E-Government Model Adoption: A Comparative Study among Multi-Stage E-Government Implementation Frameworks

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ABSTRACT

Since the governments couldn't meet the demands and challenges raised by the people inside the country within their traditional functions, so the importance of e-government has become more outstanding than before .For example, we can track and find this importance in the various areas like improving government services, increasing accountability, accurate and effective delivery of services, reducing administrative cost and time, capacity for planning management, increasing government staff productivity, and so on.

However, in order to implement e-government particularly in the developing countries, we confronted with some obstacles which made us to consider the available models.

Accordingly, five multi-stage models are described and a new model is proposed to reach the best results in the developing countries.

Key Words: ICT, E-Government, Models, Implementation, Developing Countries.

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1. Introduction

E-government is defined as the use of technology, particularly the Internet, as a means to deliver services to citizens, businesses, and other entities. Operational benefits from the introduction of Internet-based e-commerce, for government and public sector companies, include the reduction in paperwork, the provision of continuous services available to the customers, a reduction in response time, and a reduction in error rate. All of these factors contribute to the general increase in the efficiency of government business. E-government encapsulates a wide variety of meanings ranging from policies that foster the development of information infrastructures to particular measures for combating the digital divide. It also involves a series of measures to improve the administrative functions of the state [1]. Governments have recently started to realize the vital necessity of modernization in order to make improvements and strengthen and sustain their positions in the global competition. Accordingly, new business models are needed to replace the traditional ones, experiences of which could be traced in other e-based technologies such as e-commerce. Indeed, achieving such a situation would not be possible unless by removing inefficient and ineffective organizations and processes. This fact is a major concern for many countries especially in the developing world [2].

Leaders committed to e-government are demonstrating that by combining technology with new ways of operation, a government can become much more effective, efficient, transparent and responsive. Kei Ho claims that the early 1990s was the starting point of the concept of e-government. The reason for this was the use of electronic mail, list-servers and the World Wide Web to deliver services and information to citizens. By the end of the 1990s, governments worldwide were pursuing e-government projects to provide information and services to citizens and businesses electronically [3].

Since these early implementations of e-government, successive governments successfully have recognized the problems of developing ICT systems that are significant while set against the backdrop of the funds allocated to e-government projects.

The terms used to define e-government are nebulous and it means many things to the different stakeholder groups. However, in extrapolating the common strands from the taxonomies proposed by Al-Sebie and with regard to the various definitions, the following key issues can be taken into account [4]:

- Technology to deliver government services electronically.
- Transaction processes and the transformation of E-Government services.
- Benefit portfolio for delivery of government services electronically to the public.
- Citizens as the central focus of service delivery.
- Delivery of government services through a single online point of access.

E-government is a concept that exists in a seemingly constant situation of development. Given the diversity of concepts of e-government around the world, creating a workable definition of e-government is becoming very difficult [5].

Different countries based on their own specific political systems, have perceived the meaning and content of e-government differently. Academics have suggested various definitions for e-government. For Lenk and Traunmuller, it can be seen as a guiding vision that includes all proposals for

modernization and reorganization of public administration [6]. Whitson and Davis have defined E-government as implementing cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online [7]. Tapscott defined e-governments as an inter-networked government, and Nadler and Tushman emphasized that technology is only one of the structural materials. Sprecher considers e-government as a technology to help simplify and automate transactions between governments and constituents, businesses, or other governments. Luling defines E-government as online government services, that is, any interaction one might have with any government body or agency, using the Internet [7]. Due to these views, definitions of e-government range from "the use of information technology to free movement of information to overcome the physical bounds of traditional paper and physical based systems" to "the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees". The common theme behind these definitions is that e-government involves the automation or computerization of existing paper-based procedures that will prompt new styles of leadership, new ways of debating and deciding strategies, new ways of transacting business, new ways of listening to citizens and communities, and new ways of organizing and delivering information [8]. It may be concluded that the generic and broad term e-government includes many various problems ranging from technical aspects to a series of organizational and management problems: implementation, organizational change and behavior, bureaucracy, etc. It is an environment that is not completely defined from the academic point of view and that has been attacked both from the theoretical point

of view by specialists in political sciences, sociology and economics, and from the practical point of view by disciplines such as public politics and management, organizational behavior, etc [9].

2. E-government, if implemented properly, can improve current government services, increase accountability, result in more accurate and efficient delivery of services, reduce administrative costs and time spent on repetitive tasks for government employees, facilitate greater transparency in the administration of government, and allow greater access to services due to the around the clock availability of the Internet. E-government also allows governments to offer enhanced services by creating new ways to interact with the government, such as email, online meetings and forums for voicing opinion, online transactions, and online voting. A positive relationship has been identified between engagement on the Internet and participation in civic and political issues [8]. By creating a viable Internet presence, a government can generate interest in the political process among young citizens who frequently use the Internet [10]. E-government is even used in some locations as a method to reduce corruption in government functions, as a computer will not likely ask for a bribe to do its job. More important, it aims to help strengthen government's drive toward effective governance and increased transparency to better manage a country's social and economic resources for development [11]. In this paper, considering these definitions and aspect of e-government, we discuss the different classifications of the stages of e-government in the next section and the comparison of the main aspects of these models, in section 3. Also some obstacles and challenges to realize e-government in the Developing Countries will be discussed and in section 4, a mixed and

new framework will be presented for implementation of e-government properly.

3. Models of the Stages of E-Government Implementation

The process of implementing an e-government system passes through different stages until it reaches its highest potential stage. That is the integration of government information and services in different departments, for different functions and at different levels of the government system thus, enabling customers to obtain government services and information online from a single point of access [14].

The normative literature is in agreement that there are different stages in e-government provision. An evolutionary perspective where the information systems and grows and evolves with confidence, acceptance and resources is one advocated, with governments going through a number of stages before reaching maturity [15].The approaches can be divided into concepts that focus on aspects of development, i.e. simple information portals, providing communication facilities, transaction process, and finally, fully realizing the integration of government systems [16].There remains a lack of consensus regarding how many stages of maturity an e-government system goes through. Some believe that only three stages are necessary, others believe that four, five or even six stages are required. The various models of the stages of e-government and their perceptions can be seen below.

2.1 Howard's Model

Howard divides the stages of an e-government system into three, namely: publication, interaction, and transaction [17]:

2.1.1 Publication Stage: means information about activities of government available Online.

2.1.2 Interaction Stage: enables citizens to have simple interactions with their governments such as sending e-mail or 'chat rooms'.

2.1.3 Transaction Stage: provides citizens with full benefits from transactions over the Internet, such as applying for programs and services, purchasing licenses and permits.

However, there is a shortcoming in Howard's study because it does not go as far as an integration stage. This is important because it is only the integration stage that facilitates any flow of government information between different levels of agencies and departments. This is essential to enable the citizens to obtain government services from a single point. Although the integration stage of e-government has been given different names, including transformation, almost all normative sources have included it as one of their final stages.

2.2 Chandler and Emanuel's Model

Chandler and Emanuel divided e-government implementation into four stages [18]:

2.2.1 Information Stage: delivery of government services online. One-way communication between government and citizens.

2.2.2 Interaction Stage: simple interaction between citizens and governments.

2.2.3 Transaction Stage: services that enable transactions of value between citizens and government.

2.2.4 Integration Stage: integration of services across the agencies and departments of government.

Chandler and Emanuel's, mention the stage of interaction. This makes an important distinction between facilitating unrestricted two way communication, with technologies like email and discussion boards, and explicit transaction processing whereby citizens carry

out a complete transaction via an online interface.

2.3 Layne and Lee's Model

Layne and Lee have divided e-government implementation into four stages and most, including [19]:

2.3.1 Cataloguing Stage: creating websites and making government information and services available online.

2.3.2 Transaction Stage: enables citizens to interact with their governments electronically.

2.3.3 Vertical integration Stage: focuses on integrating disparate at different levels.

2.3.4 Horizontal integration Stage: focuses on integration of government services for different functions horizontally.

Layne and Lee do not mention the interaction stage, instead, they move directly to the transaction stage. However, they have provided a unique contribution to the division of the stages of e-government by dividing the integration stage into vertical and horizontal integration phases. Traditionally government departments and organizations have maintaining separate databases that are not normally connected to other government departments at the same level or with similar departments at a local or central level. The integration stage addresses breaking down these barriers [19].

2.4 United Nations DPEPA Model

A report prepared by the United Nations (Division for Public Economics and Public Administration) divides e-government into five stages including [17]:

2.4.1 Emerging Stage: creating a government website with limited or static information.

2.4.2 Enhanced Stage: updating information regularly.

2.4.3 Interactive Stage: provides users with reasonable levels of interaction enabling them to download forms.

2.4.4 Transactional Stage: enables users to complete transactions such as obtaining visas, licenses, passports, birth and death records, etc. online safely and securely.

2.4.5 Seamless or fully Stage: provides services across administrative and departmental lines with the highest level of integration.

Division for Public Economics and Public Administration splits the 'publish' stage or the 'information' stage into two by adding a new 'enhanced' stage that is not mentioned within any of the three and four stages model discussed earlier.

2.5 Deloitte's Model

Research by Deloitte, cited in Silcock [20], divides e-government into six stages including:

2.5.1 Information Publishing Stage: creates websites by departments and agencies as an one-way communication.

2.5.2 Official Two-Way Transactions Stage: enables customers to have electronic interaction with government services such as renewing television licences and paying parking tickets.

2.5.3 Multi-Purpose Portals Stage: enables customers to obtain government services and information from a single point.

2.5.4 Portal Personalization Stage: provide customers with opportunities to customize portals according to their need.

2.5.5 Clustering of Common Services Stage: with portals becoming better, government departments will disappear where government will seek to gather common services to hurry the process of delivery.

2.5.6 Full Integration and Enterprise Transformation Stage: government

departments will disappear others will appear; some departments will keep the same names but become entirely different internally.

As with Layne and Lee, the interaction stage is not preset and the model moves directly to the transaction stage from stage one (information). It should also be noted that from stage three to stage five, the Deloitte focuses on delivery of government services from a single point by using a portal which provides a full range of services and enables customers to make easy and single access to government services without the need to know which agency is responsible for which service. It seems stages 3, 5 and 6 have similar functions, but do not make something like Layne and Lee's clear distinction between vertical and horizontal integration, they could be embedded or encompassed into one integration stage. Stage 4 (portal personalization) is clearly an enhancement to the quality of service

With regard to the different classifications of the stages of e-government implementation through some charts and table shown, the advantages and disadvantages of these models can be briefly illustrated: Howard divides the stages of an e-government system into three, namely: publication, interaction, and transaction. However, there is a shortcoming in Howard's study because it does not go as far as an integration stage. This is important because it is only the integration stage that facilitates any flow of government information between different levels of agencies and departments [17].

This is essential to enable the citizen to obtain government services from a single point. Although the integration stage of e-government has been given different names,

including transformation, almost all normative sources have included it as one of their final stages.

Many studies – such as Chandler and Emanuel's [18] and Layne and Lee [19] have divided e-government into four stages and most, including Chandler and Emanuel's mention the stage of interaction. This makes an important distinction between facilitating unrestricted two way communication, with technologies like email and discussion boards, and explicit transaction processing whereby citizens carry out a complete transaction via an online interface.

Interestingly, Layne and Lee do not mention the interaction stage, instead, they move directly to the transaction stage. However, they have provided a unique contribution to the division of the stages of e-government by dividing the integration stage into vertical and horizontal integration phases [19].

A few studies, such as discussed above, have divided e-government systems into five and six stages. A report prepared by the United Nations (Division for Public Economics and Public Administration) divides e-government into five stages. It splits the 'publish' stage or the 'information' stage into two by adding a new 'enhanced' stage that is not mentioned within any of the three and four stages model discussed earlier [17]. Research by Deloitte [20], divides e-government into six stages. As with Layne and Lee, the interaction stage is not preset and the model moves directly to the transaction stage from stage one (information) [19]. It should also be noted that from stage three to stage five, the Deloitte Research focuses on delivery of government services from a single point by using a portal which provides a full range of services and enables customers to make

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4. Some Obstacles and Challenges to Realizing E-Government in Developing Countries

E-government promises some striking opportunities to improve the business of any government, but this vision is not without a series of serious obstacles. Hurdles such as citizen awareness of electronic services and information, the 'digital divide' and an exodus of skilled workers must be overcome to get from where we are today to the vision of e-government.

Overcoming these obstacles will take a special kind of leadership that is eager to get involved and initiate change [21].

The problems that hinder the wide-spread use of IT in the developing countries include:

- IT illiteracy among the majority of the government employees.
- IT illiteracy among the majority of the people. This happens also for the university graduates.
- Although the governmental websites are in Farsi (Persian) Language, those who are not familiar with the English language do not dare approach computers.

- Inadequate communication infrastructure to support the needed contacts.
- Lack of clear, well-thought-of, coordinated, and citizen-centered government strategies.
- Lack of laws and legal frameworks for use of IT, including the digital signature law, digital copyright law, information dissemination law.
- Outdated work procedures and strong inertia opposing re-engineering of the procedures.
- Digital divide, known as a gap existing between those households that have access to the Internet and online services and those that do not. E-government services are ineffective when people lack necessary computers and Internet connections to use online information and services.

5. Proposed Model Framework

With regard to the specific situation and existing barriers of governments in developing countries and based on the comparison of the present models in the area of e-government discipline which is earlier mentioned, the proposed model of this article would be a mix of the most inclusive and applied elements of the former models in order to put forward an efficient model. Our proposed model framework is comprised of the following elements:

1- **Cataloguing Stage:** A country commits to create websites and make government information and services available online for becoming an e-government player. A formal but limited web presence is established through a few independent government websites which provide users with static organizational or political information. Sites may include contact information (i.e. telephone numbers and

addresses of public officials). In rare cases, special features like FAQs may be found.

2- **Enhanced Stage:** A country's online presence begins to expand as its number of official websites increase. Content will consist more of dynamic and specialized information that is frequently updated; sites will link to other official pages. Government publications, legislation, newsletters are available. Search features, and e-mail addresses are available. A site for the national or ruling government may also be present that links the user to ministries or departments.

3- **Interaction Stages:** A country's presence on the Internet expands dramatically with access to a wide range of government institutions and services. More sophisticated level of formal interactions between citizens and service providers is present like e-mail and post comments areas. The capacity to search specialized databases and download forms and applications or submit them is also available. The content and information is regularly updated.

4- **Transactional Stage:** Complete and secure transactions like obtaining visas, passports, birth and death records, licenses, permits where a user can actually pay online for services such as parking fines, automobile registration fees, utility bills and taxes. Digital signatures may be recognized in an effort to facilitate procurement and doing business with the government. Secure sites and user.

5- **Integration Stage:** Capacity to instantly access any service in a "unified package". Ministerial/departmental/agency lines of demarcation are removed in cyberspace. Services will be clustered along common needs.

6. Conclusion

Governments have recently started to realize the vital necessity of modernization in order to make improvements, strengthen and sustain their positions in the global competition. But the collaborative challenges faced by national government are immense. To varying degrees, national governments have been forced to respond to the actions and agendas of other governments and other sectors. Accordingly, one of the most remarkable and important agenda in the developed countries which is so-called good governance became as a model to pursues in order to have transparent, accountable and responsive action against the public demands. For reaching good governance, it required some mechanism like e-government.

So far, we have witnessed and experienced many proposed e-government frameworks with their certain characteristics and stages but it seems that the contingency of each of these models differs according to their social, political, environmental contexts. Thus, based on the context (challenges &opportunities) of developing countries, our proposed model would be a holistic one, covering all the aspects and elements of the frameworks offered in this essay. The justification behind the proposed model of e-government is the compatibility of this model to the political, social and cultural environment in a developing country. It is noteworthy that the two former stages are being done now and of course it has a long way ahead in the field of e-government. Accordingly the three latter stages have been adopted based on the experiences done in the other developing and developed countries.

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