



E-Government and m-Government: Concurrent Leaps by Turkey

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Abstract: In this paper we evaluate recent mobile government efforts in Turkey within a broader context of e-government. We identify that there are various effective examples of mobile government implementations in Turkey, though traditional e-government coordination is yet to be realized. We analyze these concurrent developments in terms of both unique value added by mobile government implementation as well as macro and micro level benefits for a developing country such as Turkey.

Keywords: Mobile Government, Electronic Government, Turkey

1. Introduction

The modernization of government administrations within the context of e-Government is moving towards to the utilization of mobile applications and technologies. With these efforts, complete new ways of realizing e-Government activities often as a complementary, rather than a substitute, under the paradigms of “mobile government” (m-Government) have emerged in various countries all over the world. While some of these countries are advanced in terms of e-Government and mobile technological infrastructure, some are still weak in terms of either or both. At this point, Turkey demonstrates an interesting example; although the overall efforts in e-Government are still in the premature stage, and a relatively less advanced mobile infrastructure (only 3 GSM networks) is installed, Turkey has a number of impressive mobile government applications in use.

This article evaluates the case of Turkish m-Government developments in detail within the broader context of e-Government but particularly those efforts in Turkey. We would also like to place the evaluation within the context of other m-Government implementations in order draw specific lessons from a developing country’s effort in utilizing the newest technologies for enhancing e-Government. The paper aims to present two sets of m-Government applications which create different sets of value and benefits– applications that enhance the existing e-Government applications’ efficiency in a complementary manner, and applications that create a unique and novel set of benefits and values. The paper will argue that the m-Government applications are complementary to e-Government applications, at the same time they have their own unique features and attributes. In addition to these, the paper will argue that the leaders of policy for e-Government planning should take mobile technologies into consideration in order to extend the horizon of online governmental services and maximize the obtainable benefits from these services at the early stages of planning and system design. Turkey’s case will be used to present that countries, who are still at the beginning stages of e-Government applications are in a more favorable position in terms of including mobile platforms and technologies in their efforts, due to the fact that they are still at the planning stage where they can include these technologies into their plans and ultimately harvest superior results with less efforts used efficiently. The paper will be finalized with a proposal for policy makers for the implementation of mobile technologies and platforms into e-Government planning efforts.

2. e-Government Efforts in Turkey

Turkey has been showing considerable efforts in e-Government over the past two decades. However, due to the reasons such as the lack of coordination of the efforts, the decentralized investments, and the inexistence of a project champion among the policy makers has lead to a poor outcome at the end of the last millennium. According to the Taylor Nelson Sofres report “Government Online: an international perspective”, the users of e-Government services in Turkey as a percentage of the population resided at a mere 3% in 2001 (Mellor, Parr, 2002) and was ranked 23rd out of 27 countries included in the study. After participating in the eEurope Initiative with other European Union candidates in Lisbon (June, 2001), the Turkish government has significantly increased its efforts in the field in line with the European Union’s Lisbon Strategy – “to become the most competitive and dynamic knowledge-based economy in the world by 2010”. As to show its commitment to join the European Union, and to maintain the potential to be an

important player in the information society of the future, Turkey has launched a project called e-Transformation Turkey Project and set aggressive targets.

As an immediate result, the use of e-Government services as a percentage of population rose to 13% in 2002. Turkey had shown a 10% increase in a year which is a figure of importance. Furthermore, Turkey, a developing country, had attained the same level of e-Government usage with that of Great Britain and Japan, both developed countries. However, on a global basis, the 13% is still well below the world average of 30%, and Turkey still ranks 23rd (this time out of 31 countries). To further enhance its efforts, Turkey has released and Urgent Action Plan, which was implemented as a fundamental part of the 58th and 59th Governments' Program.

Currently, internet users in Turkey can conduct many different governmental tasks on the internet varying from social security information submission to learning the results of university entrance exams, or querying their personal information on various issues such as tax or social security. However, most of the services provided online are still at the informative or the interactive stages, transactional applications exist but are infrequent (Sebie, Irani, 2003).

Another important observation about the e-Government efforts in Turkey is the problem caused by the uncoordinated e-Government efforts. Different governmental institutions have been developing their own systems independent of other institutions. Therefore, integration is a big issue of question. A significant amount of resources and efforts will have to be devoted to system integration. Furthermore, due to the uncoordinated and decentralized nature of efforts, the resources are spent abundantly, and with low efficiency. Duplicate efforts and cross-institutional issues unaddressed due to this decentralized approach will arise at the surface during the integration stage. In order to address these problems, the government has assigned the State Planning Department with the duty of coordination and overseeing the integration. However, this issue of integration will represent a major problem in the near future for Turkey.

3. Mobile Communication in Turkey

Mobile telephones have penetrated the Turkish market faster than any other product/technology has ever done. As of December 2003, the total number of mobile users in Turkey has reached approximately 28 million – approximately 40% of the population – far exceeding the number of PSTN lines which have been stable around 19 million (8). Turkish users have adopted the mobile technology very rapidly, and mobile phones have become an inseparable part of the daily life. The infrastructure installed in Turkey consists of three 2nd generation technology - GSM networks. The operators are Turkcell, Aria-Aycell, and Telsim. Although all networks support data transfer via GPRS, mobile internet is not very popular among consumers. However, SMS, a text based messaging service is very popular, and is an important communications medium; also an important revenue driver for the operators. The effect of these preferences on m-Government will be demonstrated in the forthcoming sections.

4. Major m-Government Applications in Turkey

The m-Government applications in Turkey can be classified with different methodologies, either according to the parties involved (Government to Government - G2G, Government to consumers - G2C, and government to Business - G2B), or according to the coverage (national or local). In this article, classification with coverage will be used.

4.1 National Coverage

Mobese

One of the major applications of m-Government in Turkey is in the law enforcement area, a project called Mobese (Mobil Elektronik Sistem Entegrasyon – Mobile Electronic System Integration) (4,7) The Mobese project is mainly an infrastructure which aims to maximize the efficiency and effectiveness of the law enforcement units. The infrastructure is designed for both wired and mobile access. The police stations and related fixed units access the system via VPN. The mobile units are equipped with Tablet PCs with GPS and GPRS internet access. The system enables the following:

Mobile units can do online queries regarding identification, record history etc. These queries increase the effectiveness and responsiveness of the mobile units. The system is being used by police and traffic police officers in various areas of Turkey. The central command unit has access to the location specifics of the mobile units. In case of an incident, the system effectively assigns the nearest unit to the incident. The system enables effective communication among the mobile units and the central command unit. Since data transactions regarding law enforcement take place online, the central unit can do effective planning, simulation and management with the online data.

TBS

Another country wide mobile government application in Turkey is TBS (Trafik Bilgi Sistemi – Traffic Information System) ³. Similar to Mobese, TBS connects the mobile traffic enforcement units equipped with tablet-PCs to a central information system via GPRS (3,2). The system facilitates the following:

Similar to Mobese, TBS aims to increase the effectiveness and the efficiency of communication between the mobile units and the command center. The command center and mobile users can communicate via real time messaging system, using custom or pre-designated messages.

The mobile units can conduct real time queries regarding drivers' license information, vehicle registration, citizen identification and drivers' point status. The online queries decrease the waiting time significantly increasing the effectiveness and the efficiency of the mobile units.

The traffic penalties are conducted in an online manner, increasing efficiency, and transparency.

Since the system includes GPS, the mobile units can be mapped at the command center online. Therefore center unit can assign mobile units to incidents more effectively. Accident locations and accurate accident information are transferred to the system online, increasing record accuracy and the liability of the statistics.

Mobese and TBS are similar applications by their technologies and application models. They offer a new level of benefit that was not possible with the prior e-Government efforts. The “mobility” attribute is one of the core competences of these applications, which helps create a unique value. In addition, these applications make use of the existing e-Government infrastructure. The strategic fit between the existing e-Government infrastructure (the legal databases, connectivity, etc.) and the mobility has created a synergy, and further enhanced the value obtained from the system.

Mobile Donations

Although not a strictly governmental application, the mobile donations have been used in several charity applications. The mobile phone users took place in donation activities by sending specially priced SMSs to special service numbers provided by the operators. Campaigns have been organized for Turkish Education Foundation, National Education Foundation, and Special Olympics (Olympics for the disabled) (Celik, 2004).

4.2 Local Coverage

The local applications presented have a significance of their own merit. These applications are usually Government-to-Citizen applications that have high chances of usage penetration in the near future. These applications are highly leveraged with the high mobile penetration in Turkey, people’s significant propensity towards technology in Turkey, the ease of use of Mobile phones, and mobile platform’s ability to reach people anywhere/anytime. The penetration of these applications (and new applications) would increase the usage of online governmental services they complement significantly; a factor that is of crucial importance. Also the anywhere/anytime nature of these services increase the convenience and the satisfaction levels of citizens extensively, with an incremental investment that is relatively low compared to e-Government investments.

Earthquake Monitoring and Information System - ISTANBUL

Kandilli Observatory (Istanbul) has initiated a project which links the 100 seismographs placed in Istanbul to the institution via GSM. In case of an earthquake, the seismographs send information to the observatory via SMS. The collected and analyzed information is then disseminated to the involved governmental organizations (such as civil defense, emergency units, municipalities, local governor, military and etc.) via GPRS. The system is expected to be of extreme use in case of an earthquake, where officials and governmental institutions that are mobilized in the disaster area need real-time and accurate data (1).

Municipal Applications

Municipalities have also implemented various mobile applications in order to serve the citizens. Some examples of these applications are exemplified below.

Sisli Municipality Mobile Tax Collection System - ISTANBUL

Sisli municipality has established a system that allows the citizens to conduct taxation queries and transactions via their mobile phones. The system utilizes SMS to query the database for estate and environmental taxes of citizens, and allow the citizens to pay their taxes with their credit cards using SMS. The system increases the convenience of tax payments for citizens, and reduces the investment requirements at the tax payment offices (6).

Kadikoy Municipality Cellular Information Broadcast – ISTANBUL

Kadikoy municipality has implemented a mobile infrastructure that broadcasts municipal and governmental messages and reminders to citizens. The process starts with the citizen making the necessary setting on their mobile phones. After the citizen turns the channel 888 – Municipal Information channel, he receives messages from the municipality (when he is within the borders of the municipality) free of charge. The information sent varies from tax reminders to roadblock notices or public concert invitations. Since it is a cellular broadcast, different municipalities can use the same channel to broadcast messages to citizens within their borders (5).

BAYON-M - Bahcesehir Governance Model – ISTANBUL

The BAYON-M is a general model for local governance. However, it incorporates the use of mobile technologies in order to increase the citizen satisfaction. The use of mobile technologies involves mobile voting for local democracy (unofficial), SMS message broadcasts to citizens on various topics, and messages on special days (Yenal, 2003).

Uskudar Municipality Tax Information System – Istanbul

Similar to the application of the Sisli Municipality tax payment system, this system enables the citizens to query and pay their taxes via SMS. Furthermore, this system incorporates a reminder module, which reminds citizens of their tax payment deadlines and their tax amounts upon registration. In addition, the system enables the Municipality to utilize SMS broadcasts for information dissemination. Currently, the municipality gives these services free of charge (Tarhan, 2004, Devrim, 2004).

5. e-Government & m-Government: Concurrent Leaps

As discussed in the second section, Turkey has begun its significant advance in e-Government only since 2001. Similar to e-Government applications, the m-Government applications also have a very short history. Turkey has been advancing in both lanes almost simultaneously. However, there are two implicit cases of development and implementation which should be observed.

- *m-Government Applications Complementary to e-Government Applications*

The complementary applications require the presence of an established infrastructure. These “add on” mobile applications aim to increase the value provided by the e-Government applications. In case of the municipal tax payment systems, the technological infrastructure is not specially built for the mobile application. However, the mobile application further enhances the value offered by the system. Citizens’ convenience is increased significantly with the add-on mobile application. As a result, this category of services enhances the value of electronic government applications by adding the “anywhere” component to the “anytime” component of the value.

- *m-Government Applications that create Novel and Unique set of benefits*

This category of m-Government applications are applications which are not built on existing e-Government applications. This category of applications enables functionalities which can only be facilitated using the mobile applications. A new definition of value is created with the implementation of mobile applications. In the case of Turkey, the Mobese and TBS are such applications. Both Mobese and TBS conduct functionalities which are not possible without the use of mobile technologies. As a result, this category of services is not dependent on e-Government applications and the real value stems from the mobility itself.

In addition, to this categorization, we think that highlighting the strategic fit created by the concurrency of these efforts is of crucial importance to emphasize. At the macro level, the availability of mobile platforms and technologies allow the policy makers to include these technologies in the future roadmaps for the e-Government efforts. At this point, the developing countries have significant advantages, because they can include these platforms at a very early stage, when they are at the early levels of e-Government planning/implementation. The designs and future targets can be shaped with mobility in mind, resulting in a firm fit between e-Government and m-Government. The applications designed with a richer set of available technologies and broader visions have a higher chance of success, usage/adoption, and adaptability/upgrading potentials. Moreover, the online governmental applications which are originally designed with mobility in mind, rather than using mobility as an add-on, have a higher chance of creating the real value of mobility. The add-on applications are likely to fail to satisfy the expectations/needs at a point in the future because mobility is not really an integral part of their core. As a result, e-Government efforts built with the intended future targets, strategic fit, and the possible synergy in mind will offer a whole new horizon of benefits and values, which were previously unavailable via e-Government efforts due to the invaluable "mobility" attribute. Building applications with the abovementioned qualities in mind requires more efforts, resources and planning in programs that have been going on for a long period compared to programs that have begun more recently which have captured the mobile technologies and their essence.

In addition to macro level benefits, m-Government implementation in the early stages of e-Government development has important benefits at the micro level. The widespread use of mobile technologies has important implications adoption, usage and the penetration of e-Government applications through mobile channels. Especially in developing countries, the internet penetration is significantly lower than mobile device penetrations. Furthermore, using internet as a channel of communication requires more knowledge and experience compared to mobile platforms. In addition, people have a propensity to use mobile applications and are more accepting towards developments in mobile devices, compared to computers. As a result of these three crucial points, the mobile channels yield considerable benefits for e-Government:

- m-Government reaches a larger number of people through mobile devices which far exceed the internet user community.
- m-Government reaches a broader audience, even people who have no training or experience with computers and internet, but are active users of mobile communication.
- m-Government increases the acceptance, adoption and the usage of online governmental services by reaching the citizens through a more personal, familiar and a convenient device.

- m-Government enhances the adoption of online governmental services by citizens through the improved convenience it offers. Citizens can use the online governmental services not only “anytime” but also “anywhere”.

Availability of service anywhere, through simpler means and increased convenience would result in citizens' increased usage and adoption of services; increasing the value of online governmental services, yielding returns faster, and increasing the investment's performance.

6. Conclusion

Before all, the relationship between e-Government and m-Government must be clearly identified: m-Government is complimentary to e-Government. m-Government requires the presence of an e-Government infrastructure to function. However, this dependency does not mean that m-Government is a mere extension of e-Government. As described above, m-Government has a set of applications that enhance the effectiveness of the existing e-Government efforts and creating incremental value. However, the real power of m-Government lies in the second set of applications, applications that facilitate a novel and unique level of benefit and value. As policy makers are designing the roadmap for e-Government, the potential value m-Government must be considered and m-Government possibilities should be incorporated in the design.

The other important issue arises at the integration stage of m-Government. We believe that the stage at which m-Government is implemented or incorporated into e-Government is of significant importance. The earlier m-Government is considered as an integral part of the online governmental services, the resulting effectiveness, efficiency, and future potentials likely to be greater. m-Government should be incorporated into e-Government designs as early as possible to achieve a high level of fit between applications and systems. If m-Government is build as an add-on to e-Government rather than an integral core element, the results achieved would not reflect the real power and potential of m-Government. We believe that, in countries where e-Government efforts are at the earlier stages, the possibility to implement m-Government at the core of e-Government is higher, therefore these countries are in a more favorable position compared with the countries who have taken a long way in e-Government. In the latter type of countries, it may be difficult to implement m-Government into the existing system, which was not designed with m-Government considerations in mind. Therefore policy makers should evaluate possible m-Government projects as they are designing the roadmap for e-Government, determine the most appropriate applications and systems, however, at the same time keeping the opportunities for future upgrades/adaptations and improvements. The real power of m-Government can only be harvested if it is seen as a key element of e-Government, rather than a mere extension of services.

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