ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume LX 59 Number 2, 2012

USING THE PRINCIPAL COMPONENT ANALYSIS FOR EVALUATING THE QUALITY OF A TURIST DESTINATION

I. Vajčnerová, J. Šácha, K. Ryglová

Received: November 30, 2011

Abstract

VAJČNEROVÁ, I., ŠÁCHA, J., RYGLOVÁ, K.: *Using the principal component analysis for evaluating the quality of a tourist destination.* Acta univ. agric. et silvic. Mendel. Brun., 2012, LX, No. 2, pp. 449–458

The article deals with problems concerning evaluating the quality of a tourist destination. A tourist destination is a conjunction of products, services, natural resources, culture resources, local people, artificially created attractions and information, due to which it is able to attract a number of visitors. The visitors' satisfaction with a destination depends on the quality of their overall experience that is created on the basis of the cooperation of all actors in tourism in the given area – these are local inhabitants, service providers, public administration workers and destination management. The quality of services is a component of consumer satisfaction and so it is evaluated according to the level of a customer's satisfaction. Sustainable development and the quality of natural environment are parts of the destination quality, too. When evaluating quality it is necessary to define a set of factors (variables) that can be quantified and then to determine the quality of a destination.
The objective of the paper is to create a model for evaluating the quality of a destination on the basis of analysing the importance of individual factors (variables) concerning the quality of a destination. The importance of these factors was determined by relevant responders during a questionnaire survey. For reducing the original number of twenty dependant variables the multidimensional statistical method of analysing the principal components was used. On the basis of similarities in evaluation this method supported clusters of factors – relative dimensions of the quality of a destination. Subsequently a methodology was formulated to evaluate the quality of a destination according to four newly-defined dimensions of quality: Attractions, Services, Marketing management, Sustainability and cooperation.

principal component analysis, variability, factors of destination quality, dimension of quality, evaluating the quality

The United Nations World Tourism Organization UNWTO defines quality as a result of a process that leads to meeting all legitimate needs, requirements and expectations of a customer concerning a service product, all this for an acceptable price in compliance with mutually accepted contract conditions and determining qualitative determinants, such as security, hygiene, availability of tourist services, transparency, authenticity and harmony of tourist activities with human and natural environment. According to Gronsroos (1984) there are two basic components of quality: *technical quality* (which concerns measurable elements that are results of the provided services, for instance physical state, appearance, the cleanness of clothes and so on) and *functional quality* (which concerns the way of providing the service, perceiving this component is more subjective, it can for example be influenced by the environment of the provided services, staff behaviour, the length of waiting time and so on). From what was mentioned above it follows that the quality of a service is a feature of an operation that can be performed on a certain level. However, requirements for this level are set by customers, so

it is inevitable to define the term of quality relatively, too from the point of subjective view according to customer satisfaction. Zeithaml, Bitner, Gremler (2006) claim that service quality is a component of customer satisfaction (other components are product quality and price). Satisfaction is generally perceived as a broad concept while service quality focuses mainly on service dimensions. Many experts have dealt with setting relevant service quality dimensions (e.g. Bruhn, 1996; Berry, 1986; Parasuraman, Zeithaml, 1985) and on the basis of empiric data five main dimensions were defined: the influence of environment on a customer (tangibles), the reliability of services, the sensitiveness of the approach towards a customer (responsiveness), staff qualifications (assurance), empathy.

Tourist destination is defined as *a target area in a given region for which a significant offer of attractions and infrastructure of tourism are typical. In a broader sense these are countries, regions, human settlements and other areas that are typical with their high concentration of tourists, developed services and other tourist infrastructure, the result of which is a great long-term concentration of visitors.* (Pásková, Zelenka, 2002*); it is a place with suitable attractions in connection with tourist facilities and services which a tourism participant has chosen to visit"* (The World Tourism Organization UNWT). The development of a destination is directed by a tourist organization that realizes marketing management. According to Buhalis (2003) a tourist destination is characterized by six components marked as "6 As". It is a primary offer of tourist attractions – natural and cultural-historical potential (Attraction); a secondary offer – accommodation, hostelry, sports-recreational, cultural-social and other facilities (Amenities), a general infrastructure primarily created for local inhabitants' needs (Ancillary services), Accessibility, product packets (Available packets) and the possibility of using sports, cultural and other experience activities (Activities). Middleton and Clarke (2001) claim that a destination as a product of tourism is created by five components, three of which agree with Buhalis (Attraction, Amenities, Accessibility) and the other two are the image and perception of a destination and the price.

According to Palatková and Tittelbachová (2011) it is not easy to define the term of *destination quality*. The first reason is a high subjectivity of the destination visitors' perception and the complexity of a destination as a social-economic system. The second reason is the respect towards residents whose quality perception does not have to be in compliance with the way how visitors or management of a destination perceive it. According to Müller (1995) it is suitable to apply total quality management system (TQM) in a destination as it takes into account overall satisfaction of all involved parties, such as consumers, service providers as well as local inhabitants. Quality has to be defined, it is necessary to follow its development in case of competitors, check it at critical points, utilize information, experience and results of inspections in further development and in continuous adaptation of quality to new requirements. One of the methods of total quality management suitable for destinations is the European *system of integrated quality management* (IQM)[1] that is based on the model of exceptionality EFQM. Its creation was initiated by the European Commission on the basis of published studies that provided the results of the best quality management practice in selected European destinations. The success in the development of tourist destinations depends on the cooperation of subjects that by their activities decide significantly about the success of the whole area. Integrated quality management joins four key elements of a destination in its approach – these are visitors' satisfaction, service providers' satisfaction, the quality of local inhabitants' lives and the quality of the environment.

MATERIAL AND METHODS

For determining groups of similar factors we can use a tool of multidimensional statistic analysis – principal component analysis (PCA). The objective of this analysis is to reduce the original number of described variables by new quantities (artificial) marked as components that summarize the information on original variables at the cost of minimal information loss. These components are mutually independent and they are arranged according to their contribution to explaining the total dispersion of observed variables (Hendl, 2006).

The principal components analysis can be understood as a linear transformation of the original dependent variables into new uncorrelated variables called principal components. The basic characteristic of each principal component is its level of variability – in other words dispersion. Principal components are arranged according to their importance, so according to decreasing dispersion. The most of the information on the variability of original data concentrates in the first component, the least is in the last component (Hendl, 2006).

In the data source n by m matrix $\mathbf{X}(n \times m)$, rows represent objects and columns variables. In this paper, the objects are the responders and the variables are the questions formulated for the respective factors. Even if the number of the original features m is very large, the number of the principal components k explaining a great deal of the variability of the original data can be very small, usually from 2 to 5. Principal Component Analysis

1 The document was published by the European Commission in 2003 as "Qualitest – A Manual for Evaluating the Quality Performance of Tourist Destinations and Services" (www.ec.europa.eu).

(PCA) deals with the decomposition of **X** into a structural part $\mathbf{TP}^T$ and a noise part *E* using the equation

$$\mathbf{X} = \mathbf{TP}^T + \mathbf{E},$$

where $\mathbf{T}(n \times k)$ is a component score matrix and $\mathbf{P}(k \times m)$ is a components weights matrix, **E** is a residua matrix. We call the $\mathbf{TP}^T$ product a principal component model. The residua matrix **E** is not a part of the model, it refers to the data part **X** not accounted for by the model. It is the data part not included in the principal component of the model component $\mathbf{TP}^T$ and indicates the measure of the lack of fit of the real data by the model. A PCA principal component model can be written as

$$\mathbf{X} = \mathbf{t}_1\mathbf{p}_1^T + \mathbf{t}_2\mathbf{p}_2^T + \ldots + \mathbf{E}$$

and solved as follows:

1. Calculate $\mathbf{t}_1$ and $\mathbf{p}_1^T$ from **X** and compute
2. Calculate $\mathbf{t}_2$ and $\mathbf{p}_2^T$ from $\mathbf{E}_1$ and compute
3. Calculate $\mathbf{t}_3$ and $\mathbf{p}_3^T$ from $\mathbf{E}_2$ and compute,

continuing until all *k* components have been computed. The advantage of this procedure is that less variables and a lower dimension are required and, further on, that the original matrix **X** can be split into a structural matrix $\mathbf{TP}^T$ and a noise matrix **E**. If we use an entire model of principal components, **E** should be equal to zero. However, we must find an optimal number *k* of the components to get the best fit for matrix **E** to be almost zero. This is the key idea of the multi-dimensional data analysis: the user must find a number *k* of the principal components for which the residua matrix is as small as possible. A large value of **E** means a bad model and a small value of ***E*** a good model. The terms small, large, good, bad, however, are only qualitative (Meloun, Militký, Hill, 2005).

A PCA result may be visualized using several principal component plots as follows:

Scree Plot is a bar chart of the eigenvalues or the residual variance against the increasing index, order number A of component. It shows the relative value of eigenvalues. It is preferentially used by some authors to determine the number *A* of the "useful" principal components. Cattel[2] describes scree as a place of abrupt change between a vertical wall and the horizontal bottom. The selected "useful" principal components (or factors) then represent the vertical wall while the "useless" principal components (or factors) can be seen as the horizontal bottom. The useful components are then separated by a visible point of abrupt change with the *x* coordinate of this point being the searched-for index value. Another coarser criterion is a rule by which those principal components are used whose eigenvalues are bigger than one. However, a scree plot seems to more unbiased (Meloun, Militký, Hill, 2005).

Plot Components Weights shows the components weights for the first two principal components. In this plot, the distances between variables are compared. A short distance indicates a strong correlation. Also a cluster of similar variables can be found that correlate. This plot can be seen as a bridge between the original and the principal components because it shows the measure in which each original variable contributes to the principal components. Sometimes principal components y_1, y_2, … can be found, named, explained, and assigned a physical, chemical, or biological meaning. Then it can be visualized how every original variable x, $j = 1, \ldots, m$, contributes to the first j principal component y or to the second principal component y. Some of the original variables x contribute a positive weight, some negative. The explanation of component weights can generally be summarized into the following points:

1. The importance of the original variables x_j, $j = 1,\ldots, m$:

   Variables x_j with a high level of variability of the object data are assigned high components weights. In a 2D-chart of the first two principal components, they are then situated very far from the origin. Variables with little importance are situated close to the origin. Determining the *importance of the variables*, we have also determined the variability of the variables: if, for instance, y_1 accounts for 70% of the variability and y_2 only for 5% (as determined from a scree plot), the original variables x_j, $j = 1,\ldots, m$, with high weights in y_1 are thus much more important than the variables x_j with high weights in y_2.
2. Correlation and covariance:

   The original variables x_j, $j = 1,\ldots, m$, close to each other and/or variables x_j with small angles between their position vectors lying on the same side with respect to the origin have high positive covariance and high positive correlations. On the other hand, original variables x_j distant from each other or with high angles between their position vectors are negatively correlated.

Similarly, a components-weights plot for a different pair of significant components can be created (Meloun, Militký, Hill, 2005).

Two research tools that are most often used for measuring the quality of tourism services are Importance Performance Analysis (IPA) and SERVQUAL. IPA is a tool that serves for identifying a relative importance and performance of individual variables that have an impact on the observed issue. IPA is also used by management for identifying factors in which it is necessary to improve the quality of services. SERVQUAL focuses

2 In: Meloun, Militký, Hill, 2005.

on evaluating quality on the basis of the difference between a consumer's expectation and perception (GAP model). The combination of the methods mentioned above is used for surveying service quality in various areas of tourism, such as hotel industry, transportation, travel agencies, congress services and so on (Hudson, 2008).

RESULTS AND DISCUSSION

The quality of a destination depends on many different factors based on the basic definition of a tourist destination and its key attributes. The main dimensions of service quality (the influence of the environment, reliability, responsiveness, staff qualification and empathy) were modified for the needs of a destination where the criteria are slightly different and come out of the basis of a destination as a product and of the principles of integrated quality management that respects the satisfaction of tourists as well as tourist services providers, the quality of local inhabitants' lives and the responsible approach towards the environment. The quality of a destination is measured by customer satisfaction with a complex experience; this complex experience depends on the cooperation of all involved parties and the sustainable development. For evaluating the quality of a destination twenty factors (measurable variables) were set – they are mentioned below. They were formulated on the basis of previous researches and were assigned importance.

The factors of destination quality

1. **Natural attractions** (conditions of a natural character, e.g. climatic, hydrological and morphological circumstances, flora, fauna)
2. **Cultural-social attractions** (sights, cultural facilities, cultural and sports events)
3. **Accommodation** (the structure and level of accommodation facilities)
4. **Boarding** (the structure and level of boarding facilities)
5. **Experience activities** (the structure and level of complementary experience activities)
6. **Transport accessibility** (the accessibility of a destination for visitors, transport infrastructure)
7. **Local transport** (the possibilities of local transportation in a destination)
8. **The accessibility and quality of information** (TIC, direction boards)
9. **Pre-coming communication** (the promotion and distribution of services, reservations)
10. **Friendly welcome by local inhabitants** (their friendly relationship towards visitors)
11. **Product packets** (created product packets, destination products for various market segments)
12. **The image of a destination** (the importance of a destination image, how it is perceived)
13. **The level of service prices and goods prices** (the prices of consumer goods in a destination)
14. **The sense of security** (criminality)
15. **The uniqueness of a destination** (the specificity of a destination, its differences from competition)
16. **Active destination management** (the existence of an active organization that deals with the development of tourism in a destination, creating a positive image of a destination, ensuring marketing activities of tourism and so on)
17. **Cooperation** (Public-Private-Partnership = the cooperation of entrepreneurs – for example hotels, boarding houses, restaurants, wineries – with municipal authorities, tourist information centres, police, managements of national parks etc.)
18. **Respecting economic, ecological and social sustainability** (the conformity of infrastructure building with the natural space of a destination, the protection of cultural heritage – historical buildings, folklore, regional cuisine – the protection of natural environment, involving local inhabitants – local products, local entrepreneurs
19. **The satisfaction of entrepreneurs with activities** (how local entrepreneurs are satisfied with the support of their activities – the support from municipalities, the possibility to get involved into a development plan, consulting activities for gaining subsidies and so on)
20. **Local inhabitants' satisfaction with activities** (how local inhabitants are satisfied with the quality of living in a destination – if the municipality takes their opinions into consideration, if they feel positive or negative impacts of tourism development, for example infrastructure improvement, high concentration of tourists in the area, high prices).

A primary research was conducted for evaluating the importance of twenty individual evaluating factors (variables). The set of 130 responders consisted of academic workers, experts from business practice, workers of destination management and public administration and also local inhabitants of tourist destinations. The importance of each criterion was evaluated by the ten-point Likert scale (1-the factor with the lowest importance, 10- the factor with the highest importance). The partial aim is to divide these 20 factors into a few groups according to their similarities in individual experts' evaluations. It can be expected that even responders evaluating the quality of a destination will answer similarly to individual criteria of the same group and so it could be possible to replace the whole group by one evaluating criterion. In this way only slight distortion in evaluating the whole destination will occur but at the same time the number of evaluating criteria will decrease significantly and so the whole questionnaire will be simplified.

For determining the groups of similar factors we can use the tool of the multidimensional statistic analysis – the principal component analysis (PCA).

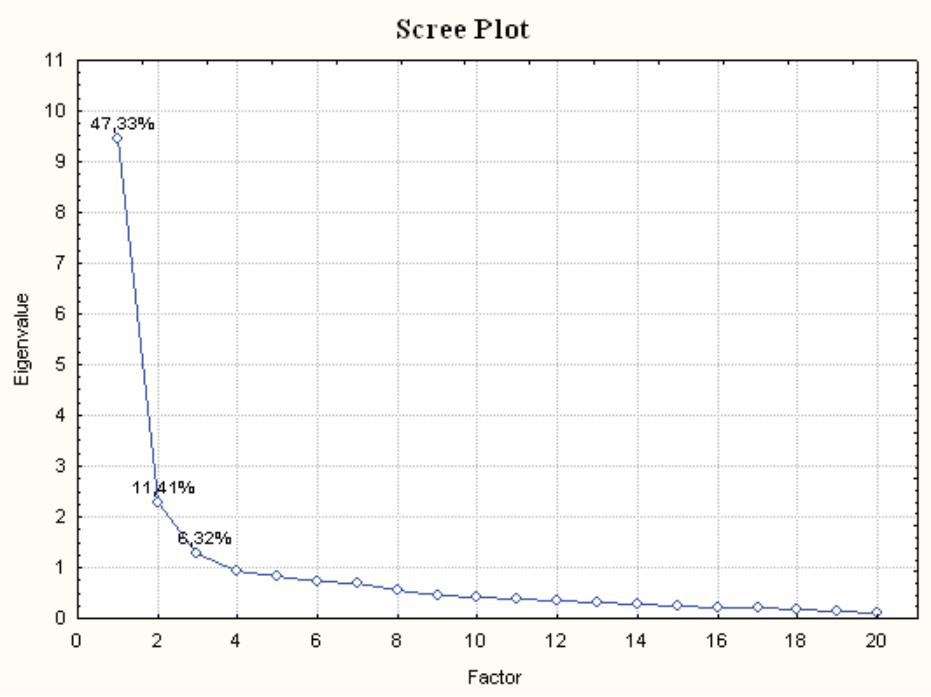
The precondition for using this method is the existence of strongly correlated variables. The correlation matrix did not prove the existence of pairs of extremely dependant variables, so we can expect that the clusters of not very distant variables in the component weights graph will probably not be very distinct. Nevertheless, they should appear and contribute to demarcating groups of similar evaluating criteria.

The Cattel's graph expresses relative sizes of individual principal components. It is evident that the most important first principal component explains almost a half of the variability of variables (47.33%). It will be possible to use the second (11.41%) and the third (6.32%) component in further analyses, the others can be considered unimportant.

The graph of component weights for the first two factors (see Fig. 2) does not provide any distinct

I: *Eigenvalues of individual principal components, source: authors*

Factor	Eigenvalue	% variability	Cumulative eigenvalue	Cumulative % variability
1	8.55	47.49	8.55	47.49
2	1.96	10.91	10.51	58.39
3	1.26	7.01	11.77	65.41
4	0.92	5.13	12.70	70.53
5	0.77	4.26	13.46	74.79
6	0.72	3.98	14.18	78.77
7	0.58	3.20	14.76	81.97
8	0.51	2.86	15.27	84.83
9	0.45	2.49	15.72	87.32
10	0.40	2.25	16.12	89.57
11	0.37	2.06	16.49	91.62
12	0.32	1.77	16.81	93.39
13	0.27	1.49	17.08	94.88
14	0.22	1.23	17.30	96.11
15	0.21	1.16	17.51	97.28
16	0.20	1.10	17.71	98.38
17	0.15	0.83	17.86	99.21
18	0.14	0.79	18.00	100.00



1: *The Cattel's Scree plot, source: authors*

II: *The table of component weights, source: authors*

Variable	Factor 1	Factor 2	Factor 3
1	–0.52	0.66	0.18
2	–0.66	0.50	–0.01
3	–0.71	0.30	–0.26
4	–0.76	0.25	–0.29
5	–0.73	0.21	–0.06
6	–0.63	–0.04	–0.47
7	–0.65	0.06	–0.44
8	–0.76	0.23	–0.01
9	–0.77	–0.07	0.08
10	–0.70	0.14	0.40
11	–0.72	–0.27	0.03
12	–0.71	0.09	0.38
13	–0.75	0.06	–0.12
14	–0.74	0.06	–0.05
15	–0.44	0.32	0.54
16	–0.72	–0.36	0.00
17	–0.58	–0.56	0.20
18	–0.67	–0.54	0.09
19	–0.71	–0.42	0.00
20	–0.72	–0.45	0.04

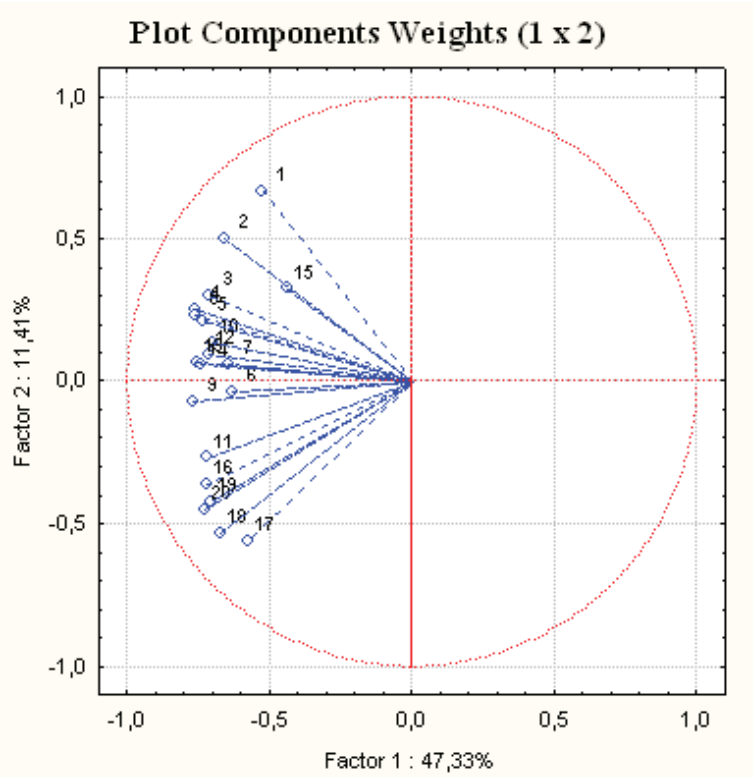
clusters of similar variables. The points in the graph for individual variables lie in the left part, which is caused by the negative first factor coordinate for all variables. The importance of the first principal component can be interpreted as *"the demandingness of an evaluator"* and the very similar first factor coordinate for all variables means that *"a demanding evaluator"* will mark all evaluating criteria low; on the other hand *"a non-demanding evaluator"* will evaluate them high. So from the view point of creating clusters of variables the first component is uninteresting.

The graph of component weights for the second and third factor (Fig. 3) already shows certain clusters of similar variables (the factors of a destination quality). The points that are further from the origin express a high dependency of a variable on the second and the third component; on the other hand the variables shown near the origin give evidence of the independence on the factors. These are variables with order numbers 5, 8, 9, 13 and 14 that will not be considered during creating clusters in the first phase and they can possibly be ranked to arisen clusters rather according to the word meaning of the evaluating criterion.

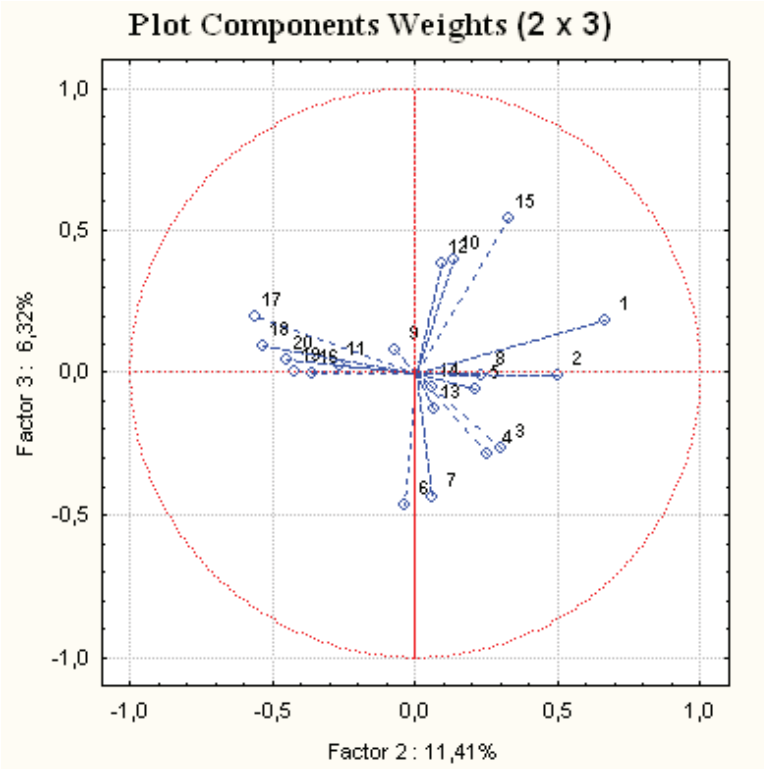
The other variables can be divided into groups according to the weight graph for the second and the third factor:

- 1, 2
- 11, 16, 17, 18, 19, 20
- 10, 12, 15
- 3, 4, 6, 7.

As shown by the graph of component weights for the second and third principal component (Fig. 3), the variables 1 and 2 are positively correlated with the 2nd component and they are in contradiction



2: *Plot component weights for factors 1 and 2, source: authors*



3: *Plot component weights for factors 2 and 3, source: authors*

with the negatively correlated variables 11, 16, 17, 18, 19, 20. The responders who assign a high importance to the attractions of a destination evaluate the factors of sustainability and cooperation lower and vice versa. The variables 10, 12 and 15 evaluating a friendly welcome, the image and the uniqueness of a destination (quantifying some elements of marketing management) are positively correlated with the 3rd component and negatively correlated with the variables 3, 4, 6 and 7 evaluating the area of services. The responders assigning a high importance to the uniqueness, image and atmosphere of a destination do not consider services to be as important – and vice versa. According to the importance of an evaluating criterion we can also add variables 5, 8 and 9 into these groups. The variables 13 (value of money) and 14 (the sense of security) are so specific and their factor weights are even the lowest that it was considered whether to add them to further analyses or whether to omit them. At the end they were included into further calculations.

The analysis of the principal components supported dividing the variables on the basis of evaluating their importance into 4 clusters that are the foundation for formulating the relative **dimensions of destination quality**.

Attractions: The influence of the environment on a customer (primary offer):
- natural attractions
- cultural-social attractions.

Services: the comfort and security (secondary offer):
- accommodation
- boarding
- experience activities
- transport accessibility
- local transportation
- the sense of security.

Marketing management:
- the availability and quality of information
- pre-coming communication
- the quality of welcoming
- the image of a destination
- the uniqueness of a destination.

The sustainability and cooperation:
- products, packets
- active destination management
- private-public-partnership
- respecting sustainability
- entrepreneurs' satisfaction with activities
- local inhabitants' satisfaction with activities
- the value of money.

The figures mentioned in table III. express an average evaluation of importance for individual factors of destination quality in case of all inquired experts. All factors are evaluated in the interval from 7.02 to 7.95 within the ten-point scale. The results show that all factors were selected suitably, so they significantly influence the quality of a destination and all 20 factors have to be evaluated. There were

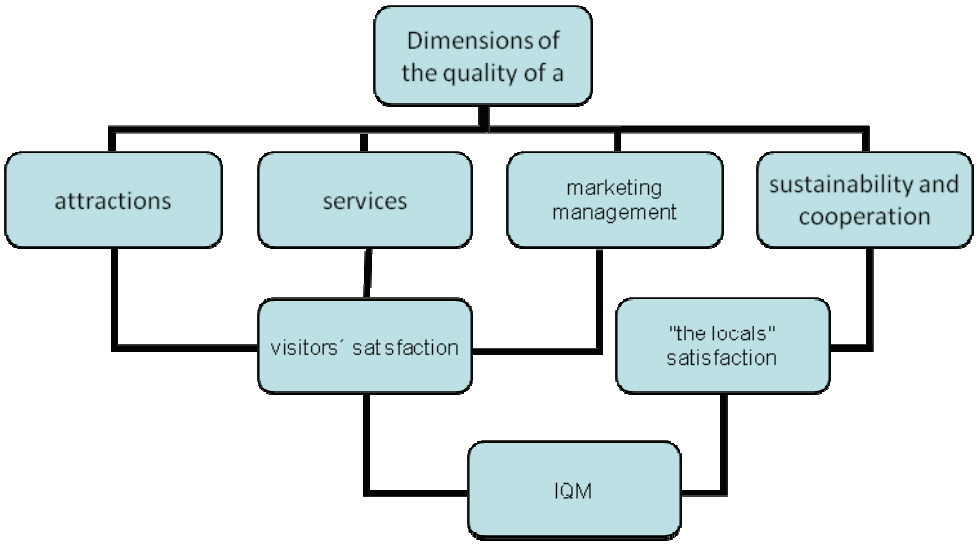
III: *The dimensions of quality formulated on the basis of PCA concerning the factors of destination quality, source: authors*

	Variable	Dimensions of the quality of a destination			
		attractions	services	marketing management	sustainability and cooperation
1	Natural attractions	7.82			
2	Cultural-social attractions	7.85			
3	Accommodation		7.65		
4	Boarding		7.66		
5	Experience activities		7.62		
6	Transport accessibility		7.49		
7	Local transport		7.27		
8	The accessibility and quality of information			7.75	
9	Pre-coming communication			7.44	
10	Friendly welcome by local inhabitants			7.73	
11	Product packets				7.02
12	The image of a destination			7.79	
13	The level of service prices				7.63
14	The sense of security		7.73		
15	The uniqueness of a destination			7.95	
16	Active destination management				7.58
17	Cooperation				7.49
18	Respecting sustainability				7.47
19	The satisfaction of entrepreneurs with activities				7.33
20	Local inhabitants' satisfaction with activities				7.48

no missing factors mentioned in the open question of the questionnaire.

The original 20 factors of a destination quality were replaced by four dimensions of quality with minimal loss of information. On the basis of these dimensions the quality of a destination can be evaluated. The elements of integrated quality management (visitors' satisfaction, service providers' satisfaction, the quality of local inhabitants' lives and the quality of the environment) are applied by force of evaluating the satisfaction in case of relevant groups of responders (visitors and so called locals).

The analysis of principal components supported the creation of clusters that laid the foundations for the dimensions of quality. Tab. III shows that the dimensions of Attractions, Services and Marketing



4: *The model of evaluating the quality of a tourist destination, source: authors*

management are created by sets of factors that can be evaluated by visitors to a destination on the basis of their experience. The dimension of Sustainability and cooperation consist of seven factors, five of which (16–20) are unable to be evaluated by a visitor. Only so called locals can express the experience and so the level of satisfaction with them. So, visitors evaluate the first three dimensions, "the locals" the last fourth one. On this level a qualitative research will come into question, the mentioned dimension can also by evaluated on the basis of a depth interview.

The example of formulating the questionnaire for evaluating destination quality: On the scale 1–10 (1 = I am completely unsatisfied, 10 = I am completely satisfied) determine your degree of satisfaction with the level of:

1. Attractions in the destination,
2. Services in the destination,
3. Marketing management in the destination,
4. Sustainability and cooperation in the destination.

The verification of the above mentioned methodology concerning evaluating the quality of a destination for concrete destinations is an issue of further research.

SUMMARY

The article deals with problems concerning evaluating the quality of a tourist destination. The objective of the paper is to create a model for evaluating the quality of a destination on the basis of analysing the importance of individual factors (variables) concerning the quality of a destination. The importance of these factors was determined by relevant responders during a questionnaire survey. For reducing the original number of twenty dependant variables the multidimensional statistical method of analysing the principal components was used. On the basis of similarities in evaluation this method supported clusters of factors – relative dimensions of the quality of a destination. Subsequently a methodology was formulated to evaluate the quality of a destination according to four newly-defined dimensions of quality.

For practical usage a simplified questionnaire can be formulated where responders will evaluate only 4 dimensions of quality instead of twenty factors – Attractions, Services, Marketing management, Sustainability and cooperation. Within the frame of benchmarking competitive destinations can be compared when at the same time the evaluation is based on the principle of integrated quality management. This universal method is applicable to all types of destinations, it will primarily help identify the strengths and weaknesses of destination quality and at the same time by quantifying original variables it enables the analysis of necessary dimensions into concrete factors that have to be improved. For the comparison or possibly benchmarking of the quality of random destinations it is inevitable to define the evaluated destination and to conduct a primary research of visitors' as well as so called "locals'" satisfaction.

Acknowledgement

The results presented in this paper are part of the University research project No. VZ: 62156 48904 „Czech Economy in a Process of Integration and Globalisation …", which is conducted with support of Ministry of Education of the Czech Republic.

REFERENCES

BERRY, L. L., PARASURAMAN, A., 1991: *Marketing Services: Competing Through Quality*. 1st ed. New York: Free Press, 212 p. ISBN 0-02-903079-X.

BOOMS, B. H., BITNER, M. J., 1981: *Marketing strategies and organizational structures for service firms.* In Donnelly, J. H. and George, W. R., Marketing of Services. Chicago: American Marketing Association, p. 47–51.

BRUHN, M., 1996: Qualitätsmanagement für Dienstleistungen. Grundlagen, Konzepte, Methoden. Gabler Verlag: Berlin.

BUHALIS, D., COSTA, C., 2006: *Tourism business frontiers: consumers, products and industry*. 1st ed. Oxford: Elsevier, 273 p. ISBN 0-7506-6377-4.

GRÖNROOS, C., 2007: *Service Management and Marketing: Customer Management in Service Competition*. 3rd rev. edition. New York: John Wiley & Sons, 496 p. ISBN 0470-02862-9.

HENDL, J., 2006: *Přehled statistických metod zpracování dat: analýza a metaanalýza dat*. 2. vyd. Praha: Portál. 583 s. ISBN 80-7367-123-9.

HUDSON, S., 2008: *Tourism and Hospitality marketing.* 1st edition. London: SAGE, 467 p. ISBN 978-1-4129-4686-5.

MELOUN, M., MILITKÝ, J., HILL, M., 2005: *Počítačová analýza vícerozměrných dat v příkladech.* 1. vyd. Praha: Academia. 449 s. ISBN 80-200-1335-0.

MIDDLETON, V. T. C., CLARKE, J. R., 2001: *Marketing in Travel and Tourism*. 3nd ed. Oxford: Butterworth Heinemann, 487 p. ISBN 0750644710.

MÜLLER, H., 1995: Q“ FOR YOU – eine Qualitätsoffensive in Feruenirteb. In: *Jahrbuch der Schweizwrischen Tourismuswirtschaft 1994/95*, Institut für Tourismus und Verkehrwirtschaft an der Hochschule St. Gallen.

PALATKOVÁ, M.; TITTELBACHOVÁ, Š., 2011: Analýza systému řízení kvality v sektoru turistických informačních center v České republice. In: *Sborník recenzovaných příspěvků z mezinárodní vědecké konference Hotelnictví, turismus a vzdělávání*. Prague: Vysoká škola hotelová v Praze 8, spol. s r. o., p. 205–217. ISBN 978-80-87411-15-5.

PÁSKOVÁ, M., ZELENKA, J., 2002: *Výkladový slovník cestovního ruchu*. Prague: MMR,. 448 p. ISBN 80-239-0152-4.

VAJČNEROVÁ, I., 2011: IQM of a tourism destination as a tool of competitiveness. In: *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*. LIX, 2, MZLU in Brno, p. 407–412. ISSN 1211-8516.

ZEITHAML, V. A., BITNER, M. J., GREMLER, D. D., 2006: *Services Marketing: Integrating Customer Focus Across the Firm*. 4nd ed. Boston: McGraw-Hill,. ISBN 007-124496-4.

ZEITHAML, V. A., PARASURAMAN, A., BERRY, L., 1990: *Delivering Quality Service*. New York: The Free Press, 226 p. ISBN 0029357012.

A Manual for Evaluating the Quality Performance of Tourist Destinations and Services. Enterprise DG Publication. Denmark: RAMBØLL Water & Environment, 2003. 52 p. Available from: <http://ec.europa.eu/enterprise/tourism/docs/studies/evaluating_quality_pe rformance /qualitest_manual_en.pdf>.

Address

Ing. Ida Vajčnerová, Ph.D., doc. Ing. Kateřina Ryglová, Ph.D., Ústav marketingu a obchodu, Ing. Jakub Šácha, Ústav statistiky a operačního výzkumu, Mendelova univerzita v Brně, Zemědělská 1, 613 00 Brno, Česká republika, e-mail: ida.vajcnerova@mendelu.cz, katerina.ryglova@mendelu.cz, jakub.sacha@mendelu.cz