THE IMPACT OF MOBILE GOVERNMENT IN ORGANIZATIONS: PROMISES AND PITFALLS

Ph. D. Professor Mircea GEORGESCU
Business Administration Department, Alexandru Ioan Cuza University of Iasi, Romania
mirceag@uaic.ro

Abstract:

The new developments in ICT along with the growth of mobile communication have developed new ways of interaction between the governments and the citizens. More and more governments are using information and communication technology especially Internet or web-based network, to provide services between government agencies and citizens, businesses, employees and other nongovernmental agencies.

The paper try to present an introduction on the characteristics of mobile government and some major issues that justify the necessity of the mobile government and identify the potential that it possesses, but also the problems that concerns such an activity (trust, security risks, privacy risks).

Adoption of mobile technologies by government organizations not only benefits the parties who use these services, but also has a positive impact in the productivity and costs of these organizations.

INTRODUCTION

Ideas about e-government sometimes amount to not a great deal more than government as usual plus information and communication technologies. The waves of e-government are rising through public organizations and public administration across the world. More and more governments are using information and communication technology especially Internet or web-based network, to provide services between government agencies and citizens, businesses, employees and other nongovernmental agencies.

If we want to speak about m-government first of all we must define e-government. It is defined as "the use of information and communication technologies in public administrations combined with organizational change and new skills in order to improve public services and democratic processes and strengthen support to public policies" [COM, 2003]. E-Government does not mean:

- to equal digitalisation with modernisation;
- to replace analogous bureaucracy by digital bureaucracy.

Almazan and Gil-Garcia after reviewing different ways to present the stages of e-government, propose the following model :

Table no. 1. Evolutionary approaches to e-government assessment: an overview

E-Government Stage	Additional Technological and Organizational Sophistication
Presence	- Limited government information; - Few Web pages developed by single agencies; - Static information about government structure and services
Information	- More dynamic information (frequent updates); - Greater number of web pages; - Statewide portal as the entry point with links to most of the state pages;
Interaction	- Forms that can be downloaded; - Two way communication through electronic mail; - Use of search engines; - Use of chats, forums and other forms of interactive communication (service related); - Some customization (citizen's profiles, use of passwords)

Transaction	• Online web services (secure and completely online), including accepting electronic payments; • More customization (use of passwords, citizen's profiles); • Portal organized according to people's needs instead of government structures

Integration	• Service portal with a single checkout point
	   o Multiple agencies, same function, different levels of government;
	   o Multiple agencies, different functions, same level of government;
	   o Multiple agencies, different functions, different levels of government.

Political Participation	• Political participation; • Online public forums; • Opinion surveys; • Online voting.

E-GOVERNMENT VERSUS M-GOVERNMENT

But, how can we define M-government? Mobile government definitions given in the literature vary slightly. Many authors describe m-government as "a functional subset of all inclusive e-government" [Arazyan, 2002], that vision saying also, that technologies used for m-government "are limited to mobile and/or wireless technologies" [Llalana, 2004]. For others authors, m-government "is a complex strategy for efficient utilization of all wireless devices" [Zalesak, 2003] with the goal of improving benefits to the parties involved in e-government.

In conclusion, m-government may be defined as a strategy and its implementation involving the utilization of all kinds of wireless and mobile technology, services, applications, and devices for improving benefits to the parties involved in the e-government including citizens, businesses, and all government units. It`s clearly that m-government is not a replacement for e-government, rather it complements and completes it. M-government is building upon e-government efforts, and there are basically two important issues related to the transition from e-government to m-government [Kuscu, Kushchu, Yu, 2007]:

- M-government is inevitable. The most important reason concern the citizen`s rising expectations for a better and convenient government services;
- M-government is complementary to e-government (some of the m-government services are replications of e-government services on the mobile platforms).

According the literature review [Yu, Kushchu, 2004] [Cilingir, Kushchu, 2004] the principles differences between m-government and e-government are:

- Convenient accessibility and availability:
  - One of the most important characteristic of mobile devices is they are always "on line";
  - Mobile devices are designed to be mobile, that means the user carried them all the time;
  - The two characteristics mentioned means that citizens can use the online governmental services not only anytime but also anywhere.
- Precision and personalisation of the delivered content
  - Mobile devices are used generally individual, we do not share this devices like a personal computer – that means we need personalized informations;
  - These type of devices is more friendly and familiar for the users, and the user don`t need specific skills.
- Larger and wider user base
  - Practicaly the mobile devices offers a biger potential number of users of m-government comparative to Internet user community.

Even smaller towns operate their own Web site with access to general public information, whereas larger cities and institutions generally offer a wider range of more developed Web based

services. The quality of these services can vary significantly, for example, in rural areas, they have limited financial, technical and human resources in order to implement and deploy services with the same quality as large institutions [Leenes, Svensson, 2002]. So, we can conclude that the deployment of an open service platform, that can be shared by networked authorities and institutions in terms of technical resources as well as comercial exploitation, would armonize the quality of public services, and provide the conditions for low cost of m-government services.

For developing m-government services a number of conditions are very important:

- critical level of of mobile phone penetration;
- reasonable cost of phone calls and text messages;
- the liberalization of telecommunication sector,
- distributed infrastructure to support mobile technology penetration.

When we talk about m-government, we talk also about mobile tecnologies. The underlying technologies are dealing with four basic concepts of mobility [Roggenkamp, 2007]:

- **device mobility** – deals with the continued access to services while beeing spatially mobile, moving from one physical location to another (granted for example via locally Wireless LAN access points or via standards such as GSM);
- **user mobility** – the citizens must be mobile without physical constraints, the only requirement is to utilize an identification module;
- **service mobility** – anytime, anywhere. More appropriately, this concept includes the idea of service delivery regardless of device and user specific settings;
- **session mobility** – describe the capability of starting, pausing if it` necessary, and resuming a user session while switching between devices and /or services.

When we try to improve the new Information and Communication Technologies for the citizens, we must answer at some important questions:

- How technologically feasible are user wishes/needs?
- What are the interdependencies between technological solutions and usage?
- How can technology adapt to these needs/interdependencies?

Despite substantial, increased investment in information technologies, no significant increase in productivity was observed. We can appreciate, we need a relatively long period for the benefits of IT investments to become discernible. Asignificant variability exists across organisations in regard to their ability to productively use information technologies. Therefore performance reflects processes and strategies as well as IT investements.

Besides the reengineering of administrative processes to reduce bureaucracy and to improve the quality of government services, the implementation of m-government solutions requires organizational and citizen changes.

Figure no. 1. Organizational and citizen changes for successful M-Government

M-Government have the ability to connect previously unconnected areas, information, and services from the government. It extends the benefits of remote delivery of government services and information to those who are unable or unwilling to access public services through the Internet, or who simply prefer to use mobile devices.

In addition, the relatively lower cost of mobile phone technology versus Internet technology has drastically lowered the entry barriers for citizens in developing countries to be connected to government services. Mobile phones could be considered now as key technologies in adapting e-government policies and programs. The actual model of mobile phones allow citizens to get access to government services virtually in any place covered by a mobile network. For example, Singapore's mobile penetration rate has reached a high of 98%. Today, the mobile phone can be used to access information and transact with Goverment while on the move. As part of the Mobile Government strategy, Singapore government has made many mobile services available to the citizens so that they can transact with the government while on the move.

What are the services that government could delivered via mobile phone? Are they traditional services or new services? We can include in m-government services relating to:

- health,
- education,
- employment,
- police,
- tax,
- judicial and legal systems, etc.

In the last years, payments and financial services are also possible through mobile phones, which drastically expands the opportunities to incorporate m-services into the everyday lives of citizens.

Another important sector that mobile phone technology can also considerably expand is e-democracy and e-participation, engaging citizens in democratic decision-making through various polls, m-voting, and other forms of communication between citizens and the government. The United Kingdom and Switzerland have pioneered m-voting in local elections. In Asia, Korea leads the way in m-voting through its use in the selection of Presidential candidates.

It is now estimated that 94% of countries in the world have some form of online services. The degree of e-government programs varies greatly from country to country but is continuing growing, like the Mobile conectivity versus Internet conectivity varies also with advantage for Mobile conectivity.

M-GOVERNMENT PERSPECTIVES
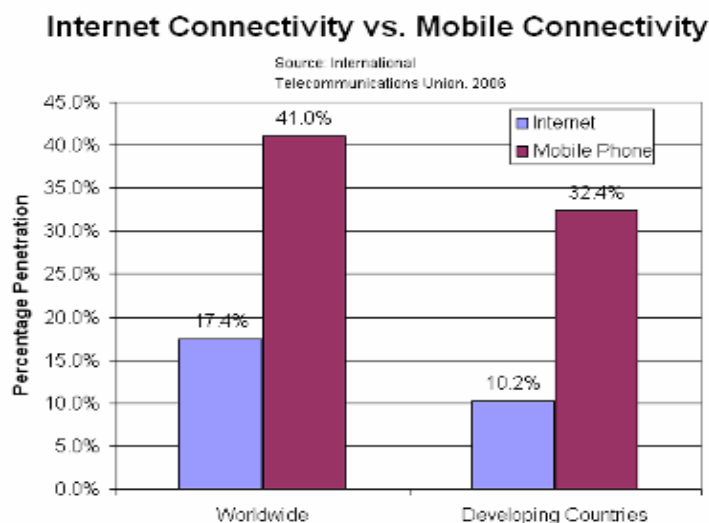

Figure no. 2. Internet conectivity versus Mobile conectivity

Why is increasing the demand for mobile services? There are several factors that year by year are vectors in this area [Riley, 2008]:

- the convergence of wired internet and telecommunication networks, allowing information once only available on a computer to be received through mobile phones;
- the penetration of mobile technology and the relative low cost of entry into mobile connectivity;
- the shift towards higher data transfer rates and 3G services which promises to make more information available at faster speeds.

However, the debate advantages/disavantages of M-Government, must start from some key questions, studied in the phase of designing mobile government.
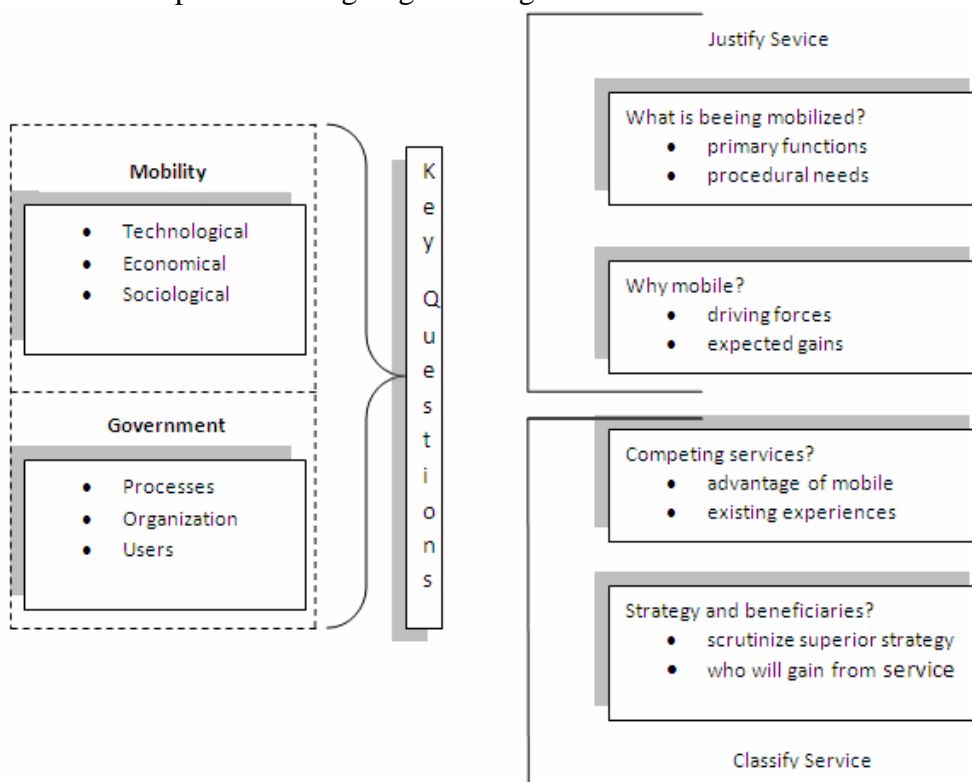
Figure no. 3. Key questions when designing mobile government

Carrying around a mobile has its advantages and its risks. Probably, one of the most enduring policy issues is privacy. In the development of e-government practices and principles over the years, privacy and security have become key factors to ensure success of online programs. Beyond privacy there are the security issues on a broader scale, where we are seeing the rise in spam, spyware, ad-aware, phishing, identity fraud and a host of other hacker activities (good or bad) that make people uneasy when going online.

Citizens have a great concern about the privacy and security in m-government. The general issue is the convincement that their mobile phone numbers might be traced, when they send their opinions and inquiries to the government.

The government must overcome the mistrust, and assure mobile users that people's privacy is protected and the information will not be sold to third parties. Wireless networks are still considered vulnerable because they use public airwaves to send signals.

For the success of M-Government strategy there are important barriers that are the key policy and technical issues that must be addressed in order to successfully implement the e-government initiative.

- Technical Barriers:

- Security;
- Digital Signatures;
- System Maintenance & Integration;
- Transition & Systems Interface;
- Online Payment Setup.
  - Financial/Economic Barriers:
    - Start Up Costs;
    - Transaction Costs.
  - Other Barriers:
    - Customer Expectations;
    - Staff Availability, Training, Expertise;
    - Language Barriers;
    - Universal Access.

Also, lack of standards and optimized data exchange protocols in mobile and wireless environments inhibit the potential of m-government. In this regard, developing a coherent m-government framework in the public sector is an important factor. Most of the European countries placed e-government services development high on their agenda. But even though the initiative is in its peek, the recent survey shows lack of awareness about m-government among the citizens. In this fashion, the development of m-government standard unites innovation of architecture, technology, feasibility and citizen's education and awareness.
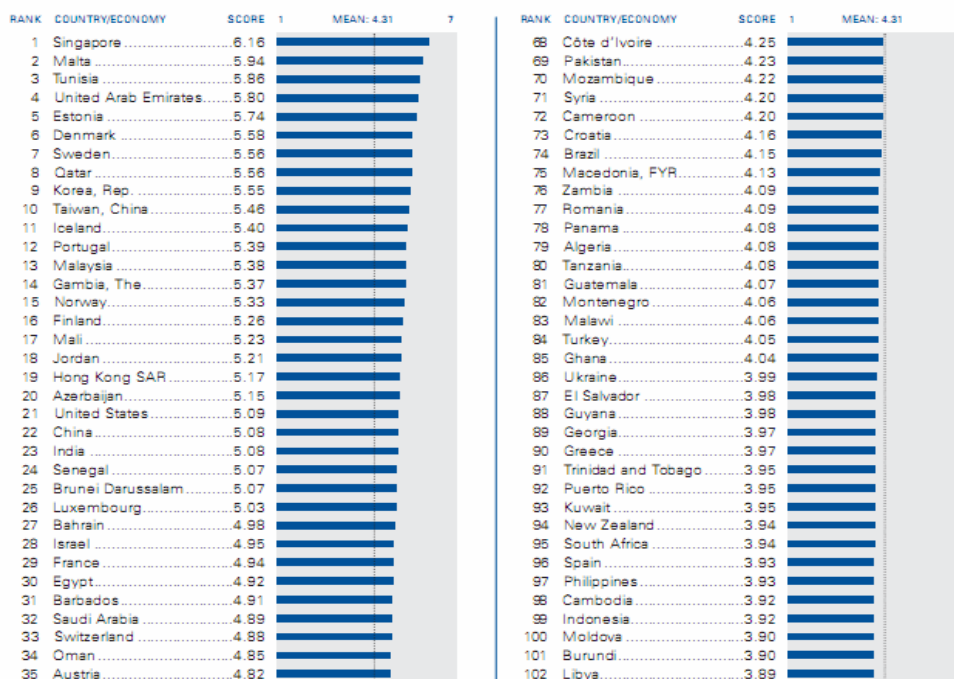
RANK	COUNTRY/ECONOMY	SCORE		RANK	COUNTRY/ECONOMY	SCORE
1	Singapore	6.16		68	Côte d'Ivoire	4.25
2	Malta	5.94		69	Pakistan	4.23
3	Tunisia	5.86		70	Mozambique	4.22
4	United Arab Emirates	5.80		71	Syria	4.20
5	Estonia	5.74		72	Cameroon	4.20
6	Denmark	5.58		73	Croatia	4.16
7	Sweden	5.56		74	Brazil	4.15
8	Qatar	5.56		75	Macedonia, FYR	4.13
9	Korea, Rep.	5.55		76	Zambia	4.09
10	Taiwan, China	5.46		77	Romania	4.09
11	Iceland	5.40		78	Panama	4.08
12	Portugal	5.39		79	Algeria	4.08
13	Malaysia	5.38		80	Tanzania	4.08
14	Gambia, The	5.37		81	Guatemala	4.07
15	Norway	5.33		82	Montenegro	4.06
16	Finland	5.26		83	Malawi	4.06
17	Mali	5.23		84	Turkey	4.05
18	Jordan	5.21		85	Ghana	4.04
19	Hong Kong SAR	5.17		86	Ukraine	3.99
20	Azerbaijan	5.15		87	El Salvador	3.98
21	United States	5.09		88	Guyana	3.98
22	China	5.08		89	Georgia	3.97
23	India	5.08		90	Greece	3.97
24	Senegal	5.07		91	Trinidad and Tobago	3.95
25	Brunei Darussalam	5.07		92	Puerto Rico	3.95
26	Luxembourg	5.03		93	Kuwait	3.95
27	Bahrain	4.98		94	New Zealand	3.94
28	Israel	4.95		95	South Africa	3.94
29	France	4.94		96	Spain	3.93
30	Egypt	4.92		97	Philippines	3.93
31	Barbados	4.91		98	Cambodia	3.92
32	Saudi Arabia	4.89		99	Indonesia	3.92
33	Switzerland	4.88		100	Moldova	3.90
34	Oman	4.85		101	Burundi	3.90
35	Austria	4.82		102	Libya	3.89

MEAN: 4.31

Figure no. 4. Government success In ICT promotion

There are many benefits by using m-government, both for public sector and for citizens. In next table Casalo, Gunaliu and Flavian summarize the benefits associated with the implementation of m-government [Casalo, Gunaliu, Flavian, 2007].

Table no.2. Benefits associated with the implementation of m-government

Benefits for the public sector	Benefits for the citizen
The public sector can reach citizens more easily and directly. Consequently the gap between the public sector and citizens is reduced	The cost for the citizen in time and effort when interacting with the government is reduced as the gap between the two is decreased
It could be possible to carry out the public services more efficiently	The citizen can interact with the public sector 24 hours a day, 365 days a year
	Public activism is promoted
There is an enhancement of the image and reputation of the public administration	The variety of services offered by the public sector to the citizen can be increased
Citizens commitment to their environment and to the public sector is increased	Citizen mobility is ennhanced: the opportunity of accessing government information and services regardless of location or time is increased

A common mobile public services framework must first and foremost incorporate the following five principles [Antovski, Lj. & Gusev M.,2003]:

- Interoperability;
- Security;
- Openness;
- Flexibility;
- Scalability

Interoperability is based on bilateral agreements in which the rules for communication are defined for each new system that is connected. The core of interoperability is the stipulation of common data models and common protocols for exchanging data.

The openness of the system is considered on several levels: open standards, open interfaces, open specifications and open source codes. Scalability should be built into a system from the start. It is important to be able to maintain both the functionality and efficiency of the solution if the need changes, for example in respect of user numbers, transaction volume or data quantity. Modularity and scalability must also relate to the nature and scope of the work. The data exchange format is based on the exiting XML standard.

CONCLUSIONS

In order to foster a successful implementation of m-government, the following key success factors emerge:

- Descentralization for local m-government diffusion;
- Central government support to local projects in order to promote standardization;
- Soft skills, in particular leadership and communication;
- Skills enhancement on the job rather than formal training;
- Early involvement of people both internal and external;
- Horizontal organizations and bottom-up approaches, but with strong commitment of top management.

In conclusion, when implementing new technologies, governments should not force citizens to upgrade their current devices, but rather smart small with applications using current technologies and current bandwidth for data transfers or services. Starting small, but thinking big – basic m-government applications should be cornerstones of wireless strategies for governments worldwide.

REFERENCES

1. Almazan-Sandoval, R., Gil-Garcia, R. (2006), *E-Government Portals in Mexico, in Encyclopedia of E-Commerce*, E-Government, and Mobile Commerce, Idea Group Reference, USA;

2. Antovski, Lj., Gusev, M., (2003), *M-Government Framework*, at http://www.mgovernment.org/resurces/euromgov2005/PDF/5_R368AL.pdf, accessed 19.07.2010;

3. Berce, J., *E-Government a window of opportunity for EU* NMS, 2005, at http://fiste.jrc.es, accessed 02.07.2010;

4. Capra, E., Francalanci, C, Marinoni, C., *Soft success factors for M-government*, in Kushchu, I., Mobile government an emerging direction in e-government, IGI Publishing, London, 2007;

5. Casalo, L., Flavian, C., Giunaliu, M., *M-Government initiatives at the local level: the case of Zaragoza,* in Kushchu, I., Mobile government an emerging direction in e-government, IGI Publishing, London, 2007;

6. Chien-Chih, Y., Janssen, M., *The need for strategic management and business model design in government and public administration*, Electronic Government, an International Journal, vol 7, Number 4 / 2010

7. COM, *The role of egoverment for Europe`s future,* Communication from the Commission, COM (2003) 576 final, Commission of the European Communities, September 26, Brussels, 2003;

8. EGov Monitor, from 11 february 2008, *Privacy and Mobile Technologies: What are the risks*, By Thomas B. Riley, Commonwealth Centre for Electronic Governance, Canada

9. Leenes, R., E., Svensson, J., S., *Size matters – Electronic service delivery by municipalities?* in the Proceedings: Electronic Government: EGOV 2002, Aix-en-Provence, France, Edition Springer, 2002

10. Roggenkamp, K., *Its` the Mobility, Stupid: Designing Mobile Government*, in Mobile Government: an Emerging Direction in E-Government, IGI Publishing, New York, 2007;

11. Song, G., Cornford, T., *Mobile Government: Towards a Service Paradigm* in the Proceedings of the 2nd International, Conference on e-Government, University of Pittsburgh, Pittsburgh, USA, 2006, at http://mobility.grchina.com/ICEG_2006_paper.pdf, accessed 1.08.2010;

12. Sørensen, C. (2003) *Research Issues in Mobile Informatics: Classical Concerns, Pragmatic Issues and Emerging Discourses*, LSE, http://mobility.is.lse.ac.uk/html/downloads.htm;

13. http://www.insead.edu/v1/gitr/wef/main/fullreport/index.html.