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Perspectives of Local e-Governance Development
in Ukraine

Master Thesis

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Author's Declaration

I confirm that I have constructed this Master's Thesis individually and that the current paper has not been presented by anyone before. All resources, viewpoints, citations, and other materials from other authors that have been used in this thesis have been referred to. I hereby declare that I am the sole author of this Master's Thesis and that it has not been submitted to any other university for examination.

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Abstract

E-governance refers the delivery of central or local government information and services using Information and Communication Technology to citizens, businesses, employees, or other non-governmental organizations. This thesis provides an overview of the general concept of e-governance, its strategies and goals in enhancing local government operations. Additionally, it focuses on the development and implementation of e-governance function in Ukraine on a national and local level, while addressing several challenges and obstacles facing the country's further progress in this field. The main focus of this thesis will be on using the theoretical framework and applying it to a model town in an attempt to discover the perspective for the development of e-governance and engage a small town of approximately 7,000 citizens. The goal of this research is for it to become a helpful tool for the potential positive changes to the town and its local residents. In addition, this model town's governing improvements may become a precedent for other cities to follow.

The thesis is written in English and contains 60 pages of text, 4 chapters, 2 figures, and 4 tables. Keywords: e-governance, e-services, ICT, cyber security, local government, web portal, model town, Ukraine.

Annotatsioon

E-valitsus hõlbab endas suhtlust riigi ja kohaliku omavalitsuse ning kodanike, ettevõtjate ja mittetulundusühingute vahel, kasutades infotehnoloogilisi vahendeid. Käesolev uurimustöö annab ülevaate e-valitsuse kontseptsioonist, strateegiatest ning eesmärkidest kohaliku omavalitsuse töö efektiivsemaks muutmisel. Töö baseerub Ukraina näitel, kuidas e-valitsemist riigi ja kohalikul tasandil on võimalik arendada ning implementeerida, käsitledes mitmeid nõrkusi ning takistusi riigi või kohaliku tasandi praegustes arengufaasides. Käesolevas uurimustöös lähtub autor teoreetilistest raamistikest, mis seotakse Ukraina mudellinna näitega, eesmärgiga arendada e-valitsuse kontseptsiooni umbes 7000 kodanikuga linnas. Lähtudes Ukraina mudellinna näitest, võib sellest lahendusest saada pretsedent teistele linnadele, mida võidakse implementeerida ja kasutusele võtta.

Uurimustöö on kirjutatud inglise keeles ning koosneb 60 leheküljest, 4 peatükist, 2 graafikust ning 4 tabelist. Märksõnad: e-valitsemine, e-teenused, IKT, küberturvalisus, kohalik omavalitsus, veebiportaal, mudel linn, Ukraina.

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List of Abbreviations and Concepts

BMC	Business Model Canvas
BSC	Balanced Scorecard
CERT-UA	Computer Incident Response Team of Ukraine
EU	European Union
G2B	Government to business
G2C	Government to citizen
G2E	Government to employees
G2G	Government to government
G2N	Government to non-government organization
ICT	Information and Communication Technology
IT	Information Technology
SMS	Short Message Service
UAH	Ukrainian Hryvnia
WWW	World Wide Web

SWOT Analysis

Business Model Canvas

Balanced Scorecard

Introduction

Information and Communication Technology (ICT) has been significantly impacting the world in today's day and age. In the realm of public administration, it has played a vital role in the development of the concept of electronic governance, which has enabled the exchange of information and services between the government, citizens, businesses, and other institutions in the society. Although a fairly new concept, it has already been surfacing in many different parts of the world, illustrating its great potential in building a successful state. Many countries are beginning to administer e-governance services in their own government structures, both on national and municipal levels. As such, by focusing on municipalities as their starting point, it is an excellent way to begin implementing this concept and engaging citizens' participation on a local level.

The field of e-governance carries within itself ample opportunities in the improvement of government services. E-governance is about having an easily accessible operation to decrease communication and information costs, and to maximize the speed and productivity of service delivery by public institutions.[1] For some countries, where bureaucracy, inefficiency and corruption rule the state, the development of effective e-governance strategies and their implementation might be the panacea.

Ukraine happens to be one of those countries, which is presently experiencing challenging times. On many grounds, the society has a great demand for reforms in the governing of their country and finds the idea of e-governance to be a potential remedy to solving several ongoing problems. However, due to its transparency and anti-corruption essence, many state elites demonstrate a lack of political will and unwillingness to accept e-governance methodology in the governing processes of the nation. In spite of this, several government officials are beginning to emerge in an attempt to implement effective e-governance services on a local level, without relying on the support of the state authorities.

The idea of this thesis is, therefore, to discover the perspectives of developing e-governance services on a local level, where more political will may be found among those in charge and where the effects of such initiatives bring beneficial outcomes to the residents and businesses of their municipalities. This strategy represents the bottom-up approach, when changes are coming from the lowest or the municipal level. This approach is more difficult to

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[1] Alkins S. K. Managing E-Government Projects: Concepts, Issues, and Best Practices. IGI Global, January 31, 2012 - 400, p 12.

actualize, however, it does not depend on the rapid change of the highest level of political power of the country.

Accordingly, this thesis will initially examine the concept of e-governance in order to get a better understanding of what it is, where it has been used, and how it can be used further. An analysis of strategies and goals of local e-governance, will further tap into the concept, while international examples of local e-governance implementations, will illustrate the potential aspects of successfully developing electronic government services elsewhere.

In order to examine whether several e-governance changes may be implemented on a local level in Ukraine, the paper will additionally analyse the current e-governance developments in the country. This will include an observation of the current legal framework and the cyber security index, in order to examine the potential for e-governance initiatives. Expanding on the research, it is important to consider several challenges that have been a barrier to the effective advancing of such services. It is likewise necessary to examine successful cases of local e-governance operations that have already been in action in different regions of Ukraine. These chapters will provide the general knowledge and allow for a broader understanding of the field of e-governance, as well as, create background insight in how it is possible to improve the operations and management of local government in Ukraine.

The main focus of this thesis will be using the above-mentioned theoretical framework in an investigative manner and applying it to a model town of Kopychyntsi, located in the western part of the nation, with a population of approximately 7,000 people. This town exhibits a number of problems in terms of its governance over the city and its citizens. However, after recent municipal elections, the city secured a handful of new, bright and ambitious individuals to join its local government. There is great potential that this particular theoretical project will find interest with these leaders and may serve as a guideline for a practical experiment of implementing changes in this government's functions.

The goal of this research is for it to become a helpful tool for potential positive change to this city and its local residents. In addition, if found to be successful, this model town's actions and implementations may become a precedent for other cities to follow. It can be used as a manual for accomplishing such changes in many other local governments in Ukraine. For this reason, the work will focus on the local governance aspect. In order to accomplish this, a general understanding of the functions of the municipality is needed. Once familiar with what exactly municipalities are accomplishing, it will become easier to define what is required to implement in order for the municipality to become successful, and which tools are needed within the

e-technology realm to assist in its achievement.

This thesis aims to discover and analyse the following aspects:

- what are the legal implications of local e-governance in Ukraine?

- how can e-governance help improve one of the municipalities in Ukraine?

The following research methodology will be applied:

Analysis - the subject of the study will be divided into parts to be considered separately as a part of one whole concept. *Legal Analysis* - often the analysis will focus on the legal aspect of the information to be researched and discussed. *Synthesis* - to combine the parts into one general concept. *Induction* - to have the formal logical reasoning which will enable to come up with an overall conclusion on the basis of the individual facts. *Deduction* - opposite of the induction method, which will help obtain individual conclusions based on general provisions and knowledge. *Abstraction* - this method will help reject superficial and unnecessary elements in order to understand internal and essential parts of the concepts and ideas. *Analogy* - this method will allow to understand the knowledge that is based in its similar elements with another, resulting in perhaps new knowledge. The literature review will include books, academic journals and papers, legislations, articles, opinions and interviews related to the topic of e-governance and the relevant technologies that are used in this field in different countries.

Since the current work includes a legal approach, in order to understand the main functions of the local government in Ukraine, the Parliamentary Database will be used, where most of the legal regulations are located. This information is required to analyse which implementations are possible to achieve without interference with the law, and which changes could actually be made in order to facilitate the better governance of the city. For this, some of the specialized local documents regarding the work of the government of Kopychyntsi are also required, which will be requested directly from the municipal office.

The motivation behind this research is the numerous practices and experiences of smart and sustainable city developments around the world. Nowadays, it is becoming easier to find such successful examples, where certain e-services are becoming paramount to the livelihood of the citizens of particular municipalities. It is significantly important to analyse their structure, in order to gain broader understanding and knowledge into the kinds of technological changes that could potentially work in practice, if implemented in the municipality of Kopychyntsi.

1. The concept of e-governance

1.1. Definition of e-governance

E-Governance is a relatively new concept, which has been gaining considerable importance over the past few years. Today, it has become possible to implement significant changes into how governments around the world function with the assistance of Information Technology (IT).

Since e-governance is a relatively new phenomenon, it has not yet established universally clear terms in the field of science, which would be recognized and applied by scholars in the same exact way. However, due to its essence and main functions, e-governance can be defined as a tool utilizing the development and implementation of Information and Communications Technologies (ICT), in order to provide government information and services online to citizens, businesses, and other organizations, thus improving services and increasing the effectiveness and efficiency of public institutions. [2] The following model illustrates this concept.
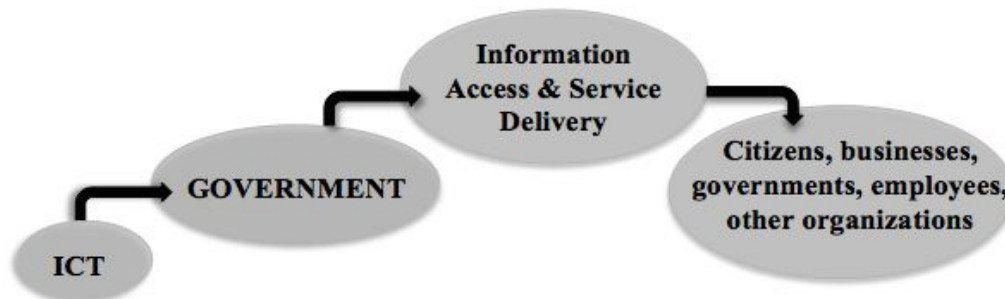
Figure 1: E-governance general overview

Other institutions and scholars define e-governance in similar ways, yet building on the concept as it develops over time. For instance, UNESCO provides a definition of e-governance, stating that it "*is the use of ICT by different actors of the society with the aim to improve their access to information and to build their capacities*".[3] It also adds about the importance of encouraging citizen to partake in the decision-making process of government services. The Council of Europe adds that e-governance augments the relationship between public officials and

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[2] Obi T. E-governance: A Global Perspective on a New Paradigm. IOS Press, 2007 - 179, p 28.
[3] E-Governance. The United Nations Educational, Scientific and Cultural Organization, n.d. See: http://portal. unesco.org/ci/en/ev.php-URL_ID=3038&URL_DO=DO_TOPIC&URL_SECTION=201.html (Accessed 24.03.2016).

communities, which in turn leads to a "*stronger, more accountable and inclusive democracy*". [4] Dawes enhances the definition by suggesting that: "*e-governance comprises the use of information and communication technologies to support public services, government administration, democratic processes and relationships among citizens, civil society, the private sector and the state.*" [5]

The concept of e-governance consists of two main elements: "e-Government", which represents ICT services in government and "e-Participation", which means the participation of society and likewise can be understood as "e-Democracy". Freeman and Quirke add that e-democracy is about ongoing citizen participation activities, which influence political decision-making processes and facilitate an active two-way dialogue between the government and the society. [6]

Further analysis of the concept can be focused on the various functionalities of e-governance. The following is an illustration of the specific classifications of services available to be delivered through the e-governance process.
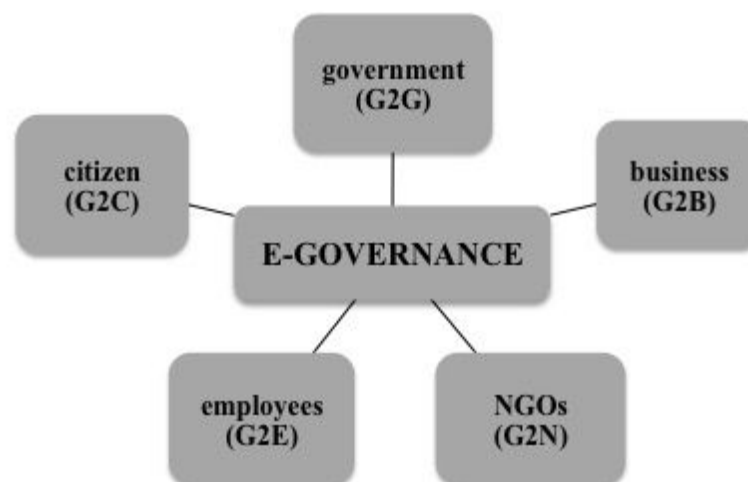
Figure 2: The five functionalities of e-governance

Government to citizen (G2C). This group of services is between the government and their citizens, where an exchange of information and services takes place. This platform allows for the government to provide certain beneficial services to its citizens, while at the same time creating an open dialogue with the community where it can listen to and communicate with those

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[4] E-governance. Council of Europe Democratic Institutions, n.d. See: http://www.coe.int/t/dgap/democracy/ Activities/GGIS/E-governance/Default_en.asp (accessed 24.03.2016).

[5] Dawes, S., "The Evolution and Continuing Challenges of E-Governance", Public Administration Review (Special Issue), December, 2008, pp. 86-101.

[6] Freeman, J. and Quirke, S. Understanding e-Democracy. Government-Led Initiatives for Democratic Reform. Journal of Democracy. 2013, pp. 141-154.

involved in the process. Citizens may receive access to government services remotely from their electronic devices, without actually coming into contact with government officials. This creates an efficient and effective way of receiving timely services such as paying bills, completing income taxes or requesting official licenses and certificates. Additionally, governments can offer a wide array of online information, various application forms, training and development opportunities, job search assistance, advice on health and safety concerns, offer travel and recreation information, among many other services.[7]

Government to business (G2B). The services under this category are the ones that are used by businesses, corporations, and other agencies for commercial purposes. [8] Through these services, governments may also offer assistance for the development of certain business ventures. While on the one hand governments provide information and services to businesses, on the other, a two way interaction is created with business to government (B2G) classification, under which businesses may offer services and products for sale to the government. [9]

Government to government (G2G). These services may occur at two levels, domestic and international, where local governments can interact with the central or national government, as well as, where the exchange of information and services between governments can take place internationally as an instrument for international relations. [10] Online partnerships and collaborations are important aspects of the interaction between government institutions and departments. ICTs create an open environment, where government representatives may share information, resources, databases and other competences in providing fast and efficient services.

Government to employees (G2E). This is a relatively newer concept, where government uses services in improving the operations and functioning of its employees. This is where the government can take advantage in providing proper training and learning opportunities for its employees, so that in return they may assist citizens in a timely and effective manner. Not only is it a good way to provide useful information for its employees, it is also a way to communicate and engage the government's employees in the decision-making and operations processes.

Government to non-government and nonprofit organizations (G2N). Another newly thought about classification of government interactions with non-government and nonprofit

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[7] Palvia S. , Sharma S. "E-Government and E-Governance: Definitions/Domain Framework and Status around the World. ISEG, 2007. See: http://csi-sigegov.orgwww.csi-sigegov.org/1/1_369.pdf (Accessed 25.03.2016).
[8] Fang, Z. E-government in digital era: Concept, practice and development. International journal of the computer, the internet and management. Vol. 10, No. 2, 2002 pp. 1-22.
[9] Palvia S., Sharma S. Ibid.
[10] Pascual, P. e-Government. e-Primers for the Information Economy, Society and Polity. UNDP-APDIP, 2003. p. 8.

organizations. The main functions here are an exchange of information and communication between government and nonprofit organizations, political parties and social organizations. [11]

E-governance is a practical mechanism in the hands of people, which does not necessarily lead to good government in and of itself. It requires positive political will for reformation and improvement of the political governing system. This means that e-governance may be helpful in making a progress in the governing process of a democratic and free society. However, alternatively, it may be used in authoritarian countries and transformed into internet state control regimes, which has been noted in some of the existing states.[12] In this type of scenario, though, it is only possible to use the term "e-government" as an element of social initiative. The element of "e-participation" is excluded and thus the concept of e-governance is not fully what it is meant to be and what it is meant to accomplish.

Local government is a system of public administration of a town or an area. In general, municipalities are directed by elected representatives of the people who live there. This organ holds a certain amount of legally defined functions, which cannot be spread out of the territory that is controlled by the particular municipality. [13]

According to this, local e-governance is a specific tool which can be used through the development and implementation of ICT solutions with an aim to improve the work of the local government. This is a general understanding of the concept of local e-governance, which will be widely used throughout the current theoretical work.

1.2. Strategies and goals of local e-governance

Local e-governance is a function of the local government by means of software and hardware systems and local information networks. It provides openness and transparency in the operations of the local government, as well as, it allows for complete access to the information on the activities of the administrative institution. In addition, it is an excellent tool for generating simple and affordable daily communication between local authorities, citizens, businesses and NGOs.

The development and implementation of e-services in the local government is needless, if there is no understanding of their benefits. In this case, usually there should exist one or several

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[11] Fang, Z. Ibid.
[12] Kalathil S., Taylor C. B. "The Internet and State Control in Authoritarian Regimes: China, Cuba and the Counterrevolution". First Monday 6, no. 8, August 6th, 2001.
[13] Chalker S., Aarts B. Weiner E. S. C. The Oxford dictionary of English grammar. . Oxford University Press, 2014. The object of search: "local government".

problems or challenges that require solving. This sort of understanding creates a high level of planning for future changes, or in other words, creates a strategy for local e-governance.

An e-governance strategy is a plan for e-government systems and their supporting infrastructure, which maximise the ability of management to achieve specific organisational objectives. [14] This plan is described in a top-level document that addresses strategic directions, goals, components, principles and implementation guidelines. The strategy should be clear and coherent, without any ambiguities. A strategy is considered a baseline for the initiatives and thus should be referred to quite often in order to make sure that any further actions are aligned with the originally intended plans. [15]

A national e-governance strategy may have a number of differences from state to state in accordance with general national strategy of each country. Local e-governance strategy may be unique to a certain scale, however, it cannot go against national e-governance strategy if such exists. A strategic framework for e-governance typically consists of such elements as:

- goals;
- objectives that further define goals;
- desired progress for each of the goals/objectives;
- a timeline for achieving the desired progress and goals;
- a way to measure the progress;
- methodology for selecting specific projects that meet the goals/objectives;
- specification of a common dimension within a goal to enable comparison of benefits generated by projects;
- an evaluation procedure in order to compare predicted and actual achievements of specific projects. Such frameworks are the foundation for e-government efforts because they can be used to validate the purpose of these programs. [16]

There is a number of goals which can be achieved with the use of e-governance. They can be divided and classified in different ways according to the priority and actual political, social and economic conditions of each country. Some of the general targets of goals will be listed and described below, which could be realized with the use of e-governance at a local level.

Time saving. Local e-governance helps citizens avoid long queues for receiving government services. Nowadays most of the interaction with the government, as well as with

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[14] Heeks R. Implementing and Managing eGovernment. SAGE Publications Ltd, November 23rd, 2005 - 304, p 43.
[15] Rabaiah, A, and Vandijck, E. "A Strategic Framework of e-Government: Generic and Best Practice". Electronic Journal of e-Government, Volume 7, Issue 3, 2009, pp. 241 - 258.
[16] Reddick C. G. Handbook of Research on Strategies for Local E-Government Adoption and Implementation: Comparative Studies. IGI Global, March 31, 2009 - 1140, p 480.

representatives on a local level could technically be completed with the assistance of ICT. Almost every person in the world has some means of ICT access, whether it be to the internet, a smartphone or at least a mobile device. At the end of 2015, it was recorded that there were more than 7 billion mobile cellular subscriptions, what corresponds to a penetration rate of 97%.[17] This creates a possibility for real time communication between citizens and their government authorities. E-governance also saves time for the local public administration in delivering needed services to their citizens. A good example could be communicating via a personal SMS or an e-mail notification on a mobile phone instead of sending a letter via regular post. [18] This means of communication has readily available infrastructure waiting to be put to use. However, many municipalities, still do not understand the value of these kinds of possibilities and opportunities in their administration.

Better business environment. E-governance may help create innovative and advanced conditions, which could be quite attractive for different investors and business venturers. Fair and equal rules encourages competition between local entrepreneurs and stimulates growth of the local budget. One of the main reasons why representatives of several local governments around the world are developing "smart city" concepts is to create better business environment in order to fulfill the budget with additional financial resources.[19]

Transparency and fight with corruption. The usage of ICT systems in local government makes the services open and transparent, where the same rules apply to every citizen. It also excludes human factor from the services and puts technology as a safety pillow between the main players in e-governance process: local government, business and citizens. [20] However, even if it is significantly more difficult to bribe a computer, existence of e-governance services on the local level is not enough to fully prevent corruption. As mentioned, this is merely a tool, political will of authorities and and effective mechanisms of punishment should also be involved.

Broadening public participation. Implementation of local e-governance requires support from the society. The interactivity of the newly established services, which are provided by the municipality with the help of information technologies, raises public interest in the work of local governments. A community which trusts and appreciates its municipality has a tendency to

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[17] ICT facts and figures: "The world in 2015". International Telecommunication Union (ITU). Geneva, May 2015. See:https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf (Accessed 03.04.2016).
[18] Neustar "mGovernment: How Government Agencies Can Use SMS". Napean LLC, 2010. See: https://www. neustar.biz/corporate/docs/how-government-agencies-can-use-sms.pdf (Accessed 03.04.2016).
[19] Zygiaris S. "Smart City Reference Model: Assisting Planners to Conceptualize the Building of Smart City Innovation Ecosystems". Journal of the Knowledge Economy. Volume 4, Issue 2, June 2013, pp 217-231.
[20] Ionescu L. "The Impact That E-Government Can Have on Reducing Corruption and Enhancing Transparency". Economics, Management and Financial Markets, Vol. 8, Issue June 2nd, 2013.

participate in governmental projects, as well as, generate their own initiatives. Public participation on a local level may also be increased with the use of such tools as modern social media. The local government is not necessarily required to create new infrastructure, tools or mechanisms of communications, but rather simply commit to using the ones which already exist in the community. Regular work reports and open discussions help involve more citizens into the local government projects and get the necessary feedback needed for future actions.

Improving the productivity and efficiency of local government departments. Generally, on a local level, as well as, on the state level, e-governance initiatives lead to the replacement of some of the government office worker functions with e-services programs, which oftentimes prove to be more efficient and effective.

This means that some of the human resources can be used for other projects, where creativity is of greater concern. Even in case if there is no need of other functions and office workers need to be laid off, the local government may ultimately save more of taxpayers financial resources for developing new projects and improving the existing initiatives.

Improving quality of life for the community. As e-governance implementation in the local government leads to positive changes in the work of the authorities and creates transparent and proactive services, accordingly it also leads to higher level of life for local citizens. In other words, if local e-governance is one of the tools which may lead the community to good governance, in turn, it improves the quality of life. In addition, local governance has a function in social integration of the community, by impacting the lives of their citizens in a positive way. Local e-governance may achieve virtual social integrity, which is as discovered, improves the quality of life of individuals, who are involved in this process. [21]

Protecting the environment. In the same way as e-governance, local e-governance has a feature of paperless workflow. Most of the operations would be computerized, which can significantly decrease the usage of paper in the government offices.

Local e-governance is a positive universal tool, which could generally be applied in every municipality worldwide and ultimately achieve the same goals. Nevertheless, each local government needs a special approach, vision and methods in formulating and implementing e-governance strategy in their particular environment, since the political, social, economic, cultural and even geographic conditions vary in every region of the world.

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[21] Moon J., Pu Li J.,Jo S., Sanders G. L.: "Improving quality of life via blogs and development of a virtual social identity". Journal of Information Technology Management. Volume XVII, Number 3, 2006, pp 26-37.

1.3. International experience in local e-governance

The idea of local e-governance exists in close relations with the concept of a smart city. A smart city is an integrated system in which human and social capital interact, using technology-based solutions. [22] Similar to local e-governance, the concept of a smart city follows the aim to efficiently achieve sustainable development and a high quality of community life through the interaction and partnership with the municipality. Smart cities worldwide are using e-governance as an instrument to serve their local citizens efficiently. In addition, it could be used to improve the internal business processes, allow for the use of resources in an environment friendly manner, increase transparency, accountability and citizen participation. It is fair to say that local e-governance is the brain of smart city.

From the international perspective and in context of local e-governance, there are basic steps that are required to be attempted by municipalities in order to make the city recognised as a smart city. [23] The steps and accompanying examples will be briefly described below.

Increase city expenditure on ICT. In order to develop e-governance at a local level, it is important to increase a percentage of households connected to the internet. This aim may be achieved by the creation of a good competitive environment for internet providers and the development of critical telecommunication infrastructure. In addition, on the background of the rapid increase of mobile internet usage, it is important that the city should be entirely covered with the fourth generation of mobile telecommunications technology (4G). This situation is not an issue for such countries as South Korea, where the penetration rate is close to absolute, however, there are still some places worldwide, where access to this technology remains at low level or does not exist at all. [24]

Municipal website availability. A number of municipalities in various countries have their own official web-sites. However, for many, there are still many electronic services with plenty of advanced functions that could be added as a function. A municipal website may become a channel for communication between the local government, its citizens and business.

Strategy. Development of e-governance at a local level cannot be chaotic and requires consistent steps from the municipality. A strategic plan has to be developed for the promotion of

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[22] Monzon A. "Smart Cities Concepts and Challenges: Bases for the Assessment of Smart City Projects." Smart Cities, Green Technologies, and Intelligent Transport Systems: 4th International Conference, SMARTGREENS 2015, and 1st International Conference VEHITS 2015, Lisbon, Portugal, May 20-22, 2015, pp 17-31.

[23] Vinod Kumar T. M. E-Governance for Smart Cities. Springer, November 26th, 2014 - 390, p 29.

[24] Open Signal: "The state of LTE". September 2015. See: http://opensignal.com/reports/2015/09/state-of-lte-q3-2015/ (Accessed 04.04.2016).

e-governance and ICT in the city. One of the early examples of a local e-governance strategy plan was established in the city of Barcelona in 1998, which was created for 1999-2003, and consisted of such components as: integrated information platform, reliable technological infrastructure, internal process reengineering and online services delivery. [25] Nowadays, e-governance strategic plans may be seen in well-known advanced cities as Stockholm, Singapore, New York and others. However, it is no less relevant to develop local e-governance strategy in middle-sized and small cities. Furthermore, a good example of local e-governance strategy demonstrates Gauteng Province in South Africa, which encourages a collaboration between such cities as Pretoria, Johannesburg, Soweto, Gauteng, Springs and several others. [26]

Increasing percentage of services available online. Introduction of ICT to the local government improves the quality and productivity of public services. There are many other benefits of e-governance for local administration such as time and financial resources saving, increasing transparency, reducing the waiting time for service delivery and others. That is why, when the local government has transformed some of its services online, it is essential to continue this transformation for all possible public functions. For instance, according to the European Commission, in the European Union (EU), 50% of life event services can be accessed entirely online, which means that all forms can be filled through the website. However, on average, only 27% of European public sector websites are providing mobile friendly applications. [27]

Electronic signature. This is a technology which has to be legally equivalent to a handwritten signature. Normally, in order to make an e-signature, it is necessary to use digital certificates embedded in a chip, which hold the data of the certificate holder. Electronic signature identifies individuals and exchanges information in a secure manner with other individuals and entities. Numerous countries around the world have adopted legal acts regarding the use of electronic signatures and from a legal perspective, the use of this technology certainly has freedom. [28] According to this, various local governments around the world have the possibility to incorporate e-signature into local e-services, and this provides tremendous prospects for the local governance in the future. Ideally, this technology can be used in all cases, where a person's handwritten signature is required. For instance, application for benefits and support in

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[25] Leo van den Berg. E-governance in European and South African Cities: The Cases of Barcelona, Cape Town, Eindhoven, Johannesburg, Manchester, Tampere, The Hague, and Venice. Ashgate Publishing, Ltd., January 1st, 2006 - 250, pp 20-21.
[26] GCR e-government strategy 2015 - 2020 "Moving from e-Government to e-Governance". Gauteng province, the Republic of South Africa, September 2015.
[27] Digital Single Market: "EU eGovernment Report 2015 shows that online public services in Europe are smart but could be smarter" June 23th, 2015. European Commission.
[28] Global Guide to eSignature Law: Country by country summaries of esignature law and enforceability. Adobe Systems Incorporated, 2016.

Manchester, can be done online with the use of e-signature technology only. [29] This technique creates possibilities for a number of other public services that could possibly be imagined.

Easiness to lodge complaints. E-governance is a tool, which not only helps authorities reach citizens easily and quickly, but it also allows local community members to have contact with their authority. Using electronic services as an instrument, citizens can effectively submit complaints and claims to their local government in order to improve their work. Quite developed example of this is the municipal complaints system in the city of Toronto, where the official web portal proposes detailed guidelines of the following process, with customer service complaints divided into various protocols by city divisions. This system allows citizens address their concerns directly to the appropriate place, in accordance with the problem at hand. [30]

Electronic voting. This technique generates a transparent, faster, cheaper, and more efficient voting process. Such a system is more accurate comparing to traditional voting and requires high level of political will from the authorities to implement it. At the time of local elections, the main financial resources are expenditures from the municipal budget. In this context, the e-voting system could save money for the development of other local e-services. On a national level, electronic voting is not highly favored, however, at a local level in some cases it is already a common practice. For instance, in 2010 in Ontario, Canada, municipal elections in 44 cities and townships made remote internet voting available to about 800,000 voters. The most known examples are such municipalities as Champlain, Clarence-Rockland, East Hawkesbury, Hawkesbury, Markham, North Dundas, North Glengarry, South Stormont and others. [31]

Through the implementation of local e-governance, various municipalities have a chance of moving towards the concept of a smart city. Their positive experience may be shared and used by other local governments worldwide, who would like to improve the governance of their community and make it more innovative, cost efficient and transparent.

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[29] Manchester city council. Benefits and support, Using electronic signatures. See: http://www.manchester.gov.uk/ info/200008/benefits_and_support/6714/using_electronic_signatures (Accessed 06.04.2016).

[30] Toronto official website, connect with your city, complaints. See: http://www1.toronto.ca/wps/portal/contentonly? vgnextoid=0aa6a07443f36410VgnVCM10000071d60f89RCRD (Accessed 07.04.2016).

[31] Grofman B., Trechsel A. H., Franklin M. The Internet and Democracy in Global Perspective: Voters, Candidates, Parties, and Social Movements. Springer, July 8th, 2014 - 148, p 9.

2. E-governance development in Ukraine

2.1. Preconditions, legal framework and cyber security index of Ukraine

In comparison to world trends, the concept of e-governance in Ukraine has appeared and became known relatively recently. It is understandable why it is less familiar and formulated, than in other more advanced countries in this field like Korea, Canada or Estonia. For this reason, it is difficult to find Ukraine in a global e-governance development rating. [32]

However, in the last few years, the concept of e-governance in Ukraine began to gain traction due to the several changes at the governmental level, as well as, the emerging of active social groups with progressive and innovative ideas at both the state level and the local level. In this context, the concept of local e-governance should be considered together with general concept of e-governance in Ukraine.

Law should be used as a background against which new changes and developments undergo stringent evaluations, yet at the same time, law should be used in facilitation to introducing new initiatives.[33] Although Ukraine is still distant from this concept, several changes have taken place both in the regulatory and facilitation sphere to augment the development of e-governance in the country.

In December 2010, the Cabinet of Ministers of Ukraine reviewed and approved the concept development of electronic governance in Ukraine. According to this document, one of the priorities for Ukraine is the development of an information society, where every citizen has the ability to create and collect information and knowledge, have free access to it, use it and share it in order to allow each person to fully realize their potential for personal and social development and quality of life. The implementation of electronic governance provides the establishment of qualitatively new forms of organization of public and local authorities, their interaction with citizens and business entities by providing access to public information resources the ability to receive electronic administrative services, apply to state authorities and local governments, using the Internet. [34] The proposed concept of e-governance defines the

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[32] Toshio OBI "2015 Waseda – IAC international e-government ranking survey". Institute of e-Government, Waseda University. June 2015 - 31.

[33] Nyman-Metcalf, K. "e-Governance in law and by law". Regulating eTechnologies in the European Union. Springer International Publishing Switzerland 2014. - pp 33-51.

[34] Verkhovna Rada of Ukraine Official Web Portal. Cabinet of Ministers Ukraine Resolution "On approval of the concept of electronic governance in Ukraine" December, 13, 2010. See: http://zakon3.rada.gov.ua/laws/show/2250-2010-%D1%80 (Accessed 09.04.2016).

purpose, basic objectives, priorities, and stages of building e-government in Ukraine. Under the provisions of the following document, e-governance is a form of organisation of public governance, which improves the efficiency, openness and transparency of state and local governments with the use of ICT to create a new type of state, focused on meeting the needs of its citizens.

However, successful establishment of the national concept of e-governance does not always lead to practically positive results. According to the United Nations E-government Survey of 2014, the index of online services in Ukraine in 2014 was 0.2677, which is below the global average rate of 0.3919. [35] This indicates serious problems in the development of electronic services in the country. One of the main obstacles to the implementation of provision of administrative services electronically in Ukraine is the low level of electronic document management in government agencies and local government institutions. For example, despite the availability of automated document management systems in the executive branch (in 100% of central authorities and 80% of regional state administrations), it is used only by a third of all number of employees (34% of employees of central executive bodies and 36% of regional state administrations). [36]

For the implementation of electronic services in the government, an important role plays the development of cyber security infrastructure. When administrative services are transferred into cyberspace, it is also important to keep in mind that they can be placed under security threats based on political, economic and other motives.

According to the Global Cybersecurity Index survey, completed by the United Nations specialized agency for information and communication technologies (ITU) in 2015, the cyber security index of Ukraine is 0,3529, which was calculated by such categories as legal, technical, organisational, capacity building and cooperation. [37]

The lowest points Ukraine gained was in capacity building (0,1250), where there was no indication of nationally recognized program for research and development of cybersecurity standards, best practices and guidelines in Ukraine. Also, according to the following research, Ukraine does not have the exact number of public sector professionals certified under internationally recognized certification programs in cybersecurity.

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[35] United Nations E-government Survey 2014 E-Government for the Future We Want, United Nations, New York, 2014, United Nations Public Administration Country Studies United Nations See: http://unpan3.un.org/egovkb/ Portals/egovkb/Documents/un/2014-Survey/E-Gov_Complete_Survey-2014.pdf (Accessed 10.04.2016).
[36] Electronic readiness assessment of Ukraine, in 2013, the National E-Governance Center. See: http://nc.gov.ua/ menu/publications/doc/elektronn_urad/E-ocinka-2013.pdf (Accessed 10.04.2016).
[37] ABI research.: "ITU Global Cybersecurity index and cyberwellness profiles." ITU 2015. See: http://www.itu. int/dms_ pub/itu-d/opb/str/D-STR-SECU-2015-PDF-E.pdf (Accessed 10.04.2016).

Another aspect which pulled the general result of Ukraine down in the cyber security index, consists of organization measures (0,2500). Even though Ukraine has an officially recognized National Security Strategy, [38] still there was no recognized national or sector-specific governance roadmap for cybersecurity in Ukraine.

Technical measures produced Ukraine an index of 0,3333. Despite the fact that Ukraine has a Computer Incident Response Team, known as CERT-UA, [39] there are still some problems in this area. According to the following research, there is no officially approved national(and sector specific cybersecurity framework for implementing internationally recognized cybersecurity standards in Ukraine. In addition, there is no cybersecurity framework for the certification and accreditation of national agencies and public sector professionals.

In the field of cooperation, Ukraine has a relatively positive practice. To facilitate sharing of cybersecurity assets across borders or with other nation states, Ukraine participates in regional cybersecurity activities, and for this its index is 0,5000.

The best results for the cybersecurity index in Ukraine are due to the legal measures category, which received a rating of 0,7500. Specific legislations and regulations related to cybersecurity have been enacted through the following laws: Access to information Act[40], Electronic Signatures Act[41], Electronic Transactions Act. [42]

Currently, a new initiative of Cyber security Index Survey will be compiled in the near future by the E-Governance Academy, which is located in Estonia. [43] There are certain chances that Ukraine's rating will improve over its previous results in these new ratings. The reason for this may be the Decree of the President of Ukraine "On National Cybersecurity Strategy of Ukraine", which was entered into force on March 15, 2016. [44]

The strategy provides a range of measures, priorities and directions guaranteeing cyber security of Ukraine, including the creation and rapid adaptation of state policy on the development of cyberspace and achieve compatibility with the relevant standards of the EU and NATO, a competitive environment in the electronic communications sector, providing services

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[38] Verkhovna Rada of Ukraine Official Web Portal. A presidential decree on "Strategy of Ukraine's national security" number 287/2015, from May 26, 2015.
[39] Computer Emergency Response Team of Ukraine (CERT). Official webpage.
[40] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine № 2939-VI "On Access to Public Information" from January 13th, 2011.
[41] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine N 852-IV "On electronic digital signature" from May 22nd, 2003.
[42] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine N 851-IV "On electronic documents and electronic document flow" from May 22nd, 2003.
[43] National Cyber Security Index project. E-governance Academy.
[44] Decree of President of Ukraine №96/2016 "On National Cybersecurity Strategy of Ukraine" March 15th, 2016.

in information security and cyber defense. It was also decided to create a National Cyber Security Coordination Centre as a working body of the National Security Council.

In view of all of the above, the cyber security situation in Ukraine has an inclination for growth and improvement. This formulates some perspectives for the development of e-governance on the central and local levels of power. However, there is still a number of challenges and problems, which act as a roadblock to the creation of an information society and the development and implementation of electronic governance in Ukraine.

2.2. Challenges of local e-governance in Ukraine

The Law of Ukraine "On Administrative Services" provision of administrative services in electronic form was intended to come into force on January 1st, 2014, through the Unified State Portal of Administrative Services.[45] Until just recently, the portal was under construction and testing mode, ultimately, the provision of electronic administrative services through the portal was not provided.

However, on March 17th, 2016, the Ministry of Economic Development and Trade of Ukraine announced that the first services will be installed in the Unified State Portal of Administrative Services. Even if the web-site is currently in the beta stage testing version, some of the services regarding doing business became available for citizens. [46]

According to the survey of the National Centre of E-Governance in Ukraine, 46% of the central state authorities and 25% of the regional and local administrations have a web page to provide online services. Among the institutions that have such web pages, only 19% of the central authorities and 30% of regional state administrations are actually providing some sort of electronic services. [47] The quality of such services may be questionable, however at least some authorities are taking the initiative to provide the necessary information about their town or city, as well as some relevant basic services for its citizens.

Consequently, the readiness of the central and regional authorities to provide administrative services to citizens in electronic form remains low. According to the results of the public monitoring of the use of e-governance technologies among the local authorities, there is

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[45] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine № 5203-VI "On Administrative Services" from September 6th, 2016. See: http://zakon2.rada.gov.ua/laws/show/5203-17 (Accessed 12.04.2016).
[46] United State Portal Administrative Services in Ukraine official web-page. See: https://poslugy.gov.ua/ (Accessed 12.04.2016).
[47] National Center of e-Governance in Ukraine. During the International Scientific Congress "Information Society in Ukraine" was presented electronic readiness Assessment of Ukraine. October 30th, 2013. See: http://nc.gov.ua/news/ index.php?ID=844 (Accessed 12.04.2016).

almost no appropriate information available on the list and the description of administrative services. Around 70% of the local governments' websites allow the downloading of application forms necessary to obtain administrative services. However, to receive the administrative services in electronic form it is possible only in 11% of websites of local governments. In addition, citizens can rarely track the status of the processing of applications for administrative services. One of the main obstacles for implementing administrative services electronically in Ukraine is the low level of electronic document management in government agencies and local government. The system of internal electronic document management, which covers all stages from document creation to administration, is implemented in 46% of local authorities. However, only 13% of the electronic document management systems are connected to all structural units. Electronic archives for incoming and outgoing documents are created only in 32% of local councils. The level of protection of information in the systems also remains low. For the purpose of exchanging electronic documents with other government organizations, only a quarter of local authorities are using protected communication channels. Insufficient attention is paid to training the staff of local authorities working with the system of electronic document management. There is also a lack of learning and development opportunitie for improving professional skills needed for the practice of e-governance. Such methods are taking place only in 38% of city councils. [48]

Today, the integration process of information systems in Ukraine is not yet completed. In addition, there is no effective system of electronic interaction between public authorities and local governments, which significantly slows down the development of electronic administrative services in the state. Factors that complicate the full implementation of electronic document management systems in government agencies and local governments are:

- lack of uniform national standards for the operation of electronic document management, unified requirements for software that makes it difficult to introduce internal electronic document management systems of state and local governments, as well as the integration of these systems;

- flaws in the domestic legislation on electronic document management and the electronic digital signature;

- insufficient protection of information in the electronic document management system of the state and the local governments;

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[48] Kapsliak I.S., Sereniuk A.O. 100 cities - a step forward. Monitoring of the implementation of e-government tools as the basis of administrative services in electronic form – Vinnytsia: NGO "Podilska Regional Development Agency", 2014. – 86. – See: http://nc.gov.ua/news/index.php?ID=1577 (Accessed 12.04.2016).

- established tradition of keeping documents in paper format in government agencies and local governments;
- limited access for citizens and businesses to information resources;
- lack of a clear vision from the side of the officials on how to develop e-governance on a state and local level;
- lack of cultural tradition in the society to monitor the effectiveness of public services.

The development of e-services in Ukraine is also complicated by insufficient funding for the implementation of administrative services electronically. The introduction of ICT in the process of administrative services requires considerable expenditures. For example, the estimated amount of funding necessary only for the modernization and operation of the Unified State Portal of Administrative Services is 198 million UAH (6.4 million euros), and for the creation and implementation of information system of interdepartmental electronic interaction of state bodies is estimated to be 150 million UAH (5 millions euros).[49]

Thus, the current law on administrative services requires a financial support from public authorities and local governments to provide administrative services exclusively by the State Budget of Ukraine and local budgets. This makes it impossible to use the mechanisms of public-private partnerships to finance further developments of electronic administrative services, both on a national and local level.[50]

Other challenges in the development of electronic administrative services in Ukraine is a lack of computer technologies in households, uneven and insufficient penetration of Internet services in Ukraine, proportionally low level of computer literacy and awareness of the opportunities and benefits of receiving administrative services electronically. However, these indicators are improving progressively every day. Also, there is a tendency of rapid growth in the number of mobile and smartphone users in Ukraine. For instance from year 2012 to 2015 the number of Ukrainians using a smartphone increased from 7% to 30%. [51] In addition the penetration of telecommunications mobile services in the population, according to research company AC & M Consulting, in 2015 was 130%. [52]

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[49] Verkhovna Rada of Ukraine Official Web Portal. Cabinet of Ministers of Ukraine Resolution № 614-p "On Approval of the Concept of the State Target Program of creation and functioning of information system of administrative services for the period until 2017" from July 24th, 2016. See: http://zakon2.rada.gov.ua/laws /show/5203-17 (Accessed 12.04.2016).
[50] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine № 5203-VI "On Administrative Services" from September 6th, 2016, article 18. See: http://zakon2.rada.gov.ua/laws/show/5203-17 (Accessed 12.04.2016).
[51] Mobile Marketing in Ukraine. "Usage of smartphones in Ukraine and in the World". January 19, 2015.
[52] RBK-Ukraina: "Forsazh 2016: what communication operators are preparing for Ukrainians?". February 8th, 2016. See: https://www.rbc.ua/ukr/analytics/forsazh-2016-operatory-svyazi-gotovyat-ukraintsam-1454907567.html Accessed 13.04.2016).

This information provides promising perspectives on the use of mobile channel as an additional provision of electronic administrative services, especially on the local level, where the degree of personal computer and smartphone users is relatively lower than in the central cities. Currently, the potential of electronic government with the help of mobile services is by far not exhausted in all its possible ways. According to the results of the public monitoring in the implementation of e-governance on a local level, a mobile version of a website is available only in 3% of government websites. Rarely is a tool such as an SMS message is used in the operation of government service delivery. [53]

2.3. Examples of local e-governance in Ukraine

The degree of e-governance development in Ukraine during the last 2-3 years has been significantly increasing and becoming a popular tool in augmenting government service delivery and citizen participation. Often, this serves as a mechanism for loud political statements from the side of the central officials. According to this, the demand in the society and the lack of political will on a national level creates good conditions for bottom-up initiatives and development of e-governance on a local level.

Some of the local municipalities in Ukraine have already started to take advantage of using technological advancements in building their own online services in addition to those, which are already implemented on the state level. These cities often raise the bar of quality and efficiency of administrative services in the country and giving a positive example for other municipalities, as well as, state officials to follow.

In September 2015, the analysts ranked Ukrainian cities with the most developed system of electronic governance. Cities were evaluated by the number of connections of public services to the state portal. In the following rating, major cities of Ukraine were studied and evaluated, which are already connected to some of the online services. [54]

The leader of this rating became the city of Lviv, where its citizens can receive the maximum possible number of online services. Residents of this city can request certificates of no criminal record, on income, information about apartment waiting lists, sign online petitions, make an e-complaint, among many others. Moreover, recently Lviv city authorities together with

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[53] Ibid. Kapsliak I.S., Sereniuk A.O. 100 cities - a step forward. Monitoring of the implementation of e-government tools as the basis of administrative services in electronic form – Vinnytsia: NGO "Podilska Regional Development Agency", 2014. – 86. – See: http://nc.gov.ua/news/index.php?ID=1577 (Accessed 12.04.2016).
[54] Imena.Ua: "Lviv is connected to the biggest number of online services with access to the portal iGov among all cities. September 4th, 2015. See: http://www.imena.ua/blog/e-government-rate/ (Accessed 12.04.2016).

the "Oschadbank" and the ICT Competence Center implemented the project of an "e-card of Lviv citizen". This card was created by the example of Estonia's ID card. Through this innovation, the resident of the city will be able to receive municipal, state and private services online. The "e-card of a Lviv citizen" uses the technology of digital signatures called "BankId" and enables access to 20 municipal services online. [55]

In addition, the city of Lviv has participated in the development of "mobileID" technologies in Ukraine. In the Forum of Electronic Governance "451 °E", which took place in Lviv, Ukrainian mobile operator "Kyivstar" introduced a trial version of Mobile ID service. Today, Mobile ID standard is already used in 20 countries. Experts believe that its introduction in Ukraine will be an important step towards the synchronization of Ukrainian document management systems with the European standards and requirements. [56]

Finally, according to the official website, the city of Lviv has a "Digital Conversion Program 2020, established and approved by local municipality". One of the main priorities of the city's development strategy, according to the their competitiveness strategy is the IT industry. The development of e-government in Lviv and the introduction of various tools of e-democracy is an important component in the development of a modern European city. Electronic governance provides new forms of communication between citizens, business and government, free access to public information, promotes participation of residents in the process of city management, improves the quality of public services and brings them closer to the requirements of residents. [57] This municipal program is the first example of strategy formulation regarding the development of e-governance in Ukraine. Hopefully, this will be a good inspiration for the development of the national e-governance strategy on a state level.

The second place in the following rating took the city of Dnipropetrovsk. With the assistance of the local portal of this city, one may order a certificate of no criminal record, income statement, register in electronic queue for passport issuance service and for car registration authority, as well as several other services. In addition, the city has a resident portal of Dnipropetrovsk, which provides a number of local services, available only for its citizens. In this city was invented the only working system of electronic authentication - "BankID", which is

[55] Zaxid: "The city authorities presented a "Card of Lviv citizen». July 30th, 2015. (Accessed 12.04.2016).
[56] City council of Lviv official web-portal: "Kyivstar introduce Ukrainian Mobile ID - the service of mobile identification of users". September 18th, 2015. See: http://city-adm.lviv.ua/news/economy/227303-kyivstar-vpershe-predstavyt-ukrainskyi-mobile-id-servis-mobilnoi-identyfikatsii-korystuvachiv (Accessed 13.04.2016).
[57] City council of Lviv official web-portal: "The city of Lviv has developed the program of digital transformation for years 2016-2020". March 17th, 2016. See: http://city-adm.lviv.ua/news/city/lviv-changes/230975-lviv-otrymav-prohramu-tsyfrovoho-peretvorennia-do-2020-roku (Accessed 13.04.2016).

now available for all customers of the major Ukrainian banks. [58]

The third leader in this rankng takes the city of Lutsk. There have already been created and introduced many e-services, such as the BankID system, the personal cabinet, retrievement of no criminal record and statement of earnings. Residents of Lutsk, using the e-government system can receive an e-mail extract from the technical documentation of the monetary evaluation of land. In addition, Lutsk city government has a strategic document regarding the development of local e-governance in the community: "Program of e-governance and Information of Lutsk in 2016 - 2017". The main goal of the program is the development of e-government to achieve European standards of quality for electronic administrative services, e-democracy, openness and transparency of city government to the public, NGOs and business.

According to the Program, the following results are expected to be achieved in the near future:

- a single information and telecommunication space by the city government;
- introduction of elements of the concept of a Smart City, where technology is integrated into relevant structures to improve the quality of service, reduce costs and consumption and to improve communication and understanding with the community of the city;
- particular attention should be paid to such sectors of city management as energy, health, transportation and social life, where in each of these areas can be introduced innovations that are called to optimize the use of financial resources. [59]

Fourth place in the ranking occupied Kyiv, the capital of Ukraine. Kyiv has already implemented and began using personal electronic cabinet of citizen, including its mobile version, a call-center, and a card of the city dweller. However, so far in Kyiv there is very little choice of online services and the ability to identify the citizen, compared to other regional cities. At the end of 2015, the city administration of Kyiv presented an online tool for the control of formation of the city budget for the year 2016. The interactive website allows within a couple of clicks to correct certain directions of the city budget for the relevant areas of expenditure. The most interesting propositions from the citizens were taken into consideration by the local authority. [60]

The fifth place with the same number of services was taken by the cities of Mykolaiv and Kherson. In each of the cities, there has so far been established two electronic public services.

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[58] Ryzhenko O. The features of the development electronic governance in Ukraine. Public management and local governance, 2015, vol. 4(27), pp. 143-151. See: http://www.dridu.dp.ua/vidavnictvo/2015/2015_04(27)/18.pdf (Accessed 13.04.2016).

[59] The decision of the City Council of Lutsk № 2/16 "On the program of e-government and Informatisation the city of Lutsk in 2016 - 2017 years" from December 24th, 2015. See: http://www.lutskrada.gov.ua/print/74455 (Accessed 13.04.2016).

[60] City Administration of Kyiv official web-portal: Consultation on the draft budget of Kyiv for 2016. See: http://app.citizenbudget.com/?token=p9xApqsf3YF5VWTxskNF (Accessed 13.04.2016).

Residents of Mykolaiv may get a copy of the decision of the city council and its executive committee, as well as be on waiting list of citizens who need better housing conditions. In Kherson are available online answers to a request for public information and appeal from the municipal authorities. Starting from January 2016, in Mykolaiv entered into force a local program "Electronic Mykolaiv region", which has an aim to introduce region systems of e-governance and e-democracy. This program will last for one year and its budget is 2,800,000 UAH, which is around 95,000 euros. [61]

These cities are comparable in establishing new trends and innovations in the development of e-governance in Ukraine. The higher level of political will and social initiatives, in comparison to the central governmental, allows some of the local municipalities to become engines of e-governance in Ukraine. Respectively, the best testing models for new innovations in the country are small municipalities, because when the locality is smaller, it is often less difficult to bring changes to it without facing bureaucracy from the side of the authorities.

The development of local e-governance has great potential. This instrument may significantly increase the scale and quality of administrative services provided by the central government, as well as, by local municipalities. However, there is a number of difficulties which are slowing down the transformation process. Due to this fact, it was decided to chose one of the local governments of Ukraine, where all the necessary changes may be done faster and which would require full collaboration from local governmental institution. The aim of this project is defined in such aspects:

- demonstrate the essential benefits of e-governance as a tool of improving administrative services;
- increase awareness and trust regarding e-governance services among the society;
- speed up the process of the e-governance transformation in Ukraine starting from the local level (bottom-up direction);
- establish better quality of life in the targeted community and encourage other local municipalities for future collaboration.

According to this for the research purposes, it was decided to select another local municipality in Ukraine, which is smaller in comparison to the main regional cities-centers, described above, and to create a plan for development of electronic governance.

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[61] Regional Council of Mykolaiv official web-site: "In the regional council was signed a memorandum on application the platform for e-governance for the cities of Mykolaiv region." January 20th, 2016. See: regionhttp://mk-oblrada.gov.ua/index.php/359-v-oblasniy-radi-pidpysano-memorandum-shchodo-vprovadzhennya-platformy-elektronnoho-uryaduvannya-u-mistakh-mykolayivshchyny (Accessed 16.04.2016).

3. E-Kopychyntsi web portal project

3.1. The town of Kopychyntsi as a target municipality

Kopychyntsi is a town located in Ternopil region of western Ukraine. Its population is around 7,000 citizens. Similarly to several other communities in Ukraine the town of Kopychyntsi has rich and intensive history of self-governance. It is fair to say that this tradition started in the year 1564, when the town received its Magdeburg rights, the privilege status of the municipality, which declared its internal autonomy in governance.[62]

Today, from the social perspective this small community perfectly represents the country it is situated in. This target municipality has good potential in the context of local e-governance. It is believed that comparing to other bigger in scale local municipalities of Ukraine, where the first early steps towards e-governance have already been made, the town of Kopychyntsi may be more flexible for important transformations in the future.

Furthermore, when testing new electronic services on such a size of municipality, it is significantly easier to control the situation in terms of governance. In addition, investment into e-governance development programs on a local level require lower amount of resources, which results in faster and easier implementation.

Finally, in case of possible mistakes, the impact on society will be much lower as it is comparatively a small part of the population of Ukraine. This will not significantly affect the trust in e-services in Ukraine, which will probably still remain high. This is one of the reasons why it is recommended, that most of the governmental and even regional electronic services in the country should be initiated on a local level. It is also likely that the town of Kopychyntsi may become a small incubator for a number of e-services in the public field of Ukraine in the future.

In order to gain better understanding, it is important to analyse the administrative system of the town of Kopychyntsi. The target municipality is ruled by a local council, which has been recently re-elected in accordance with the Decree of Supreme Council of Ukraine (Verkhovna Rada) "On appointment of regular elections of deputies of local councils and mayors in villages, towns and cities in 2015". [63]

The town council of Kopychyntsi is lead by a major, who is elected by the respective

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[62] Savka B. Kopychyntsi: a journey through the centuries: historical outline. Ternopil: Dzhura, 2001 - 580, p. 150.
[63] Verkhovna Rada of Ukraine Official Web Portal. Resolution of the Verkhovna Rada of Ukraine № 645-VIII "On calling regular elections of deputies of local councils and villages, town and city chairmen in 2015." from July 17th, 2015. See: http://zakon4.rada.gov.ua/laws/show/645-19 (Accessed 14.04.2016).

local community on the basis of universal, equal, direct, suffrage, by secret ballot, in a manner prescribed by the laws of Ukraine and exercise their powers on a permanent basis in accordance with Article 42 of the Law of Ukraine "On local government in Ukraine. [64]

According to the main statutory document, the town council of Kopychyntsi is an elected body, consisting of deputies, which according to the law have the right to represent the interests of the territorial community and carry out functions and powers of the local government on the behalf and in the interests of their citizens. The general council membership is 26 representatives. [65]

An important role in the administration of the municipality of Kopychyntsi, plays the secretary of the local government, who is elected by the city council from among its members for an office. Unlike the municipal deputies, the secretary works in the city council on a regular basis. According to the current legislation of Ukraine, the city government of Kopychyntsi consists of such administrative bodies as an executive committee, departments, divisions, and others city council executive bodies. The main role plays the Executive Committee which is formed by the respective council for a term of its office. The personal composition of the Executive Committee is approved by the City Council on a proposal of the mayor.

The Executive Committee consists of the deputy mayor of the council, a manager of the executive committee and also heads of the departments, offices and other executive bodies and entities. In addition, the Executive Committee includes the Secretary of the Council. The head of the following body is the major of the town of Kopychyntsi. The Executive Committee has certain obligations and it is responsible for achieving several tasks:

- consider projects of local socio-economic and cultural development, target programs on budgets, draft decisions and other issues introduced to the Council;
- coordinate the activities of departments, offices and other executive bodies, enterprises, institutions and organizations belonging to the communal property of the territorial community and hear out reports by their leaders;
- have the right to modify or abolish acts of subordinate units, departments and other executive bodies and their officials.

The main form of work of the Executive Committee is its meetings. The representative body of the council is called to convened by the Mayor at least one time each month. The meetings are eligible if more than half of the total composition of the Executive Committee is

[64] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine 280/97 "On local governance in Ukraine" from may 21st, 1997. See: http://zakon3.rada.gov.ua/laws/show/280/97-%D0%B2%D1%80 (Accessed 14.04.2016).
[65] Regulation of work of City Council of Kopychyntsi, seventh convocation, article 2. From January 1st, 2015.

present. A decision considered to be adopted if it was voted for by the majority of the total membership of the executive committee.

The local government of Kopychyntsi deals with several types of power, which may be divided into functions and delegated by the upstanding governments in the political-administrative system of Ukraine. The delegated functions of the town council are categorized into the following divisions of power and authority:

- the field of socio-economic and cultural development, planning and accounting;
- the area of budget, finance and prices;
- management of municipal property;
- the department of housing and communal services, trade services, public catering, transport and communications;
- the area of construction;
- the field of education, health, culture, physical culture and sports;
- the sphere of land relations and environmental protection;
- the field of social protection of population;
- the division of foreign trade activities;
- the division of decide-making process on administrative and territorial systems;
- assurance law and order, protection of rights, freedoms and legal interests of citizens. [66]

Due to the recently entered into force statements from the Law of Ukraine "On amendments to some legislative acts of Ukraine regarding the empowerment of local governments and optimization of administrative services", starting from April 4th, 2016, the smallest local authorities of Ukraine, including the council of Kopychyntsi, will receive one more function on official registration of the living places of local citizens. [67]

As it can be seen, the local government of Kopychyntsi holds a significant number of responsibilities. Theoretically, to some of them fully or partly e-governance process may be incorporated as a tool to improve the quality of work of the current administrative body and to increase the quality of life of its local inhabitants.

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[66] Ibid. Regulation of work of City Council of Kopychyntsi, seventh convocation. From January 1st, 2015.
[67] Verkhovna Rada of Ukraine Official Web Portal. Law of Ukraine № 888-VIII "On amendments to some legislative acts of Ukraine regarding the empowerment of local governments and optimization of administrative services" from December 10th, 2015. See: http://zakon5.rada.gov.ua/laws/show/888-19/print1458381487174697 (Accessed 14.04.2016).

3.2. Analysis of the "as-is situation" in terms of e-governance

Despite the fact that the town of Kopychyntsi nowadays is regulated by a new, innovative and active team, the concept of e-governance is almost entirely absent in this authority. It is fair to say that the town council does not provide any services to its citizens in electronic form. There is no strategy or vision in terms of local e-governance in Kopychyntsi. The lack of technological solutions involved in the operations of city the council of Kopychyntsi as well as the bureaucracy of the country are causing several problems from the perspective of communication of the government and their citizens. The present conditions may eventually decrease the trust of the community towards their official government representatives.

The statutory acts and legal documents in the town council of Kopychyntsi are digitalised, however, are not uploaded into any of the publicly available electronic resources. The regular reports on work of the local government are published on the entrance doors of the city council building. This provides access for citizens to the main news and results of work of the authority, however, for a number of local citizens, who are regular internet users this situation creates certain inconvenience to assess above mentioned information. In addition, the citizens who are currently out of town or out of the country, do not have a direct channel to be informed regarding the work of their own local government, unless through a friend or a family member who at the time is located on the territory of the town.

The city council of Kopychyntsi does not have a solid information resource, which would inform people about the events that are related to the community. In order to achieve this aim, currently the local government uses several social network communities, which were organized by active citizens. However, the above mentioned communities are not unified and not directly connected to the city council in any way.

Another drawback of the operations is the bureaucratic procedure of creating complains to the local government. This situation is common for most of the municipalities in the entire country, where an average scenario for application of the complaint in Ukraine can be recognised as complicated. Usually, the process is divided into many possible phases depending on the case at hand. The complaint should be created in a written form, either handwritten or typed out and printed out by the complainer and then personally delivered to the department of citizens appeal of the local authority. Additionally, the complainer usually spends money on transportation and his personal time to get to the location of the municipal office. A well formulated complaint should be prepared in a proper manner, outlined by the government representatives, with all the

argumentations and often can include several illustrations, in order to be examined by officials. Then, the complaint is registered by the public servant and embedded with a special number to the case, which is later entered into a special registry, oftentimes a paper one. After a certain period of time, when the application is delivered by regular post to the Department of the Citizens, the worker of the institution is supposed to decide to which competency this appeal relates. Then, he or she prepares an order to send it to the particular subdepartment, which is responsible for reviewing this category of complaints. But, before doing this, the public worker needs to receive the approval from the head of the Department of Citizens appeal, who may also reverse the process in case that the decision was made incorrectly. The department head may give his corrections and only then the complaint will go to the right subdepartment.

According to article 20 of the Law of Ukraine "On Citizens' Appeal", the applications from citizens are considered and solved within one month from the date of receipt. [68] When the complaint is in the right subdepartment it may be held up in the waiting list until the specialist takes it into consideration. It may take some time for them to understand the core of the problem and to propose a solution, which will be efficient for the particular case. The specialist will also send the request to the agency, which should estimate the problem and approve whether they are able to fix it by themselves or if they need some other agencies or specialists to get involved.

Finally, in the situation where it has been decided to resolve the cause of the citizen's complaint, this process also takes a good amount of time. The entire process of the complaint ends with a creation of a report about the status of the problem and the way it was resolved. The report goes to the Department of the Citizens' appeal, which should approve the following document and prepare an acknowledgement letter for the complainer. Usually, it will be filled out by the secretary and signed by the head of the Department. The letter with the information about the status of the resolution of the problem will be send back to the citizen who filed the complaint via regular post.

This is only one of the many issues that illustrate the inconvenience of the operations of the government officials, as well as inconveniences for the citizens. These types of issue too face the city council of Kopychyntsi, as in a number of other municipalities in Ukraine. However, these challenges and drawback may be solved with the assistance of e-governance processes that have already been proven to work in Ukraine. The AS-IS situation, which states a certain level of

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[68] Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine № 393/96 "On Citizens' Appeals"from October 2nd, 1996. See: http://zakon5.rada.gov.ua/laws/show/393/96-%D0%B2%D1%80/print1458381487174697 (Accessed 14.04.2016).

inconvenience in the communication between the government and its citizens, as well as, between the government and other local entities, may be improved. The following subchapters will provide a proposition regarding the first steps which could be taken in the field of e-governance, in order to improve the effectiveness and efficiency of the operations of the city council of Kopychyntsi.

3.3. Web portal as a solution and its general description

The field of e-governance continues to develop over time, and as such new concepts, terms and theoretical frameworks surface. A concept that has been familiar in some respects is the one of the maturity models, which have been created and re-created by several scholars to result in 25 types of maturity models for best practices in e-government portals. [69] Perhaps one of the more known and highly referred to out of the 25 models is the Layne and Lee maturity model. [70] The authors developed a 4 stage model with the following outlines:

- stage 1: "catalogue", where the public authority is simple presented on the web;
- stage 2: "transaction", where a citizen can engage in an exchange with its authority;
- stage 3: "vertical integration", across different levels with similar functions;
- stage 4: "horizontal integration", across different functions and services. [71]

According to these stages, the town of Kopychyntsi is still quite far from completing these stages. Officially, it has not necessarily even reached and passed the "catalogue" stage, since it does not have its own web portal.

In order to increase the efficiency of the work of the local government of Kopychyntsi, the author proposes that an interactive web portal be implement. The web portal will serve as an augmentation to the operations of the city council, transferring several services into e-services and allowing the local authorities to be able to directly deliver information and services to its citizens, while the society takes advantage of efficient work of its government. The portal would have several types of functionalities, which will be described below. The initiative will be called the "e-Kopychyntsi" web portal project.

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[69] Fath-Allah, A., Cheikhi, L., Al-Qutaish, R.E. & Idri, A. e-Government maturity models: a comparative study, International Journal of Software Engineering & Applications, 5(3), 2014,- pp 71-91
http://airccse.org/journal/ijsea/papers/5314ijsea06.pdf
[70] Layne, K. & Lee, J. Developing fully functional e-government: a four stage model,Government Information Quarterly, 18(2), 2001, - pp 122-136.
[71] Ibid.

Since the newly re-elected government representatives took office in late last year, there have been discussions regarding the need for an official Kopychyntsi web-site. However, there is still no clear vision of its functionalities, information, appearance and the process of creating this portal. For this reason, in order to assist the local government in solving an issue of their concern, this particular initiative may not only reveal whether it is possible to implement e-governance processes on a local level in Ukraine, but also actually serve as a resolution in implementing a service that could potentially aid the officials in their daily operation and the citizens in receiving the requested services.

Town visiting card. The first stage of the web portal initiative would be to create a concise static information page about the town of Kopychyntsi. This information may be useful for the local citizens, as well as for visitors and bypassers, who are not familiar with this community. The main language of the following web portal should be Ukrainian, however, the content should also be translated into the following foreign languages: Russian, Polish, Hebrew, German and English. This is caused by historical preconditions. Kopychyntsi's visiting card page will contain a general overview of the town, position of the town in the administrative and political system of Ukraine, historical background, natural resource potential, demographic situation, transport system and photo gallery.

Digital information on the work of the city council. The web portal will be integrated with the local city council, accordingly, the results of the work of the municipality could be open and available for citizens online. In order to achieve this goal, all of the documents should be digitalized and published electronically. These documents will contain the following type of information:

- statutory documentation of the city government; [72]
- sample forms of official documents that are involved in the work of local government;
- regular reports on the municipality's work.[73]

Informational resource. Information regarding all the activities that are taking place in Kopychyntsi or involving residents of this community, should be placed into the web portal. This content will be updated on a regular basis. At present, there are several web communities on various social networks, which provide a platform for communication the events in Kopychyntsi. The most active citizens who have organized and are supporting these communities, should be invited for future cooperation. In addition to the following, there is already one webportal

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[72] Presently, this information may only be requested when physically visiting the municipal office
[73] This information is available only in paper form near the main doors of the municipality.

kopychyntsi.com.ua, which was created by a volunteer resident in 2006 that covers all the main events in the town. It used to be a relatively active in the past years, however, nowadays it hosts around 300-400 unique users daily. [74] As the consequence of negotiation with the main developer of this web-resource it was decided to rebuild the existing web-portal into local e-governance service and to create the direct cooperation with the local municipality.

Electronic service delivery. These will be in congruence with the activities of the local government. According to the competence of the municipality of Kopychyntsi, the new web portal will be helping the representatives in delivering services to citizens. The required documents will be provided in electronic form with a possibility of electronic signature. Individuals will have a choice of not coming into the local government office, what may significantly reduce the workload of the authority, as well as, provide a convenient method for the citizen in receiving the necessary services.

E-participation. These include electronic complaints, propositions and appointments with members of the city government. The electronic web server of Kopychyntsi will provide an opportunity for citizens to take an active part in the functioning of the local government. In order to fulfill this requirement, the possibility for active citizens to send electronic petitions and proposals to the authority will be developed. These statements will be prioritised with the quantitative measures of support from the other active participants of the community, which must be authorised by the portal system. Once a petition has collected a certain amount of signatures, for instance 100 authorized supporters, its will gain the appropriate priority and will be taken into consideration by the municipal leader. Then, a deadline will be established for the local government representatives to provide an official feedback regarding the topic that has been raised by the community. This system is a good way of developing higher level of participation of the local society in the public life of the residents. In addition, those citizens, who are currently out of town or out of the country, but are interested in its well-being, would receive a chance to become a voice of influence in the administrative processes of their hometown.

In the previous sub-chapter, a description of the as-is process of filing complaints in any average local authority in Ukraine, including the city council of Kopychyntsi, was presented. This unfavorable process may be revised with the "e-Kopychyntsi" system, where individuals will be able to send complaints easily and perhaps receiving feedback much faster. First, the user

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[74] Town of Kopychyntsi web-portal. See: http://kopychyntsi.com.ua/ (Accessed 14.04.2016).

will have to complete an electronic authentication in order to let the system know that a certain person wants to use service. Afterwards, the citizen may be able to fill out a specific form describing the reason and main arguments of the complaint. Using an electronic signature, the electronic complaint will be confirmed and sent to the city council. During several stages when the e-complaint is received, checked and considered, the citizen will receive notifications through personal electronic notification programs, for instance via e-mail. The resolution will be provided and the decision of the complaint will be addressed by a representative to the user of the e-complaint service.

In addition to the electronic propositions system, a possibility to make an appointment with each member of the local government electronically will be developed. According to Ukrainian legislation, the citizens have a right to contact the local authorities regarding their functional responsibilities with comments, complaints and suggestions concerning the statutory activity. [75] Electronic appointment with the representatives of the local government of Kopychyntsi is expected to be an effective tool to realize this legal statement and encourage the citizens to freely exercise their rights.

Enhancing public collaboration. The web portal may also serve as a link between the local government and other public institutions in Kopychyntsi. It is possible to create an environment for collaborative activities of other public institutions, which are taking place in the town. These public institutions are schools, a cultural center, a theater, a hospital, a kindergarten, a school of arts, several churches and a few other organizations. This portal will create a platform, where the representatives of these institutions may be able to promote and advertise their events, inform citizens of cultural and academic events, invite residents to participate in recreational activities and provide an overall opportunity for the citizens to participate in the social life of the city.

The idea of the interactive web portal, which would be connected to the local government of Kopychyntsi is only a first step towards the transformation of this town into one of the local e-governance models in Ukraine. It has been estimated that successful implementation of this conglomerate of electronic services in the particular local community should prepare a good ground for even more innovative transformations and progress in terms of e-governance in Ukraine.

The current chapter described only the general functions, which could be implemented in

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[75] Ibid. Verkhovna Rada of Ukraine Official Web Portal. The Law of Ukraine № 393/96 "On Citizens' Appeals" from October 2nd, 1996. Article 1. See:
http://zakon5.rada.gov.ua/laws/show/393/96-%D0%B2%D1%80/print14583814 87174697 (Accessed 14.04.2016).

the town of Kopychyntsi in the near future. Below will be used modeling and various comparative planning approaches regarding the development of this particular e-Kopychyntsi web portal.

3.4. Analysis of the "to-be model"

The proposed web portal should improve several issues and challenges in terms of local governance in the town of Kopychyntsi. It will also have various e-solutions, which will be provided by the local government to its citizens. This chapter will describe the effects of this web portal on the work of the city council of Kopychyntsi and what will be the possible consequences if the proposed solution will be implemented. In order to analyse the proposed solution from a theoretical perspective, several modeling instruments will be involved.

In formulating the strategy for improvement of the work of the local government of Kopychyntsi, it is important to keep in mind how the authority used to work without the proposed concept of the interactive official government web portal. This model has already been characterized above. Now, it is necessary to describe the "To-Be" situation, as it may indicate main innovative features of the process of interaction between the local government and its citizens.

3.4.1. Business Canvas Model

The first instrument which will be used to evaluate the plan is the Business Model Canvas (BMC). The Business Model Canvas is a template for the development or the documentation of an existing business or in this case the governing models. The business model canvas describes the main elements of a business such as its service, customers, infrastructure and finance-related information. Despite the fear that the public sector is often challenged to implement private sector principles, the Business Model Canvas can become a useful tool to help the public institution see itself as a service-oriented business. [76] The following figure shows the perceived model canvas for the to-be state of the Town Council of Kopychyntsi, when the new web portal would be implemented.

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[76] Osterwalder A., Pigneur Y. Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. John Wiley & Sons, February 1st, 2013 - 288, p 48.

Key Activities	Key Partners	Value Proposition	Customer Relationships	Customer Segments
- town visiting page; -digital informatization of work of the city council; - informational resource; - electronic services delivery; - e-participation; - enhancing collaboration with other public institutions.	- The city council of Kopychyntsi; - BankID system; - citizens.	- Better access to the local government (for citizens); - faster access to the citizens (for local government); - informative environment; - effective communication tool for community; - environment for fresh initiatives; - environment for e-complaints and petitions; - place where basic e-services may be received online.	- Mutual initiatives; - effective complaint management; - feedback.	- Citizens; - city council of Kopychyntsi; - local public organizations; - local business organizations.
	Key resources - Working capital		**Channels** - Web interface; - mobile application; - sms notifications.	
Cost Structure - Creation and development of web portal of the city (payment for developers); - System support (salary for employee).			**Revenue Streams** - Local budget	

Table 1: Business Model Canvas of e-Kopychyntsi

Business Model Canvas is divided into nine separate blocks, which represent different fields for the idea of the implementation of the official web portal.

Key partners. The web portal of city of Kopychyntsi should be created under the control and main interest of the local government. However, despite the fact that the project will be the focus of the local government, various initiatives, propositions and collaboration will be included from the side of the civil society, other public and private institutions, which would like to take part in the betterment of the livelihood of the city. For implementing some of the services, where the electronic identification will be required, one of the key partners of the following project will be the national BankID system. [77]

Key activities. The following value proposition requires several key activities, which would be taking place when the project is completed. The web portal of the city of Kopychyntsi is called to become the instrument for solving some of the issues in the operations of the local

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[77] BankID - a tool for verification citizens through Ukrainian banks for providing administrative services via the Internet. See: http://bankid.org.ua/ (Accessed 14.04.2016).

government in order to increase the efficiency and effectiveness of service delivery to the citizens. According to this, the key activities of the following project match the main functions of the web portal of the city of Kopychyntsi, which one again are the town visiting page, the digital informatization of work of the city council, informational resource, electronic services delivery, e-participation, and enhancing collaboration with other public institutions.

Key resources. The main key resource for "e-Kopychyntsi" project will be working capital. As this web service will not have any materialistic form, there will be no physical resources involved. However, it will require high quality knowledge in information technology and several web tools. Absence of need of various resources and possibility to involve specialists in several stages of the project development on a voluntary basis, has been recognised as a strong and positive phenomenon in the city.

Value proposition. By its nature, the "e-Kopychyntsi" project is positive as it creates a number of values for its main customers. If proven to be successful, citizens will receive more instruments of influence over the local government, as well as, be able to accomplish their needed civic actions. From another side, the city council will have a better and faster access to the inhabitants of Kopychyntsi, with the purpose to deliver certain information and services. An informational environment will also be created, when all the main components and information regarding the city will be compiled and integrated in one place. In addition, the web-portal of Kopychyntsi will establish the opportunity for citizens not only to receive information, but also to participate actively in all the topics and hold better communication each with another.

It is believed that the "e-Kopychyntsi" project will be able to create an environment for useful initiatives regarding the organization of the city and its social life. These propositions will be considered by the city council and best of them may be realized in the near future. In addition to this, the web portal will propose a platform for filing complaints, which may be positively reflected on the work of the local government. The complaints system in its electronic form is intended to be more understandable and user-friendly for the citizens, where they may receive faster feedback and reaction from the local authority.

The biggest perspective of the "e-Kopychyntsi" project is that it provides an opportunity for the city council to deliver some of the administrative services in an online form. This part differentiates the project of "e-Kopychyntsi" from the average municipal website, even with all the innovative and interactive parts. This idea will be achieved with the services of electronic identification and electronic signature, which are developed by the innovative team from the city

of Dnipropetrovsk[78], and are already available for all the bank users in Ukraine. This technique will create a possibility for the development of e-governance in the city of Kopychyntsi.

Customer segments. The main type of customers of the project will be citizens. The web portal will mainly focus on individuals who are related to the city of Kopychyntsi. However, in some parts as customers will also be recognized the city council, local public and business organizations.

Customer relationships. "e-Kopychyntsi" service will have several types of relationships between its customers. Effective feedback system will be developed between the local government and its citizens. Also, it is assumed, that successful implementation of the current project will become a positive model for mutual initiatives, which at the end of the day would bring substantial benefits in the context of community development.

Channels. The customers will be reached through various channels. Since the project embodies an electronic form, most of its functions will be realized through official web portal. In addition, for smartphone owners, a mobile application will be developed, which will be designed in 60 days after the project is launched. Very few services will be distributed through sms notification for those customers, who are using standard mobile phones only.

Cost structure. The budget for the project realization and the placement of its early version on track, comparatively does not require a large amount of financial resources. Around 60 per cent of the budget will be spent for the development of the web interface, even on a volunteer basis. Another 40 per cent of the budget will be used to support the system for 100 days. After 100 days, the main conclusions regarding the project will be made and costs possibly will be restructured and finances will be allocated again for the particular period, which will be agreed with the main financial funders.

Revenue streams. Since "e-Kopychyntsi" is a public project and it will be designed for the needs of the local citizens, the use of this portal and its services should remain free of charge for everyone. The main revenue stream at the beginning will be the local municipal budget and the allocated finances for these transformations. However, in case of further development and promotion of the idea of the local e-governance in Ukraine and worldwide, it is recommended that the representatives search for other ways to receive more financial funding sources to further develop in this field and continue to improve their services.

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[78] PrivatBank official web-portal. Accredited key certification center. See: https://acsk.privatbank.ua/ (Accessed 14.04.2016).

3.4.2. SWOT Analysis

The SWOT analysis is a widely used method for strategic planning, which was created by four professors from Harvard university in 1965. This method is one of the first models to consider the external environment of an organization. Before, strategy models restricted themselves to strategic planning, without taking into account their environment. [79]

Today, the SWOT analysis is mainly used within the marketing departments of large businesses. However, it is also widely known and used for the strategic development of various projects in the public sphere. [80]

When completing a SWOT analysis, the main strategic factors and concepts of the project should be divided into four categories:

- strengths (strong sides of the project);
- weaknesses (weak sides of the project);
- opportunities (which are opened after the implementation of the project);
- threats (which can occur and are in association with its implementation).

This analysis helps understand the strategic positive sides of the following idea, as well as, the main possible negative elements of this system. Below, a table is shown, which described a SWOT analysis of the interactive web-portal to be created for the city council of Kopychyntsi.

Strengths	Weaknesses
- an increased level of cooperation between citizens and the local government body; - creation of more opportunities for those citizens, who use internet on daily basis and encourages them to use it for obtaining government services; - access for citizens located outside the territory, to participate in community life; - speed and quality of work of local electronic services; - presence of political will from the side of local government will improve governance of the city.	- lack of financial resources; - e-governance concept is not widely known in Kopychyntsi and needs to be highly promoted; - general low level of trust to any government; - those citizens, who are not using internet, will have less options to be informed.

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[79] 50minutes.com. The SWOT Analysis: Develop strengths to decrease the weaknesses of your business. 50 Minutes, August 17, 2015 - 32, p 6.
[80] Prowle M. The Changing Public Sector: A Practical Management Guide. CRC Press, March 23, 2016 - 288, p 52.

Opportunities	Threats
- expansion of services into the entire district, where the city of Kopychyntsi is located; - the local governance in Kopychyntsi will be recognized as an innovative town and will receive support from the state; - development of more e-services in the future; - experience exchange with other municipalities in Ukraine and abroad; - attracting attention of investors to the modernly governed municipality; - some of the e-governance developments at the local level may be used by state in the future.	- the system will be only partly integrated with the state e-governance services; - bureaucratic system of governance in Ukraine may not give the green light to further development of transparent e-services; - rapid negative changes on the state level in Ukraine; - change of the existing local government.

Table 2. SWOT analysis of e-Kopychyntsi

The following is a detailed description of the above table of the SWOT analysis.

Strengths. "E-Kopychyntsi" has a number of angles, which should be recognized as strengths. First of all this project creates a unique cooperation between the citizens and the authority in an electronic form. In today's digitalized world, this type of connection with the government might be one of the most convenient and fast ways of information and service exchange. The local municipality receives a powerful tool for governing the community as most of the citizens will find it easy to access the portal and build various kinds of relations with them. In addition, this system creates motivation for citizens to use internet and encourages them to do it with purpose of increasing the level of governance in their hometown.

Furthermore, this interactive web portal can create various positive possibilities for those people, who belong to the community, however, for different reasons are not located in the city. For instance, those young individuals who temporarily moved to other cities in order to receive higher education, would have a chance to feel own value in the development of the community, where they came from. Students will also have a possibility to implement fresh knowledge and workable ideas, which they have gained while living at a distance of their town.

One of the positive factors of "e-Kopychyntsi" system for the local community will be the speed and quality of work of the local electronic services. Citizens will have a possibility to stay at home or be elsewhere, while receiving requested services from their local government. For instance, in order to register a new place of living, residents will not be required to go to the city council office, stay in a queues or to wait until the weekend will be finished. All the needed documents will be digitized and stored in a database, so there will be no fear to lose some of the documents issued by the local government.

Finally, due to the presence of political will from the side of the local governmental

administrative workers, there are chances of improving and positively changing the traditions of government in the city of Kopychyntsi. It is believed that "e-Kopychyntsi" is a new project for the current location, which would be able to raise the bar of local governance in the city. As a result, citizens will develop a sense of higher demand for the quality of their administration.

Weaknesses. Despite a big number of strong arguments in favor of the development of the web portal, still some weaknesses may take place in this particular case. The first obstacle that may come in the way of the development and implementation of the "e-Kopychyntsi" project is a lack of financial resources. There are fears that the local municipality of Kopychyntsi will not be able to support and maintain the web portal entirely. By its nature, the current idea is positive and receives a lot of positive feedback in Ukraine as well as abroad. Several members from the community of Kopychyntsi will be ready to help on a volunteer basis. However, it is commonly known that enthusiasm may end due to various other factors, including financing. Also, in order to make "e-Kopychyntsi" grow and develop further, the budget needs to be flexible. That is why there is hope that this project will demonstrate itself of benefit and it will find stable financial support in the future.

Another weakness regarding the development of e-services in the town of Kopychyntsi is that small town citizens of Ukraine generally do not have much knowledge about the concept of e-governance. There would probably need to be extra efforts exerted in order to deliver the positive implications of the idea of e-governance to the community members, as well as, to the representatives of the local administration. Certain difficulty creates lack of trust of Ukrainians to any governmental institution. Generally, this is caused by the poor level of government on the state level as well as at local levels. Even if the politicians from the current city council of Kopychyntsi have earned certain level of trust, local citizens might be critical to new initiatives, which would come from the administration. In order to avoid this type of situation, an active participation of the local civil society is to be encouraged and to take an active role in the overall promotion of the "e-Kopychyntsi" project.

The last weakness listed in the following SWOT analysis relates to the problems of implementing any electronic service. This is the lack of internet usage by some of the customers. In the current case, those citizens who are not using any of the electronic devices connected to the world wide web (WWW), would not be able to take an active role in the life of the city through the "e-Kopychyntsi" web portal. These people will only be able to receive sms notifications on their regular mobile phones. However, due to the rapid growth of the smartphone users, it is estimated that there is a huge tendency for using mobile applications

rather than web browsers due to the usability and simple access. [81] According to this, it is believed that those people who do not use the internet, sooner or later will start using it from smartphones, which are gradually entirely replacing cell phones.

Opportunities. On an external level there are several positive and negative sides of the project. Starting from opportunities, it is important to mention that in case of successful implementation of the web portal in Kopychyntsi, there is a possibility to promote this system for usage into the entire district, where the town is administratively located. According to the last state population census, Husiatyn district has a population of 67 thousand people and unites 65 localities.[82] This could be a positive achievement to develop a similar system of local e-governance not only in the town of Kopychyntsi, but expand it to the surrounding cities.

The second opportunity for "e-Kopychyntsi" is that this project will be positively recognized at the national level as a complex of methods for innovative and effective governance. According to this, more specialists and financial resources may be involved in order to develop various e-services and to begin implementing them from this small community in order to decrease the risks for mistakes.

When the first version of "e-Kopychyntsi" is launched, a number of additional e-services and features should be implemented. There are already existing plans to develop local e-voting system and several ideas in field of e-medicine for the local hospital. These will be the next steps towards e-governance for the town of Kopychyntsi in the near future.

Certain opportunities for the city of Kopychyntsi in terms of e-governance are seen in the future cooperation and experience exchange with other municipalities in Ukraine, as well as, abroad. There could be a participation and organization of various conferences and ideas incubators in the field of e-governance and local e-governance. From the perspective of a small municipality, vast potential is seen in numerous associations with other organizations and administrations in Ukraine and worldwide. As the concept of e-governance has a tendency to grow, this type of opportunities according to the SWOT analysis has certain perspectives.

When talking about the future possible benefits for local citizens of Kopychyntsi, it seems to be assured that modernly and effectively governed municipality attracts positive attention among various social groups outside the local community. It is known that well governed municipalities or so called "smart cities" have a property to attract smart people,

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[81] Lella A., Lipsman A, The U.S. Mobile App Report. ComScore, August 21st, 2014
[82] National Ukrainian population census. About number and composition of population in Ternopil region, the results of Census 2001. See: http://2001.ukrcensus.gov.ua/results/general/estimated/ternopil/ (Accessed 14.04.2016).

innovative ideas and additional financial resources. [83] This creates various opportunities for local government to increase municipal budget and to implement more ideas regarding infrastructure development and new project implementations. The main beneficiaries of this process will be the local citizens, whose city will be positively transformed.

"E-Kopychyntsi" is not just a regular web portal for one of the local municipalities in Ukraine. It had been planned to become a tool, which would accelerate the progress of e-governance development in Ukraine and possibly abroad. Some services that will be designed for this small community may be used as a framework on the national level, when Ukraine will be implementing e-governance for the entire state. The best practices and mistakes analysis may become a valuable knowledge on the way to efficient and successful development of e-governance in this country.

Threats. According to the SWOT analysis, from the high scale understanding, the web portal system carries within itself several drawbacks. One of them may be possible insufficient level of integration of Kopychyntsi city council services with the Ukrainian national services, which may be provided at the state level in the future. "E-Kopychyntsi" project is following a concept of local e-governance and according to it, the changes in the country would be done in the direction from the bottom-up perspective. On the national level, Ukraine has certain steps and development towards e-governance. And despite the creation of special governmental authority, which is dealing with e-governance development in Ukraine, still there is no national concept officially adopted and implemented. [84] That is why local e-governance in Ukraine is developing by its own and there are no guarantees that when the national strategy will be formulated, it will be suitable for all the local services, which are already working in various municipalities throughout the territory of Ukraine.

Another external challenge, which may be referred to as a threat for the "e-Kopychyntsi" project is the bureaucratic system of governance in Ukraine, which still exists in a number of administrative levels throughout the country. Some of the high standing politicians may not give the green light to further development of transparent e-services in case that these services will somehow affect them personally. From another side, the concept of e-governance finds high support from society mainly because this is a tool to clean up the bureaucracy and make the process of public management more efficient and transparent. According to this, one of the

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[83] Betz M.R., Partridge M.D., Fallah B.: "Smart cities and attracting knowledge workers: Which cities attract highly-educated workers in the 21st century?" Regional Science. Article first published online: March 5th, 2015.
[84] Arkhypova Y.O. "E-government as a form of public administration". Electronic scientific specialized edition of "Public Administration: improvement and development". № 5, 2015. See: http://www.dy.nayka.com.ua/?op= 1&z=855 (Accessed 08.05.2016).

threats or obstacles for the concept of e-governance implementation parallelly becomes the biggest motivation for its realization and provides the high level of trust from the civil society. That is why, when implementing and expanding the "e-Kopychyntsi" initiative, it is believed that under the pressure of the society, political will may be found from the side of various administrations.

Despite the fact of civil society becoming quite active in the country, today Ukraine remains in a difficult situation from a political, as well as, an economic perspective. There are numerous politological estimations regarding special elections of the president and the parliament of Ukraine. For instance on April 10th, 2016, the prime minister of Ukraine Arseniy Yatsenyuk resigned himself from his official position. According to this another government with new ministers had to be elected. [85] Various examples of instability on the political arena in Ukraine are not necessarily contributing to the finishing of the projects, which often cannot be started by one politician and finished by another one. However, from the perspective of the development of e-governance on a local level, political changes on the state level are affecting the city of Kopychyntsi on a much lower scale.

In comparison to the state level, rapid change of the existing local government in the city of Kopychyntsi have much lower chances. Today, there are numerous reasons, including support from citizens, to rely on the current city council and to collaborate with this authority in terms of introducing this and many other ideas and initiatives. However, in case that the composition of the local government will change for some uncalled for reason, an attempt should be made to find support of the project among the local citizens.

Through this analysis, it was possible to analyse most of the angles of this initiative and capture the essence of the "e-Kopychyntsi" project. Generally, this is a positive idea, which may be realized in the public field of most of the local municipalities worldwide. However, in the current case, this initiative is designed specially for the background of a Ukrainian town of Kopychyntsi. The ideas of this study could be expanded further in order to improve and create a chance to implement this development further in practice in the near future. The next chapter will described more theoretical steps towards the development of the "e-Kopychyntsi" project.

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[85] Reuters: "Ukrainian PM Yatseniuk resigns, paving way for new government". April 10th, 2016. See: http://www.reuters.com/article/us-ukraine-crisis-yatseniuk-idUSKCN0X70JO (Accessed 12.04.2016).

3.5. Strategy and project implementation plan

3.5.1. Balanced scorecard

Implementation of the successful project requires a serious strategic approach. That is why it is important to develop a good framework in order to make "e-Kopychyntsi" a successful service. To describe this process, a Balanced Scorecard (BSC) tool will be used, which is called to provide clear formulation of strategic plans and their implementation. This management system was developed in the early 1990s by Robert Kaplan and David Norton and is widely used in business and in the public sector as well. [86]

The BSC system allows managers to present business projections in four projections and provides answers to four questions:
- how is the organisation/service evaluated by the client (client aspect);
- which processes can provide exceptional competitive advantages (internal aspect);
- how to achieve further improvement of the company/service (innovation and learning);
- how do shareholders evaluate the company? (financial aspect).

Each of these questions should be defined with the help of such categories as objectives, measures, targets and initiatives. According to the authors, the BSC highlights those processes that are most critical for achieving breakthrough performance for customers and shareholders. Often this identification reveals entirely new internal processes that the organisation must excel at for its strategy to be successful. [87] In the following section, the BSC framework will be used to describe and formulate the strategic approach for the "e-Kopychyntsi" project. Later each of the four BSC aspects will be analysed separately.

Strategic priorities	Objectives	Measures	Targets	Initiatives
Financial	Some functions of the city council workers can be replaced, which will save financial resources;	Decrease number of workers in the department; increase training resources;	20% of workers after first year. The salaries will increase by 10%. 10% will be saved for other projects;	Evaluative proficiency exam by the end of each year.

[86] Kahihu P. Transforming the Public Sector Through the Balanced Scorecard: Public Sector Transformation In Africa Through Balanced Scorecard Strategic Management System. VDM Publishing, 2014 - 92. p 18.
[87] Kaplan R.S., Norton D.P. The Balanced Scorecard: Translating Strategy Into Action. Harvard Business Press, 1996 - 322. p 11.

Customer	Fast, convenient and effective online services;	Develop online functions for citizens;	5 first services available for use within first year;	Provide overview workshops to familiarize citizens with new online services.
Internal processes	Increase information exchange between citizens, business and government;	Develop effective marketing strategy to increase user base and activity;	30% (around 2000) of citizens will be using portal on daily basis after one year;	Promote service development over various social media channels.
Learning and Growth	Gaining new knowledge and ideas;	Experience exchange with other e-municipalities;	Quarterly meetings;	Local e-governance conferences.

Table 3. Balanced Scorecard of e-Kopychyntsi

Financial aspect. According to the framework, the financial aspect of BSC should be answering the question: how does the system look to the shareholders? As was mentioned in the Business Canvas Model, the revenue streams of the project are expected to come from the local budget of city of Kopychyntsi. That is why the main shareholder will be the local government of the community. From a financial perspective, the strategic objective of "e-Kopychyntsi" project is to save a certain amount of financial resources by replacing some of the city council functions with online services. In addition, with the help of ICT the authority workers may perform some of their functions faster and with better quality. These functions may be various types of notifications to citizens from the city council, data collecting, registering and many others. Accordingly, the measures will be manifested in decreasing some of the staff. It is planned that by the end of the first years after "e-Kopychyntsi" project is launched, 20 per cent of the working personnel will be reduced. It is estimated that the rest of the personnel will be able to deal with all of the functions of the city council with help of the interactive web-portal and will be additionally motivated for work with a 10 percent growth in salaries. Respectively, the remaining 10 per cent of the financial resources, that would be saved, may be spent for other projects and therefore, will be returned back to the municipal budget. However, in order to identify, which individuals among the workers have enough professional competence and who should be relieved of their duties, an effective system has to be implemented. In this case it is proposed to create a mandatory evaluative proficiency exam, which will take place by the end of each year. Various research described that to create the best specialists to work and create a high standard

environment for them, this may increase their productivity. [88] From a financial perspective, this mechanism might save certain amount of resources for the budget.

Customer aspect. According to the BSC framework, in order to develop a strategic vision, one should also answer the question: how should the organization appear to their own customers? In the case of "e-Kopychyntsi" project, the main customers are citizens of the town. According to this, they should receive fast and effective online services, provided by own local government. One of the purposes of the "e-Kopychyntsi" project is to build strong and trustful relations between local authority and community participants. Therefore, through the development of smart and convenient solutions, citizens would see the local government as innovative and a trustful organisation with the aim of improving life in the community. [89] Furthermore, the first strategic target of the "e-Kopychyntsi" project in compliance with the BSC framework, will be the creation of five electronic services for citizens, which will be realized through the interactive web portal. There is a certain probability that many of the local community participants will not properly understand how to use these services the day after it is launched . To solve this issue, overview workshops will be provided to familiarize citizens with new technologies that are developed by the city council. The workshops will emphasize the main advantages of following public services and benefits which they may bring to local citizens. Additionally, basic cyber security instructions will be provided in order to avoid possible unnecessary incidents which may discredit citizens' trust to any online services.

Internal processes. In order to satisfy the shareholders in face of local government with its budget and main customers, which are the citizens of Kopychyntsi, from the strategic perspective, an adequate business process objective must be chosen. According to this, the plan is to increase information exchange between citizens, business and local government. As was mentioned before, the main environment of the "e-Kopychyntsi" project will be the interactive web-portal, which will be supported by government and used by citizens as well as authority workers. According to this, from the perspective of an internal business process, effective marketing strategy must be developed to increase the number of individuals using the following web resource. Additionally, the activities of each user in this environment should be increased. For this purpose the web resources have to be interactive and interesting for local community members. It is planned that by the end of the first year after the project is launched, the user base

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[88] Weibel A., Rost K., Osterloh M., Pay for Performance in the Public Sector—Benefits and (Hidden) Costs J Public Adm Res Theory (2010) 20 (2): pp. 387-412.

[89] Vandebeek C.A., Gemino A.C. Building Citizen Trust Through E-government. Government Information Quarterly. Volume 22, Issue 4, 2005, pp. 720–736.

should consist 30% of the Kopychyntsi population. This might be around 2,000 unique visitors every day. Also, it is estimated that not only citizens of Kopychyntsi will be using the "e-Kopychyntsi" web portal.

Successful development of e-governance attracts the interests of individuals from other locations and so they may be interested in following the electronic life in Kopychyntsi. Furthermore, according to the World Bank research, in 2014, on average 43,4% of Ukrainians were active internet users. [90] Such an indicator has a tendency to grow every year. In view of all of the above, such ambitious aim to receive the audience of 2000 users, looks quite realistic. According to the BSC framework, the main initiatives that are planned to be realised are appearing through the promotion of new services development in social networks used by local citizens. For this purpose various synchronized groups should be created, which will be additionally informing residents about updates regarding the main web portal. The most important and personal information will be sent to citizens' e-mails, as well as, to the mobile phones through sms notifications with a request to visit the specific page of the main "e-Kopychyntsi" portal.

Learning and Growth. In order to make the e-Kopychyntsi strategy effective, the ability to change and improve the work of local government should be described and analysed. For this workers of local municipality professionally should always be in process of self-development. As a result, new knowledge and ideas have to be gained constantly. To achieve this aim, it is required to have the experience exchange with other innovative municipalities in Ukraine and abroad, who are developing e-governance and related to this field progressive projects in their communities. It would be beneficial to search for cooperative partners to organize common regular quarterly meetings, where there will be an opportunity to share experiences and identify major practical mistakes that could arise during development or implementations of various services on the local level. Based on such meetings and the personal experience every year, there should be planned an organisation of a conference, where experts from fields related to innovative local governance will be invited. These kinds of events may be helpful not only to spread and gain new knowledge, but also to coordinate the actions, which could be done in various municipalities in Ukraine.

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[90] World Bank. Internet users (by 100 people) See: http://data.worldbank.org/indicator/IT.NET.USER.P2 (accessed 06.05.2016).

3.5.2. Project implementation plan

The project implementation plan is a mechanism, which helps to understand what is the sequence of actions that should be done in case of when implementing the project from theoretical to the practical sphere of life. Project planning is one of the key elements which contributes to success of the organisation as it orders and coordinates all the steps that should be made in order to complete the program. [91] Usually, each project plan has to answer such main questions as:

- "What?", which means the work that should be done during the realisation of the project and what could be the deliverables;
- "Who?", defines responsibility holder for the project and explains how these individuals will be involved in their tasks;
- "When", creates understanding of the timelines for each meaningful points of the project that should be completed.

E-Kopychyntsi is a project which is designed to be developed and implemented in one of the local municipalities in Ukraine. According to this, it would also need to have its own project plan, which may become a manual for practical use.

What?	Who?	When?
Finalizing project idea and onboarding; presentation preparation	Initiators	Day 1
Presentation of e-Kopychyntsi idea to the local government; formulating a development team	Initiators	Day 15
Engaging IT specialists	Development team	Day 30
Design and development of interactive web portal, content gathering, implementation process	Development team, IT team, Government representatives	Day 31-60
Testing functionality and compatibility, User interface and user experience optimization	Development team, IT team, Government representatives, community volunteers	Day 61-80

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[91] Serrador P. Project Planning and Project Success: The 25% Solution. CRC Press, November 24, 2014 - 228, p 15.

Presentation for city council personnel; Hands-on training	Development team, Government representatives	Day 85
Interactive workshop sessions for citizens	Development team, Government representatives	Day 95-97
Web portal final launch	Development team, Government representatives	Day 100

Table 4: Project Implementation Plan for "e-Kopychyntsi"

The project implementation plan for e-Kopychyntsi will have a duration of 100 days. It contains several groups of tasks and actors responsible for their realization. First two weeks are planned to be spent for finalizing the idea and onboarding the project. This is needed to make e-Kopychyntsi maximally suitable for the practical environment, where it will be implemented. Additionally, at this stage there will be a preparation for presentation of the project, which will briefly deliver general concepts and emphasize benefits of having an e-governance system in the local community. The following tasks will be done by main initiators of the project, which plans how to create a development team. Later the main initiators have to become the core of the development team.

On day 15 the initiators will have to demonstrate the idea of their project to the city council of Kopychyntsi during one of the regular sessions. It is assumed that the local government will demonstrate interest to local e-governance developments in their city and after one week e-Kopychyntsi project will be approved. After that, initiators will have to formulate the development team, which is doing to take the responsibility for the main processes of project implementation. In addition, the team will discuss and define what kinds of tasks should be performed by separately hired IT specialists.

On day 30, IT specialists will be engaged by the development team. Later, during days 31-60, they will reconstruct the existing website of the town of Kopychyntsi. Improvements will be made to the design and various new features and functionality will be added. These technical changes will be performed under control and according to the requirements of development team. In addition, it is recommended that some of the local government representatives should be involved in the process of building a new interactive web-portal for the town of Kopychyntsi, which will allow various interactions with city council. The following stage of the project implementation plan also requires the proper content gathering. Some of it will be created in

accordance with the project idea, developed by the initiators. Additionally, a significant part of the content will constitute statutory information and documentation from the local government of Kopychyntsi. Also, due to the fact that e-Kopychyntsi project will rebuild and improve an already existing web portal of the city, the information should be migrated to the new web portal into a separately designated section.

When the interactive web portal of Kopychyntsi has been built, a certain amount of time will be needed for its testing and correction of deficiencies. The importance of testing during the software development is essential. Testing should be a prioritised stage of the product development as it directly links to its quality. Testing involves checking, that there should be no discrepancy in the software development process anywhere throughout. [92] According to the project implementation plan, during days 61-80 the development team together with the IT team and the government representatives will be testing functionality and compatibility of the interactive web portal. Significant attention will be dedicated to its optimisation. Additionally, in order to test the following product from the side of the user for its user interface and experience, several volunteer will be invited to test the web portal.

Starting from day 85, when the system is built and tested, the portal will be presented to the Kopychyntsi city council personnel in order to familiarize them with the new instrument, which is needed to accomplish their work duties. The main responsibility over this stage of the project planning will be taken by the development team and the local governmental representatives. During days 95-97, interactive workshop sessions will be organized for the local citizens of Kopychyntsi, who ultimately become the main customers of the e-Kopychyntsi web portal project. The aim of such workshops will be to raise the interest of the local society to the concept of local e-governance in Kopychyntsi. Additionally, the benefits from using such a system and future perspectives of it will be emphasised. During this stage, the development team will have a chance to make final corrections of the system before it begins operating publicly. On day 100, the development team and the government representatives will officially launch the project of e-Kopychyntsi.

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[92] Khan M. E. , Khan F. Importance of Software Testing in Software Development Life Cycle. International Journal of Computer Science Issues (IJCSI) 11.2 (Mar 2014): pp 120-123.

4. Discussion

4.1. Future plans and vision

On the background of inconsistent political regulations at state level and high demand from the society, local e-governance in Ukraine has significant prospects. It provides definite a possibility of accelerating the transformation process of the country into a modern, innovative, efficient, transparent and competitive state. One of the main tools for achieving this goal is the development of public electronic infrastructure and services at the municipal level.

E-Kopychyntsi is a positive theoretical project for the creation of local e-governance in one of the settlements in Ukraine. Its aim is to improve the work of the city council of the town of Kopychyntsi, consolidate local citizens and create a common environment for interaction between all social groups of the community. Although the following theoretical developments are aimed at being implemented in real life in the near future, they may also be used in various ways in the context of advancing local e-governance in other municipalities worldwide. Through cooperation with the local authorities as well as some of the most active citizens of Kopychyntsi, an interactive web-portal will be created, which will perform several functions. Initially, the system will be launched with a limited amount of electronic services, described above, which will serve the citizens' public needs and make their communication with authorities on the local level more convenient. As the project advances, more services will be added and the focus of developers will be on such e-governance techniques as e-voting and e-health.

Due to the low level of participation in the previous local elections in Kopychyntsi, the introduction of e-voting would be a good instrument to increase the level of democracy in the community. Kopychyntsi is a provincial town in Western Ukraine, and as a result a relatively big part of the local population, while officially registered as living in their home town, are in fact are temporarily located in other parts of the country or even abroad. These individuals are often students, seasonal workers, emigrants, entrepreneurs,and others. They often do not have the ability to come home on the day of the local elections to vote for their preferred candidate. Because of this, it is highly important to create a reliable and effective system which would allow the citizens of Kopychyntsi to participate in democratic processes of their home community, even while located elsewhere. Their electronic votes will be counted equally along with the paper ballots signed by the rest of the citizens. Additional benefits of organizing an e-voting process in such a small municipality as Kopychyntsi consists of a significantly lower

level of political ambitions of some of the political powers, as compared to state level elections, which could be interested in manipulation of the voting results or discreditation of the e-voting system. Thus far in Ukraine there are no precedents to internet voting and the proposed system in the context of the e-Kopychyntsi project could become a positive testing model for the e-governance experience in Ukraine. This experience may later be used for various e-voting initiatives elsewhere at the local level as well as on the national scale.

The second prioritized local e-governance project which is planned to be developed in Kopychyntsi in the near future is e-health. The hospital in Kopychyntsi is an efficient medical institution, which receives not only local patients, but also those from neighboring towns and villages. However, the system of the document flow requires definite modernization. On the background of computerisation and electronification initiatives of medicine from the state government, it is planned to initiate the process of electronic document flow in the Hospital of Kopychyntsi. The Ukrainian health care system is far from being the most advanced systems and and is still struggling to overcome many problems and issues. The doctors in Kopychyntsi, outside of their actual responsibilities to treat patients, have to do a lot of formal paperwork. When a new patient comes, they have to open a separate hard copy journal. This journal is filled with handwriting and includes a great deal of information about the state of the patient's health and treatment measures advised to the patient. Filling out these journals takes time out of the medical specialists, which could be spent on more efficient tasks like learning or treating other patients. After finishing the patient's personal journals, these must be signed and placed into the archive of the particular hospital they attended. This archive can be accessed only in case of a visit at the same hospital on another occasion. Such situations create an inconvenience both for doctors as well as for the patients. Consequently, e-health initiatives in Kopychyntsi have seen a huge demand for implementation.

Along with the e-voting and e-health services, which are planned to be implemented in the future after the interactive web-portal development, there are various ideas for many other electronic services, which could improve the governance of Kopychyntsi and set it on the course to becoming a smart town. A significant role in this context is played by the cooperation with other local communities and municipalities and sharing their own gained knowledge and experience with neighbors in order to qualitatively improve the governance on the the large scale. There are several directions where e-Kopychyntsi project has the prospects for development in the future.

The first prospect is related to the Administrative reform in Ukraine, which began in 2015 and is ongoing until today. According to the regulation issued by the Cabinet of Ministers of Ukraine, the smallest municipalities have the possibility to unite or to be united on a voluntary basis and to receive additional financing in accordance with the size of the newly created community. This regulation also applies to Ternopil region, where the town targeted in the current thesis is located. [93] For the city council of Kopychyntsi this means that there is a possibility to unite several neighboring villages under their own governance, which would significantly increase size and population of the community. Accordingly, some of the new functions and responsibilities will be delegated to the authorities. In this case, if the project of e-Kopychyntsi will be adopted and implemented by the local government of Kopychyntsi, later its services will automatically have to be spread into several other settlements and benefiting their citizens as well.

Assuming that the national administrative reform will be implemented, the development of e-governance on the local level certainly gains more strong arguments. For instance, in the town of Kopychyntsi, the role of fast and convenient electronic public services may become higher in comparison to what it is currently. The distance to the administrative center for some citizens, who are located in other villages, becomes greater and it requires additional time for them to reach the city council in order to receive requested documents or services. Furthermore, the workload of the city council will be increased which can be caused by rapid growth of population, that will be integrated into the local community. Thus, instead of increasing the number of local authority workers, introduced on time e-governance system may have a chance to save significant financial resources for the municipality. These funds may later be invested into various other innovative projects.

Another direction and ambition of e-Kopychyntsi in future is dedicated to other similar communities, which would like to accelerate the development of local e-governance. Following the model of Kopychyntsi, learning and analysing all the positive and negative experiences, the local governments of towns such as Chortkiv, Terebovlya, Husiatyn, Khorostkiv and Zalishchyky could initiate the launch of their own projects, similar to e-Kopychyntsi. Significantly less amount of time would be required to develop those services on the local level, as they are already created and tested in a very similar environment. It is important that such

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[93] Verkhovna Rada of Ukraine Official Web Portal. Resolution of the Cabinet of Ministers of Ukraine № 1391-p "On approval of the formation of long-term plan of territorial communities in Ternopil Oblast" from December 16th, 2015. See: http://zakon0.rada.gov.ua/laws/show/1391-2015-%D1%80 (Accessed 20.04.2016).

electronic systems should be interconnected with one another, so they are not providing their services in silos. Positive performance and efficient implementation of the e-Kopychyntsi project with ongoing efforts may start a chain reaction for local e-governance development in the surrounding communities of Ternopil region, where they are administratively located. Accordingly, if some of the e-services developed during this process would be set up for the entire region, it would become more difficult to differentiate local e-governance from state level e-governance due to the same number of customers, who are using these electronic systems. For instance, Estonia is known as a country with advanced examples of e-governance implementation on the national level. However, its population is almost equal to Ternopil region of Ukraine, where the town of Kopychyntsi is located.

When Ternopil region receives their own system of e-governance, it is important that it cooperates with other large cities in Ukraine with the aim of experience exchange. Developing connections with international partners for gaining new innovative ideas and inspiration will become essential. However, strategic partnership should be established with those Ukrainian cities, that already have workable services and valuable experience in e-governance. Such steps should be prioritized due to the important role of integration of those services, which are parallelly established for different regions of Ukraine. As was mentioned in chapter 2.3., one of the cities that is actively developing e-governance on the local level is Lviv. Similarly to Ternopil region, Lviv is also located in the Western part of Ukraine. The efficient cooperation between these regions in terms of e-governance could cover the population of approximately 3.6 million, which is more than population of Estonian combined together. This creates significant perspectives for local e-governance development in Ukraine. Later, some of the services may be launched in cooperation with the city of Dnipropetrovsk, where so far there has been significant development and shared possibilities for electronic signature and electronic authentication through BankID technology. This city is located in Eastern part of Ukraine and some of the e-governance innovations have been tested in this region already.

Following the logic of the bottom-up development of e-governance in Ukraine, finally, there can appear several locally initiated and supported electronic services, which will be working for the entire country. The role of the e-Kopychyntsi initiative, however, will still retain its importance. Every new service, which is planned to be developed on the local, regional or state levels, may be tested on this particular community due to the relatively easier risk management.

5. Conclusion

5.1. General overview

E-governance provides an opportunity for significant government information and services be available in an electronic form in order to create a more effective channel between the key players in the society. This thesis plunged deeper in considering the general concepts and applying them in an interesting initiative.

At the beginning of this thesis, the concept of e-governance, its international understanding, growing role and importance for today's world was analysed. Generally, e-governance has five functionalities, where the electronic services are addressed, government to citizen (G2C), government to business (G2B), government to government (G2G), government to employees (G2E), and government to non-government organisation (G2N). The central role in the e-governance concept is played by strategy, which can be defined as a general plan for the development process that helps to achieve the the main goals, among which are time saving, better business environment, transparency, broadening public participation, improving efficiency of government, improving quality of life for the community, protecting environment and others. It is important to mention that the general concept of e-governance should be understood in quite similar way as the general concept of local e-governance as the only difference between these two is the population size of the community. International experience in this field is an important aspect in order to understand the basic steps in developing a local community as a smart city.

One of the main concerns in this work was to analyse the legal implications of the local e-governance perspectives in Ukraine and whether it is possible to implement local developments. Several preconditions, legal frameworks, e-governance and cyber security developments were observed. In addition, several challenges and successful examples of implementing electronic services were examined. Based on the results, it can be concluded that in general, Ukraine has medium conditions for e-governance development. This nation has already achieved several important goals, for instance the adoption of the national concept of e-governance, as well as the cyber security strategy, legal acts on electronic signature and the protection of information, among a few others. However, at the state level, there has not yet been adopted a national e-governance strategy or law on electronic authentication. At some points, it can be clearly noticed the lack of political will in the development of effective electronic services as these require an innovative approach and transparency.

Nevertheless, such conditions create a wide corridor for various local initiatives in the field of e-governance, which are already breaking ground in several cities of Ukraine, among which are Lviv, Dnipropetrovsk, Lutsk, Mykolaiv and several others. The local governments of these communities have understood the significant role of e-governance in the modern public management and defined it as one of the prioritised directions for development. Keeping the perspectives of local e-governance development in Ukraine in mind, for the purposes of this research, a municipality smaller in size, comparing to the cities mentioned above, was selected in order to cultivate a plan of development for the implementation of local e-governance initiatives.

Kopychyntsi is a town located in Ternopil region of Ukraine, which was chosen for illustrating theoretically how e-governance initiatives can help improve one of the municipalities in Ukraine. Despite the fact that the current municipality is governed by a recently elected innovative and active government, the concept of electronic governance is almost entirely absent in Kopychyntsi. There is no electronic documents flow, the only city website is initiated and supported by private individuals and the procedure of complaints and propositions has been nearly disabled in the bureaucratic process.

As a solution with the concept of Layne and Lee's Maturity Model in mind, a comprehensive decision was made to theoretically build an interactive web portal, which would be coordinated by the local authority and would have several functions, that would be performed by the electronic service. This initiative was names the e-Kopychyntsi web portal project and its function is to become an informational link between the local government, citizens, business, employees and non-governmental organisations. The e-Kopychyntsi implementation project was described using various tools such as the Business Model Canvas, a SWOT analysis, the Balanced Scorecard and the Implementation Project Plan, which helped analyse e-Kopychyntsi from various angles.

Despite the fact that e-Kopychyntsi is planned to improve the local e-governance in one of the municipalities in Ukraine and several additional services will be later developed using the current platform, this project cannot be developed in isolation from other innovative initiatives. Furthermore, it has an ambition to help other local communities to implement local e-governance concepts through sharing gained knowledge and experience in this field. According to this, various local e-governance projects in Ukraine, including e-Kopychyntsi, may be incorporated and integrated in order to follow the bottom-up approach of transforming the country. In the far prospective, the town of Kopychyntsi may become a testing model for new electronic services designed for national or regional levels of governance.

5.2. Implications for future/further research

The purpose of the thesis was to analyse the perspectives of electronic governance on a local level in Ukraine and theoretically model an e-governance project in a selected city council. This research may be used in the future as a practical guide, as well as, for academic interest. It mainly focuses on the Ukrainian perspective, however some of the ideas could become a useful example for the same field of study in various municipalities located under different legal jurisdictions around the world.

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