Spatial potential as an aspect of territorial competitiveness

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Abstract

States, regions, cities and villages are nowadays forced to compete for attention, the interest and respect of clients, as well as the users of the territory in question (visitors, business people, investors, gifted and agile workforce). The value of a territory is created by its potential, which may have material or immaterial character. A territorial plan not only complexly resolves the spatial arrangement and functional use of a territory but also creates the prerequisites for the permanently sustainable development of a municipality. The aim of the research was the assessment of the potential participation barriers in the implementation of selected environmental management instruments and their impact on permanently sustainable development of urban settlement as well as to develop the recommendations to make this action more effective. On the basis of a research it is possible to assess identified participation barriers using a method of mathematical statistics – Analysis of variance (ANOVA). Through a process of risk assessment and subsequently its implementation into strategic documents on territorial management, the increased competitiveness of the territorial unit can be expected.

Keywords: assessment, analysis of variance, barriers of participation, territorial plan, competitiveness.

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1. Introduction

Planning is the efficient managerial method by which the complex and systemic utilization of development potential is maximized by Wywrich (2016). The aim of its implementation is to create the most objective and most realistic alternative for the effective and balanced spatial development which reflects the ideas and requirements of all the entities participating in its administration and use (Ye, 2014). In seeking trends and making assumptions in terms of an individual region´s development success rate, most sources share the opinion that the quality of the human and social potentials is the main condition for success (Stofko, Soltes & Stofkova, 2016). The fact that the alienation of citizens and a loss of interest in the development of public matters is one of the main problems of modern democracies i.e. not only in the Slovak Republic (SR) and the Czech Republic (CZ), which is a paradox of the present (Gabrhel & Hrazdilova, 2015). In the context of the creation and management of networks, partnership, and participation based on mutual confidence as one of the competitive advantages of the White Carpathian Euroregion, the authors concentrate their attention on the specific relations between the user entities in the territory in question(Lajcin, Slavikova & Frankovsky, 2014)

2. Research methodology

Data collection was performed by electronic on-line research as well as standardized written questioning by means of a questionnaire, the so called exploration method i.e. primary data collection. The on-line research procedure was as follows:

- The final version of the questionnaire was programmed into web form and placed on the Internet and social networks

- after successful testing of the questionnaire, respondents were contacted by e-mail containing the research e-mail address and login data

- Information about the research status, fulfilment of quotas and interim statistics were collated during the on-line research. Data collection finished once the sample size and quotas were fulfilled

- The collected data were checked for consistency, trustworthiness and the logical continuity of responses whereby wrong responses (dialogues) were removed. The statistical characteristics of the respondents were then added and the data processed with the use of a statistical programme (Betakova,Dvorsky & Haviernikova, 2014).

Obtaining information on the opinions, knowledge or approaches of a large number of respondents is the preference of this method. The data may be processed and compared and are more reliable and objective than those obtained through interviews. The processes involved in the creation and valuation of social capital and on the perception of security in the White Carpathians Euroregion is the focus of our analysis.

3. Methodology of the analysis of variance of selected barriers to participation

The analysis of variance is a method of mathematical statistics that enables us to verify whether a statistical feature has a significant influence on the evaluation of selected participation barriers by respondents. The nationality of the respondent is the statistical feature in our research. Respondents are classified by means of a basic statistical method (simple classification) into two groups. The aim of the analysis of variance is to find whether respondents in selected countries evaluate the selected participation barriers comparatively. To verify this, the overall variability (the sum of squares of variances of a variable from its average) is divided into an inner variance within a group and a variance between groups (difference of group averages). The verification was conducted by means of the

parametric F-test. The F-test is calculated as the ratio of intergroup and intra-group variability. Two conditions have to be met for the F-test to be applicable – normality of respondents' evaluation in each research group and homoscedasticity. Homoscedasticity is verified by Cochran's, Bartlett's and Levene's tests, whereas the normality of the groups according to a statistical feature – the $Pearson\ \chi^2 test$ - with regards to the number of respondents. Unless the precondition of variance identity (homoscedasticity) is met, the Kruskal-Wallis test of medians of respondent evaluations is applied. Numeric calculation of all the applied tests is performed at a significance level of 0.05 i.e. a type I error is tolerated by Rampaso, De Souza and Flores (2016). The individual responses related to the barriers were expressed on a scale of 1 – 10, whereby 1 represents the lowest impact and 10 the highest impact. As the analysis of variance numerical processing is complicated, STATGRAPHICS CENTURION XV software was utilized Dvorsky, Zeman and Betakova (2015).

The analysis of variance of the selected barriers consists of the following stages:

- Calculation of *selection characteristics* (average, variance, standard deviation) from the particular case study for the selected barriers in the countries
- Determination of the suitability of the application of *parametric or non-parametric* tests on the barrier subject to variance analysis with regard to the conditions for their implementation
- Determination of whether the mean values of the selected barriers between the individual countries are identical by *testing* assumptions of the averages of selected barriers by means of the parametric F-test and non-parametric Kruskal-Wallis test.

4. Analysis of variance of selected barriers to participation from local and public administration

A list follows of the selected participation barriers from local and public administration:

- Insufficient government effort to accept the participation approach
- Unwillingness of the project administration apparatus to give up control over project activities and directives
- Lack of stimuli and skills of project staff that would encourage them to accept the participation approach
- Limited abilities among local level organizations and insufficient investment in the creation of community opportunities
- Much delayed commencement of participation and lack of belief that things can be changed
- Mistrust between the government and the parties at local level

From the formulation of the participation barriers from local and public administration it is possible to put forward a subjective opinion on the dissatisfaction of inhabitants of the White Carpathians Euroregion. It could be said that with regards to the historic interconnection between the countries and their cultural traditions that the statistic feature – nationality – may not have a significant influence on the respondent's evaluation of the selected barriers. This statement will be verified my means of the mathematical statistics method - analysis of variance - on selected evaluations of the barriers. Should the statement be confirmed, attempts will be made to clarify disparate and contradictory claims through discussions in the given expert-scientific sphere. These discussions will also apply to the preparation and expression of the research conclusions.

4.1. Insufficient government effort to accept the participation approach

The aim is to determine by means of statistical methods whether a respondent's nationality affects the mean values of the scaled responses to the above referenced barrier. To achieve this, an "analysis of variance" was conducted i.e. a comparison of the mean values of insufficient government effort to accept the participation approach according to the origin of inhabitants. It is necessary to know the basic selection characteristics (BSCs) of the respondent groups. These are given in Table 1. These are μ – the average value of the responses to the 4.1 participation barrier and δ^2 – variance of responses to the 4.1 participation barrier.

Table 1. Basic selection characteristics of the 4.1participation barrier

BSCs	SR	CR
μ	6.25	5.98
σ^2	4.74	1.19

An analysis of variance utilizing the parametric F-test is possible if two basic conditions are met:

- Homoscedasticity – determination of the variance of individual groups according to a respondent´s nationality according to the following tests: Cochran's test: p-value = 0.198; Bartlett's test: p-value = 0.085; Levene's test: p-value = 0.363. The individual test results show that the p-value is always greater than the significance level of 0.05. For this reason the assumption with regards to the individual groups is not rejected and the assumption of homoscedasticity of the parametric test is confirmed

- The normality of the selection sample in the individual groups of respondents according to nationality is tested using the Pearson χ^2 test. The resulting values for the groups of respondents in the individual countries are: p-value = 0.251 for the Slovak Republic; p-value = 0.745 for the Czech Republic. We can observe from the results that both the respondent groups according to nationality have p-values greater than the level of rejection of normality at the significance level of 0.05, so the assumption of normal distribution of data in each group has been met

The previous calculations confirmed that the conditions were met for the application of analysis of variance using the parametric F-test. The following step is to analyse the variance itself. By doing so the mean values for the participation barrier - insufficient government effort to accept the participation approach – can be compared for the involved countries.

Table 2. Analysis of variance of the 4.1 participation barrier

Variance	Sum of squares	Df	Average of squares	F-ratio	P-value
Between groups	10.4	1	10.4	3.50	0.0401
Inside groups	1062.7	358	2.968		
Total	1069.1	359			

The analysis of variance in Table 2 splits the barrier variance evaluation into two components: variance of evaluation between the involved countries and the internal variance in the countries. The F-test is the ratio between them, which in this case equals 1.48. As the p-value is 0.0401 i.e. lower than the significance level of 0.05, we can refute the claim that the differences between the mean values of the respondent evaluation with a confidence level of 95.0% are statistically insignificant.

4.1. Unwillingness of the project administration apparatus to give up control over project activities and directives

The aim is to determine by means of statistical methods whether a respondent's nationality affects the mean values of the scaled responses to the above referenced barrier. To achieve this an "analysis of variance" was conducted i.e. a comparison of the mean values of the unwillingness of the project administration apparatus to give up control over project activities and directives according to the origin of inhabitants. It is necessary to know the basic selection characteristics (BSCs) of the respondent groups. These are given in Table 3.

Table 3. Basic selection characteristics of the 4.2 participation barrier

BSCs	SR	CR
μ	2.79	3.8
σ^2	1.78	0.18

An analysis of variance utilizing the parametric F-test is possible if two basic conditions are met:

- Homoscedasticity – determination of the variance of individual groups according to a respondent's nationality according to the following tests: Cochran's test: p-value   = 0.356; Bartlett's test: p-value = 0.457; Levene's test: p-value = 0.437. The individual test results show that the p-value is always greater than the significance level of 0.05. For this reason the assumption with regards to the individual groups is not rejected and the assumption of homoscedasticity of the parametric test is confirmed

- The normality of the selection sample in the individual groups of respondents according to nationality is tested using the Pearson χ^2 test. The resulting values for the groups of respondents in the individual countries are: p-value = 0.741 for the Slovak Republic; p-value = 0.675 for the Czech Republic. We can observe from the results that both the respondent groups according to nationality have p-values greater than the level of rejection of normality at the significance level of 0.05, so the assumption of normal distribution of data in each group has been met

The previous calculations confirmed that the conditions were met for the application of analysis of variance using the parametric F-test. The following step is to analyse the variance itself. By doing so the mean values for the participation barrier - unwillingness of the project administration apparatus to give up control over project activities and directives – can be compared for the involved countries.

Table 4. Analysis of variance of the 4.2 participation barrier

Variance	Sum of squares	Df	Average of squares	F-ratio	P-value
Between groups	7.51	1	7.51	7.61	0.0061
Inside groups	353.144	0.358	0.986		
Total	360.656	0.359			

The analysis of variance in Table 4.2 participation barrier in Table 4.,splits the barrier variance evaluation into two components: Variance of evaluation between the involved countries and the internal variance in the countries. The F-test is the ratio between them, which in this case equals 7.61. As the p-value is 0.0061 i.e. lower than the significance level of 0.05, we can refute the claim that differences between the mean values of the respondent evaluation with a confidence level of 95.0% are statistically insignificant.

5. Analysis of variance of selected barriers to participation from local and public administration

A list follows of the selected participation barriers from process participants – citizens and all the other economic entities:

- •Lack of time

- •Lack of funds

- •Lack of expertise

- •Indifference

- •Too complicated procedures

- •Lack of knowledge of participation options

From the formulation of the participation barriers from process participants i.e. citizens and all other economic entities, it is possible to put forward a subjective opinion on the uniqueness of each individual human being even if they live in the same White Carpathians Euroregion. It could be said that the statistic feature – nationality - may have a significant influence on the respondent's evaluation of the selected barriers. This statement will be verified my means of the mathematical statistics method - analysis of variance - on selected evaluations of the barriers.

5.1. Lack of time

The aim is to determine by means of statistical methods whether a respondent's nationality affects the mean values of the scaled responses to the barrier **lack of time**. To achieve this an "analysis of variance" must be conducted i.e. a comparison of the mean values of the lack of time according to the origin of inhabitants. It is necessary to know the basic selection characteristics (BSCs) of the respondent groups. These are given in Table 5.

Table 5. Basic selection characteristics of the 5.1 participation barrier

BSCs	SR	CR
μ	1.69	3.21
σ^2	0.41	0.96

An analysis of variance utilizing the parametric F-test is possible if two basic conditions are met:

- Homoscedasticity – determination of the variance of individual groups according to a respondent's nationality according to the following tests: Cochran's test: p-value = 0.133; Bartlett's test: p-value = 0.145; Levene's test: p-value = 0.263.The individual test results show that the p-value is always greater than the significance level of 0.05. For this reason the assumption with regards to the individual groups is not rejected and the assumption of homoscedasticity of the parametric test is confirmed

- The normality of the selection sample in the individual groups of respondents according to nationality is tested using the Pearson χ^2 test. The resulting values for the groups of respondents in the individual countries are: p-value = 0.116 for the Slovak Republic; p-value = 0.554 for the Czech Republic. We can observe from the results that both the respondent groups according to nationality have p-values greater than the level of rejection of normality at the significance level of 0.05, so the assumption of normal distribution of data in each group has been met

Table 6. Analysis of variance of the 5.1 participation barrier

Variance	Sum of squares	Df	Average of squares	F-ratio	P-value
Between groups	265.22	1	265.22	388.55	0.000
Inside groups	244.37	358	0.682		
Total	509.59	359			

The analysis of variance in Table 6 splits the barrier variance evaluation into two components: variance of evaluation between the involved countries and the internal variance in the countries. The F-test is the ratio between them, which in this case equals 388.55. As the p-value is 0.000 i.e. lower than the significance level of 0.05, we can refute the claim that differences between the mean values of the respondent evaluation with a confidence level of 95.0% are statistically insignificant.

5.2. Lack of funds

The aim is to determine by means of statistical methods whether a respondent's nationality affects the mean values of the scaled responses to the barrier **lack of funds**. To achieve this an "analysis of variance" must be conducted i.e. a comparison of the mean values of the lack of funds according to the origin of inhabitants. It is necessary to know the basic selection characteristics (BSCs) of the respondent groups. These are given in Table 7.

Table 7 Basic selection characteristics of the 5.2 participation barrier

BSCs	SR	CR
μ	6.32	1.18
σ^2	1.89	0.25

An analysis of variance utilizing the parametric F-test is possible if two basic conditions are met:

- Homoscedasticity – determination of the variance of individual groups according to a respondent's nationality according to the following tests: Cochran's test: p-value = 0.168; Bartlett's test: p-value = 0.173; Levene's test: p-value = 0.229. The individual test results show that the p-value is always greater than the significance level of 0.05. For this reason the assumption with regards to the individual groups is not rejected and the assumption of homoscedasticity of the parametric test is confirmed

- The normality of the selection sample in the individual groups of respondents according to nationality is tested using the Pearson χ^2 test. The resulting values for the groups of respondents in the individual countries are: p-value = 0.041 for the Slovak Republic; p-value = 0.478 for the Czech Republic. We can observe from the results that both the respondent groups according to nationality have p-values greater than the level of rejection of normality at the significance level of 0.05, so the assumption of normal distribution of data in each group has been met

The results show that the respondent valuation group from the Slovak Republic is not subject to normal distribution because the resulting p-value is lower than the rejection level of normality at the significance level of 0.05, so the assumption of normal variance of evaluation in each country involved is refuted.

The above calculations confirm that the conditions were not met for the application of analysis of variance using the parametric F-test. As a result, the analysis of variance is conducted by means of the

non-parametric Kruskal-Wallis median test. This test will determine whether the medians of the participation barrier - lack of stimuli and skills of project staff that would encourage them to accept the participation approach – can be compared for the involved countries.

Table 8. Analysis of variance of the 5.2 participation barrier

Country	Number of respondents	Average value
Slovak Republic	180	270.2
Czech Republic	180	90.62

p-value = 0.007

The procedure for the Kruskal-Wallis test calculation can be found in numerous publications. Respondents' evaluations are ordered from the lowest to the highest value for each country. The calculated p-value is lower than 0.05. We can therefore claim that the differences between the medians of respondents' evaluation of the barrier - lack of funds - are, with a confidence level of 95.0%, statistically significant between the countries involved.

6. The Results and Discussion

By conducting an "analysis of variance" it was possible to carry out tests that enabled us to back the claim and draw conclusions on the statistical attribute – nationality of the respondents. The result is that nationality has a statistically significant impact on the evaluation of the selected participation barriers from local authorities and public authorities, but also from the process participants i.e. citizens and economic entities. Significant statistical differences were found between the evaluation by respondents from the Slovak and Czech Republic for all the participation barriers.

The ability to get successfully integrated into a wide network, to develop creative regional networks and thereby improve regional competitiveness is a basic requirement for a society based on networks. Technical-economic changes are not only reflected in the field of technical progress, but are also inseparably linked to changes in management, organizational structures, method of communication, behaviour and value categorization.

The research results have shown that individual entities realize the inevitable impact of the stronger participation of public-law entities, businesses, non-profit organizations and citizens on the development processes of a region. Unfortunately, the mechanisms for systematic long-term and correct cooperation between potential partners in these processes are still absent. The creation of partnerships often encounters with various types of barriers. The research results in conjunction with findings from secondary information form the basis for the following conclusions:

- Each entity involved in the research considers partnership an inevitable condition for the achievement of regional development goals

- One of the basic factors that motivates the establishment of partnerships is the possibility to draw money from European funds

- Regional government institutions do not fully utilize the principle of partnership with the private sector in the initialization, creation and implementation of development policies or in the complex utilization of European funds in compliance with operational and regional plans

Strategic partnerships are an inevitable factor of network building. The functionality of a network itself is determined by strategic, tactical, operational, interpersonal and cultural factors alike. In this context network coherence requires the players to share common values. By sharing values a network becomes more effective.

7. Summary

The ability to get successfully integrated into a wide network, to develop creative regional networks and thereby improve regional competitiveness is a basic requirement for a society based on networks. Technical-economic changes are not only reflected in the field of technical progress, but are also inseparably linked to changes in management, organizational structures, methods of communication, behaviour and value categorization. Twenty years after the split of the former Czechoslovak Republic it is possible to characterize the period through significant changes in the categorization of values of the region´s inhabitants within the context of development. These values are based on their subjective points of view on the actual stage of development and value categories of society. The development processes have also brought dynamic and turbulent changes in the generation and formation of the value orientation of the entities that form it.

The research looked for answers to the question "How do citizens and other economic entities participate in the administration of public matters in determining the system of values, standards and expectations, which influence their attitudes and behaviour?" The research has shown that the space for authentic civic participation has widened in the Slovak and Czech Republics, but that citizens show little interest in the opportunities that are presented to them. A new participative democratic civic culture has not developed. In this regard we agree with Falťan's claim that this fact indicates how complicated the way to understanding is and that even in a market economy the way to prosperity is not necessarily through "tough" individualism. The presented research is based on the claim that partnership is a natural part of human society. The assumption that the ability to enter into efficient partnerships brings development impulses was confirmed by the research, as was the opposite that a low ability to enter into partnerships is an obstacle of development. The results of the primary research confirmed the claim that barriers to the process of creation and formation of material and functionally oriented partnerships still persist.

Acknowledgements

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