

Tourism and Sustainable Development

Medicinal and Thermal Spas in South and West Transdanubia - The Significance of Accessibility

Áron Kovács¹, András Bozóti², Zsuzsanna Pótó³, Márta Bakucz⁴

Abstract: Transport plays a substantial role in determining competitiveness in tourism. The **objective** of our study is to highlight the relationship between the accessibility [by road] of medicinal and thermal spas and the tourist figures of the settlements examined, and we hope in this way to build on our **prior work** in the broad, but highly important field of Spa Tourism in Hungary. Our **approach** is based on an analysis of the data from two particular regions in terms of tourist flows – centrally located West and peripheral South Transdanubia. Methods of correlation and rank correlation were used which were based on statistical data from the Hungarian Statistical Office and from our own questionnaire. The **results** clearly show the significance of accessibility to be unarguable on the basis of our questionnaire, although the rank correlation alone proved the relationship. There is also a degree of correspondence between accessibility and tourist figures, albeit with certain limitations. The **implications** are not as yet totally clear since a number of specific factors are involved which require further consideration, such as the relative prosperity of the regions, population density and the adequacy of the road network. However, work has already started on this programme.

Keywords: Health tourism; Road transport; Regional comparison; Rank correlation; Tourism Tax

JEL Classification: L83

¹ PhD Candidate, University of Pécs, Faculty of Business and Economics, Address: 80, Rákóczi St., Pécs 7622, Hungary, Tel.: +36202960456, E-mail: kovacs.aron@ktk.pte.hu.

² PhD Candidate, University of Pécs, Faculty of Business and Economics, Address: 80, Rákóczi St.; Pécs 7622, Hungary, Tel.: +36302468281, E-mail: bozotia@ktk.pte.hu.

³ Assistant Lecturer, University of Pécs, Faculty of Humanities, Department of Sociology, Address: 16, Zsolnay Vilmos St.; 7622 Pécs, Hungary, Tel.: +3672503600/28215, E-mail: poto.zsuzsanna@pte.hu.

⁴ Associate Professor, PhD, University of Pécs, Faculty of Business and Economics, Address: 80, Rákóczi St., Pécs 7622, Hungary, Tel.: +3672501599/23386, Corresponding author: bakucz@ktk.pte.hu.

1. Introduction

Transport, accessibility and spatial factors are of increasing importance in business-related micro- and macro-economic decision-making processes, and the aim of this paper is to examine the links between two separate, although connected, fields of study. Transport plays a substantial role in determining competitiveness in tourism, in that it influences both quantitative and qualitative factors in destinations – and so has a direct impact on the nature of the traffic. Since our primary target is the effects of transport on tourism, we concentrate on transport which uses public roads, since the majority of both foreign and domestic - tourists prefer to travel in this way (Hungarian Tourism Plc., 2010).

The theoretical basis of the topic requires us to define accessibility, transport and tourism, showing cogent links among them and presenting an evolutionary development of touristic models of competitiveness from the transport perspective. Following this, we apply empirical analysis to produce [hopefully significant] results in two distinct fields.

The first field relates to the general preferences of tourists visiting medicinal and thermal spas and uses relevant data collected in a questionnaire (devised by us) which examines the accessibility of these spas by the public road network. [The questionnaire was created within the framework of the Hungarian OTKA project No.106283]. After drawing general conclusions, we analyse the data from two particular regions - West and South Transdanubia. In terms of tourist flow, West Transdanubia is located centrally, whilst South Transdanubia is peripheral. This contributes to the different factors which impact on these regions' spas and on the forms of transport carried on public roads.

On the same basis, the second field examines eight settlements from each of these regions – all with medicinal and thermal spas – a total of sixteen. The paper attempts to investigate the relevance of road transport to tourist traffic in respect of these settlements.

2. The Theoretical Background to the Topic

Accessibility is a universally important factor, and it is clear that, in connection with the paradigm shift in economics (as demonstrated by the New Economic Geography and the increasing importance of regional economics), the role of geographical distance is less and less arguable. When defining tourism, “transport” can, perhaps, be described as “movement beyond the normal limits of a person’s regular way of life (including both their residence and place of work) irrespective

of motivation, time-span and target field” (based loosely on the World Tourism Organization’s and the Inter-Parliamentary Union’s definition of 1989).

By examining the relationship between tourism and transport, three important factors should be taken into consideration: transport itself, as movement with the aid of vehicles; carriage as a process, when goods or people are brought from one place to another; and travel, which means the movement of people with different motivations (Tóth et al., 2012).

Any further investigation of the relationship must also take into account other factors, such as the complexity of the links between sending and destination countries, the problem of accessibility at the destination, including the accessibility of specific tourist attractions, and, finally, those types of travel when travelling itself belongs to the complex ‘treat’ (Hall & Page, 2009). This paper aims mainly to examine the first factor and so it does not take into account any local features of the different modes of transport.

The chief role of transport in tourism is that it creates a spatial correspondence between supply and demand, and so we need to examine the qualitative and quantitative conditions of accessibility. A twofold system of relationships can be seen between the demand for transport and the services provided by the infrastructure which define the character and the extent of demand for transport in terms of time, cost and other factors.

Accessibility is a key factor in analysing transport. The notion of “accessibility”¹ involves those possibilities in a given area which are available to an individual, provided that one travels to a different area to pursue activities of any form of personal interest in search of relaxation, recreation, entertainment, recuperation, etc. (Linneker & Spence, 1992, Tóth & Kincses, 2007). Transport has a significant effect on the quality and level of services provided by the infrastructure of a given area (Tóth & David, 2009), on the appeal of a given area, and on its degree of popularity in terms of the number of visitors. More forms of accessibility can be defined, depending on the perspective of the analysis. For instance, financial, social, physical, mental, and organizational accessibility can be differentiated (Tóth et al., 2012). This study, however, deals only with physical accessibility and does not deal with any other factors since these require totally different types of data.

In respect of tourism, both primary and secondary infrastructures can be distinguished. Whilst the former refers to the quantity of accommodation and its level of development related primarily to tourism, the latter refers to those facilities which assist tourism, such as ticket offices, souvenir shops, travel agencies etc. and

¹ To examine accessibility, we studied the available data provided by Route Planner with Google Maps (taking into account motorways and toll roads) between the 2nd and 10th of October 2013.

also involves the transport infrastructure (Abonyiné, 2006). Depending on the location of a given destination, and based on its level of attraction, it can be assumed that a destination can be approached by various means of transport and by different routes. For these reasons, visits to medicinal and thermal spas are primarily made by road, and so the trips can be described by the typical characteristic features of road transport.

Based on the distribution of the number of international tourist arrivals using all forms of transport, 90% of tourists arrive in Hungary by road, whilst 60% of domestic journeys lasting several days are also undertaken by car (Hungarian Tourism Plc.). Hence, in our analysis we look at data on the accessibility of spas by road. Travel by road is usually preferred for short journeys and has the advantage of greater comfort, relative safety, rapidity and its “door-to-door” feature (Veres, 2011). The preference for one particular means of transport indirectly predicts the level of attraction of a given destination. The spas selected for analysis in this study are located in domestic regional markets and we can safely assume that tourists from abroad will generally prefer to use road rather than any other form of transport in view of the notable lack of rail and air services or their low standard.

Azimi and co-authors (2013) examined and tested [by various methods] the relationship between tourism and transport on the basis of a Turkish province, Gilan. They tried to approach the issue from the perspective of development, and the authors considered whether the development processes of tourism and transport could interact or not – that is, whether these two sectors could develop more quickly together or separately.

The results clearly showed increased road traffic as a result of tourist destination development, although it is not necessarily true that this represents a development in the quality of travel. The authors revealed many difficulties by means of document- and SWOT-analyses, which may be due to the poor level of transport in general. For instance, extremely high prices for public transport, the lack of interaction between public transport companies and imbalances in the road network. Lohmann and Pierce (2012) carried out secondary data acquisition and analysed questionnaires completed by experts. Based on this work the authors defined the following factors in terms of the relationship between tourism and transport: characteristics of the sending countries and the targeted destinations, the speed of travel, the level of environmental pollution, the main directions of travel etc. Tourism can contribute to the development of transport networks, and so, to reach tourist destinations, travellers may need new corridors or road networks, but this effect is mutual. Kordel and Bentkowska (2009) focused on mega-events such as the European Football Cup of 2012 and its potential requirements from the perspective of the transport network. In their forecast the authors drew the conclusions that a road network should be developed on the basis of the potential

traffic and of the number of inhabitants able to access those locations which would be the venue of matches. Our study has a similar logic and aims to calculate the numbers who could potentially visit spas.

Many papers have been written attempting to examine the relationship between tourism and transport - not on the basis of statistics and quantitative factors, but by examining the connection by the help of qualitative factors or from a management perspective (Sorupia, 2005). These studies are suitable mainly for investigating local relationships – as opposed to those studies which deal with regions or countries.

The studies dealing with the connection between tourism and transport differ in their results. However, it is unarguable that accessibility plays a decisive role in determining competitiveness in tourism, and more and more model creators and experts in tourism recognise the relevance of factors supporting tourism in this particular context. Competitiveness in tourism refers not only to one single settlement, but to the broader spatial unit - to the destination as a whole since, although an attraction may be specific to one single settlement, the effects should be considered in relation to the wider area in view of what is often a problematic definition of the actual destination (Michalkó & Rátz, 2010). It is not only a question of the distance from one place to another, but also the means of transport and the level of accessibility which are significant. Tourism and transport complement and support each other in many ways, and the two fields are in a specific relationship system (Michalkó & Rátz 2010).

When looking at the destination competitiveness models created to date, transport and accessibility clearly feature in most. According to some models, the two factors are not designed to measure competitiveness directly since they are only complementary factors contributing to competitiveness, although other approaches claim that both belong to the key competences of competitiveness.

In adapting the diamond model to tourism, transport is regarded as a vital factor, its function being to provide the environmental embeddedness of the touristic attraction (Jancsik, 2007). According to Vengsay (2003), however, transport cannot be directly connected to tourist attractions. He used a different approach in his own analysis in which, although tourist attractions and activities were included as complementary services (e.g., public works and catering establishments) he also emphasised the relevance of accessibility. The most detailed and workable model created to date was developed by Crouch and Ritchie in 1999. In their model they scrutinised the micro- and macro-environment of tourism and defined the key competences whose existence and level mainly determine the competitiveness of a given destination. For these key competences to have the desired effect,

complementary factors are needed, and, within these factors, accessibility is treated separately and differentiates land, sea and air transport.

Go and Govers in their study (2000) assert that accessibility is the main factor and they elaborated their concept of competitiveness from a series of factors such as image, climate, environment, accessibility, facilities - and the touristic appeal of a given destination. As opposed to earlier works in the field, Dwyer & Kim (2003) regard the development of the demand factor as a dominant factor in determining the competitiveness of a given destination. In order to evaluate competitiveness, they distinguish three component groups. The first of these comprises natural factors and basic touristic attractions whilst the second relates to issues involving the management of a given destination (the potential for government and business support, image-building together with accessibility and transport). The final embodies the actual demand characteristics.

In the adaptations of the models of competitiveness in tourism created at the end of the '90s and the turn of the century, transport plays an increasingly important part. One of the best studies in the field was produced by Armenski, Marković, Davidović and Jovanović (2011) who deal with investigating the competitiveness of health tourism in Serbia.

Their model includes two factor groups - one involving natural and cultural resources and the other concerning tourism-related settlement infrastructure, together with accessibility and quality. The authors of the study created individual index groups to define the accessibility of each key competence - which clearly accords with contemporary trends in economics. Kayar and Kozak's model (2010) represents one of the latest adaptations in the field. They examine the competitiveness of Turkey in respect of health tourism based on the WTTC index of 2007 (Gooroochurn & Sugiyarto, 2005): they identify 13 significant factors which determine the competitiveness of a given settlement. As with earlier models, official policy, environmental protection regulations, health and safety and human resource management issues, as well as cultural peculiarities ascribed to nations play important roles. In Kayar and Kozak's model, accessibility is a specific key factor.

3. An Analysis of Accessibility based on Preference Questionnaires

This section of the paper is based on data recorded between the 20th and 24th of February 2013 within the framework of OTKA project No. 106283 entitled "The Examination of Competitiveness Factors of Medicinal and Thermal Spas in Hungary and in Central European Regions". During our research a questionnaire relating to consumer preferences was used as the survey method, the survey itself

being conducted by telephone. The respondents were drawn from the adult population (over 18) and were selected by quota sampling, representative of the Hungarian population's age and gender distribution. After data recording and cleaning, a database of 1,000+ respondents was ready for analysis. In the questionnaire three questions dealt with accessibility. One asked how far the respondent would be willing to travel if he wished to spend his/her holiday at a medicinal or thermal spa. The other two referred, respectively, to the importance to the respondent of the distance from home to destination, and to the question of accessibility when using public roads or public transport. The following analyses were mostly justified on a five percent significance level. Since the variables operate on a low level scale, the test of independence was executed by Chi-Square test. The effect size of correlation was evaluated by the Cramer index. For further analysis the AR (Adjusted Standardised Residual) Index provided guidance.

First of all, it is worth looking at distance as linked to the willingness to travel. Of the total number asked, 912 people answered the question relating to travelling distance and their willingness to travel. Nearly half (48%) indicated the longest distance (in excess of 100 km) when showing the extent of their willingness to travel (assuming their desire for a spa holiday). The data assessed suggest that distance in itself might not be a primary factor in selecting a destination, as the distance involved in their willingness to travel could have been lower. However, this assumption requires further explanation on the basis of an analysis of the distance (home to targeted spa) and of accessibility. Competition for guests among spas is, therefore, greater even within borders. The remaining respondents (28%) are willing to travel a maximum of 50 to 100 km, and less than a quarter (24%) indicated that they would be willing to travel no more than 50 km for the purpose. From the results it can be deduced that, in terms of willingness to travel, there is a statistically supported correlation between the length of stay and spending patterns. The study will elaborate on this later.

A second aim of the analysis is to show the relationship between travelling distance and length of stay. When examining the figures it became clear that nearly half of the potential guests (48%) willing to travel less than 50 km choose to stay for only a long weekend. Further, the majority of respondents (58%) willing to travel 50 to 100 km prefer the same length of stay. However, 40% of respondents willing to travel farther prefer a 4-7-day holiday, 22% choose a minimum of a week and only 36% of this particular group opt for a long weekend. In analysing the correlation between acceptable travelling distances and length of stay, it was observed that, on the basis of the p-value¹ (0.000), beside every logical level of significance¹, there is

¹ By the p-value of Chi-Square or, in other words, the significance value, is meant the assumption with which the rejection of the null hypothesis results in error (Pintér & Rappai, 2007, p359).

a correlation between the two items, and not only 5%. According to the Cramer index, this correlation is considered weak ($C=0.237$). Among respondents willing to travel 50 km or less, there is a greater willingness to go away only for the day ($AR=7.8$), as opposed to a declining interest in a 4-7-day holiday ($AR=-3.1$) away from home. A logical explanation could lie in the different income levels of different consumer segments. For respondents willing to travel 51 to 100 km it is more typical to spend a long weekend of 2-3 days ($AR=4.8$) at a desired destination, while trips lasting for at least a week are less common ($AR=-3.7$) in this particular segment. Respondents willing to travel at least 100 km more typically prefer to be away for 4 to 7 days ($AR=3.7$) or for even longer ($AR=4.2$). Based on these findings we can assume that the distance factor in willingness to travel and the length of stay are related ($p=0.000$; $C=0.237$). In planning the services to be offered by spas, it would be rational to take these trends into account since most potential guests do not plan a whole week of recreation at a given complex, but prefer to take advantage of the various offers and reduced prices available for long weekends. However, the segment spending 4-7 days at a given spa should also be considered worthwhile since, as mentioned above, 48% of respondents would be willing to travel 100 km or more in order to visit their preferred spa. Clearly, service packages and marketing should be adjusted to these trends.

The third area examined is the relationship between travelling distance and the willingness to spend calculus. In respect of operating spas, these figures are considered the most important, although the average length of stay should not be ruled out since there seems to be an indirect link with average daily consumer spending.

On the basis of this distribution, a relationship between travelling distance and consumer spending can be predicted as follows: 42% of those willing to travel less than 50 km would spend a maximum of HUF 5,000, a further 42% from HUF 5,000 - 10,000, and only 1% would be ready to spend over HUF 20,000 per person. In terms of those willing to travel between 51 and 100 km, only half (21%) would spend less than HUF 5,000, whilst more than half (59%) would spend from HUF 5,000 - 10,000, and 17% from HUF 10,000 - 20,000. Under 3% would be willing to spend over HUF 20,000 per person. In terms of the longest distance (100+ km) category, 19% of respondents would be willing to spend less than HUF 5,000, a little over half from HUF 5,000 to 10,000, almost a quarter (23%) from HUF 10,000 to 20,000 and a significant number (7%) over HUF 20,000 per person (*Chart 1*). The average spending of respondents willing to travel less than 50 km is

¹ In Social Sciences a 5% level of significance is considered typical but in some cases 1% and 10% levels are also accepted. All three levels of significance mentioned comprise the group of 'logical levels of significance'.

HUF 6,685, of those who would accept 51-100 km the figure is HUF 8,200 and for those willing to travel more than 100 km the average is HUF 9,490.

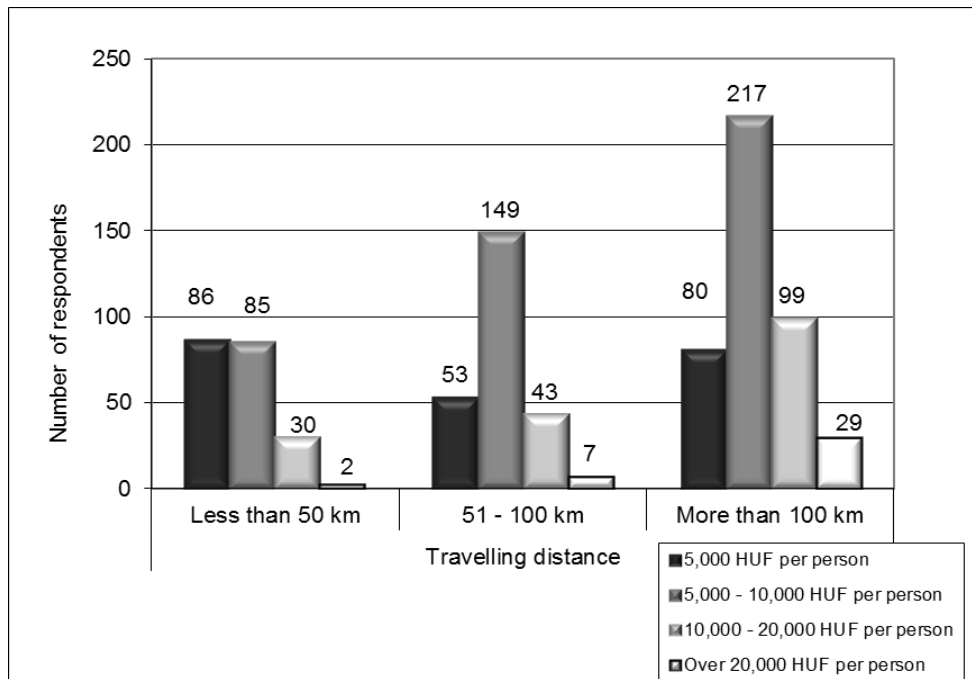


Chart 1. The Relationship between Travelling Distance and Consumer Willingness to Spend

Source: Authors' construction

The p-value of the Chi-Square test is 0.000, and so there exists a correlation on 5% significance level between the distance respondents are willing to travel to reach a spa and consumer spending patterns. On the basis of the Cramer index, the degree of correlation is weak ($C=0.182$). The interconnections shown in the above chart can, again, be explained by the financial circumstances of the guests. In relation to income, a “typical” holiday destination decision could be determined on the basis of the assumption that, for potential guests who are willing to spend only a modest amount on visiting a spa, distance itself seems to be a major factor - that is, they are only willing to travel shorter distances; but those willing to spend a substantial amount on their holidays when visiting a spa, are willing to travel greater distances - in which case travel expenses amount to a significant sum of money. The detailed results also support this trend - that is, among people willing to travel less than 50 km, the rate of spending less than HUF 5,000 per day is much higher than expected ($AR=6.6$), although, at the same time, among the same group of respondents, the

rate of daily spending from HUF 5,000 to 10,000 (AR=-3.0) is less than expected, as in the case of higher spending (HUF 10,000 to 20,000) (AR=-2.7). For respondents willing to travel between 51 and 100 km, the willingness to spend HUF 5,000 to 10,000 is higher than average (AR=3.0). When taking respondents willing to travel over 100 km into account, on average, they spend from HUF 10,000 to 20,000 (AR=2.7), or even more than HUF 20,000 (AR=3.5). Less expected is that they spend HUF 5,000 or less (AR=-4.0). From the results we can deduce a correlation between acceptable travelling distance and willingness to spend ($p=0.000$; $C=0.182$).

The fourth field which we examined deals, firstly, with the accessibility of spas, secondly, with the home-to-destination distance and, finally, with the assumed relationship between the two issues. It is, again, good to study the distribution of these two variables separately.

The home-to-destination distance is regarded as highly relevant for over a quarter of the respondents (28%), but it may be more interesting to note that three quarters identify this as moderately significant. On the basis of the responses, the importance of accessibility seems to more significant since half of the respondents (50%) noted this as highly relevant, and nearly 90% as moderately significant. These observations clearly deny our hypothesis which supposes that the acceptable travelling distance indicated by the respondents would already determine the relevance and preference of accessibility and that of distance in an indirect way.

Table 1. The Relevance of Distance between Home and Spa Destination and of the Accessibility of the Spa (person, n=927)

Relevance		Accessibility of Spa or Thermal Bath Resort					Total
		No Relevance	Preferred No	Yes-No Relevance	Preferred Relevance	Full Relevance	
Distance between home and spa	No Relevance	35	7	28	23	70	163
	Preferred No	8	7	12	15	24	66
	Yes-No Relevance	7	17	55	95	96	270
	Preferred Relevance	4	2	17	69	72	164
	Full Relevance	6	2	15	34	207	264
Total		60	35	127	236	469	927

Source: Authors' construction

The table (*Table 1*) demonstrates the notability for respondents of two examined dimensions: the distance between home and spa, and accessibility of Spa or Thermal Bath Resort. The table shows 207 respondents who considered both issues - that is, distance and accessibility - as highly relevant. In terms of correlation this exists at every logical level of significance between distance and accessibility ($p=0.000$), and that its degree is weak ($C=0.252$). Respondents indicating total relevance in connection with distance chose the lower categories of accessibility less than expected (1 (AR=-3.3), 2 (AR=-3.0), 3 (AR=-4.5), 4 (AR=-5.5)) excluding the category of full relevance, although this was chosen by more respondents than expected (AR=10.7). Similarly, those regarding accessibility as being highly relevant seemed to prefer the lower distance categories less than expected (1 (AR=-2.2), 2 (AR=-2.4), 3 (AR=-5.9)) with the exception of the category of full relevance which, on the other hand, was favoured by more respondents than expected (AR=10.7).

The analysis offered in this chapter clearly indicates a plausible relationship between travelling distance and the average length of stay just as between distance and spending patterns when studying consumer opinion and their preferences. The next chapter aims to analyse the above relevance study by examining randomly selected settlements.

4. Rank Correlation, Correlation between the Number of Guest Nights, Tourism Tax (TT) and Accessibility Parameters

The accessibility study used specific examples taken from a database of 16 settlements in which a given settlement with a medicinal and thermal spa can be accessed within 120 minutes via public roads (*Chart 2*).

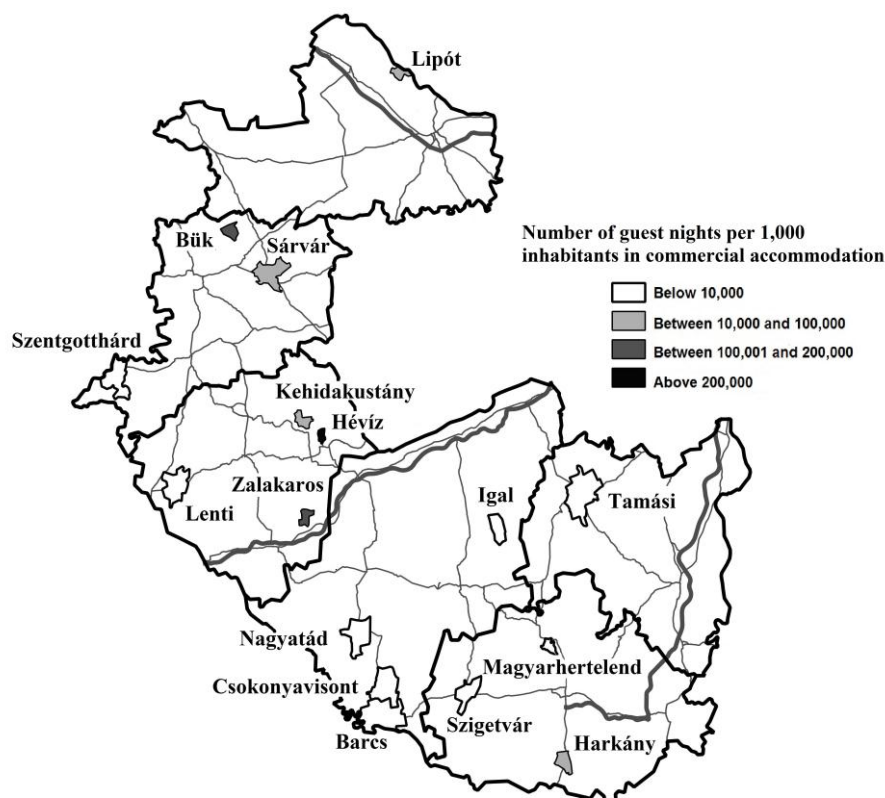


Chart 2. The Distribution of 16 Spas in South and West Transdanubia and the Number of Guest Nights per 1,000 Inhabitants in Commercial Accommodation in 2011

Source: Authors' construction on the basis of KSH data

We have in particular stressed two factors: first, we looked at the number of permanent residents of all settlements in the area, and, secondly, at the accessibility of each settlement in terms of time - that is, how long is needed to reach a given spa. The next step was to create accessibility indices – in fact, two versions. When creating these, “complexity” was considered an important factor, and so, in each case, both access time and the number of people in a given destination (the population) were taken into account. The first index was entitled “Population numbers able to reach a given spa within 30 minutes,” and the second, following this form, was entitled “Population numbers able to reach a given spa within 60 minutes.” Next, a correlation study of the most important data was carried out with reference to the size of the resident population, actual guest nights, guest nights per

1,000 residents, tourism tax¹ allocated from the local authority's revenues (HUF '000s), the contribution of the TT to local revenues (%), and, finally, to the accessibility indices. To be able to draw conclusions, we employed the Pearson correlation coefficient². There is no correlation on any level of significance ($p > 0.1$) between the accessibility indices and the number of visits for tourism purposes. Discrepancy is very high with respect to both the quantitative criteria and accessibility data.

To introduce one further factor, by using the same quantitative criteria discussed earlier, we were able to draw conclusions from rank correlations created from the rank correlation coefficient³. On the basis of the data provided by the 16 medicinal and thermal spa resorts examined, the correlations relating to rank, such as the number of guest nights per 1,000 residents, the TT (in '000s), the TT rate and the correlation between the three accessibility indices, were focused on. There is a correlation on a 5% level of significance ($p = 0.049$) in respect of the number of residents accessing a given spa within 30 minutes and the number of guest nights calculated in thousands. It can also be seen that this correlation points in a positive direction and the strength of correlation is moderate ($r = 0.500$). Consequently, if the number of people accessing a given spa resort is growing (e.g. the area is moving up-market, new residents move into the area) we can expect a rise in the number of guests. On a 10% level of significance ($p = 0.097$) we can also see a correlation of moderate strength pointing in a positive direction ($r = 0.429$) between the number of people accessing a given spa within 30 minutes and the ratio of TT defined in relation to local revenues. Regarding the other pairs of indices, there are no correlations on any logical level of significance ($p > 0.1$).

It is clear that the accessibility study is not capable of justifying expectations in full when taking the above approach into account. The reason for this could lie in the discrepancies in the accessibility figures and those of the number of tourism-related visits, and also in the fact that accessibility appears to be a complementary function in the competitiveness of tourist destinations. In the previous chapter we discussed in detail that accessibility is considered a major factor in selecting a spa, implying a need for a more comprehensive analysis of correlations with moderate strength.

¹ Hereinafter TT.

² Correlation refers to the stochastic statistical relationship between two relevant quantitative criteria or variables (Pintér & Rappai, 2007, p 247). The linear correlation coefficient between two (X and Y) variables is measured by the application of the covariance of the variables and the product of their standard deviations (Pintér & Rappai, 2007, p 253)

³ Spearman's rank correlation coefficient measures the linear correlation coefficient constructed from two rank correlations. The index, instead of measuring the actual values of the variables, makes use only of the information attributed to the ranking of variables. (Pintér & Rappai, 2007, p 257)

The table below (*Table 2*) shows the ranking of variables in relation to each settlement which show rank correlations. Since both the ranks of the variables representing the number of tourist visits appear in correlation exclusively with the 30-minute ranks (no correlation with the 60 minute ranks), and so it seems sufficient to display the results in a single table.

Table 2. Ranks of Settlements in relation to the Number of Residents Accessing the Settlement to the Number of Guest Nights per 1,000 Residents, TT Ratio

Settlements	30-minute Ranks	Ranks in Relation to the Number of Guest Nights per 1,000 capita	Ranks of TT Ratio
Barcs	16	16	16
Bük	9	2	3
Csokonyavisonta	13	9	5
Harkány	1	4	6
Hévíz	6	1	1
Igal	4	10	9
Kehidakustány	7	5	4
Lenti	14	11	11
Lipót	8	7	7
Magyarhertelend	2	12	12
Nagyatád	11	15	14
Sárvár	3	6	8
Szentgotthárd	15	8	10
Szigetvár	10	13	15
Tamási	12	14	13
Zalakaros	5	3	2

Source: Authors' construction

When taking a closer look at the rankings, it can be seen that Harkány performs surprisingly well in the 30-minute accessibility category. It should be remembered, however, that Harkány is situated in a part of the country containing a large number of small villages, which fact alone had a great effect on the degree of the measured index designed to show destinations accessible within 30 minutes. Still, an assumed relationship can be suspected between the indices measuring the touristic performance of a given settlement and accessibility itself due to the fact that, for Harkány, it would seem futile to expect better performance figures compared to those of rivals in Western Transdanubia (especially Hévíz, Zalakaros and Bük). Magyarhertelend appears to be in a very similar situation, but here the effect produced is more pronounced. Despite the favourable accessibility of Magyarhertelend's thermal bath, the indices do not promise any outstanding results. This particular assessment can be interpreted in two ways. It could firstly be deduced that, on the basis of ranking, accessibility has no influence on tourist arrival figures, and, secondly, that the favourable location of the bath may be interpreted as having the "capacity" as well as a relatively large number of

potential target group of guests. To make things more complicated, the index in question analyses the number of residents -which implies only a potential consumer circle, whereas the spending preferences of residents relating to the services of a given medicinal and thermal spa depend, among other things, on their personal income and liquidity.

The case of Igal can be described as a stalled development project. Though the accessibility figures mirror positive results and the services of the spa are exceptionally wide-ranging compared to the regional average, neither the settlement itself, nor the spa is visited to the extent one would expect from the positive accessibility figures and the generous number of services provided. Igal should make better use of its resources such as its favourable location and its level of transport infrastructure. In addition, operating the spa more effectively and increasing guest numbers could also provide better prospects for the settlement as a whole.

In respect of the accessibility index, the performance of West Transdanubia's flagship medicinal and thermal spas can only be considered as average. In terms of tourism figures, the best results are provided by Hévíz (6th place) whilst Zalakaros achieves 5th place and Bük 9th. For these settlements there is no direct relationship assumed between accessibility and tourism potential, although the poorer performance of Bük may mean a competitive handicap in relation to the two direct rivals. Since changing complementary resources seems to be cumbersome due to interests working outside tourism, in relation to setting prices, providing services and in the targeting a consumer segment, Bük should attempt to combat its apparent disadvantage in accessibility. In Western Transdanubia the most favourable accessibility index is accorded to Sárvár - which, similarly to Igal, is under-utilised in spite of its potential capacities. The ranking positions of Lipót, Lenti, Szigetvár, Nagyatád and Tamási show a similar tendency, although to determine a direct correlation would require organising further case studies with a different approach.

The poorest performance is, undoubtedly, that of Barcs. Its popularity and the number of Hungarian tourist arrivals are very low, and, moreover, its geographical situation does not meet the demands of domestic medicinal and thermal tourism. For Barcs the reason for failure could be not only poor marketing communication, but poor accessibility.

5. Conclusions

The purpose of this study has been to analyse the role of accessibility and that of distance in relation to the decision-making of tourists visiting certain medicinal and thermal spas. An examination of the result shows that the relevance of accessibility has been clearly justified from different angles. The analysis of travelling distances points to the assumption that the majority of guests (48% of respondents) are willing to travel farther to reach their desired spa. There is a clear parallel linking travelling distance and length of stay - which essentially doubles the potential for tourist traffic. Hence, selecting the best marketing strategy for a medicinal and thermal spa is vital; it needs to be decided whether it aims to welcome guests preferring long weekends, or whether it targets another group of guests who are not only willing to spend 4 to 7 days at a given spa, but are ready to travel longer distances and to spend more than average when there. Finally, when elaborating their plans, marketing experts need to consider a variety of preferences. For the majority of potential guests, the distance between their home and the given spa seem to be highly relevant - together with accessibility. The latter factor could be a basis for further analyses in the conflict between supply and demand.

The significance of accessibility has proved unarguable on the basis of our sample of 1,000 people - which seems to justify the appearance of particular studies dealing with the competitiveness of tourism in which the infrastructure, transport and accessibility become the key factors of the complementary resources of tourism. In the course of our analysis of the selected settlements, it was rank correlation which alone proved the relationship existing between the number of tourist arrivals at each settlement and accessibility data. However, the correspondence between these two factors requires further examination, which may be due to a variety of reasons. On the one hand, the sample involving 16 settlements may be considered as having limited scope and so general conclusions cannot be drawn. On the other hand, regional differences also generate inequalities. The accessibility indices simply measured the number of potential consumers but not the extent of their willingness to visit spas – a fact which should not be ignored when analysing the results. Moreover, the geographical location and the natural and economic embeddedness of a spa settlement have different characteristics. The population within the 30 minute range, for example, could amount to a much higher figure for such a settlement in Baranya County than for any settlement in Vas County, and, in addition, there are substantial differences in income in the two regions, which influences the spending pattern of households. The data relating to catering facilities and accommodation in West Transdanubia shows an average extra spend of HUF 2,000 per capita (KSH, 2011). This, presumably, influences the number of arrivals at a spa. The limited scope of the present study means that further opportunities exist to investigate other issues within the field.

6. References

- Abonyiné P. J. (2006). Az infrastruktúra és a turizmus néhány összefüggése/Relationship between infrastructure and tourism. In: Kókai S. (Eds.) *Földrajz és turizmus – tanulmánykötet Dr. Hanusz Árpád 60. születésnapjának tiszteletére./Geography and Tourism – studies celebrating the 60th birthday of Árpád Hanusz*, Nyíregyháza. Nyíregyházi Főiskola. pp. 15-23.
- Armenski, T. & Marković, V. & Davidović, N. & Jovanović, T. (2011). Integrated model of destination competitiveness *Geographica Pannonica*, Vol. 15 No 2. 2011. pp. 58-69.
- Azimi, M. & Hoseini, M. & Ildormi, A. & Abroofarakh, M. (2013). The role of road transport in tourism industry development (Gilan Province). *Singaporean Journal of Business Economics and Management Studies*, Vol. 1. No. 11. 2013. pp. 111-124.
- Crouch, G. I. & Ritchie, J.R.B. (1999). Tourism, competitiveness and social prosperity. *Journal of Business Research*, (44). pp. 137-152.
- Dwyer L. Kim & C. (2003). Destination Competitiveness: Determinants and Indicators. *Current Issues in Tourism*, Vol. 6 No.5. 2003. pp. 369-414.
- Go, F., Govers R. (2000). Integrated quality management for tourist destinations: a European perspective on achieving competitiveness. *Tourism Management*, Vol. 21. No.1. 2010. pp. 9-22.
- Gooroochurn, N. & Sugiyarto, G. (2005). Competitiveness indicators in the travel and tourism industry. *Tourism Economics*, Vol. 11, No. 1, March 2005. pp. 25-43.
- Hall, C. M. & Page, S. J. (2009). Progress in Tourism Management: From the geography of tourism to the geographies to tourism – A review. *Tourism Management*, Vol. 30. Issue 1. 2009, pp. 3-16.
- Herman, S.& Pintér, J.& Rappai, G. & Rédey, K. 2007. In: Pintér & Rappai: *Statistika/Statistics*, Pécs. PTE KTK.
- Jancsik, A. 2007. Versenyképesség és annak fejlesztési lehetőségei a turisztikai célterületeken/Competitiveness and its potential for developments in touristic destinations, Menedzsment a XXI. században, In: Kovács, Z. & Szabó, L. [2007]: *Menedzsment a XXI. században/Management in the 21st century*, Pannon Egyetem, Veszprém pp. 155-173.
- Kayar, C. H. & Kozak, N. 2010. Measuring destination competitiveness: an application of the travel and tourism competitiveness index (2007). *Journal of Hospitality Marketing & Management*, Vol. 19 No. 3. 2010. pp. 1-14.
- Korde, Z. & Senator-Benkowska, K. 2009. The role of Polish road transport in tourism. *GeoJournal of Tourism and Geosites*, Vol. 3. No. 1. 2009. pp. 44-62.
- Központi Statisztikai Hivatal (2011). A háztartások fogyasztásának regionális különbségei/Regional differences of household consumption, 2009. Budapest.
- Linneker, B.J. & Spence, N. A. 1992. An accessibility analysis of the impact of the M25 London Orbital Motorway in Britain. *Regional Studies*, Vol. 26. No.1. 1992. pp. 31-47.
- Lohmann, G & Pierce, D. G. 2012. Tourism and Transport Relationships: The Suppliers' Perspective in Gateway Destinations in New Zealand. *Asia Pacific Journal of Tourism Research*, Vol. 17. No. 1. 2012. pp. 14-29.
- Magyar Turizmus Zrt. 2011. Turizmus Magyarországon/Tourism in Hungary, 2011. Magyar Turizmus Zrt. 2011.

- Michalkó, G. 2007. *Magyarország modern turizmusföldrajza/Modern Tourism Geograpy of Hungary*, Dialóg Campus Kiadó, Budapest.
- Michalkó, G. & Rátz, T. 2010. Hungarian Spa destinations in the tourism-oriented property market. *Földrajzi Értesítő/Hungarian Geographical Bulletin*, Vol. 59. No. 2. 2010. pp.131-146.
- Sorupia, E. 2005. Rethinking the role of transportation in tourism. *Proceedings of Eastern Asia Society for Transportation Studies*, Vol. 5. 2005. pp. 1767-1777.
- Tóth, G. & Dávid, L. 2009. Az elérhetőség és az idegenforgalom kapcsolata/ The relationship between accessibility and tourism, *Tér és Társadalom/Space and Society*, Vol. 23 No. 3. 2009. pp. 45-62.
- Tóth, G. & Dávid, L. & Vasa, L. 2012. A közlekedés szerepe az európai turisztikai áramlásokban/The role of transport in European tourist flows, *Területi Statisztika/Regional Statistics*, 15/2. pp. 160-176.
- Tóth, G. & Kincses, Á. 2007. Közúti elérhetőségi vizsgálatok Európában/Public road accessibility surveys in Europe, *Statisztikai Szemle/Statistical Review*, Vol. 85. No. 5. pp. 432-463.
- Vengesayi, S. 2003. A conceptual model of tourism destination competitiveness and attractiveness. *ANZMAC 2003 Conference Proceedings*, Adelaide, 1-3, December, 2003., Monash University. pp.637-647
- Veres, L. 2011. *Turizmus és közlekedés/Tourism and transport*. Pécsi Tudományegyetem, Pécs. Retrieved from: <http://www.eturizmus.pte.hu/szakmai-anyagok/Turizmus%20%C3%A9s%20k%C3%B6zleked%C3%A9s/book.html> ,date: 09.09.2014