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ICT and e-Governance:
The web portals of Istanbul Metropolitan Municipality

Bilişim teknolojileri ve e-Yönetişim:
İstanbul Büyükşehir Belediyesinin web siteleri

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ABSTRACT

This paper deals with an evaluation of Istanbul Metropolitan Municipality (IMM) web portals in terms of the role of Information and Communication Technologies (ICT) in shaping new ways of governance. It tries to understand, on the local (municipal) level, the effects of ICTs, and specifically web portals, in framing the type of new governance called "e-governance". Based on existing literature on e-governance -by capturing the key aspects in terms of local governance- this paper explores the case of Istanbul Metropolitan Municipality websites by evaluating their character from three main aspects: information (information share); service provision; and public involvement (public participation).

Key words: e-Governance; e-municipality; ICT; Istanbul Municipality; website evaluation.

ÖZ

Bu çalışma, bilişim ve iletişim teknolojilerin yeni yönetim yolları üzerindeki etkisini araştırarak, İstanbul Büyükşehir Belediyesinin web sitelerinin bir değerlendirmesini yapmayı amaçlıyor. Buna bağlı olarak, bu araştırma yeni bilişim teknolojilerin- özellikle web sitelerin- yerel ölçekteki yönetimi nasıl etkilediğini anlamaya yönelik yapılmıştır. E- yönetim de adlandırılan bu yeni süreç literatürde geniş bir yer almaktadır. Bu makale, mevcut literatürün e-yönetim ile ilgili ana temalarına değinerek İBB'nin web portallarını (web sitesi ve diğer platformlar) e-yönetim açısından değerlendirmesini yapmaktadır. Bu bağlamda, İBB'nin web sitelerinin içeriği üç temel konu üzerinden değerlendirilmiştir. Bunlar; bilgi sağlamak, hizmet vermek (e-hizmet) ve halkın katılımı sağlamak olarak sınıflandırılabilir. Bu üç konu ile ilgili belediyenin online uygulamaları incelenmiştir.

Anahtar sözcükler: e-yönetim; e-belediye; bilişim teknolojileri; İstanbul Büyükşehir Belediyesi; web site değerlendirme.

INTRODUCTION

The societies are developed within different contexts under various processes during the history. According to time and place the communities have shaped the way of their life under the effect of different natural and socio-economic factors. Among a lot of actors, the technological developments and governmental systems have been two important indicators of the social structure. Toffler (1981) defines three main ages in the historical development of society: agriculture revolution, industrial revolution and the revolution in the information and communication technologies. Each of this revolution has made dramatic changes in society. This paper concentrates in the transformation of governance in the information age. It explores different aspects e-governance such as: new tools of management, communication, policy making, civil engagement, potentials and challenges. It should be accepted that the term "e-governance" is not a very new concept since there is a considerable research and practice in this field especially after 1990s. The research consists of two main parts: the literature review regarding e-governance and the analysis of the case of Istanbul Metropolitan Municipality website.

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The literature review, firstly, introduces some basic definition of different scholars regarding the concept of e-governance by presenting a variety of approaches. Secondly it evaluates the potentials and challenges of ICTs by considering them as a significant opportunity in local governance issues. Another basic topic taken into the account is the evaluation criteria of municipal websites which is one of the most fundamental aspects in e-governance. While, the discussion of the case study represents some analysis of e-governance issues in the websites of the Istanbul Metropolitan Municipality (IMM). The analyses are done through the evaluation of web portals of municipality such as: official website, forums and social media platforms. These portals are evaluated by analyzing the character of their content in three main mediums: informative, service provider and public involvement applications. The needed information for the research is gathered from the web portals and the responsible governmental offices of the Municipality (Information and Communication Technology office, financial office, White desk etc.)

LITERATURE REVIEW

Definitions

As mentioned before, the term of e-governance related with ICTs is not a very new concept as it has been in focus since the 1990s (Balocco et al., 2013). It would be worthy to mention that there is not a very clear use of the e-government term for the same purposes. As Heeks and Balur (2007) has observed, the governments do not have a clear separation between the terms e-government and e-governance by using them instead of each other. This fact is also supported by Garson (2006) while saying that some scholars use the term in different meanings. He suggest the term digital government as a common ground that cover all uses of ICTs in public services. However, the idea is to separate the concept e-government from e-governance by aiming to transform the informative character of e-government to an involving (two-way interaction) character of e-governance. Garson (2006) also tries to make the differences between e-government and

e-governance more visible by presenting four theories of information technologies and their fitting with these concepts. Table 1 shows the correspondence of these theories with the concepts of e-government and e-governance Calista & Melitski, p.91, 2007).

In its simple meaning, e-governance can be defined as the 'digital governmental information' that empowers 'digital transactions' between public and governmental authorities (Abramson &Means, 2001). A wider description of e-government explains it as change of relationships within the internal structure of government and its new relationship with public and other institutions that are provided via ICT applications in the internet platform (Tapscott, 1996; Fraga, 2002; Heichlinger, 2004). Other scholars stress the fact that e-governance is not just a digitalization of information but it is a new form of governance that improves the relationship between citizens and government with a 'citizen-centered' approach by increasing the efficiency of information and service delivery through the use of ICTs by being independent from time and physical distance (Holmes, 2001; Durrant, 2002; Gupta et al., 2004; Awan, 2007; Garcia et al., 2008). There are also other scientists who see the e-governance as the change of conventional ways of governance. In this sense the re-formulation of governance structure becomes important by defining new ways of communication through ICTs by eliminating the obstructions of conventional government forms (Rhodes, 2000). "E-governance deals with changing the manner by which governments interact democratically with citizens."(Calista & Melitski, 2007).

The United Nations concentrates on two main characteristics of e-governance: 'e-readiness' and 'e-participation' (Arandiaa et al., 2012). The first one concerns the providing of broad information that improves the communication and service delivery to the public. The second one (e-participation) is about the opportunities that governments provide to increase the engagement of public in decision making process by the use of ICTs (Arandiaa et al., 2012). Finally, the research of Moon (2002) provides a kind of summary regarding e-government is-

Table 1. The Relationship Between Four Theories of Information Technology and E-Government and E-Governance* (Calista & Melitski, p. 91, 2007).

	Theories of E-Government	**Theories of E-Governance**
Normative	Systems Theory: Through automation, engineers and designers prepare technology to achieve bureaucratic efficiency through system integration.	Socio-technical Theory: ICTs serve as a forceful participatory and social equalizer, as information technology mediates social and economic disparities through networked stakeholders.
Normative	Technological Determinism: Technology is the centerpiece operating with a mind of its own and seeks to reproduce itself.	Reinforcement Theory: Technology is apolitical, yet acts as a controlling tool for the status-quo.

*Information technology theories adapted from Garson (2006).

sues. In his work he defines five main stages for e-governance: 1) sharing of information, 2) interactive communication, 3) delivery of services, 4) a new structure of 'vertical' and 'horizontal' relationship and, 5) political engagement.

Potentials and Challenges

Most of the discussions suggest that the governments that are able to have a good management of resources especially those related with ICTs have more possibilities in being successful (Martin&Gregor, 2006). Before exploring the potentials and challenges of e-governance, it would be appropriate to understand the main actors in an e-governance model. DeBenedicts et al (2002) makes a clear classification of different actors in e-governance framework that explains most of interrelationships. He classifies them into four main categories: 1) Government-to-Government (G2G); 2) Government-to-Business (G2B); 3) Government-to-Citizen (G2C); and 4) Citizen-to-Citizen. G2G is more related with internal structure and relationships of the government. G2B concerns the interaction between authorities and businesses (services, transactions). G2C is the interactive communication between government and public. Finally, C2C deals with the different of platforms where citizens communicate and share different information with each-other.

The basic issues discussed in literature regarding the potentials and opportunities that e-governance offers include topics such as: transparency and openness; democracy and civic engagement; more accessibility; accountability; cost reduction; interactive communication; and better service delivery. For example, The OECD report (2003) stresses the fact that ICTs increase the efficiency of governments by providing large data processing; more information distribution to public; better service delivery and an increase in the public involvement. Moreover, e-governance affords an interdisciplinary internal and external structure; offers easier management of incomes; transactions and payments.

Scholars consent that e-governance is more efficient in different managerial issues. An important issue is the cost reduction in terms of time and money spent for a particular operation (DeBenedictis et al, 2002; Eggers (2004). Furthermore, ICTs offer opportunities for a more transparent government; public engagement; and easier service deliveries to citizens (Navarro et al., 2012). The development of ICTs increases the opportunities for a two-way communication, larger public engagement and reduces of costs related with time and physical distances (Coleman & Gotze, 2001). The introduction of different ICT implementations can help interactive engagement and develop the accessibility of citizens to different information (Dutton, 1999).

Besides the potentials of e-governance there are a lot of challenges and problematic issues that should be taken into consideration. The topics regarding this issue are mainly related with aspects such as: socio-economic structure; infrastructure problems; security and privacy issues; inappropriate use of ICTs; and legislative regulations. Socio-economic profile of the society is very important in terms of having efficient results from developments in ICTs (Misuraca et al., 2012). The attempts of governmental bodies are not sufficient for a successful e-governance. Other aspects such as infrastructure, research and academic developments and investments play also a basic role in good governance (Nelson, 1993).

Another important topic is the appropriate use of technology. Mistakes in the management of resources and the inappropriate use of ICTs can cause different problems such as; inefficiency, subjective decisions; cost increase and important security problems (Arandiaa et al.,2012). Security and privacy issues are really serious aspect that should be taken into consideration very carefully. The internet platforms do not give a total guarantee for security and privacy since it is a very complex network (Zittrain, 2008). ICTs and e-governance are open to misuse of information in the large oasis of data and resources on the net platforms (Misuraca et al., 2012). Finally, in most cases, the existing regulations and legislation are not sufficient for the new developments in ICTs. For example, if a problem occurs due to a wrong implementation of the government, the responsible persons are the official workers although the other actors (public) may have contributed to that decision (Misuraca et al., 2012). Legislative issues are stated also in the OECD report (2003)by stressing the responsibilities that governments should take to eliminate the legislative obstacles to e-government.

Website Evaluation

One of the basic mechanisms in e-governance is the municipality's website. The main roles of municipality websites are to: provide information to citizens; control the transaction operations and involve public in decision making (Cowley, 2005; Lean et al., 2009). Related with this issue, the duty of municipal websites in e-governance is to inform the public, interact with it and provide e-services for transaction, payments and registrations (Lee, 2001; Torres et al, 2005; Navarro et al., 2012). In this context the accessibility of municipal websites gains a lot of significance. To test the accessibility of a website we should look to the access alternatives that the site provide in its compatibility with different technological tools (Nadler and Furman, 2001; Lazar et al., 2003). The elements that should be analyzed regarding the accessibility of the municipality websites are: access to electronic data (text, audio, and video), the tools that provide this access (computer, internet, TV) and the infrastructure for the data transfer (the number of internet connections) (Arandiaa et al. 2012).

Regarding the evaluation of municipal websites, Holzer and Kim (2008) used four main criteria in their studies: the 'usability' of the site, its 'content', security and, e-services provided. Another research in this field is that of Merkuyeva et. al (2004) where the site of St. Petersburg municipality were elaborated in terms of usability by defining parameters such

as: web design, links, navigation opportunity and amount of data. A similar study is that of Portuguese municipal website conducted by Arezes (2003) where he stresses the fact that the website designs should concentrate on providing opportunities to low skills or the low educated people in the field of internet. A final example is that of Awan (2007) studied the e-government websites in Dubai by focusing on issues such as: ease of use, communication possibilities, languages provided and security and transactions.

CASE STUDY ANALYSIS

The case study consist of analyzing the web portals (official website, Facebook, Twitter and other platforms) of Istanbul Metropolitan Municipality and evaluating them in the aspects of: 1)informing public (transparency); involving public (participation in decision making); and providing e-services (transactions via internet). It is worthy to mention the fact that it is not very easy to have a clear division regarding the character of the information provided in those platforms. For example a material that is launched in the website can have both informative and involving character since the rising of awareness in public increases its potential of participation in decision making (in many forms). Another challenge is the large amount of data provided in these web portals and this makes it hard to evaluate all the information and extract the needed materials for this research.

The Istanbul Metropolitan Municipality is the largest municipality in Turkey covering a metropolitan area of 5,461 km^2 with a population of 14,160,467 (TÜİK, 2013). The municipality has two physical locations (Saraçhane and Merter additional building) in Istanbul. Considering the difficulties of physical accessibility- especially in a big city like Istanbul- the web portals that provide information and services via internet get a great importance. The main web platform of the municipality is its official website where the citizens can reach a lot of information. The website (www.ibb.gov.tr) content information such as: the description of services, institutional organization, news, projects and investments, guides and bulletins etc.

Share of Information and Transparency

The website of Istanbul Metropolitan Municipality has approximately 4.5 million clicking per month (IT official IMM) and it is ranked 256. among all websites in Turkey (Alexa, 2014). The main sub domain visited within the site is the site of traffic control center (40.77%) where citizens can see live the situation of traffic flow within the city. The other most visited links are: main page (32.76%), the city guide (sehirrehberi: 16.29%), touristic information:tks.ibb.gov (11.36%), and the educational site (İSMEK: 7.02%) (Alexa, 2014). In addition, website of municipality (www.ibb.gov.tr) won the 1st prize Golden Spider awards in 2007 in the category of public sector (BELBIM[1], n.d).

As mentioned before the first part of this analysis consists of evaluating the informative (transparency) character of the municipal website. The issue of transparency is very important in terms of increasing the awareness of citizens regarding the working and operation of their municipality. In this aspect the website of IMM offers broad information related with the structural organization of the institution; their responsibilities; actual news; description of services; budget, projects and investments. In this context, the public can reach for example information related with the mayor, his duties, the daily agenda and past activities. Another important information is the organizational structure of the institution; the areas of their responsibility; the agenda of city assembly and the decision that are taken. Public can also can be informed about the strategic plans, projects, investments, tenders. They can see also the budgetary plan, incomes and expenses of the municipality. Moreover, actual news and bulletins regarding the activities of municipality are published in the website continuously. Istanbul TV, live cameras and ibbtube are platforms that offer video information about the city. An useful application are the touristic cameras that launch live views of thirty eight touristic locations in Istanbul with an audio in background (Turkish and English) giving information about that place. While, ibbtube is a web platform where the municipality or other users (public) can upload and watch videos in different categories. Finally, it is important to stress the fact that the evaluation done in this section is based in the main mediums of the municipal website that offer information to the public, since it is not possible to include all the platforms that can be part of this category.

Online Services (E-Services)

The second section of the analysis deals with examination of the services (e-services) that municipality web portals offer to the community. These services can be classified in different main categories such as: informative, registration, financial (payment) and social services. The way of using these services is done through the application forms or other web or mobile applications that are offered in the website. The main part of the services is provided under the e-municipality sub domain (e-belediye). There are a lot of services-some of them mentioned in the previous section- that can be categorized as informative (giving information) ones. Applications such as: getting informed (bilgi edinme); white desk (beyaz masa); urban master plan (e-imar); and city guide (şehir rehberi). Via the getting informed application citizens can get information (or documents) by filling an application form online and specifying the type of information they want and giving their contact information. The white desk application is a broader program that includes services such as: getting information, making complains, requests, and proposals in different fields. In the e-imar application people can learn the approved master plan in 1:5,000 scale for any specific zone (parcel, urban block). While, the city guide application consist of the map of Istanbul metropolitan area where the users can view different layers (map, satellite image, 1:100,000 scale Environmental

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[1] BELBIM is a partner company of Istanbul Metropolitan Municipality that deals with technical infrastructure in the areas of operations such as: development of hardware, software and consultancy in ICTs.

Table 2. Cash and e-payment of transaction in IMM (IMM Income directorate, 2014)

Year/type of payment	Cash (%)	e-payment (%)	Total
2013	99.96	0.04	100
2014 (first quarter)	99.1	0.09	100

Table 3. Mobil Municipality application

Transportation	e-payment	Complaints	Daily info	Getting information
- Cameras	- IMM[4]	- White Desk	- Weather	- Documents
- Traffic density map	- İGDAŞ[5]	- Complain app	- Pharmacies	- IMM government structure
- İDO[2]	- İSKİ[6]	- Application status	- News	- Cultural centers
- İETT[3]			- Activities	- Sport centers
			- City theaters	- Social Centers
			- Fish and food prizes	- Cemetery
			- Mayor agenda	
			- Media bulletins	

Plan, addresses and locations) and take specific information for a particular zone.

Another important category of e-services is that related with online registration payment of taxes. IMM offer online services for e-registration and e-payment (e-sorgulama, e-ödeme, e-beyanname) where people (business) can be registered, pay taxes and learn their debts to municipality. Table 2 shows the percentages of e-payment and cash payments done to IMM for the year 2013 and the first quarter of 2014. As can be seen from the table it is an increase of e- payment ratio in first quarter of 2014 (if the trend goes like this) but it is still very low. This shows that the citizens of Istanbul still use the conventional way for transactions (paying cash through banks).

Finally, IMM offers also some social and cultural services online. One of the applications is e-health which aims to offer health services at home to disable citizens. Those who want to benefit from this service fill in an application form in the website and after the evaluation of the application the health team (doctor) is sent to the patient house. Another online service is e-library and e-museum and an audio library for visual handicapped persons. In this site they can reach and download different audio materials. In the context of social services, people can also search for theatres in the city and make online ticket reservation or buying. Finally there are also some applications in the field of education. There are online (audio video format) courses offered mainly for primary, secondary and high school students. In addition the citizens can find information of İSMEK training programs via the website or a mobile application.

Most of the services mentioned above are also offered in a mobile application that can be downloaded through the link given by municipality (İbb Mobil Belediye). Table 3 shows the categories of these services.

Public Engagement

The final section of the case study analysis focuses on the evaluation of municipal portals that concerns the public participation in decision making process. It was mentioned before that of information sharing is a factor that rises the public awareness and participation but this analysis tries to understand the more touchable and direct applications of e-government for engaging the citizens in decision making. One of the most useful application is the previous mentioned white desk (beyaz masa) service. The service is based (or used) mainly in complaints and request rather giving proposals to municipality. People are offered different ways to use this service (physical presence, post mailing, telephone line, e-mail and online application form) but the most used one is the telephone line. Via this service citizens can make any kind of complain or request that is related with municipal services. Table 4 shows the main fields of online applications and their rates for the year 2013 and the first quarter of 2014.

Another form of public engagement is done through different interactive platforms such as: forums, online voting and questionnaires where people can share their ideas and complains.

Table 4.   The applications to white desk via internet for first quarter of 2014 (white desk office)

Konu	Web (ibb.gov.tr)	e-mail	Total
Inspection	4.750	354	5.104
Human resources	2.971	76	3.047
Traffic	2.300	754	3.054
Maintenance	1.904	234	2.138
Taxi	1.899	133	2.032
Social services	1.761	59	1.820
Parks and Gardens directorate	1.277	141	1.418
Security	1.095	271	1.366
İSKİ (Water supply)	840	87	927
Outside services	819	100	919
Other			
Total (2014)	18.197 (86%)	2.895 (14%)	21.092

Expect of some questionnaires in sub domains the municipal website does not offer any interactive medium for sharing ideas. Actually this gap is somehow filled by the Facebook and Twitter accounts of municipality. Both of these mediums have a high potential of interactive communication and sharing data of different formats (text, image, audio and video).

The Facebook account of IMM was opened in 2011 and it has 17,440 followers. Mostly it is used for launching the activities, news or projects of municipality. The posts done by municipality are supported with rich visual materials. There are a few comments done by citizens but in general the site does not contain a two-way communication between public and municipality. On the other hand, the Twitter account – with 114,000 followers- is used more efficiently in terms of public involvement. Beside the posts (for news, activities or others) the site has some complaints related with municipal services that are sometimes supported with visual materials. The feedback for the complains is done in short time by the municipality by saying that the issue is sent to the specific unit of that service. However, the amount of interactive communication still being in low rates in both mediums.

DISCUSSION and CONCLUSION

This paper deals with analyzing the issues of e-government by focusing on the evaluation of web portals in the case of Istanbul Metropolitan Municipality. The main aim is to evaluate the role of municipal websites in establishing an efficient e-governance. The literature discusses the potentials of e-government by elaborating aspects such as: transparence; better service delivery; civic engagement; interactive communication; cost reduction; and more accessibility and accountability. In accordance with literature, the web portals of IMM are analyzed in three main perspectives: share of information; e-service delivery; and public participation in decision making. In this context, the analysis show that the municipal websites

have a high efficiency in providing information about the organization of the municipality, it responsibilities, service descriptions, news, projects, plans, investments and budget. This fact has a positive influence on increasing the transparency of institution and public awareness. On the other hand the delivery of e-services is not very efficient and still in low rates. For example the payments done by e-banking for the year 2013-2014 does not reach one percent of the total payments. Although the municipality provides the e-applications in its website, people still use the conventional ways of using the services. Regarding the efficiency of the web portals in rising the public participation, they also still in low rates. One of the main platforms in this context is the white desk which is one of the most used services. Nevertheless, most of the application is done via telephone rather than internet. Other important mediums that offer a lot of potentials for interactive communication information share that can increase the civic engagements are Facebook and Twitter. However the municipality has accounts in both platforms, they are used more for a one-way communication expect of some inconsiderable cases. In short, it is very positive that municipality offers a hybrid system service (online, telephone and physical presence) but conventional methods still being dominant. While, the character of web portals is more informative than involving one.

It is meaningful to stress the fact that the municipality is not the only actor for an efficient e-government. Technical infrastructure (internet coverage) that is depended on other governmental authorities and socio-economic profile of community are also very significant factors that influence the usability of e-governance. If the needed infrastructure is not provided and the public has not the sufficient abilities (level of education, incomes, ability to use technology etc.) the services provided by municipality will not be very efficient.

Finally, to increase the effectiveness of e-governance IMM should implement some policies. Firstly they should have a better

advertisement policy for the services and applications that they offer online in the purpose of increasing the awareness of the public. In addition, IMM should have more educational programs for the public and businesses in terms of enlarging the usability of their e-services. Moreover, they should develop more interactive platforms and use them more efficiently in the context having a higher public engagement. Finally, IMM should benefit from the potential of mobile applications by developing mobile apps for all services they provide via internet.

Acknowledgements

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