vienna** (2008), *Public transport accessibility of Alpine tourist resorts from major European origin regions and cities*, Paris, Vienna.
- [24] **Celata, F.** (2007), *Geographic Marginality, Transport Accessibility and Tourism Development*, Global Tourism and Regional Competitiveness, pp. 37-46, Bologna.
- [25] *** (2012) **Cultural Sites and Tourism Development of European Strategies, Sustainable Accessibility to small tourist areas.**
- [26] **Saad, K., Jianhong, Xia, Bert, V.** (2011), *Measuring accessibility to tourist attractions*, Geospatial Science Research Symposium, Melbourne.
- [27] **Bodocan, V.** (2009), *Transport and tourism (course notes)*, Cluj-Napoca.
- [28] **Stephen, P., Les, L.** (2003), *Tourism and transport*, Elsevier Press, Lane Kidlington.