SZENT ISTVÁN UNIVERSITY

Relationships of consumer behavior and the tourism supply in Jász-Nagykun-Szolnok county

Thesis of (PhD) Dissertation

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1. INTRODUCTION

1.1. The actuality of the subject

One of the important and controversial topics of the economists' thinking is the learning about and evaluating the consumer behaviour. In the traditional model the consumer choice takes place among ideal circumstances, based on full information and without any uncertainty. Since the environmental conditions and impacts keep changing, uncertainty gets an increasing role. In the economic sciences it is important to be careful when the uncertainty-containing data are being analysed. The arising issue: what mathematical and statistical methods can be used and with what efficiency? By applying the quantitative and qualitative methods the decisions can be substantiated realistically. A model that is considered „ideal" requires the significant variables, in this way there is need for the application of multi-variable methods. Nowadays the quantity of available information is increasing. The methods that are suitable for the combination of these and for the complex utilisation of the information are of great significance.

The mathematical, statistical methods in different disciplines are the devices of the definition of the results, meaning to get by adaptability. To present this I took the tourism as a research area.

Tourism is one of the most significant areas of the economy. It is true in Hungary, too, that there is a significant and increasing demand for the „touristic products", and the conditions are good for meeting this demand. In addition when talking about the stimulation of the economy tourism can be suitable for playing the resource-moving role since due to its characteristics it is able to integrate the other areas of the economy, to launch and sustain the development. Consequently tourism can be one of the flagships of the Hungarian economy. Tourism is a complex system that is affecting almost everybody in a certain form, either directly or indirectly.

The successful research of tourism requires the collection and systemisation of knowledge element of various sciences. Tourism has an internationally accepted definition, yet the researchers belonging to the certain sciences perform research that correspond to their needs and approaches. In this way the relation between tourism and the various sciences is imbalanced.

I have performed methodology researches in various areas and I found that there are several white spots in tourism. I thought it is justifiable to review the main methodology issues and find application possibilities for analysing the touristic activity.

Since the study is primarily methodological, I chose Jász-Nagykun-Szolnok county to deal with the topic. The data available at county level give a good basis for a methodological research and despite the fact that the counties are not subunits of the EU supporting system, they are units that can be used for testing the applicability of the methods.

1.2. Objectives of research

So the fundamental objective of the treatise is equivalent adapting of the modern quanititaive methodological devians on he area of tourism.

Objectives

• Reviewing the bibliography related to the topic. The research covers several scientific areas, the main are as follows: marketing research, tourism and the mathematical-statistical methods. As accordingly it is required to know and process the related Hungarian and international bibliography.

• Revealing the features of tourism through secondary research; getting to know the factors that are forming the touristic output, their analysis with proper methods that provides the new opportunity to grouping and modelling.

• Through primer research teaching the consumer groups connectable to the domestic tourism – by applying the proper multi-variable mathematical-statistical methods.

The tasks to be carried out

By following the theory – the methodology – and the logic of empirical analysis I defined the following tasks:

• From theoretical perspective:
  • Reviewing the consumer/customer behaviour that can be connected to the research topic, analysis of their applicability in the area of touristic behaviour.
  • Reviewing the factors that are affecting the touristic consumer behaviour, that are affecting the travel-related decisions and they can also build the basis of the classification of the tourists.

• From methodology perspective:
  • Reviewing the methodology of mathematics and statistics, accentuating the development history of methods, the drafting of the problems.
  • Reviewing the multi-variable statistical methods applicable in the research (multi-variable regression, principal component analysis, cluster analysis, discriminant analysis, multidimensional scaling), as well as defining the conditions.
  • Besides the theory that is considered classical: presenting the Bayes way of thinking.

• Empirical research:
  • Secondary research: Revealing the characteristics of tourism.
    • With the quantitative researching methods decomposing the variation of the guest nights into components when measuring the touristic output.
    • Defining the direct and latent factors that affect the touristic output.
  • Primer research: Revealing the preferences and travelling habits connected to the domestic tourism, identification of the touristic criteria of the population with various purposes, creation of consumer groups by applying multi-variable mathematical and statistical methods.

Hypotheses of research

Every hypothesis is based on my intention to prove the statement by finding the suitable mathematical-statistical method. At the beginning of the research it could not be defined for sure – it could be made probable only – which methods are suitable for proving the certain hypotheses. Therefore the methods intended to be applied separately do not appear in the hypotheses. In the *New and novelty results* chapter I assigned the applied method to the results.

H1: The general opinion says tourism is an economy stimulating sector, and simultaneously it is not a breakthrough for many settlements since there is no receiving capacity and consequently there are no guests.

H2: The touristic output is rather differentiated even in Jász-Nagykun-Szolnok county, thus it is required to study the small regions at settlement level.

H3: There is a measureable difference regarding the variation of guest nights between the small regions/settlements of Jász-Nagykun-Szolnok county and one of the reasons is regional, and the other consists of the structural differential effect of choosing from among the local accommodation categories.

H4: From the perspective of tourism there are similar characteristics besides the specific features according to which the educated settlement groups differ from the statistical small regions.

H5: From the perspective of tourism the situation of the settlements of Jász-Nagykun-Szolnok county can be considered stable.

H6: The touristic motivation can be separated with the traditional socio-demographic features, in this way the age or the related life-cycle can be the basis of the segmentation.

H7: Besides the basic motivation there are well-definable secondary motives that help in participating in the tourism.

2. MATERIAL AND METHODS

The topic of the research required the application of various analytical methods for achieving the objectives. The research is partly revealing during which by applying the secondary researching methods and using the secondary data the problem could be discussed, and on the other hand it is descriptive through the primary research and based on questionnaires.

2.1. Methods for data-collection

The elaboration of the theoretical background meant partly the studying of the features and forms of the consumer behaviour, the learning about the various models, and on the other hand it meant the analysis of the tourism-related bibliography, the consumer behavioural analyses performed in tourism and the analysis of the travel-related decision models, and also it meant the processing of the mathematical and statistical theories and the methods related to the research. The used bibliography derives from the areas of marketing, tourism and the mathematical-statistical methodology, found in Hungarian, English and German languages.

The quantitative secondary information derive from two main sources: the databases of the central statistical office and the organisation that is performing the touristic market analysis. These were complemented by the information of the specific research institutes and professional organisations. The theories, methods, models featuring in the thesis are supported by the referred bibliography and the results of my own and those studied and published jointly.

I completed the secondary data with primary information for getting to know the motivations and reasons existing in the background of the phenomena. The purpose of the enquiries aimed at analysing the behaviour among the potential tourists and the actual tourists. The primary research took place based on questionnaires:
1. Among the residents of Szolnok city (surveying the leisure time habits, travelling motivation and the touristic attraction of the destination) in year 2010. The population told its opinion partly as consumers and partly as the receiving group of a destination. The sample consisted of 302 elements, layered by gender and age.
2. Among the residents living close to the Tisza river (attraction, experience survey, secondary motivation research) in summer of 2012, in 6 places (Cserkeszőlő, Csongrád, Szeged, Szolnok, Tiszafüred Tiszakécske). It is a non-representative sample of 355 arbitrary elements.

2.2. Methods for analysis

The connection of the properly chosen methodology and its practical application is the main element of the thesis. I processed the information with various methods that most corresponded to the purpose and the data. The simple, and generally the usual methods were presented tangentially, the complex and multi-variable methods were presented in a more detailed form. Their theoretical background can be found in the subchapters of the literature processing, the practical application is in the proper research items of the chapter that is telling the results.

When processing the data I applied the following methods:

• Out of the simple indicators I created uni- and multidimensional ratios. The compositions can be characterised with the static analyses in a given period. The variation of the dynamic ratios are good for analysis, their graphic presentation helps in determining the trend. I calculated multidimensional ratios suitable for comparison, such as the average number of guest nights and some specific indicators that analyse the value of a given factor considering 1000 inhabitants.

• The analyses corresponding to various criteria were accompanied by the analysis of associative, mixed and correlation relations in function of the type of criteria. The significance analysis of the indicators that measure the stochastic relations also took place, by applying the proper probes.

• The limits of the simple methods could be released by applying the multi-variable procedures. From among the multi-variable analyses I applied the multi-variable regression-analysis then the main-component analysis suitable to compress the information content of the variables that showed the factors that are significant from the perspective of analysing the phenomenon and according to what system they are connected to each other.

• Regarding the grouping, the establishing of the relatively homogenous, disjoint sets I used cluster analysis, regarding the hierarchical methods – after trying several ones – I opted for the Ward method (when creating the consumer groups), respectively the non-hierarchical k-medium procedure for the checking (when positioning the settlement from tourism perspective).

• The checking of the grouping was supported by the discriminant-analysis with which I defined/strengthened the discriminating variables that separate the groups and the monitored units were positioned in the given area.

• For interpreting the similarities/differences between the studied elements I opted for the multidimensional scaling. I used them for the visual transparency of the experience expectations.

• For defining the grouping stability I prepared a transition matrix that is suitable for mapping the dislocations. The calculations were also checked.

• I analysed the changes for the period of 2000-2011 based on the specific (suitable for regional comparison) data of the guest nights from among the quantitative secondary data. I applied the shift share analysis to define the effect of the attraction power within the tourism output and the effect of the structure of the accommodation point chosen in the given settlement.

3. RESULTS

3.1. Results of the bibliographic review

The thesis is covering several scientific areas, thus when reviewing the bibliography I processed several topics. These are: 1) general models required for the present research of the consumer and customer behaviour; 2) features and characteristics of the touristic market, the types of tourists and the travel-related decisions; 3) the mathematical, statistical models used for the analyses.

Besides the general consumer and customer behavioural models there is the vast group of models connected to the product groups. Tourism satisfies a well-defined need, in this way the getting to know and evaluation of the consumer behaviour requires special knowledge and tools. The behaviour of the tourist can be modelled less certainly than in case of buying certain products.

The analysis of the *types of tourists* is one of the basic conditions of the destination's success. By knowing the types it is possible to define the categories of the tourists who visit the destination. There were many people among the tourism researchers who grouped the tourists based on a certain criterion system. The various typologies approach the potential segments from various perspectives. The trip needs and habits of the target groups are differentiated, in this way the marketing work focussed on the life-style analysis that is applied in tourism, too. It is not possible to define general time-lasting types. The "consumer of the current period" needs to be known continuously so that the touristic service providers and the service distributors can properly meet the needs of the potential travellers.

The steps of the travel-related decision resemble the purchasing decisions, but noting that the decision involves a higher risk. According to the main models analysed by me the travel-related decisions are strongly influenced by marketing. Separating the demand segments and knowing their characteristics form the main element of the marketing strategies.

I found that for influencing the travel-related decision there is need for the competition between the products and the destinations, thus it is worth considering the destinations as commercial brands because of the transformation of the tourists' expectations and habits.

3.2. Tourism in Jász-Nagykun-Szolnok county

Considering the 78 settlements of the county the guests spent nights at commercial places in 27 settlements (34,6%) and at private houses in 32 settlements (41%). Because of the overlap the number of settlements where guest nights were spent is 37 settlements. The number of private accommodations (other since 2009) is worth mentioning, mostly in the Lake Tisza area. 84,5% of the guest nights was realised through commercial accommodation and the remaining 15,5% is related to the private accommodation. Thus the guest nights are basically concentrated at the commercial places.

3.2.1. The factors affecting the guest traffic

I have evaluated dynamically one of the important indicators that measures the touristic output that is also characterising the demand of guests. The novelty of the analysis is provided by the fact that I performed an effect-ratio analysis for Jász-Nagykun-Szolnok county by using the settlement and small-region data of the period of 2000-2011. When using the method from tourism perspective the evaluations at county respectively region level are more important. Therefore for revealing the spatial differences of tourism I prepared an analysis at settlement level and related to the county average because this is how the settlements whose dynamics stand out / lag behind their environment can be identified.

Considering the variation of the guest nights basically two main groups can be structured based on the relation with the county's average (125,2%) increase, those performing above the county average and those performing below. This fact can be further decomposed with the applied method to regional and structural components (in this case based on the accommodation types). The accommodation types involved in the analysis: hotel, pension, holiday house, community accommodation (tourist, youth hostel), campsite, other.

All the effects result in positive regional effects in the more visited settlements where at the accommodation points the dynamics is more favourable than in case of the type-based dynamics at county level . The structural effect helps in defining which type of accommodation the guests had preferred. The order based on accommodation type means also the qualitative categorisation. The structural effect is positive where the majority of the guests is opting for the hotels of qualitatively higher level, and it is negative if they go for the lower accommodation category.

Types	
0	average performance in tourism
1	above average performance in tourism |+ regional effect| > |+ structural effect|
2	above average performance in tourism |+ regional effect| < |+ structural effect|
3	above average performance in tourism |- regional effect| < |+ structural effect|
4	above average performance in tourism |+ regional effect| > |- structural effect|
5	below average performance in tourism |- regional effect| > |+ structural effect|
6	below average performance in tourism |+ regional effect| < |- structural effect|
7	below average performance in tourism |- regional effect| > |- structural effect|
8	below average performance in tourism |- regional effect| < |- structural effect|
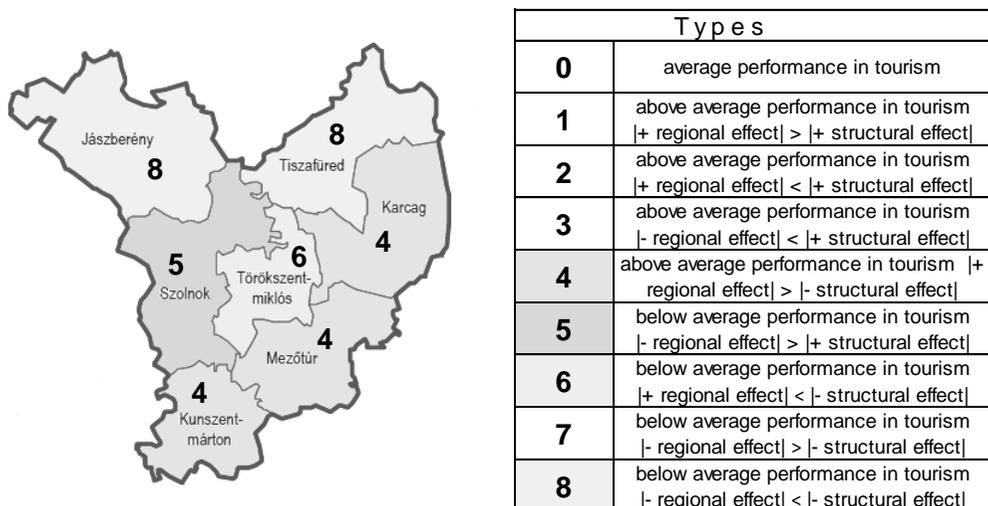
Figure 1: Types of JNSZ county subregions on the basis of the analysis

Combining the result at small regional level the significant part of the positive values of „all the effects" can be shown in the Kunszentmárton small region, and the minor part in the small region of Karcag. This is the result of a settlement in both small regions (Cserkeszőlő, illetve Berekfürdő).

The more than average increase of the guest nights of the further settlements outstanding based on the settlement level is little for being able to prove a positive effect when doing the small region combination. This is proving why it is worth analysing at settlement level. ¾ of the lagging behind the county average is the result of the Szolnok area, and ¼ is the result of the small regions of Jászberény and Tiszafüred.

The analysis to define the effect of the attraction power within the tourism output and the effect of the structure of the accommodation point chosen in the given settlement.

The regression model describing the variation of the guest traffic

For defining the factors that affect the number of guest nights there was a multi-variable linear regression model by using the settlement data of Jász-Nagykun-Szolnok county. Significant (calculated per 1000 constant residents).

Independent variables: commercial accommodation[a] (com_acc_cap _1000resident); private accommodation[b] (priv_acc_cap_1000resident); number of catering businesses[c] (catering_1000resident).

Dependent variable: guest nights (guest_nights_1000lakos).

The number of the commercial accommodation beds have the biggest explaining power ($R^2=0,923$[a]). The next variable, the number of private accommodation beds has much lower force ($R^2=0,967$[a,b]). This is complemented with rather little explanation, but the number of catering points is a mentionable explaining variable ($R^2=0,971$[a,b,c]).

In the prepared multi-variable linear regression model the involved parameters are significant, simultaneously there is connection between the explanatory variables.

Since the model is lacking the variables that in my opinion affect the variation of tourism, either individually or in group, thus I used the significant variables with the omitted variables for the multi-variable analyses.

3.2.2. Analysing the tourism-forming factors with multi-variable methods

The variables that got into the multi-variable linear model are clearly the elements of the tourist supply. In addition there are other background variables, too, that are affecting the tourists. It is important to determine the position of the regions/settlements from touristic perspective because the position is influenced by the competing destinations, too, since as replacement „products" they feature among the tourist's choosing and deciding possibilities.

I processed the data at settlement level in this case, too. Variables, the abbreviations of the variables used in the tables below.

pop_dens: population density
wat_sew: sewerage for 1 km water network
agrb_vent: the number of agricultural business ventures per 1000 inhabitants
comb_vent: the number of commercial business ventures per 1000 inhabitants
acc_prov: accommodation provider per 1000 inhabitatnts, the number of catering businesses
com_acc_cap: accommodation capacity per 1000 inhabitants at commercial accommodation units
priv_acc_cap: accommodation capacity per 1000 inhabitants at private accommodation units
guest_nights: the number of quests nights per 1000 inhabitants

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Table 1: Rotated Component Matrix

	Component	
	1	2
com_acc_cap	,985	,058
priv_acc_cap	,981	,011
acc_prov	,938	-,005
guest_nights	,920	,076
pop_dens	-,155	,807
comb_vent	,157	,801
wat_sew	,167	,790
agrb_vent	,035	-,670

Source: own calculations

Those variables got into the 1. principal component, which are directly related to the guest reception.

The constituents of the 2. principal component are related to the demographic, infrastructural characteristics and the tourism background of the settlements. Negative sign stregthens the rural, while the positive one the urban characteristics.

For confirming the result of the main-component analysis I performed discriminant analysis. I grouped the settlements based on the main-component coordinates.

97,3% of the grouping established based on the main components took place correctly. In this way by using the linear combination of the explanatory variables the discriminating functions assuring the best possible separation became interpretable.

The 1st function is in the strongest connection with the receiving capacity and the tourism output; the 2nd functions contains variables that present the "city-countryside". The 3rd function has little explaining power, it is connected significantly to one variable, that is the population density which indicates the city features in case of the 2nd function.

Table 5
Eigenvalues of Discriminant functions

Func-tion	Eigen-value	% of Variance	Cumula-tive %
1	9,457	56,5	56,5
2	6,675	39,9	96,4
3	,603	3,6	100,0

Table 6
Structure matrix

Variable	Function		
	1	2	3
priv_acc_cap	,722	-,291	-,154
acc_prov	,565	-,227	-,094
com_acc_cap	,559	-,195	-,159
guest_nights	,399	-,139	-,100
comb_vent	,285	,549	-,276
wat_sew	,117	,302	-,249
agrb_vent	-,057	-,261	,227
pop_dens	,078	,487	,777

Source: own calculations

Based on the discriminant analysis the following groups have been established:

Strongly provincial, with insignificant tourism (group 1/16 settlements). The reception capacity and output of the of tourism is weak. Expressively the settlements of low density, living rather from agriculture do belong here. These are the settlements that are very difficult to be developed. Should the development take place in the direction of either dimension, that is little. The development of tourism is not a real chance for us. They can aim at the guests who like the landscape of the plain and the rural village-like region. Simultaneously because of lacking the basic

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infrastructure tourism remains for the population of these settlements only a complementary source of income.

Developing small towns (group 2/17 settlements). Those settlements belong here that are more urban but showing a weak performance from tourism perspective. (In this group 68,4% of the settlements is town.) Here after improving the basic infrastructure the development could be boosted with touristic product development and more active destination marketing.

Considerable tourism performance (groupe 3/3 settlements). The settlements of the county that are leading from touristic perspective. The small regions of Kunszentmárton and Karcag – because of Cserkeszőlő and Berekfürdő – are in leading position at small region level, too. The third settlement in this group is Abádszalók. Half of the guest nights spent in the county belongs to this group. This group proves that it is not the statistical small-region classification that matters. All three settlements belong to different small regions. Their separation proves the existence of the background variables that feature in the study.

Strong city with tourism requiring a correction (groupe 4/1 settlement). The chief town of the county is Szolnok. The possibility of development is not justified by the attraction power but by the infrastructure and the level of supply. In this way the serving of the tourists in transit can be a strength; or organising such events that may provide a bustling environment to the locals and the visitors.
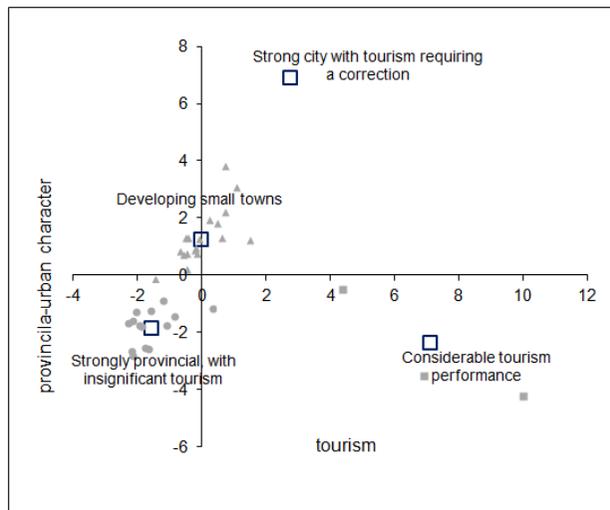

Figure 2: The location of the groups on the basis of the discriminant functions
Source: own research

Stability of positioning

Based on the data I calculated a step-wise transition for analysing the development, catching-up chances and mobility of the settlements organised in four groups.
(The four groups are the 4 status, and only entries different from 0 are marked)

Table 4: Transition matrix

status	Number of settlements				status	Probability values			
	1	2	3	4		1	2	3	4
1	13	2	1		1	0,813	0,125	0,062	
2	1	15		1	2	0,059	0,882		0,059
3			3		3			1,000	
4				1	4				1,000

Source: own calculations

Based on the tourism-related secondary data of the small regions/settlements the position of the settlements can be considered stable. According to my calculations out of the analysed 37 settlements 32 remain in position and 5 may move, out of which 4 into developing direction and the position of 1 worsens. The level of the mobility represented by the moving process described by the transition matrix is 14% for the analysed data.

For answering the questions raised on the basis of the calculations the following chart was prepared as a new result.
The square is a bidimensional status that I reduced from the original variables by applying the main components and the discriminant analysis. In this way the situation of the groups in the two dimensions corresponds to the group centres established by the coordinates. The dislocation of the group centre respectively the elements within the group mean development if it takes place from left to right and/or upward. In this way every group, settlement is able to move in such a way that means development.
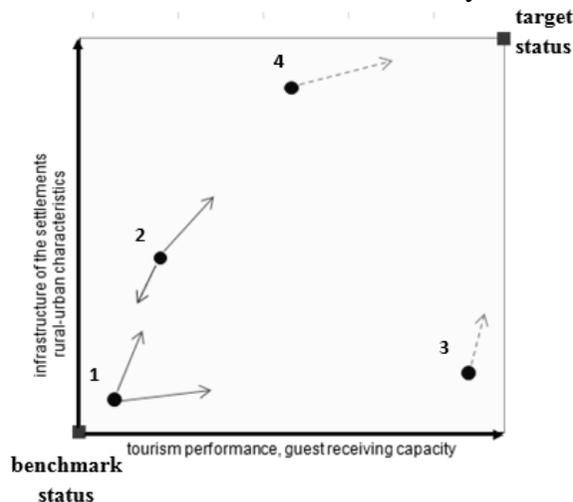

Figure 3: Status space
Source: own research

I made the positioning by using the data of year 2010, too, the result of the basic calculations is identical with the analysis of 2008, the deviation was in the groups.

Table 5

Group	2008.	Forecast	2010.
1	16	14	14
2	17	17	18
3	3	4	3
4	1	2	2

Source: own calculations

The mobility is the forecasted 8,1%.

3.3. Creating the consumer groups

The condition of the proper development of the services offered by tourism consists of knowing the needs and behaviour of the consumer. I made a quantitative research for understanding population's behaviour related to travelling. Based on the characteristics of the data collection the results reflect basically the views and expectations of the city population who likes to travel.

Regarding the grouping of the settlements the rather urban chief city of the county, Szolnok, is rather separated but its tourism needs improvement. Even the special bibliography considers that the "one-element" group is worth dealing with and to be handled properly. In this case it means that the chief town of the county is the subject of a separate study.

The receiving capacity of the city, the characterisation of the touristic performance took place by using the regional database of the central statistical office.

In the city the leading role is played by the hotels and the community accommodation regarding the catering for the guest traffic. These provide almost ¾ of the accommodation capacity and the guests spend 86% of the guest-nights at such accommodation places. The average spending time at the commercial accommodation places is 2,3 days, and it is 4,5 days at the other business accommodation places.

3.3.1. Evaluating the primer information

The primer research was based on a sample consisting of 302 elements. The interval is the age group of 18-75 years. The monitoring took place based on a quantitative (age group) and an alternative qualitative (genders) breakdown, with voluntary selection within the layers. When establishing the sample I tried to realise that the questioned people are people who can be considered to be independent decision-makers and participate in tourism as consumers.

In the study I surveyed the preferred holiday forms as motivations, and on the other hand the frequency and form of the participation in tourism.

The average values of the travelling and participation forms are evident. The evaluation of the holiday frequency shows that the respondents put the ONE holiday / year to the 1st place. Through the increase of age and simultaneously with the increase of the days off it is not the multiple holiday / year but the staying at home gets more value.

Figure 4
The average values of the travelling

wellnes	3,86
cult progr	3,65
gasztro	3,54
sightsee	3,51
family	3,41
walking	3,23
sports	2,99
relax	2,95
rural tour	2,87
fish., hunt.	2,64
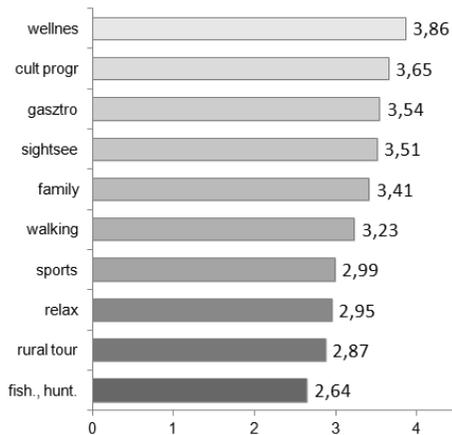
Table 6
The average values of the travelling frequency and participation forms

Characteristics	Order	Average
Frequency		
TRAVEL		
once a year	1.	2,89
several times a year	3.	2,06
STAYING	2.	2,15
Participation form		
Related to water	1.	3,54
Bustling busy	2.	3,44
Town holidays	3.	3,29
Relatives, friends	4.	3,20
Quiet location	5.	3,20
Rural environment	6.	2,69

Source: own calculations

Evaluating the attracting capacity of the town

The significance of the city as a touristic destination consists of motivating by itself the trips, it meets the needs of the tourists and the local population. The respondents classified the listed factors such as the receiving community of the destination. Partly how important they think the factor is as a touristic attraction point, and on the other hand at what level the city is making use of this.
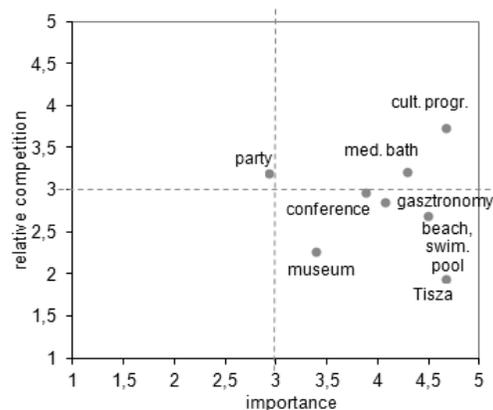

Figure 5: Relative competitiveness
Source: own research

Organising the importance and performance averages in a coordinate system with the origin pushed into the average point (3;3) the factors that got into the 4 new quadrants are presenting the acting suggestions.

In the new 1st quadrant the importance of attraction power is high and the relative competitive capacity is also high. This is an important piece of information because one needs to pay attention so that the position remains or it becomes better along the competitiveness axis.

In the new 4th quadrant there are the factors whose importance is high, the related competitiveness is low. These definitely need improvement.

The new 2nd quadrant contains the elements of low importance but having high competitiveness. Every factor getting here needs to be specified because it is possible that it is not worth spending energy because of the low importance but it might be possible that there are segments where the judgement of importance is higher.

The new 3rd quadrant would have contained the areas of low importance where even the competitiveness is low. None of the factors got here, which is not a problem because it is not worth dealing with them.

3.3.2. Output of the multi-variable data analysis

The consumer groups were established through cluster analysis. I followed the principle of forming disjoint sets that do not contain overlaps. Regarding the hierarchic procedures I used the Ward methods. The grouping of the questioned people took place based on the standardised values of 8 variables, they are: *a) the spa, thermal,. b) exercise.; c.) relaxation, total relaxation; d) touring.; e.) rural environment; f) sightseeing.; g.) quiet holiday; h.) water related recreation.*

By applying the step-wise discriminant-analysis the grouping was correct at 92.1%. The discriminating functions are suitable, every applied variable is significant, they are suitable for separating the groups.

Table 7
Eigenvalues of Discriminant functions

Func-tion	Eigen-value	% of Variance	Cumula-tive %
1	2,935	55,5	55,5
2	2,031	38,4	93,9
3	,322	6,1	100,0

Table 8
Structure matrix

Variable	Function		
	1	2	3
the bustling, hectic holidays	,591	,226	-,080
relaxation, total relaxation	-,540	,304	,103
sports	,327	,287	,323
water related recreation	,323	,023	,298
rural environment	-,297	,475	,383
touring	-,441	,486	,035
sightseeing	,566	,451	-,144
wellness, spa	,085	,077	,917

Source: own calculations

The groups formed from tourism perspective based on the two more significant functions:
1. There is a strong need for the bustling and hustling tourism that can be participating at a city event, or a holiday by a water and it is more favourable if these can be chosen together. They reject the calm and quiet holiday, the rural tourism. *Adventure researching, active tourists.* (67 person – 22,2%)
2. From the perspective of looking for tranquillity it is the opposite of the previous, they are appreciating the rural tourism, but they do not reject the urban programs either. *Tourists looking for relaxation.* (89 person -29,5%)
3. The attitude of this group is sort-of negative toward the analysed holiday forms. They are glad to opt for gastronomy, visiting the relatives and friends that are

performed at family level, but these variable did not get into the analysis. *Family programme earners.* (113 person – 37,4%)

4. Practically this group is not interested in any kind of holiday form. *Uninteresting.* (33 person – 10,9%)
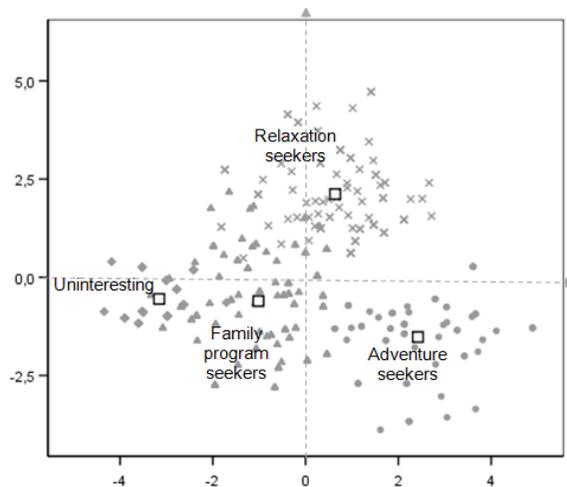

Figure 6: The location of the groups on the basis of the discriminant functions
Source: own research

The established groups are separated, there is a significant difference between them.

Summarising table about the main characteristics of the groups

Regarding the contingency tables those variables got among the defining characteristics where there is a significant correlation between the given variable and the cluster group.

Table 9

Specifications	Group 1.	Group 2.	Group 3.	Group 4.
	Adventure seekers	Relaxation seekers	Family program seekers	Uninteresting
	n=67	n=89	n=113	n=33
genus	-	male	female	-
age	18-25	41-60	26-60	61-75
family life cycle	•young single, •married without children	•married with children under 18, •middle-aged married without children	•married with children 6-18, •middle-aged single	•pensioners
specifically motivated	•cultural events, •sporting	•rural environment •cultural events •sporting •sightseeing	•fishing •gastronomy •touring, •relatives, friends visiting •wellness	•relaxation
frequency	1/year	1/year	•more/year	•stay home
form	•water-related •city vacation	•calm, quiet holiday •which can be in cities	•relatives, friends visiting •prefer too busy	•quiet peaceful holiday(if you do not stay at home)

Source: own research

3.4. Evaluating the secondary travelling motivations

The willingness of the tourists usually is not based on a single motivation. There are surveys that prove that besides the basic motive there are so-called secondary forces that influence the travel-related decision.

The popular water tourism, the tourism of the settlements situated by the water is in the focal point everywhere. There are settlements (Cserkeszőlő, Csongrád, Szeged, Szolnok, Tiszafüred, Tiszakécske) by the river Tisza being analysed whose tourism may probably be influenced significantly by the binding to the water. The water-shore's touristic motivations were analysed based on the results of the analysis made among the participants of the Tisza tourism.

A certain part of the questions corresponds to the national touristic data collection that takes place every year. In this case the research "crossed" the county border which is not disturbing because half of the monitored points is in the county, two are almost along the county limit; and on the other hand as I have already mentioned the regional importance is going to be proved which is essential when analysing the tourism.

The water-shore trips are connected primarily to the summer period, and they are characteristically longish. The average spending time of the respondents was 5,3 days which is exceeding the national average, and corresponds to the season characteristics.

The main motivation of the people visiting the Tisza is the resting. The results show that the programs connected to the water (water trip, beach activity) respectively the programs by the water, festivals, events are influencing the touristic output. The rural holiday practically does not mean a motivating power. It even does not appear at a level in the settlements of the Lake Tisza as it could based on the capacities.

Satisfaction per factor

The answers given in connection with satisfaction actually are the elements that form the image of the destination, out of which I used some to organise into groups that were used by researchers to build up the touristic image. I calculated the averages in threesome segmentation. The first group contains the most important elements, the second group contains the important elements, third contains the less important but still accepted elements.
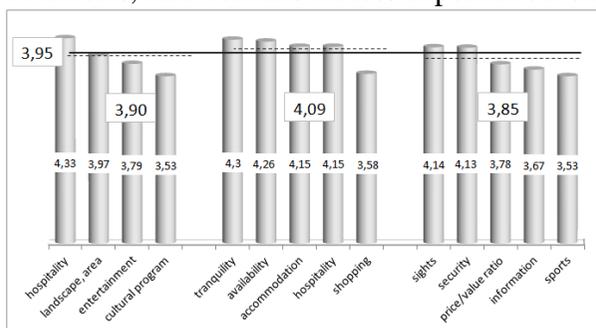

Figure 7: Satisfaction levels image forming options
Source: own research

The image is strongly connected with being known as it was proved by several studies. In our case there is a strong connection between the touristic image and the being known. Consequently the people knowing the destination have a more detailed and positive picture, while those who not visited the destination yet are often more negative.

Systemising the expected factors

The multi-dimensional scaling evaluated the exepectations of the tourists visiting the Tisza, specifying the major dimensions to which they can be narrowed. So placing the variable in a bidimensional emvironment the subjective evaluation of the guests can be revealed.
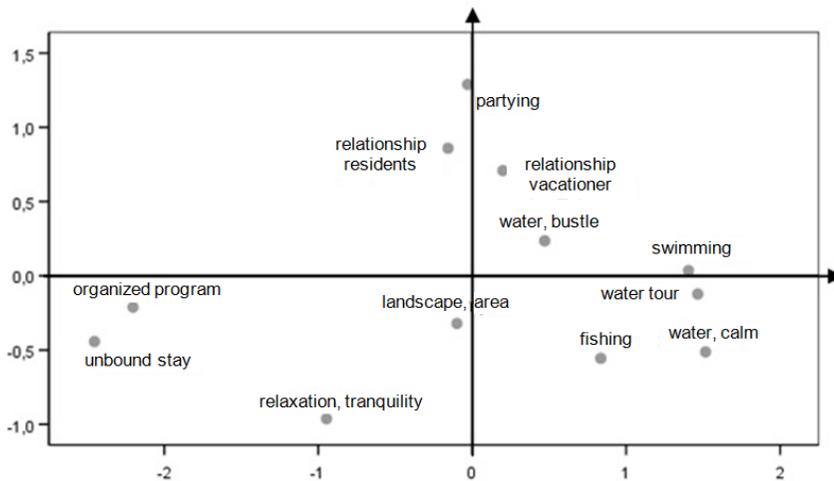

Figure 8: The position coordinates corresponding points
Source: own research

Even without turning the axes can be seen that the 1st dimension refers to the significance of the water-related programs (the farther the point is to the right, the more important role the water has) which is natural since this is the primary motivation, that is why it is reasonable to arrive to such a destination. The 2nd dimension is selecting the expectations based on the strength and intensity of the background programs (the higher the point is, the richer and exciting program the expectation is) thus it is confirming the hypothesis that there is a secondary motivation.

I think it is important to state that the attraction area of the six sites are in majority within a 100 km radius. Basically each venue is visited by those living in the nearby, maybe from the neighbouring counties, and in addition all six Tisza settlements are county limits, too. This also proves that it is required to focus on smaller areas than the 3-county regions since there are differences even within the region.

3.5. The travelling decision model that can be based on the mathematical-statistical methods

Besides the general consumer and customer behavioural models there is need for models that are connected to product groups, in this case they are the travel-related decision making models. Based on their review and the results of the empirical research I established a trip-related decision model whose elements can be studied and proved through mathematical and statistical methods.

The *environment* contains all the factors that are usually mentioned. These are the elements of the macro and micro environment.

The model can be applied for individuals, families or other communities in function with the decision-maker. The owner of the decision problem can be one or more people, so the *needs* have to be examined from this perspective. This is characterising the *travelling possibilities,* too, respectively the *travelling needs* forming their intersection.
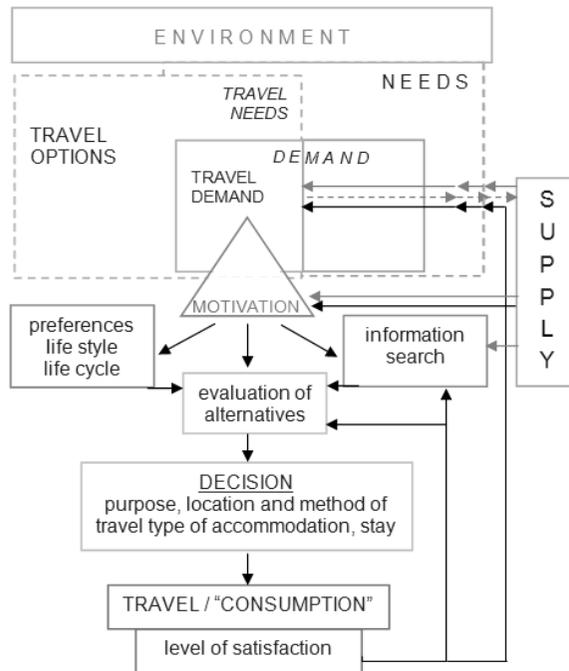

Figure 9: Travel decision-making model is supported by mathematical and statistical methods
Forrás: Saját szerkesztés

According to the rule of the thumb the income and the savings are delimiting the wishes and narrowing it to the level of demand, and a subset of it is the *travelling demand.*

The complex *touristic supply* affecting the travelling demand is the combination of attractive force, the accommodation and catering points and other service providers,

the prices applied by them and the features o the receiving area that can't be measured objectively. When here is available free time – there is no travelling without it – then *motivation* is focussing at the serious thinking of travelling.

The tourists have various motivation characteristics, and even the points going to be visited influence differently, the motivations are causing the various forms of tourism, therefore several studies consider that motivation is one of the elements of the market segmentation. The societal status typology used to be the basis of segmentation for a long time. Simultaneously the *life-style* typologies got in focus showing that the life-style, way of life are the primary bases of the consumer habits. That is why I stressed the life style in a separate model that plays an important role in urging the people to travel, to go for something unknown. The travel-related decision is strengthened by the *life cycle*.

From the perspective of *information searching* I think it is important -that my study has also established – that the tourist's travel-related decision is strongly influenced by his own, the friends', family members' travelling experience – that is the mouth marketing. This – by lacking the sample of goods – is much stronger in the service providing industry than in the area of physical products.

The *alternatives* is the set of the concrete acting possibilities for solving a decision situation, that form the decision environment. The alternatives are characterised by the important fact that their number is finite; they can be independent; but they can be interconnected especially when planning the trips.

At the level of *decision* it is required to take into consideration that the behaviour of the decision-maker can be rational or irrational. The decision theory usually supposes that the decision-maker is rational. As it is known the behaviour of the decision-makers does not always correspond to the strict rationality, in such cases the objective aims at finding a proper possible solution. The majority of the real decisions is influencing the events going to take place in the future whose outcome depends on the chances, in this way the decision contains stochastic factors, too.

Spending time at the chosen destination gives the opportunity to measure and monitor the „consumption". A certain part is also required by the central statistical office, another part can be estimated based on primer research.

A certain part of the models does not mention the *satisfaction* whose measuring and the related conclusions are indispensable. The trip, the obtained experience determine the tourist's satisfaction which depends partly by the quality of the used services and partly by his preliminary expectations. In my study I analysed this with the ratio of the fulfilment of the experience and its expected level.

I applied the approaching, analysis of these elements (except for the life-style analysis) with the mathematical-statistical methods in my study, presenting the possibilities that is the main objective of my thesis.

3.6. New and novel scientific results

I am summarising my new and novel results as follows:

- Regarding the dynamics of the guest nights there is a measureable deviation between the small regions, settlements where one of the reasons is regional, and on the other hand it is shift of proportion when choosing the local accommodation categories. *(Applied method:shift-share analysis)* **T1**

  I have evaluated dynamically one of the important indicators that measures the touristic output that is also characterising the demand of guests The accommodation types involved in the analysis: hotel, pension, holiday house, community accommodation (tourist, youth hostel), campsite, other. When using the method from tourism perspective the evaluations at county respectively region level are more important. I prepared an analysis at settlement level and related to the county average because this is how the settlements whose dynamics stand out / lag behind their environment can be identified All the effects result in positive regional effects in the more visited settlements where at the accommodation points the dynamics is more favourable than in case of the type-based dynamics at county level The structural effect helps in defining which type of accommodation the guests had preferred. The order based on accommodation type means also the qualitative categorisation. The structural effect is positive where the majority of the guests is opting for the hotels of qualitatively higher level, and it is negative if they go for the lower accommodation category. I applied analysis to define the effect of the attraction power within the tourism output and the effect of the structure of the accommodation point chosen in the given settlement.

- Besides the specific features there are similar features that organise the settlements into common, typical groups from touristic perspective, overwriting the small region limits. (*Applied methods: principal component analysis, discriminant analysis.*) **T2**

  In this case it is also essential to process the data at settlement level since this is only way when it can be proved which settlements provide the touristic power of certain small regions. It is important to determine the position of the regions/settlements from touristic perspective because the position is influenced by the competing destinations, too, since as replacement „products" they feature among the tourist's choosing and deciding possibilities. I checked the separation established along the well-definable main axes through the discriminating variables (*Strongly provincial, with insignificant tourism; Developing small towns; Strong city with tourism requiring a correction; Considerable tourism performance* groups). I found that there are similarities between the settlements and they are not definitely identical among those belonging to the same small regions. Simultaneously a small region can become defining if it has a settlement with an outstanding output and the tourists visit it gladly.

- The touristic position of the settlements that are part of the touristic supply – as destinations – can be considered relatively stable in the long run meaning that it is

not flexible regardless the variation of the touristic demand. (*Applied method: Based on Markov transition matrix model.*) **T3**

By applying the one-step transitional probabilities for analysing the development possibilities and the mobility of the settlements organised into groups according to the touristic situation a 2-dimensional status-environment has been formed that shows the development possibility. This can be the joint moving of the entire group or the separation of certain settlements from the group. Based on the transition matrix I found that these groups are relatively stable.

- The segments with touristic criteria of the city population of various objectives can be identified by revealing the preferences and travelling habits, checking the criteria with which the relatively homogeneous groups are being formed. (*Applied methods: cluster analysis, discriminant analysis.*) **T4**

  The majority of the Hungarian population lives in towns. That is why it is essential to get to know the views and needs of the urban population that likes to travel. The "quality" depends also on the type of city where the tourist is living, since the cities have a variety of leisure time products and services that are able to meet the various market needs. Simultaneously it is the local population's living area, too, in this way the question is what is the tourist expecting from the trip compared to his own environment. I surveyed the preferences of the population of a city with county rights. By applying the cluster analysis I assured the forming of the disjoint groups. In this way I separated four groups: *Adventure researching, active tourists; Tourists looking for relaxation; Family programme earners; Uninteresting.*

- Besides the basic motivation inducing the travel there are well-definable secondary motives, too, that help in deciding among the destinations of identical types and it is possible to prepare a map where the subjective criteria of the selection can be organised in an objective transparent system. (*Applied methods:satisfaction index, multidimensional scaling*.) **T5**

  The willingness of the tourists usually is not based on a single motivation. There are the so-called secondary forces, too, that are forming the travel-related decision especially in case of destinations of identical types. For surveying the secondary motivations I chose the water tourism of river Tisza. Through the multi-dimensional scaling – whose utilisation is new in this form – I evaluated the important dimensions to where the tourists' expectation can be narrowed down. In this way I placed the variables in a two-dimensional environment. The 1st dimension refers to the significance of the water-related programs The 2nd dimension is selecting the expectations based on the strength and intensity of the background programs thus it is confirming the hypothesis that there is a secondary motivation.

4. CONCLUSIONS

In the first part of the thesis by using the relevant bibliography I reviewed the system of the notions, general models of the consumer behaviour, I summarised the consumer types and travel-related decision models being formed in the operational system of tourism.

Based on these I took the following conclusions:

- It is useful to get to know the consumer, customer models because in connection with the consumers and the selection process they are a starting point for the new customer behaviour researches, contribute to the understanding of the consumer decision making.

- The getting to know and evaluation of the consumer behaviour requires special knowledge and tools in tourism. The behaviour of the tourist can be modelled less certainly than in case of buying certain products.

- Besides the general consumer and customer behavioural models the models related to the product groups have also spread that are based on the general models, presenting the extent at which the consumer behaviour related to the certain product groups deviate. The travelling decision models are of this kind, too.

- The categorisation of the tourists is one of the main conditions of destination's success. By knowing the types it is possible to define the categories of the tourists who visit the destination. The categorisation of tourists is based on the fact that the individuals have different needs, preferences and differentiated travelling habits. This defines also the needs.

- The tourism models show the participant of what science created it. This is true for the system models, the trip-related decision models and the tourist typology.

The results of my own research

Findings that do not relate to the new and novel results

- Since 2008 the unfavourable change of demand reduced the tourism output, too, since due to the crisis and because of the decreasing salaries there is less mostly for the goods and services that can relatively be omitted, thus the main reason of staying out of tourism is caused by the lack of financial possibilities. Therefore in 2011 only a little more than ⅓ of the population went on travelling, meaning that two-thirds „remained" at home.

- The two most important motivators of the leisure travels are the „entertainment, rest and sport" respectively the „visiting the friends and relatives". At the Lake Balaton the week-end and the longish trips were dominated by the first type, while in the other regions the short trips were characterised by the second type.

- The spending habits of the people coming with tourism purpose (spending at least one night far from their home) differs significantly from the average consumption structure of the visitors.

New and novel results (T1-T5) and hypotheses

	Hypothesis of research		Rela-tion
H1	The general opinion says tourism is an economy stimulating sector, and simultaneously it is not a breakthrough for many settlements since there is no receiving capacity and consequently there are no guests.	True	**T1, T2**
H2	The touristic output is rather differentiated even in Jász-Nagykun-Szolnok county, thus it is required to study the small regions at settlement level.	True	**T1, T2**
H3	There is a measureable difference regarding the variation of guest nights between the small regions/settlements of Jász-Nagykun-Szolnok county and one of the reasons is regional, and the other consists of the structural differential effect of choosing from among the local accommodation categories.	True	**T1**
H4	From the perspective of tourism there are similar characteristics besides the specific features according to which the educated settlement groups differ from the statistical small regions.	True	**T2**
H5	From the perspective of tourism the situation of the settlements of Jász-Nagykun-Szolnok county can be considered stable.	Partially true	**T3**
H6	The touristic motivation can be separated with the traditional socio-demographic features, in this way the age or the related life-cycle can be the basis of the segmentation.	Partially true	**T4**
H7	Besides the basic motivation there are well-definable secondary motives that help in participating in the tourism.	True	**T5**

Significance of the research

- The research achieved its main objective, regarding the certain areas of tourism the various mathematical, statistical methods can be applied if the proper conditions are met.
- The methods applied during the empirical research prove that it is possible and worth researching the demand side of tourism even when there is a significant uncertainty. The marketing work may be aided by the known research results.
- The research reveals where and how the presented methods should be applied in the pretentious education.

Practical applicability

- The studies prepared with the methods may contribute to improving the information level of the decision makers, may enhance the decisions that are built up more solidly and yielding favourable output.
- The preparation of the tourism-developing concept require the accurate positioning of the regions as well as the definition of the situation. In case of one destination this corresponds to the product positioning (as touristic product).
- The results of the research can be recommended to the touristic service providers, the travel agencies and distributors aiding in revealing the needs of the various touristic segments.
- Case studies can be prepared for the educational analyses that can be updated with current data.

5. PUBLICATIONS

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