Articles

Information Aspects of Local Administrative Policy

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Summary:

Developing and implementing local administrative policies is a major issue for regional development. In this context the paper examines the issues involving the application of information technologies as part of local administration and policy. Such a study is important with a view to the extension of the electronic services for citizens and businesses, as well as to the development of the concept of information society. On the basis of such an analysis, conclusions and directions for future development are formulated.

Key words: Information technologies, local administration, e-administration.

JEL: H61, H71.

Introduction

Financial stability is a major problem local government is faced with. In recent years we have seen the expansion of decentralization and the delegation of authority. As a result municipalities have gained more powers related to revenue collection and spending. This requires that techniques be applied for balancing administrative and professional staff of the municipal administration and the newly delegated powers. Furthermore attention should be paid to the changes in the technical and technological means for assuming the new powers related to revenues and expenditures, stemming from the decentralization process.

1. Information aspects of local administrative policy

The complexity of the problems with regard to the information aspects of local administrative policy has prompted researchers to carry out studies such as that of David Ammons, which focuses on municipal benchmarking and the effectiveness of municipal operations. Evaluation of certain municipal activities was made in the Questionnaire Capacity Assessment Municipal Service Delivery – Western Balkans & Turkey, and in the study of OMBI Performance Benchmarking Report 2008. Some models and tools for efficient municipal administration are available in the study Effective Models and Instruments of Municipal Administration. In foreign literature, and from a practical point of view, there is a strong interest in

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the local administration policy, especially in the part of local finances. For example, in the UK there are national professional standards for the administration of local revenue. Generally they fall under four main categories, namely: professional standards, maintaining records of property, duties and charges, procedures for collecting local revenues, assessing the benefits and compliance, assessment of local benefits and appeals against the decisions of local revenue authorities. Similar is the nature of is the work of a group of US researchers who analyzed a survey conducted at the level of municipal financial management in 50 municipalities, in which more than 75 employees were interviewed. The authors say there are several essential aspects of effective governance, related to the following questions: is there a term that creates a common understanding of the municipal goals and the required employees' qualification and skills; does the municipality achieve its goals in the region through the implementation of various programs and the provision of relevant services; does the municipality provide information about meeting public demands for municipal services and other things.

In order to perform the study of the information-related aspects of local administrative policy it is necessary that a series of assessments be made. In literature there is no uniform definition of "assessment." In recent decades this concept has undergone a "major theoretical and methodological development". According to the same source, "[u]nlike in medical terms, assessment is not a discipline that

was developed by practicing professionals over thousands of years". Evaluation is referred to as "the systematic determination of value and/or significance of something or someone using criteria". The literature offers another definition of "assessment", namely "calculating, determining the price of an object or commodity". According to another author, "creation of a critical evaluation is objectively as possible to the extent that it meets certain conceptual rules". D. Stufflebeam defines evaluation as "research designed to support any audience to determine the quality of the site that are worth". "The assessment is a systematic, rigorous and comprehensive application of scientific methods. Evaluation is a process that requires resources such as expertise of professionals, time and significant resources".

There is a number of studies of national significance on the assessment of local administrative policy and its informational aspects, such as the methodology for assessing good governance in municipalities, the Efficient Municipality research project, implemented with the financial support of Administrative Capacity operational program and financed by the European Union through the European Social Fund. This project defined the Local conditions for doing business index, which aims to investigate the differences in the business environment at the local level.

The policy of providing administrative services at the local level is constantly changing. This paper introduces the policy aspects related to the:
- electronization of the process of local government;

- description and modeling of business processes at the local level;
- the need for new services for individuals and businesses;
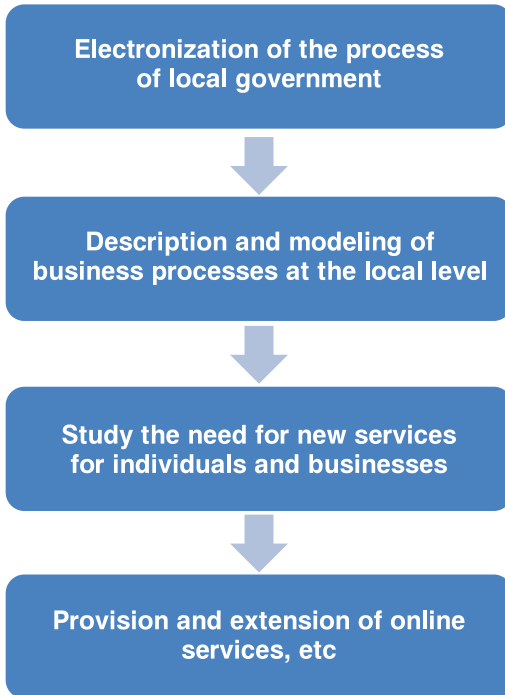- provision and extension of online services, etc.

- Determining the need for relevant e-services;
- Analysis and modeling of business processes;

Electronization of the process of local government

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Description and modeling of business processes at the local level

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Study the need for new services for individuals and businesses

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Provision and extension of online services, etc

Fig. 1. Information aspects

Diagnostic analysis stage

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Determining the need for relevant e-services

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Analysis and modeling of business processes

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Design of logical and physical architecture of the system

↓

Design of database, business logic and system interface

↓

Implementation of database, business logic and system interface

↓

Testing and deployment of the system

Fig. 2. Electronization of local government

The information-related aspects of local administrative policy are illustrated in figure 1.

In this study the "electronic local government" term refers to the created municipal teams of specialists and to the used set of hardware resources and relevant software systems that enable the municipality to provide electronic services to citizens and businesses. The examinations that we made give us sufficient grounds to propose the following sequence of steps for the electronization of the process of local government:
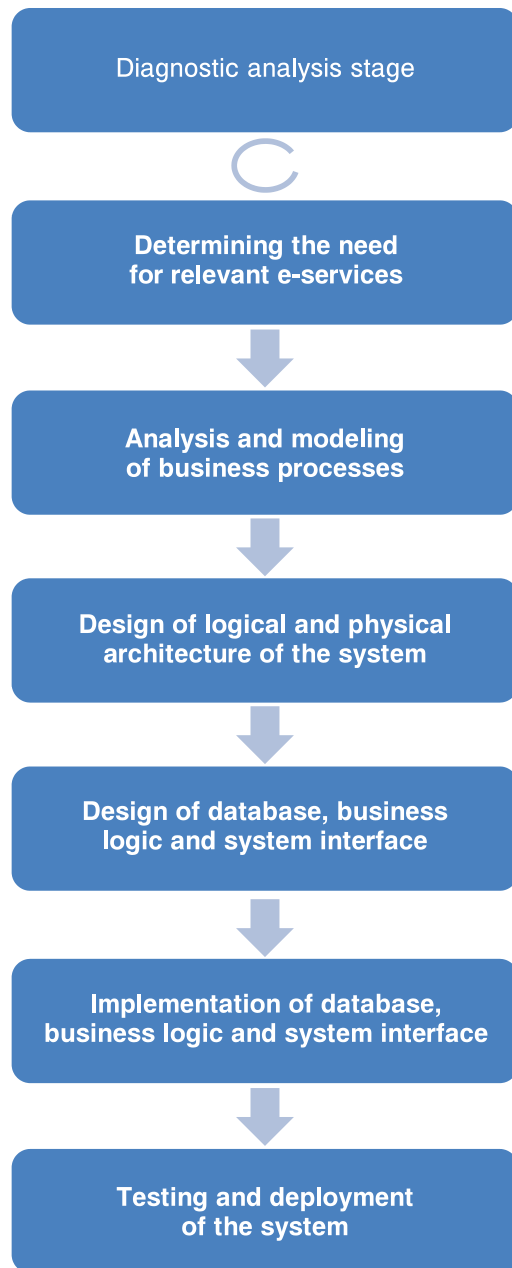
- Design of logical and physical architecture of the system;
- Design of database, business logic and system interface;
- Implementation of database, business logic and system interface;
- Testing and deployment of the system.

The steps for the electronization of the process of local government are presented in figure 2.

As can be seen from the outlined stages in the electronization, this process is among the most challenging tasks faced by any local government. These stages are part of information security to be provided in the pursuit of the local administrative policy.

2. Status of e-services in local administrations in Bulgaria

In order to determine the status of e-services in local administration, a representative survey was carried out. The survey was conducted in early 2012 in 54 municipalities in the Republic of Bulgaria (National Statistical Institute) using a questionnaire consisting of six main sections, presented in figure 3.

The questions that make up the questionnaire can be grouped along the following criteria:

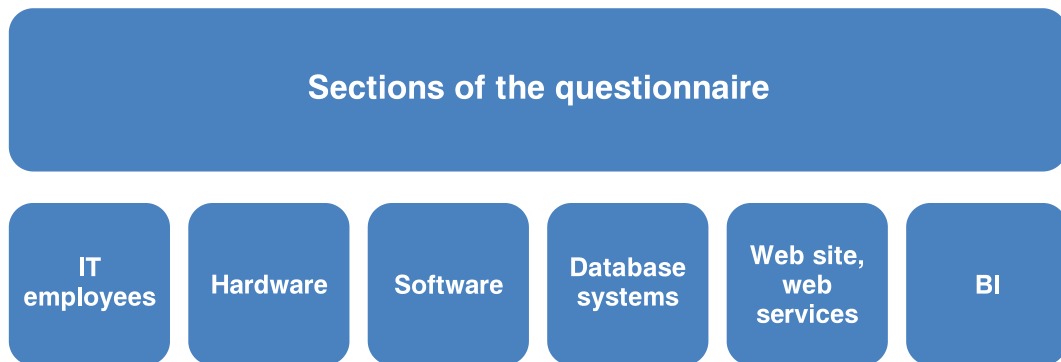- Questions with possible 'yes' or 'no' answers;
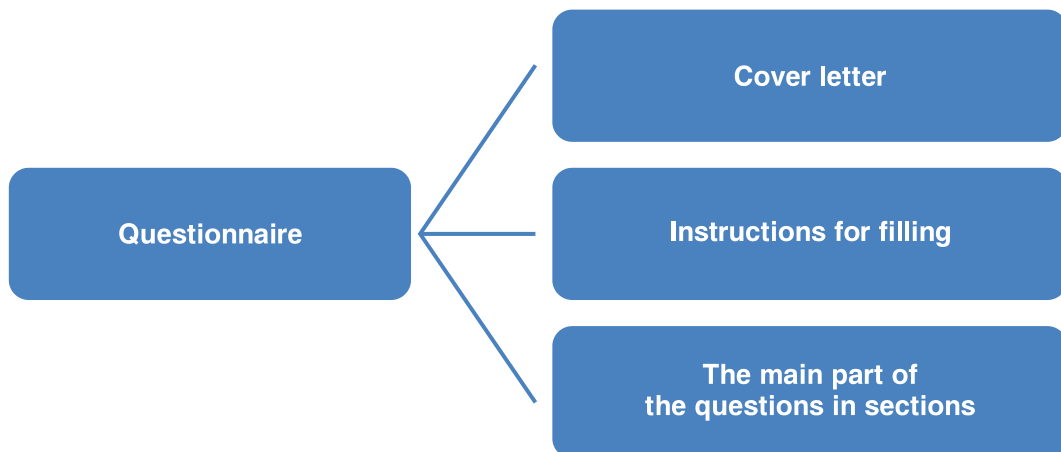

Fig. 3. Structure of the questionnaire

Fig. 4 Questionnaire

- Questions with multiple choice answers, which require only one answer;
- Questions with multiple choice answers, where it is possible to specify more than one answer;
- Open-ended questions where respondents provide separate answers.
    The questionnaire consists of three parts:
- Cover letter;
- Instructions for filling;
- The main part of the questions in sections.

Parts of the questionnaire are illustrated in Figure 4.

Detailed instructions for filling are provided and designed to facilitate the maximal number of respondents. The cover letter describes the survey, giving information about its participants and objectives as well as how the collected data will be used.

Once the questionnaire is ready, we proceed with forming a sample for the study. The Unified classifier of administrative-territorial and territorial units of the Republic of Bulgaria lists 264 municipalities. Under the effective legislation the Republic of Bulgaria consists of 28 districts, each encompassing a number of different municipalities.

Determining the sample size is an important issue in empirical research. According to many authors, samples including more than 30 units are considered as large samples. This study was conducted in 54 municipalities.

The studied 54 municipalities cover approximately 22% of the population in Bulgaria. The municipalities that fall within the sample of this survey were selected randomly through a lottery selection function for generating random numbers. For the purposes of the study a simple random sample was used. Therefore, all the municipalities in Bulgaria have the equal possibility for entering the sample of 54 municipalities researched. The way the sample is formed gives us sufficient grounds to assume that the data obtained from questionnaires is representative and the statistical results of the sample apply to the entire population of the municipalities in Bulgaria.

Municipalities in the sample are presented in Table 1.

3. Analyses of results of the empirical survey

The results of the responses to the question of "Is it possible through the website of your municipality any online services to be performed?" are presented in Table 2.

The results of the responses to this question show that more than half of municipalities provide online services - 34 municipalities. Unfortunately, the percentage of the municipalities that do not provide such services is higher - 40%. To launch the operation of electronic local government, the websites of the municipalities have to provide various electronic services.

The results of the responses to the question of "Does your municipality provide some web services for connection with other systems?" are presented in Table 3.

The development of e-local government requires that each municipal computer system is connected to external systems and databases. As practice shows, this principle

Table 1. Municipalities in the sample (National Statistical Institute, 31 December 2010[1])

Blagoevgrad	323552	4,4	2	Blagoevgrad	76812
				Petrich	55408
Burgas	415817	5,6	2	Burgas	206700
				Tsarevo	9411
Varna	475074	6,5	3	Dalgopol	21972
				Dolni Chiflik	19141
				Aksakovo	14204
Veliko Tarnovo	258494	3,5	3	Gorna Oryahovitsa	48049
				Zlataritsa	4584
				Svishtov	48351
Vidin	101018	1,4	1	Vidin	64989
Vratsa	186848	2,5	2	Vratsa	74648
				Oryahovo	12069
Gabrovo	122702	1,7	3	Gabrovo	66321
				Dryanovo	10315
				Tryavna	12094
Dobrich	189677	2,6	2	Kavarna	15657
				Krushari	5118
Kardzhali	152808	2,1	2	Ardino	12282
				Kardzhali	68406
Kyustendil	136686	1,9	2	Kocherinovo	5811
				Kyustendil	61944
Lovech	141422	1,9	2	Lovech	52308
				Yablanitsa	6334
Montana	148098	2	1	Berkovitsa	19256
Pazardzhik	275548	3,7	2	Pazardzhik	120422
				Rakitovo	15418
Pernik	133530	1,8	1	Breznik	7506
Pleven	269752	3,7	2	Belene	10671
				Dolni Dabnik	14230
Plovdiv	683027	9,3	3	Karlovo	53656
				Plovdiv	347611
				Hisarya	12768
Razgrad	125190	1,7	2	Razgrad	53918
				Zavet	11110
Ruse	235252	3,2	1	Borovo	6511

[1] National Statistical Institute, www.nsi.bg, 31.12.2012

Silistra	119474	1,6	2	Dulovo	28634
				Tutrakan	16637
Sliven	197473	2,7	2	Nova Zagora	41199
				Tvarditsa	14180
Smolyan	121752	1,7	2	Devin	12963
				Zlatograd	12112
Sofia	247489	3,4	2	Botevgrad	33529
				Kostinbrod	17448
Sofia (capital)	1291591	17,5	1	Stolichna	1259446
Stara Zagora	333265	4,5	3	Bratya Daskalovi	9625
				Stara Zagora	163420
				Kazanlak	75509
Targovishte	120818	1,6	1	Antonovo	6395
Haskovo	246238	3,3	2	Svilengrad	23867
				Dimitrovgrad	55869
Shumen	180528	2,5	1	Varbitsa	10318
Yambol	131447	1,8	2	Elhovo	16332
				Yambol	75742
Total	7364570	100%	54	3519230 (48%)	

Table 2. Online services

Answer	Municipalities
Yes	34
No	20

Table 3. Web services for connection with other systems

Answer	Municipalities
Yes	17
No	37

of data sharing is implemented through web services. The data obtained from the surveyed municipalities shows that such data transfer is possible only in 17 out of the overall 54 municipalities. In the remaining 37 municipalities the available software is not connected to external systems.

4. Hypothesis testing

After conducting the survey and providing data for assessing, we need to carry out statistical analysis. The goal is to analyze the relationships and dependencies among complex assessments and to verify statistical hypotheses. This study will formulate and test one statistical hypothesis.

The verification of statistical hypotheses goes through the following six steps (fig. 5):

● Defining the null and alternative hypothesis;

The null hypothesis is the one that shows no statistically significant difference between variables and is referred to H_o. The alternative hypothesis is the opposite of the null hypothesis. It shows a statistically significant association and is denoted by H_1.

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┌─────────────────────────────────┐
│  Defining the null and          │
│  alternative hypothesis         │
└─────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────┐
│  Determining the risk of        │
│  error α                        │
└─────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────┐
│  Selecting criterion for        │
│  verifying the hypothesis and   │
│  calculate the empirical        │
│  characteristic                 │
└─────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────┐
│  Determining the type of        │
│  critical area                  │
└─────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────┐
│  Determination of the           │
│  theoretical characteristics    │
└─────────────────────────────────┘
              │
              ▼
┌─────────────────────────────────┐
│  Comparing the empirical with   │
│  the theoretical characteristics│
│  and making a decision          │
└─────────────────────────────────┘
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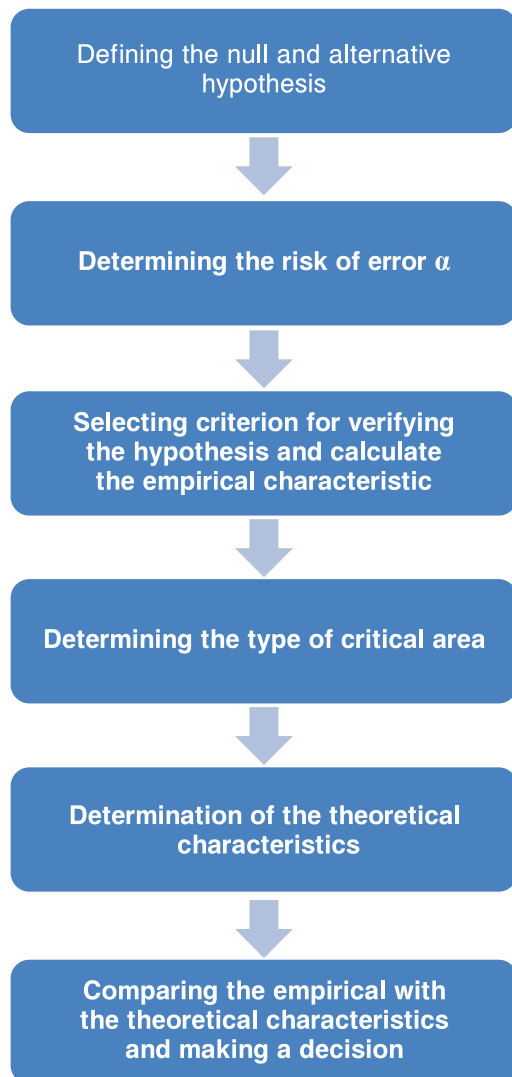
Fig. 5 Process of verification of statistical hypothesis

After the analysis one of the two hypotheses has to be confirmed while the other one must be rejected.

- Determining the risk of error α

The value of the error risk α is determined by the investigator. It is widely accepted that most of the socio-economic research work with risk of error α equal to 5%. Therefore this analysis assumes that the risk of error α is 0,05.

- Selecting the criteria for verifying the hypothesis and calculating the empirical characteristic

The criteria can be divided into two types: parametric and non-parametric. Parametric criteria are used when the testing variable is measured on a strong scale and the distribution is close to normal. If a requirement is not fulfilled, non-parametric criterion should be applied.

- Determining the type of critical area

The critical area is one in which the null hypothesis is rejected. It can be unilateral or bilateral. The type of the critical area depends on the method of examination and the method of setting the alternative hypothesis.

- Determination of the theoretical characteristics

They are determined by the schedule table for the theoretical distribution with a concrete value of α error and rank of freedom.

- Comparing the empirical with the theoretical characteristics and making a decision

If the empirical characteristic is greater than the theoretical one, the null hypothesis is rejected while the alternative hypothesis is regarded as true. If the empirical characteristic is less than the theoretical one, the null hypothesis is regarded as true.

Another way to make a decision on the basis of statistical analyses is by using the level of significance. The level of significance is compared to the risk of error α. If it is greater than α, the null hypothesis is assumed to be true while the alternative is rejected, and vice versa, if the level of significance is less than α, the alternative

hypothesis is assumed to be true while the null hypothesis is rejected.

In this study we make the decisions using the level of significance, as all analyses are done with the SPSS software product.

When studying the relationships and dependencies between variables, different statistical methods may be applied. The selection of a method depends on the combination of factor and resultant variables. The most widely used methods are:

- Chi-square analysis – used for qualitative factor variables and qualitative resultant variable;
- Analysis of variance – used for qualitative factor variables and quantitative resultant variable;
- Regression analysis – used for quantitative factor variables and quantitative resultant variable.

According to Goev, "Essentially chi-square analysis is a kind of statistical hypothesis verification. Therefore, to realize the analysis we have to go through all six stages of the testing of hypotheses"[2].

In this study a chi-square analysis will test the following hypothesis: Is there a statistically significant relationship between the adequate and timely management decision making and employee involvement in the change of the database structure.

This analysis was performed by observing the following three requirements:

- There are no theoretical frequencies less than 1;
- If some theoretical frequencies are less than 5, they should not exceed 20% of the cases;

- The sample size is greater than 50.

In order to measure the strength of the relationship with chi-square analysis, we use the coefficient of Cramer. It is the most appropriate measure because the coefficient is normalized in the range between 0 and 1. It is assumed that when the interval is:

- 0 to 0.3, the relationship is weak;
- 0.3 to 0.7, the connection is average;
- 0.7 to 1, the relationship is strong.

In order this coefficient to be interpreted it must be determined whether the coefficient is statistically significant by comparing the level of significance (Asymp. Sig) and the error α. When Asymp. Sig $< \alpha$ (0,05), then this coefficient is significant and it can be interpreted.

For testing the hypothesis we will pass through the described six steps to verify the hypotheses statistically:

- Defining the null and alternative hypothesis.

The null hypothesis (H_0) states that there is no statistically significant relationship between taking adequate and timely management decisions and employees engaged in the change of the structure of databases.

The alternative hypothesis (H_1) states that there is a statistically significant relationship between taking adequate and timely management decisions and employees engaged with the change of the structure of databases.

- Determining the risk of error – α = 0,05
- Selecting criterion for verifying the hypothesis and calculating the empirical characteristic

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[2] Goev V. Statistical processing and analysis of information from the sociological, political and marketing research with SPSS, Sofia, 1996

Chi-square analysis is a type of testing hypotheses on the class of nonparametric as variables studied are located in weak scales (nominal or ordinal).

The results of the requirements of the chi-square analysis are presented at Table 4.

Table of Chi-square [α = 0,05, k = 1] - 3.84
- Comparison of theoretical and empirical characteristics, where:
1. chi-square empirical <chi-square theoretical – null hypothesis is true;
2. chi-square empirical > chi-square theoretical – alternative hypothesis is true.

Table 4. Chi-square analysis

Chi-Square Tests

	Value	df	Asump. Sig. 2-sided)	Exact Sig.(2-sided)	Exact Sig.(1-sided)
Pearson Chi-Square	,156[b]	1	,693		
Continuity Correction[a]	,005	1	,944		
Likelihood Ratio	,157	1	,692		
Fishers' Exact Test				,755	,475
Linear-by-Linear Association	,152	1	,696		
N of Valid Cases	51				

a. Computed only for a 2x2 table

b. 0 cels (.0%) have expected count less than 5. The minimum expected count is 5.61.

The first requirement (no theoretical frequencies less than 1) is fulfilled – the minimum theoretical frequency is 5.61. The second requirement (there may be theoretical frequencies less than 5, but they should not exceed 20% of the cases) is satisfied, since they are 0%. The third requirement (the sample size is greater than 50) is also satisfied with the sample of 54 municipalities. The three requirements are met, so the results can be interpreted.

The table shows that the ratio of chi-square is 0.156.
- Determining the type of critical area – in chi-square analysis and F distribution, critical area is always unilateral.
- Determination of the theoretical characteristics;
  k = (p-1) (q-1)
  p - number of rows in cross-table
  q - number of columns in cross-table
  k = (2-1). (2-1) = 1

Since chi-square empirical - 0.156 < chi-square theoretical - 3.84, therefore the null hypothesis is accepted.

The conclusion is that there is no statistically significant relationship between adequate and timely management decision making and employee involvement in the change of the database structure.

Table 5. Chi-square analysis

Symmetric Measures

		Value	Asump. Sig. 2-sided)
Nominal by Nominal	Phi	-,055	,693
	Cramer's V	,055	,693
N of Valid Cases		,157	
		51	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis

The coefficient of Cramer (Table 5), which measures the strength of the relationship is statistically insignificant, as the level of significance (Approx. Sig.) =

0,693 > α. Its value is 0.055, which means that the strength of the relationship is weak.

Conclusion

The conducted empirical research and analysis give us grounds to arrive at a number of conclusions, which are as follows:

- Relatively rarely a single municipality hires new IT specialists;
- Municipalities have good hardware resources in place;
- A small number of local administrations have the opportunities to provide online services;
- Most municipalities do not have systems for early warning systems in place;
- These findings give us grounds to recommend that steps should be taken to create conditions for the expansion of electronic services at the local level.

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