

Researching the Status of Electronic Services in the Bulgarian Local Administration

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Summary:

Bulgaria is at this stage of development, when significant investments are required in order to create and use e-government. A part of the idea of building e-governance is the coverage of services that municipalities provide. For these reasons, it is important from a theoretical and practical point of view, that the factors for creation of a functional electronic local government are properly determined. It is necessary for us to meet the question: are the municipalities ready to provide electronic services and do the municipalities have the opportunities for this task? For the purpose in this study we use a survey of information systems and technologies in the municipalities and on this basis opportunities for building electronic services are given.

Key words: local administration, municipalities, e-administration, information technologies.

JEL H61, H71.

Introduction

Achieving financial stability is one of the main problems of local government and local administration. The processes of decentralization have increased

the revenue and expenditure powers of municipalities. This leads to the need of a balance between the administrative capacity, training and competencies of employees in the municipal administration and the technical means available to take on new revenue and expenditure powers derived from the decentralization process. We should also pay attention to the modern trends in computerization of the management process. There are certain difficulties for municipalities when it comes to provision of resources and their sources, rights for determining their size, methods of use and responsibilities for financing of public services that are associated with the financial decentralization. For this purpose each municipal administration should have reliable computer information systems. As a basic administrative territorial unit it is important for the municipality to be financial independent, as a condition for carrying out activities related to implementation of local priorities. The financial independence is affected by Vassileva (2001), who says: «Local government and local autonomy are unthinkable without financial independence».

The municipalities in Bulgaria are in need of highly skilled, motivated, open to

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the public, ensured with the necessary high-tech means municipal administration, as a condition of financial independence of local government. This can be achieved through a phased computerization of services for the citizens and the business. In the current market conditions the functioning of modern local government is impossible without adequate information systems and technologies.

For the purposes of this study, it is important that we clarify the nature of the concepts of administration, activity, process. Kandeveva (2001) says that „The administration is associated with the management. The administration exists both in the state, local and public organizations, and business organizations – public and private." According to Benev(2002) „The administration is a system of public institutions with executive-form of government activities through the application of laws and other regulations." In the literature we found the following definition of „activity". Andreichin (2008, p. 161) gives the following definition, namely „what one does in any area of life, work, occupation". This definition supports our understanding that the activities are the concrete expressions of the functions that the municipalities perform in the process of the revenue administration. On the other hand, the same author defines „process" as „a set of consecutive steps, series of events, changes of conditions or stages of development."

All this allows us to define the following research problem: **the need of studying the status of information systems and technologies used in the municipalities in**

the context of the concept of electronic government.

Here follows the determination of the object and the subject of the study, namely:

- The object of the study are the units of local government, that develop and maintain the information systems;
- The subject of the study is the provision of electronic services by the municipalities in Bulgaria.

The objective of this study is: **Disclosure of particulars in the provision of electronic services in the municipalities and formulation of guidelines for the development of e-local government.**

In order to achieve the objective we have the following tasks:

- Analysis of conditions for building and operating of electronic services in local administration;
- Conduct of empirical research and treatment of the results;
- Definition of opportunities for building an electronic local government.
- The restrictions on ongoing research are:
- The research is not implemented in all the municipalities in Bulgaria, but in a representative sample of them;
- We cannot perform a comparative analysis over the time due to the lack of statistics.

1. Conditions for Establishment and Operation of Electronic Services in Local Government

It is a difficult task uniquely to define the factors and conditions for establishment of computer services in the local administration or computerization of local government at all. Finding the solution of this task is only possible after studying the national and

global experience in building an e-government and analyzing the current state of information capabilities in the municipalities.

By "electronic local government" in this study will be understood "all the computer information systems and web services, that provide a municipal administration, together with the available knowledge, skills and competencies of municipal staff, engaged in e-services to citizens and businesses". From the given definition, we can determine the following conditions for functioning of the e-local government:

- Availability of integrated computer systems in the municipalities. By "integrated" we understand the implementation of connectivity between the used software applications in order to achieve common functionality by using a common database;
- Presence of web services, which are realized and modeled in accordance with the existing business processes. It is an important condition, which practically turns local administration into e-local government;

- Availability of hardware resources and communication connections when the implementation of computerized information system is distributed or when there is a Cloud computing;
- Availability of information technology specialists with relevant expertise, skills and competencies for provision of electronic services and handling citizens and businesses in the electronic environment and others.

2. Survey of Municipalities in Bulgaria

In recent years the need for electronic exchange of information between the businesses, the citizens and the local administration is growing up strongly. The satisfaction of the electronic services is difficult to be measured. It is related to the concept of "service quality", which is also ambiguous. A representative for the country survey was conducted for determining the status of electronic services in the local administration. The study was conducted in early

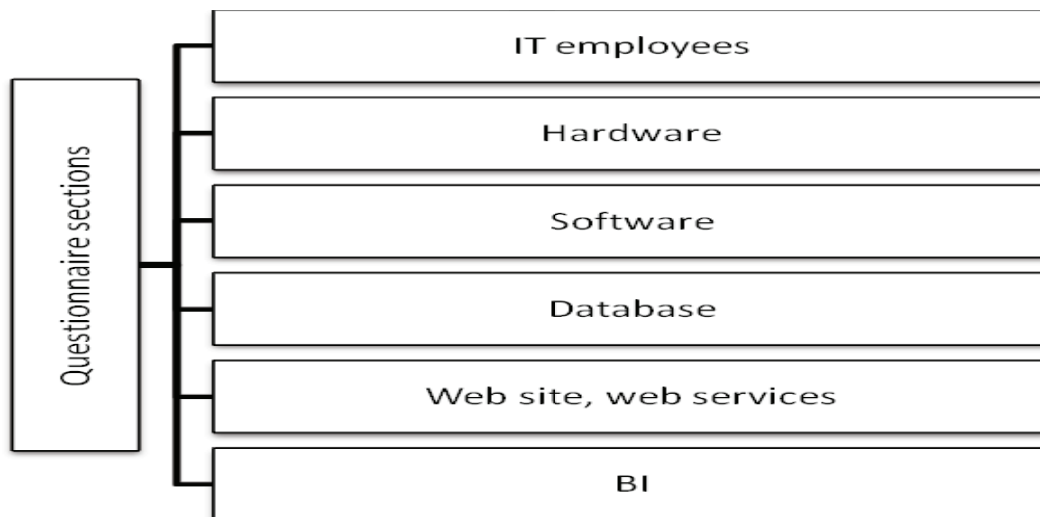


Fig. 1 Structure of the Questionnaire

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2012 in 55 municipalities in Bulgaria with a questionnaire consisting of six main sections, namely (Fig. 1):

The questionnaire sections are: 1. IT employees; 2. Hardware; 3. Software; 4. Database; 5. Web site, web services; 6. BI. Table 1 shows the list of municipalities that are sampled and interviewed.

- By sending a questionnaire to the e-mail.
- The survey of municipalities by visiting has the following advantages:
 - Understanding the peculiarities in the functioning of the administrations at the municipalities visited;
 - Increased reliability of data collected;
 - Faster collection of questionnaires.

Table 1 Municipalities in the Sample

№	Name	№	Name	№	Name
1	Zavet	19	Berkovitsa	37	Gorna Oriahovitsa
2	Dulovo	20	Kocherinovo	38	Tutrakan
3	Breznik	21	Lovetch	39	Kostinbrod
4	Yablanitsa	22	Razgrad	40	Kardjali
5	Vratsa	23	Plovdiv	41	Svishtov
6	Petrich	24	Svilengrad	42	Devin
7	Ardino	25	Zlatograd	43	Burgas
8	Carevo	26	Aksakovo	44	Vidin
9	Krushati	27	Zlatarica	45	Pazardjik
10	Rakitovo	28	Drianovo	46	Nova Zagora
11	Borovo	29	Bratya Daskalovi	47	Karlovo
12	Kazanlak	30	Tryavna	48	Belene
13	Antonovo	31	Dimitrovgrad	49	Yambol
14	Varbitsa	32	Elhovo	50	Botevgrad
15	Oriahovo	33	Dolni Chiflik	51	Hisar
16	Dalgopol	34	Kustendil	52	Gabrovo
17	Tvarditsa	35	Dolni Dabnik	53	Blagoevgrad
18	Sofia	36	Kavarna	54	Targovishte
				55	Stara Zagora

Fig. 2 presents the territorial distribution of the sampled municipalities.

There are two approaches that can be applied in conducting the survey:

- By visiting;

- The survey of municipalities by visiting has the following disadvantages:
 - Higher costs including a trip, transportation, etc.;

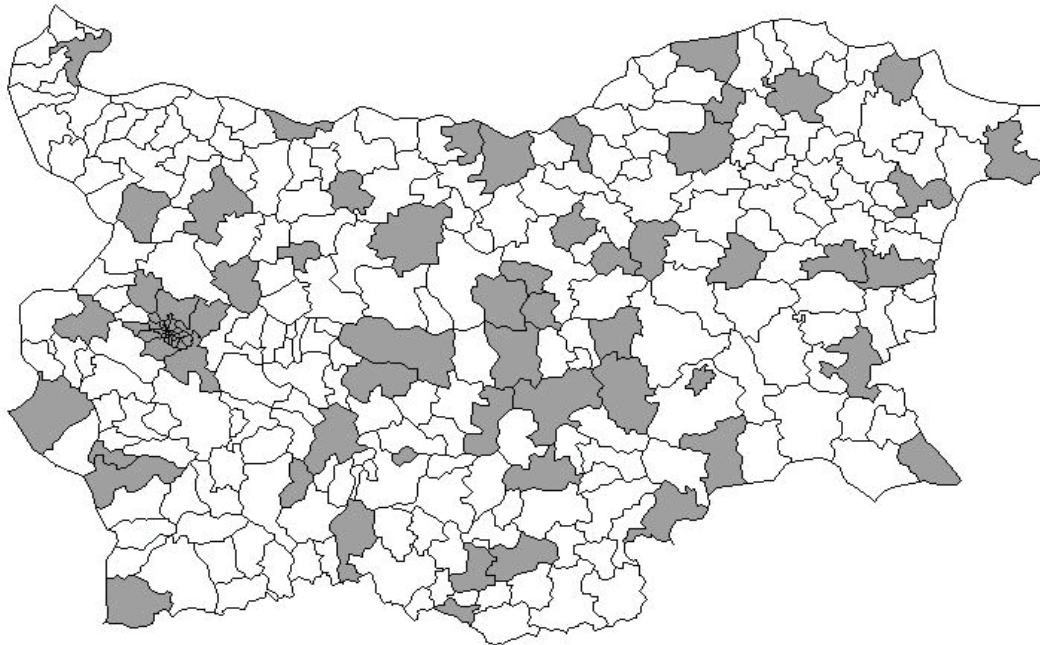


Fig. 2 Municipalities in the Sample

- More difficult to coordinate the dates for the survey, due to the high commitment of the respondents.

The survey of municipalities by sending a questionnaire to the e-mail has the following advantages:

- Lower costs;
- A significant number of municipalities in the sample can be covered.

The survey of municipalities by sending a questionnaire to the e-mail has the following disadvantages:

- Less reliability of collected data;
- Slower collection of questionnaires;
- Less reliability of collected data;
- Need to perform a few phone calls to coordinate the process of filling the questionnaire.

Giving these advantages and disadvantages, the approach of sending letters by the e-mail is appointed. The results of the survey have been collected and processed.

3. Basic Results

After collecting the questionnaires and their treatment we are able to make the following analysis:

3.1. The answers to the question: what is the total number of IT employees, are presented in Table 2.

Table 2 IT Employees

Answer	Municipalities
Less than 5	51
From 6 to 10	2
From 11 to 20	1
More than 20	1

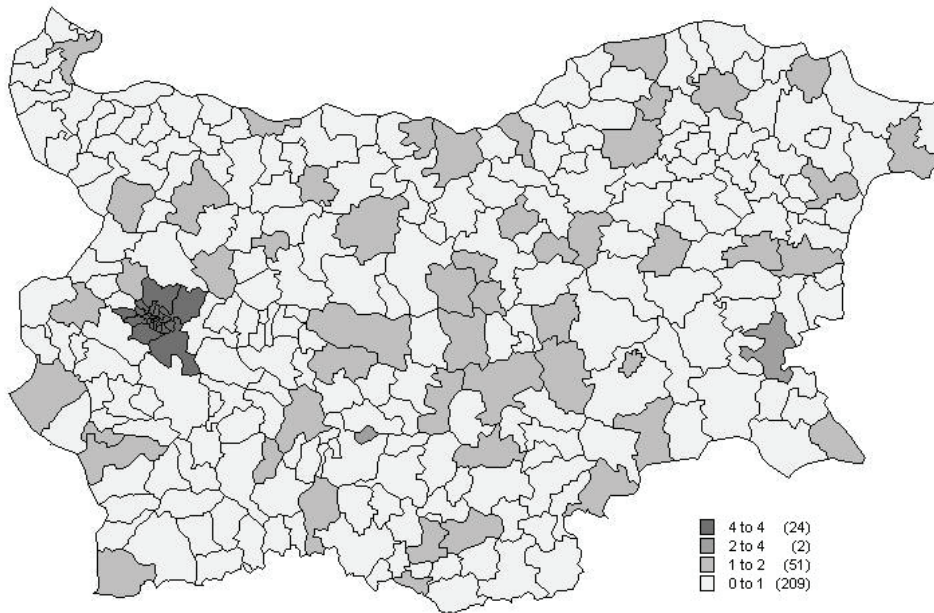


Fig. 3 IT Employees

The territorial distribution of municipalities is presented in Fig. 3.

These results indicate that the majority of municipalities have fewer than 5 employees in information technologies segment. In 51 municipalities they are less than 5, in 2 municipalities they are between 6 and 10, in one municipality they are between 11 and 20, and in another one municipality there are more than 20 IT employees.

3.2. The answers to the question: how often new IT employees, are appointed are presented in Table 3.

Table 3 Appointments of IT Employees

Answer	Municipalities
Once in a month	0
Half-yearly	0
Once per year	1
Once every few years	50

The territorial distribution of municipalities is presented in Fig. 4.

The answers to this question from the survey show that almost all municipalities appoint new employees once every few years – 50 municipalities. This practically shows that there is a low capacity of municipalities to provide new professionals in the dynamic field of information technology. In the questionnaire there are no questions about the employee satisfaction, but the possibility is a relatively low pay, which local government can provide compared with the private IT companies. Similar are the results obtained in relation to the employees leaving.

3.3. The answers to the question: how often IT employees are leaving, are presented in Table 4.

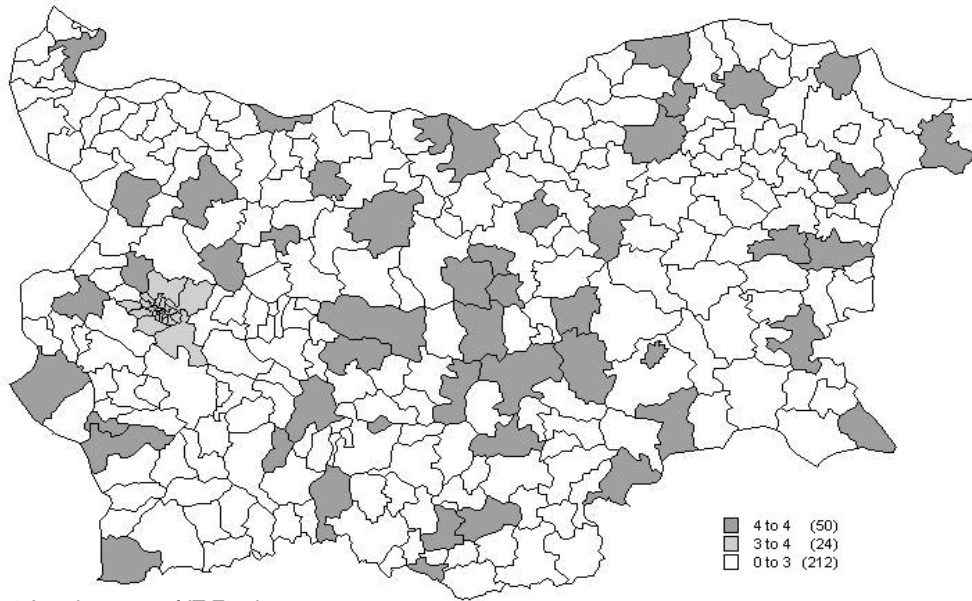


Fig. 4 Appointments of IT Employees

Table 4 Leaving of IT Employees

Answer	Municipalities
Once a month	0
Half-yearly	0
Once per year	1
Once every few years	50

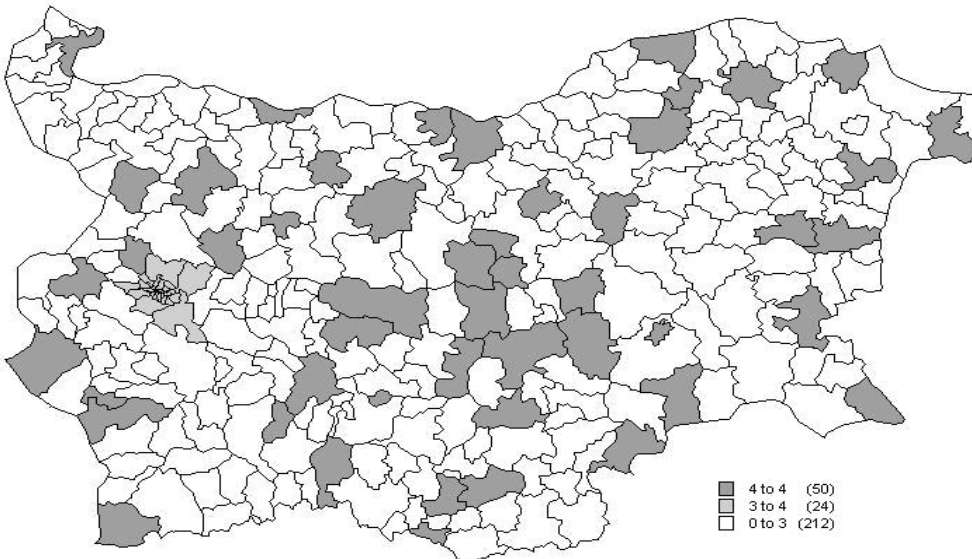


Fig. 5 Leaving of IT Employees

The territorial distribution of municipalities is presented in Fig. 5.

These results are fully consistent with the results of the previous question. This means that municipalities are in a state of relatively stable changes in the number of employees in the information technologies segment. This raises some issues to take measures for training the IT staff.

3.4. The answers to the question: how do you assess the turnover of IT professionals, are presented in Table 5.

Table 5 Turnover of IT Professionals

Answer	Municipalities
Below average for municipality	20
About average for municipality	5
Above average for municipality	5
Do not know	22

The percentage in the answers is presented in Fig. 6.

The territorial distribution of municipalities is presented in Fig. 7.

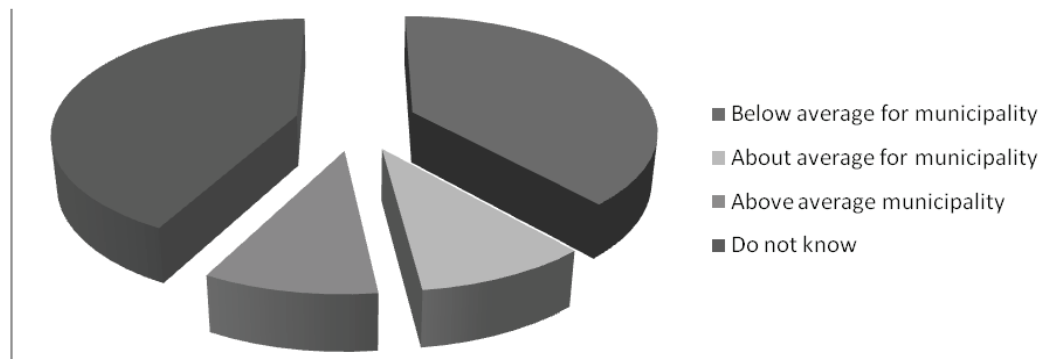


Fig. 6 Turnover of IT Professionals

Data from the study show that there is a relatively constant movement of IT professionals in the municipalities. It may

even be concluded that the movement of staff in the information technologies segment is lower than other departments in the local administration.

3.5. The answers to the question: how do you estimate the hardware resources in the municipality, are presented in Table 6.

Table 6 Hardware in the Municipalities

Answer	Municipalities
bad	4
average	19
good	22
very good	9

The territorial distribution of municipalities is presented in Fig. 8.

It is obvious from the results, that the most municipalities have average or good hardware security. There is a sufficient number of computer configurations for implementing the activities of the municipality and cyber certain services – 41 of 55 municipalities. One of four municipalities has

an insufficient hardware level. We should make it clear, that the condition of the hardware is momentary and it can be changed

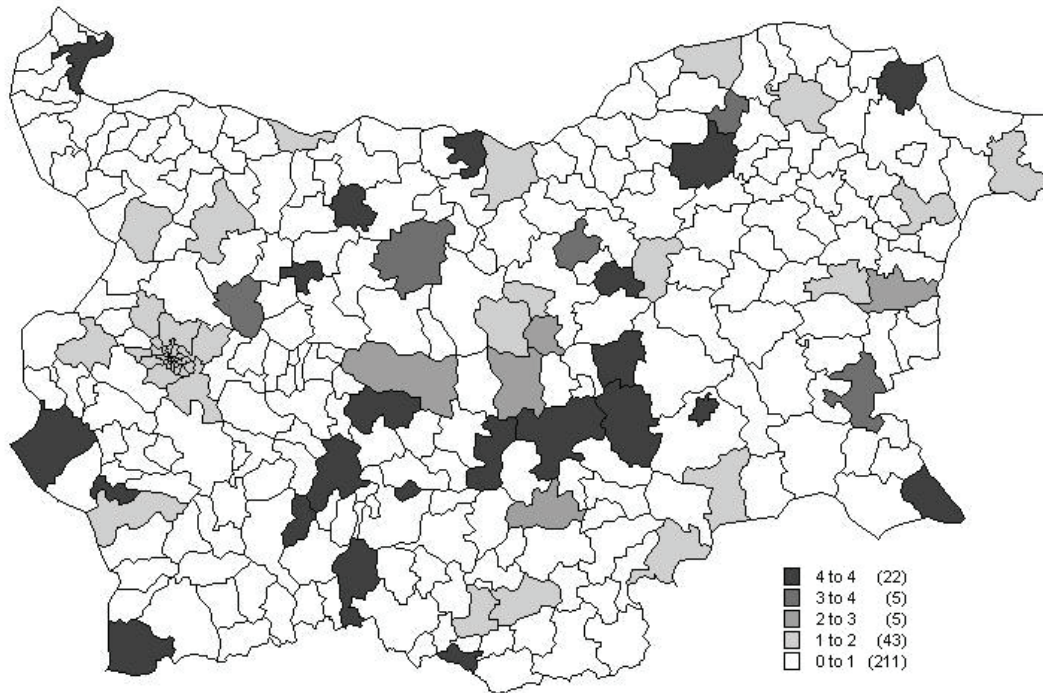


Fig. 7 Turnover of IT Professionals

in some time. Therefore, the questionnaire has provided an evaluation question whether the investment in hardware is a priority for the researched municipality.

3.6. The answers to the question: is the investment in hardware a priority for the municipality, are presented in Table 7.

Table 7 Hardware Investment Priority

Answer	Municipalities
Yes	30
No	25

The territorial distribution of municipalities is presented in Fig. 9.

The analysis of results shows that for more than a half of the municipalities the investment in hardware is a priority. Significant, however, is the number of municipalities for which the investment in

hardware is not a priority. We should make it clear, that the existence of the relation between the servers and the workstations is a prerequisite for the development and deployment of electronic services and the creation of electronic local government. Besides the necessary hardware, the municipalities should possess an adequate level of software.

3.7. The answers to the question: does your municipality have software applications specifically designed for it, are presented in Table 8.

Table 8 Software Applications

Answer	Municipalities
Yes	12
No	43

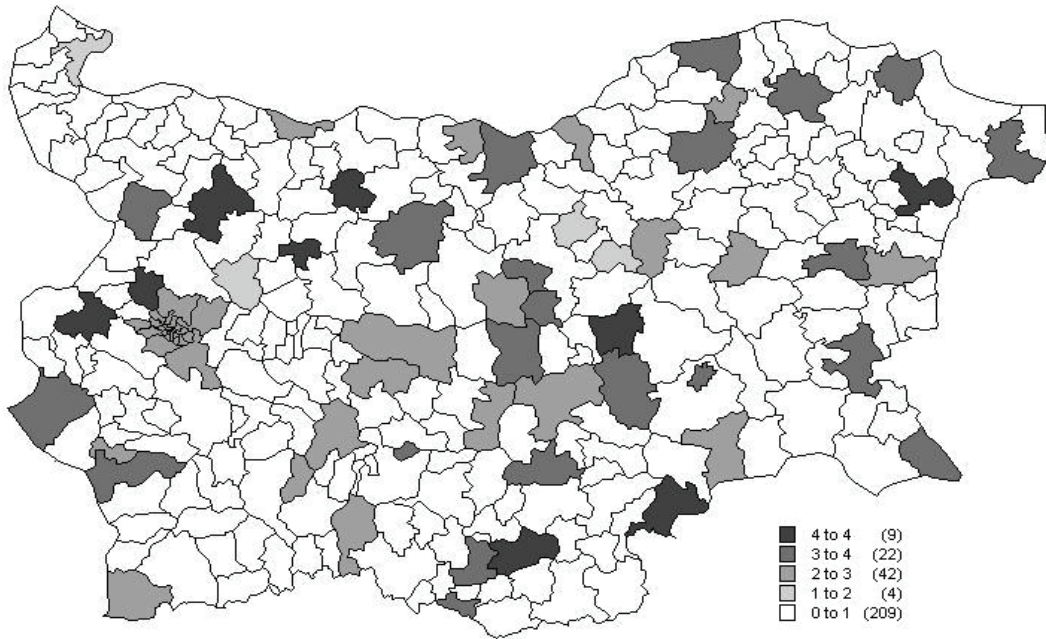


Fig. 8 Hardware in the Municipalities

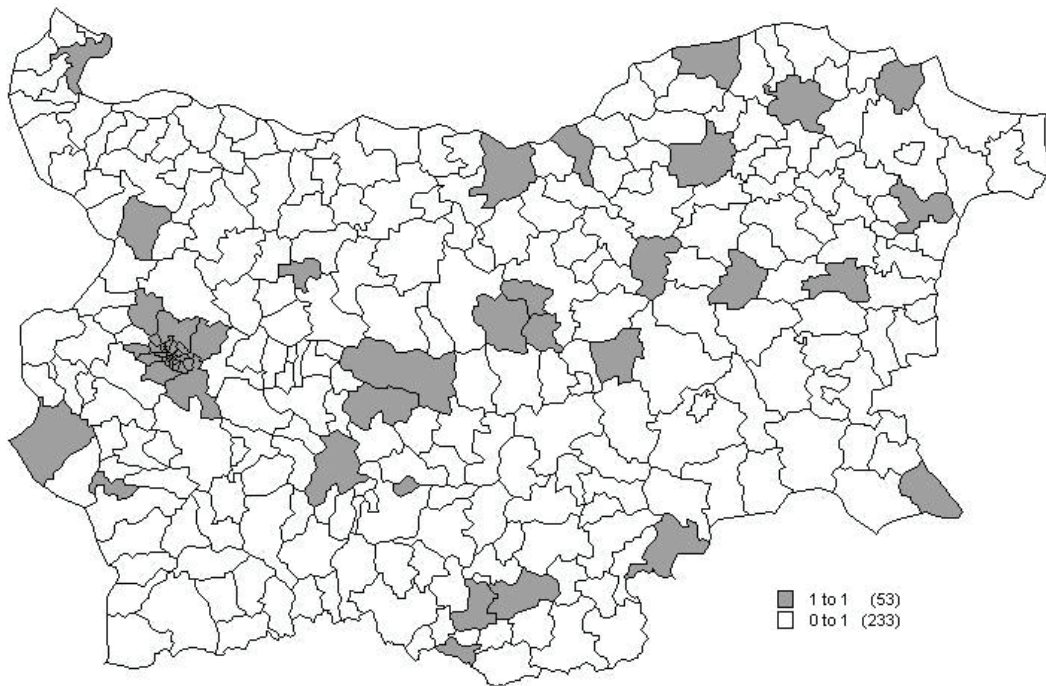


Fig. 9 Hardware Investments

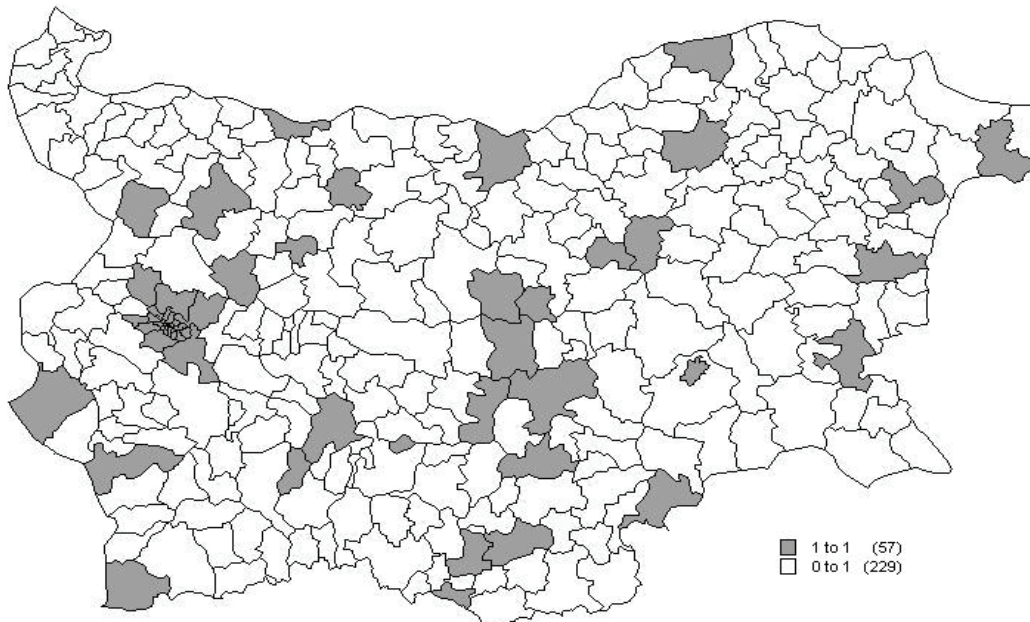


Fig. 10 Software Applications Specifically Designed for the Municipality

The territorial distribution of municipalities is presented in Fig. 10.

The results of this question are quite indicative for discovering the trends in the electronic local administration. Since each municipality has a number of characteristics of business processes, it will need specific software for the provision of electronic services.

We believe that possibilities for using universal software are realistic only by applying the concept of distributed computing or Cloud computing. The territorial distribution is sufficiently indicative for the fact, that there are specifically designed software only in part of the largest municipalities in Bulgaria, like Sofia and Burgas.

3.8. The answers to the question: is it possible through the website of your municipality any online services to be performed, are presented in Table 9.

Table 9 Online Services

Answer	Municipalities
Yes	34
No	21

The territorial distribution of municipalities is presented in Fig. 11.

The answers to this question show that more than a half of the surveyed municipalities provide online services – 34 municipalities. Unfortunately, there is a large percentage of municipalities that do not provide these services – 40%. In order the local government to be functioning, it is necessary for municipalities to provide various electronic services.

3.9. The answers to the question: does your municipality have some web services which can connect to other systems, are presented in Table 10.



Fig. 11 Municipalities with Online Services Available

Table 10 Web Services for Connecting Other Systems

Answer	Municipalities
Yes	17
No	38

The territorial distribution of municipalities is presented in Fig. 12.

The development of electronic local government requires a connection of each municipal computer system to external systems and databases. Experience shows that this principle of data sharing is implemented through the web services. Data from the surveyed communities show that such data sharing is only possible in 17 of all 55 municipalities. In the remaining 38 municipalities there is no connection of the existing software with external systems.

3.10. The answers to the question: does the municipality have a business intelligent system (BI), are presented in Table 11.

Table 11 Municipalities with BI

Answer	Municipalities
Yes	7
No	48

The territorial distribution of municipalities is presented in Fig. 13.

In the modern theory and practice, the BI deployment is necessitated by the requirements of achieving a higher level of analytical data in the analysis. Data from the study show that the majority of municipalities in Bulgaria (88%) do not have such systems. Only 7 of the surveyed municipalities indicated the availability of such software. We believe that the development of municipal software will show a tendency to expand the use of BI.



Fig. 12 Web Services for Connecting Other Systems



Fig. 13 Municipalities with BI

3.11. The answers to the question: does the municipality have a computer early warning system, are presented in Table 12.

Table 12 Early Warning Systems

Answer	Municipalities
Yes	8
No	47

systems and web services for e-local government. These steps can be (Fig. 15):

- Planning of web services. This is the first step in a series of activities for provision of online services and information. As a rule, the modern man expects to find any information on the Internet. In this sense,



Fig. 14 Municipalities with Early Warning Systems

The territorial distribution of municipalities is presented in Fig. 14.

The results of analysis of the availability of early warning systems are similar. In only 8 of all the municipalities analyzed there are such systems.

Analyzing data from the empirical study leads to the formulation of a number of conclusions and highlighting the prospects for development of electronic local government.

4. Opportunities for Building a Local E-Administration

Examinations made lead to the proposing of the following sequence of stages in the development of computer information

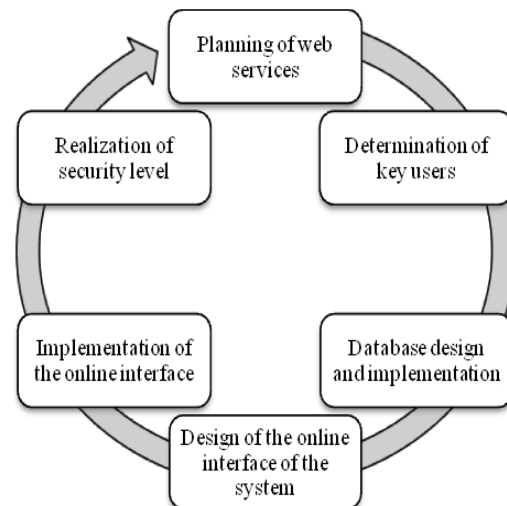


Fig. 15 Sequence of Stages in the Development of Online Services

as the network is inherently useful, so the presence of "parasitic" information in it is constantly growing. Moreover, here in the foreground comes the issue of security and protection of personal data which in most cases is associated with the acquisition of appropriate information and legal balance;

- Determination of key users. This represents a kind of analysis of the relevant business processes, since the determination of groups of associated users is related to measures for safeguard security. Moreover, the large number of users

queries, help system (Help) and security modules;

- Realization of security level, etc.
- As we saw in the listed several possible stages of the process of creating on-line services, this is one of the toughest tasks facing each local authority.

The implementation of IT projects in the local government and administration is a complex and responsible task. The risk management in the implementation of software projects in the public service depends on several key user groups (Fig. 16):

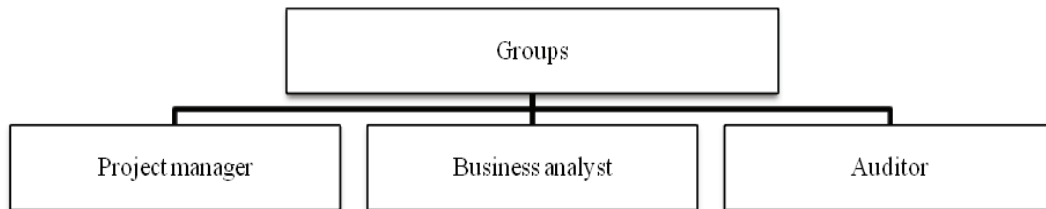


Fig. 16 User Groups

interested could lead to some technical problems when working with the system, such as lowering its quick action;

- Database design and implementation;
- Design of the online interface of the system. This step has in mind the design of variants of channels for accessing the database of the institution (Web, email, telephone, etc.);
- Implementation of the online interface. At this stage of the implementation of online services, we pay attention to the program realization of all the modules for user

- Project manager – he manages the risk of a software project. In this paper we consider that the project manager should bear the risk of the project. It is a figure that is bound to measure all risks. It is required to ensure complete customer satisfaction and all other actions necessary to ensure the project;
- Business analyst – he is responsible for developing a quality project and ensuring an effective software;
- Auditor – he is required to provide a continuous review and to ensure the

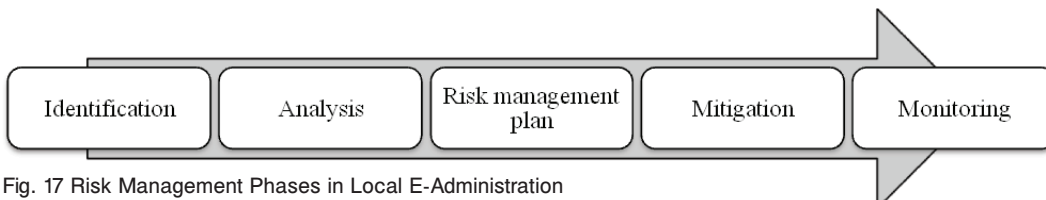


Fig. 17 Risk Management Phases in Local E-Administration

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creation of software in accordance with all the regulatory requirements.

The process of the risk management goes through the following phases (Fig. 17):

- Identification. At this stage it is necessary primarily to identify the risk points in the realization of a software project;
- Analysis. It is necessary to identify the risk characteristics. At this stage we divide the main types of risk and its sources. We offer a risk analysis to be performed;
- Risk management plan. This means planning the risk for all the elements in order the overall risk to be addressed and referred to the measures for reducing it;
- Mitigation. At this point out attention is concentrated on conducting the necessary measures and establishing safeguards to prevent hazardous situations;
- Monitoring. At all stages of the implementation of a software project it is necessary for us to properly organize a monitoring for the risk management.

Conclusions

The empirical research and analysis conducted lead to the formulation of a number of conclusions:

- The staff turnover in IT in the municipalities is low;
- Relatively rarely the municipality hires new IT specialists;
- Municipalities have good hardware systems;
- Most of the municipalities do not have software that is designed specifically for them;
- A small number of municipalities offer opportunities for online services;

- Most of the municipalities do not have early warning systems;
 - Most of the municipalities do not have BI.
- All the conclusions made outline the main trends in the development of e-local government.

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