From the traditional bureaucratic paradigm to E-government: visible and invisible Barriers

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Abstract

E-Government initiatives are currently popular in many countries, both developed and developing countries. Iran is an Islamic country and one of the most ancient and richest bureaucratic systems in the world. Thus, the nature of the traditional model of government bureaucracy and other distinctive characteristics such as the large size of government and the nature of government monopoly highlight the importance of investigation of E-government development in this country. The aim of this paper is to examine the factors that impede the E-government initiatives based on senior officials' perceptions in the Iranian context. The paper reviews the literature concerning E-government barriers. It then goes on to the research methods used in data collection and analysis. After that, the research results are presented briefly. Finally, the paper concludes with research findings.

Keywords: E-government, Barriers, Information and Communication Technology (ICT), Information Technology (IT), Government Bureaucracy, Developing Countries

1 Introduction

The advent of the Internet has increased the opportunities for governments to use Information and Communication Technology (ICT) to achieve objectives such as improved planning and monitoring mechanisms, cost savings, and more effective administration and delivery of certain public services (Ho 2002; Pradhan 2002; UnitedNations 2002; Unnithan 2002; Avgerou 2003; Jaeger and Thompson 2003; Madon 2003; Sharma and Gupta 2003; Ndou 2004). As a result of this, the majority of governments have set the realization of e-government as one of their primary targets. Thus,

in recent years, E-government development has been a topic of interest for many researchers and policymakers(Atkinson and Ulevich 2000). However, there are increasingly concerns and challenges as to how governments can pass the transformation process to E-government in an effective way.

2 Overview of literature

Although the benefits of E-government, in theory, are many, the successful development of these systems is not simple or cheap, particularly for developing countries with scarce resources. Thus, there have been several studies which have attempted to recognize the obstacles and drivers for successful E-government implementation (Heeks 1999; 2001; Chutimaskul 2001; Akomode, Talebbendiab et al. 2002; Hackney, Jones et al. 2002; Heeks 2002; Heinderyckx 2002; Li and Steveson 2002; Molla, Licker et al. 2002; Molla, Licker et al. 2002; OECD 2003; Reffat 2003; Sharma and Gupta 2003; Sharma and Palvia 2003). Despite the efforts conducted in this regard, still there are huge amounts of challenges and concerns which are to be considered and resolved. However, several issues intensify the importance of investigation of this issue, which are:

First, a major concern in this regard is the high rate of E-government projects failure. Findings of several studies indicate that despite high costs of E-government projects, both tangible and intangible, many E-government projects are failing or are slowly diffusing. (Chutimaskul 2001; OCED 2001; United Nations 2001; Li and Steveson 2002; Pardo and Scholl 2002; Heeks 2003; Stoltzfus 2005) Consequently, the failure rate of E-government projects has been estimated to be high. For instance, according to a recent report regarding produced estimates for E-government projects in developing

countries, almost 35% of projects are total failures, 50% are partial failures, and only 15% are successful(Heeks 2003).

Second, the complexity of E-government development due to complexity of government administration is another issue (Pardo 2000; Tambouris, Gorilas et al. 2001; Fang 2002; Reffat 2003; Li 2005). Despite the popular misconception which supposes that E-government is just loading information and services on the web; it implies dramatic organizational and institutional changes (Pardo 2000; Saji 2003; Montagna 2005). Thus, E-government will fundamentally alter the way public services are delivered and managed. This will cover various organizational, economical and social as well as technological aspects concerning E-government strategies and projects (Pardo 2000; Navrara and Cornford 2003). On the contrary, within prior research, little attention has been paid to organizational aspects of this issue particularly, reciprocal impacts between the current reality of government administration and implementing E-government(Schedler and Schmidt 2004).

Third, the existing ambiguity among people who are involved in developing E-government especially in the developing world is another concern. Although some authors have mentioned the criteria that can be used to judge success and failure such as ITPOSMO Model or Factor model (Heeks 1999; Heeks 2001; Al-Tawil and Sait 2002; Evangelidis, Akomode et al. 2002; Heeks 2004; Joia 2004), movement toward e-government development in developing countries is generally at the early stages of preparation. Recent evidence shows that E-government projects are failing due to lack of

understanding of effective planning, development and deployment(Gupta and Jana 2003).

Finally, very few studies have been conducted in the research area in an in-depth manner. In addition, no strong case study has been found that used qualitative approach in the research context. Despite of all studies that have been conducted, there is still a gap in this area and many academics have called for this research (Pardo 2000; Burn and Robins 2003; Siau and Long 2005).

3 Barriers from the literature

So far, however, lack of a comprehensive list of barriers to assist researchers and parishioners in their future plans is one of the criticisms of existing literature as noted by(Gil-GarcÃ-a and Pardo 2005). In most recent studies, different authors have classified E-government barriers in a variety of ways based on the purpose of study and applied research methodology of the research and level of E-government maturity in research context. Thus, there is still insufficient research on the factors which are blocking E-government development especially in developing countries.

However, with the purpose of filling up a part of this gap, this research has attempted to examine a wide range of existing studies in both developed and developing countries with special focus on developing countries environments to produce a generic list of barriers to successful E-government development. A number of studies have been conducted over the recent years to categorize the main areas of E-government development barriers. A review of literature dedicated to e-government barriers reveals six major categories that should be considered in order to examine the barriers of e-government development which are:

Table **1:** Six major categories of E-government barriers

Areas	References
Organizational barriers	(Affirm 2002; Molla, Licker et al. 2002; Golden 2003; Sharma and Palvia 2003)
Political barriers	(Heeks 1999; Atkinson and Ulevich 2000; Golden 2003; Sharma and Palvia 2003)
Cultural barriers	(Affirm 2002; Van Dam 2002; Sharma and Palvia 2003)
Legislative and regulatory barriers	(Deakins and Dillon 2002; Evangelidis, Akomode et al. 2002; OECD 2003; OECD 2003; Sharma and Gupta 2003)
Resource barriers	(Affirm 2002; Evangelidis, Akomode et al. 2002; Sharma and Palvia 2003)
Technological barriers	(Evangelidis, Akomode et al. 2002; Golden 2003; OECD 2003)

- *Organizational barriers*, are those barriers that are inherent in organizations structures and inter and intra relationships to hinder the transition of e-government(Golden 2003; Sharma and Palvia 2003).

- *Political barriers* are those barriers where someone or some group of political leaders has to make the decisions and have the will to carry them out. As mentioned before, E-government offers opportunities for governance development. This potential requires a strong political will behind it in order to be utilized. Indeed, without political leadership, particularly, in primary stages of e-government development, few e-government initiatives will be funded and implemented (Heeks 1999; Golden 2003; Sharma and Palvia 2003).

- *Cultural barriers* are those barriers where organizational culture factors such as attitudes, beliefs, values and behaviors learned by individuals themselves, or passed on to them by members of their social environment influence the implementation of e-government(Sharma and Palvia 2003).

- *Legislative and regulatory barriers* are those issues that are concerns about privacy protection and security of personal data as a high priority to e-government implementation.

- *Resources barriers* are the ones where e-government implementation may get hampered due to short of resources such as skilled manpower, funds and other resources(Sharma and Palvia 2003).

- *Technological barriers* are those barrier that are related to lack of technologies as a major bottleneck to the implementation and maintenance of E-government(Evangelidis, Akomode et al. 2002; Golden 2003; OECD 2003).

4 Research Objectives and Methods

The main purpose of this study was to examine the factors that either facilitate or impede the E-government initiatives based on E-government senior officials' perceptions in Iran. Especially, how senior officials perceive the barriers and driving forces of E-government development. For the purpose of this study, barriers are those factors that hamper E-government development and drivers (or driving forces) are those factors that push e-government into happening. Based on other authors' studies in different context, a theoretical framework was developed, which aimed to better understanding of E-government development process. Then the framework was used as a guide during data collection and analysis process. The proposed conceptual framework consists of a number of factors derived from existing literature to examine the barriers and drivers of transformation from traditional bureaucratic model of government to E-government.

The chosen research method used in this study was a qualitative method (Myers and Avison 2002). Qualitative research has a history from the social science and it bas been found particularly useful for studying social and cultural phenomenon (Neuman 1994; Denzin and Lincoln 2003). This research was interpretive in nature; on the assumption that understanding phenomena through the meaning the people attribute them is an appropriate approach (Orlikowski and Baroudi 1991; Walsham 1993; Denzin and Lincoln 1994). A case study has been conducted which focused on investigating barriers and drivers of developing E-government in Iran. This was achieved by conducting of in-depth interviews with 28 senior officials who are involved in E-government projects across the country as this method has been recommended as the major source of data collection for interpretive studies by(Walsham 1995).

A key feature of this method was to draw insights from key experts groups at three different levels include; ICT policymakers, senior officials in public organizations and IT experts from Non-governmental organizations (NGO) as well as private sector. In addition to interviews, the authors attempted to obtain other required information through reviewing relevant documents(Benbasat, Goldstein et al. 1987; Yin 1994).

After the data collection process, as a data analysis strategy, this research has used grounded theory techniques to present research findings as prominent amongst the various research strategies recommended for interpretive research(Eisenhardt 1989; Strauss and Corbin 1990; Hughes and Jones 2004).

The major stages used for data analyses were as follows: At first stage, data gathered by tape-recorded interviews were transcribed precisely as word by word. Then, all transcribed data were translated from Persian to English into a text format documents. Then, the authors developed a database consists of raw materials including interviews documents and the researcher's field notes

manuscripts gathered during data collection process. The final stage was three phases of coding; open, axial and selective (Strauss and Corbin 1990). Moreover, the researchers also used, the Nvivo, qualitative software program, to organize the collected data.

5 Results

Although, based on a proposed analytical framework and research questions, research findings are discussed into two separate sections, barriers and drivers of E-government development, due to presentation limitations, this paper just concentrates on the research results concerning e-government barriers. The authors are hopeful of obtaining another chance to present the findings of this research regarding E-government driving forces for major stakeholders' groups. Therefore, the following section presents obtained results concerning E-government barriers which have been categorized into six categories:

5.2 Organizational barriers

Based on research evidence, major organizational findings challenges of E-government development in research context are placed into two general groups: the perceived challenges related to traditional model of government bureaucracy which affects E-government development transformation, and the perceived in-progress (underway) barriers of E-government related to transformation and implementation stages.

Taking into consideration this point that E-government is not only government computerization but more significantly is about transforming the way governments interact with the governed (Pardo 2000; IOSPress 2003; Massey 2003), it would be quite clear that this transformation demands fundamental changes in the traditional model of government bureaucracy as well as government-citizens relationship, as is supported by (United Nations 2002; Evans and Yen 2005). Thus, research results provide evidence that the traditional model of government bureaucracy can slow down the process of E-government transformation.

These barriers are briefly discussed into three sub-categories: The first sub-category of the traditional model of government bureaucracy barriers is the problem of "*dominant mindsets" (or thoughts*) among bureaucrats within public administration system. For the purpose of this study, "dominant mindsets" refer to problems originated from traditional popular ideas and thoughts of government bureaucrats which directly or indirectly affect E-government development. For instance, the

misconception of the government-citizen approach is one these barriers. The interviewees have declared that the existing bureaucrats' perception of government-citizen's relationship is a key obstacle. They believe that bureaucrats' beliefs and thoughts about government-citizen's relationship are in contradiction with the recognized purposes of E-government. Also, they have declared the elements such as; giving an illogical political sanctity to government performance from government side, sovereign nature of government, independency of the financial sources of government expenses to citizens, bureaucrats approach to government as a place for earning income for livelihood, the nature of uncompetitive government economy justify this sort of citizen-government relationship. Moreover, worry of transparency, unwillingness to accountability has been mentioned as other barriers in this regard. Since, several respondents believe that many bureaucrats within traditional government in spite of their claim in favor of "transparent administration" assume that gaining greater transparency through E-government is in divergence with their personal benefits.

Another sub-category of the traditional model of government bureaucracy is *structural* barriers. These are inherent structural features of government which decelerate the process of E-government development. The barriers such as the complexity of government nature and its structure, large size of government, the nature of government monopoly, and slowness of privatization process are major findings in this regard.

The third sub-category of the traditional model of government bureaucracy is related to *operational (or managerial)* barriers. These include inefficient and lengthy procedures popular in traditional administration which overshadow the E-government development process. The major managerial barriers identified in this study are: inefficient administrative processes as well as Non-standard business processes, lack of a seniority system and managerial proficiency, instability of managerial positions, lack of documentation culture, avoidance of making high risk decisions, weakness of policy implementation.

Thus far, the above–mentioned problems inherent to government bureaucracy considered as bottlenecks to initiation of E-government development or "invisible barriers". However, research evidence identified a series of organizational requirements and preconditions are also considered essential for developing E-government. Likewise, interviewees during their

discussion have referred to some of direct consequences of the current traditional model of government bureaucracy or "visible barriers" which apparently are incompatible with prerequisites of E-government development.

The researchers have tried to illustrate existing inconsistencies between the gained outcomes of traditional model of government bureaucracy based on interviewees' perceptions with expected organizational preconditions for E-government applications which mainly are:

While a citizen-centric based approach has been identified as one of the essential preconditions for developing E-government (Burn and Robins 2003; Brown 2005; Ma, Chung et al. 2005; Chen, H M Chen et al. 2006). The dominant approach of government bureaucrats not only is incompatible with a citizen- centric approach, claimed as one vital purposes of E-government development, but also, bureaucrat approach tend to be either a sovereign approach or a functional-centric approach.

In spite of this reality that a transparent government is an expression of E-government, existing environment of concerns about transparency in administration system is in contrast with transparent government acclaimed by E-government.

Whereas system thinking and strategic planning are considered as an essential requirement of E-government development, premature and precipitant actions for developing E-government from senior officials' side who believed they should move quickly in this way, was the consequence of unclear strategy and ambitious targets based on temporary efforts and non systematic thinking and planning.

While Reengineered Business Process(BPR) or process standardization has been recognized as a major organizational prerequisite of E-government development (Bhatnagar 2002; Tsekos 2002; Becker, Algermissen et al. 2004; Chircu and Lee 2005), lack of process standardization has been declared as one of major imperfections of the traditional bureaucratic system which influences E-government development in this country.

Even though there is no a popular standard about the reasonable size and function of government, it seems that less complex systems as well as a rational size and structure of government is a prerequisite of E-government development. Based on this research evidence, the large size of government and the nature of government monopoly are considered as the major characteristics of Iranian government that hold back the E-government development.

As mentioned, another recognized organizational issue is in-progress challenges which refer to routine and daily problems related to the transformation stage. These barriers are usually resolved by short-term solutions that are not difficult to manage. The barriers such as; lack of proactive collaboration between agencies, poor project management, passive international collaboration and insufficient experience on large projects are major declared barriers by respondents.

5.3 Political barriers

Prior studies have highlighted the importance of a strong political awareness and commitment as one of essential elements to initiate E-government development (PCIP 2002; United Nations 2002). Interestingly, the results of this study reveal three major sub-categories of political barriers: political unawareness, insufficient political involvement and problems related to the policy making process.

Although, levels of awareness among the policymakers and senior officials vary from well-informed to illiterate, it was revealed that the general level of senior officials' awareness regarding E-government values and its applications was low but growing. As, lack of consensus on E-government concepts in addition lack of belief in E-government (as a core government priority) have articulated as consequences of low level of awareness by a number of respondents.

In addition, the common conception among interviewees was that the vast majority of senior officials are preferred supporting E-government development rather than full involvement. They also link this issue to inadequate awareness about E-government capabilities.

Another aspect of the identified political barriers is associated with the policy making process. The problems such as; more concentration on short-term planning with temporary efforts rather than strategic planning and system thinking, ambitious targets and vision, lack of clear strategy with a national IT master plan along with unclear objectives have been mentioned by number of respondents.

5.4 Cultural barriers

Taking into consideration the overlap between cultural barriers and as discussed, the dominant mindset of bureaucrats as a sub-category of the traditional model of government bureaucracy, the most important recognized cultural barriers in this study are: resistance to change, inappropriate cultural infrastructures, wrong attitude about technology- having a technology-driven approach from civil servants' side and negative views for using Internet with distrust to new technology from citizens' side- and pessimistic approach of people both inside and outside of public sector regarding the achievement of government plans.

5.5 Resources barriers

The identified resources barriers can be classified into two main subcategories: human and financial resources. While, the barriers such as; lack of IT skilled staff in spite of availability of huge number of young well educated people as a strength point for e-government development in Iran, lack of hybrid mangers with sufficient specialty in all required areas, inappropriate use of outsourcing strategy to provide required IT qualified manpower have been declared as major human barriers of E-government development in research context.
However, whilst the common conception is that there is no serious problem in terms financial resources; many respondents believe that budget mismanagement is a more serious problem than insufficient financial resources.

5.6 Legal and regulatory barriers

The research results reveal that the concerns related to security, privacy, and regulatory issues in developing countries are entirely different from E-government leading countries. Since, developing countries are still at early stages of their E-government initiatives, they have not investigated these issues thoroughly. However, the major perceived legislative and regulatory barriers by senior officials are: cyber law emptiness such as; lack of copyright law, E-signature and E-payment citizens' mistrust to new system and technology, government concern about protection of public information which must be exchanged on the web.

5.7 Technological barriers

For the purpose of this study, technological barriers are those barriers that are related to lack of technologies as a major bottleneck to implementation and maintenance E-government. Thus, in response to questions about technological barriers of E-government development, many of interviewees explicitly have highlighted that the major problem for E-government development in an Iranian context is not a technological problem. In fact, it can be said that there is a kind of consensus between all IT senior officials involved in E-government on identifying technological barriers as a second priority problems in comparison with organizational and political barriers. In addition, while many senior officials by acknowledging considerable advancement of ICT infrastructures during recent years believe that technological problems are not major issues for developing E-government and can be resolved in a short period of time, others by admitting aforementioned point state that existing technological infrastructures are not sufficient for E-government development. Nevertheless, during discussion, they have mentioned various technological concerns which can be categorized into two main sub-categories: firstly, the barriers related to inappropriate technological infrastructures such as: low Internet speed, low rate of computer and Internet penetration, lack of qualified Application Service Provider (ASP), poor websites content and incompatibility among different systems from technical point of view.

The second sub-category is related to challenges related to technology management such as; unavailability of capable IT companies, lack of capable IT companies to run large sized projects, lack of required mechanisms to assess IT companies, problem regarding the quality of IT consultancy systems, spending more money for hardware, using a variety of software and hardware, use of obsolete and outdated hardware and software and finally, government monopoly popular in the ICT industry.

6 Discussion and Conclusion

As mentioned in the literature review, E-government has been identified as one of the top priorities for governments across the world. Most countries do not want to be left behind the others in this movement. Despite the numerous advantages of E-government, there are many challenges and concerns that must be taken seriously by governments if they want to exploit the benefits E-government offers. The main purpose of this paper was to present the identified barriers and E-government in Iran.

The results of this study revealed that a variety of factors are blocking the government way in transformation from current bureaucratic model of

government to ICT-based government paradigm in research context.

In sum up, research results on barriers of e-government development in Iranian context and the relationship among all six major identified categories and their sub-categories has revealed several important points:

The research findings indicated that there is a close relationship among barriers stemming from the traditional model of government bureaucracy, as a major barrier, with other categories. For instance, policymakers and senior officials who are currently in charge of policy making are considered as output of the organizational system and bureaucratic model of government. Also, the influence of lack of seniority system in administration system on level of political awareness is quite clear. Likewise, there is more and less the same linkage among bureaucratic model of government and other barriers such as cultural, resources, legal and regulatory and technological.

The themes that emerged from these findings indicate that E-government barriers are clustered around existing traditional bureaucratic system. In fact, the conclusion that can be drawn from this research is that the challenges related to the traditional model of bureaucracy of government, both mindsets, institutional and managerial, are considered as the core of all other barriers which are building block E-government in Iran.

The results of this research revealed that the quality of existing bureaucratic system in each society is drastically affecting E-government process development. Thus, another major finding to emerge from this research is that there should be a distinction between the societies with a relatively well-organized or mature bureaucratic system and developing world societies such as Iran with an immature model of government bureaucracy in their journey toward E-government. Since, the challenges facing these two groups of countries are quite different. While, mature bureaucracies have kicked off their E-government movement from an suitable point with mature model of government bureaucracy and its characteristics such as: standardization, division of labor, immature bureaucracies are initiating from a point with many attitude, institutional, and managerial challenges in front as consequences of immature model of government bureaucracy which intentionally or unintentionally overshadow their efforts toward E-government.

Moreover, given that the problems related to the bureaucratic model of government are placed at the core of all other barriers, one of the significant findings to emerge from this study is that E-government transformation challenges in this special context are more organizational rather than technological. Therefore, the following conclusion can be drawn that E-government would be a relatively complicated and time-consuming challenge because of its organizational and social roots. Also, this issue has been supported by this research evidence where many respondents differentiate the challenges such as; financial, technological, skills problems which can resolved in short time, from the challenges such as organizational and cultural which need long period of time to change of peoples' attitudes, approaches.

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