Assessing Electronic Government Readiness of Public Organizations

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Abstract

Electronic Government (eGovernment) has rapidly become a political imperative at local, national and international level. Based on the perceived success realized by the private sector through information and communication technology (ICT) introduction, diffusion and adoption, governments around the world are becoming more and more interested in embracing ICT, and respectively have made a remarkable progress over the last few years. Once only regarded as a means for modernizing the public sector and increasing government productivity and efficiency, eGovernment is presently recognized as a driver and a key enabler of citizen-centric, cooperative, and seamless modern governance. This implies not only a profound transformation in the way government interacts with the governed but also the reinvention of its internal processes and how organizations carry their business both internally as well as externally with other segments of the community. Based on the literature, it is frequently claimed that the availability of an effective eGovernment assessment framework is a necessary condition for advancing eGovernment proper implementation. This paper aims to review some of the existing electronic readiness (eReadiness) and eGovernment readiness (EGR) frameworks, to identify the different aspects covered by both types, and to discuss to what extent they can really fulfill their intention in acting as guiding tools in the successful introduction and implementation of eGovernment. Based on this discussion, the paper concludes that such assessment tools are not suitable in assessing EGR over a micro level (i.e., a public organization). At the end, the paper presents the building blocks of an EGR assessment framework. These building blocks - categorized into four main dimensions: strategy, processes, technology, and people - cover all internal factors that should be addressed when setting an appraisal framework of eGovernment success on a public organization scale.

Keywords: Government; eGovernment; eGovernment Readiness; eReadiness; Information and Communication Technology; Public sector.

1. Introduction

eGovernment has been a growing fact of life and an integral element of the digital environment since 1996 (Porter, 2003). The possibilities enabled by electronic commerce (eCommerce) have raised the level of expectations of citizens (Nour et al., 2008) demanding faster, better and more access to government services (McGrath and O'Reilly, 2004). Moreover, governments anticipate similar increases in efficiency, productivity improvements and cost savings similar to those experienced by the private sector (Clark, 2003). Around the world, there is a whole range of countries from highly developed to developing that have equally committed substantial resources to implementing eGovernment (Tassabehji, 2005). According to the United Nations Survey 2008 "From eGovernment to Connected Governance", 189 out of 192 member countries (98%) operate government websites (UNDESA, 2008).

eGovernment is predicated on leveraging the power of ICT to deliver services provided by governments; however, how these benefits will be reached is still a matter of controversy (Krishnaswamy, 2005). eGovernment is still in an early stage (Leith and Morrison, 2004) and has not achieved many of the expected outcomes such as cost savings and downsizing amongst other issues (Moon, 2002). This is mainly due to the applications which tend to reflect low levels of back-stage reengineering and inter-department cooperation (UNDESA, 2003a). eGovernment is more than a technological phenomenon; it is transformative in nature (Dada, 2007), encompassing a broad spectrum of activities that are offered using ICT (Northrup and Thorson, 2003) affecting the management of human, technological, and organizational resources processes (Jansen, 2005; Pappa and Stergioulas, 2005). Most implementations activities focus on service delivery concerns with little emphasis on real transformation of the services themselves or the processes associated with their delivery (Grant and Chau, 2005).

Today, eGovernment is still rather immature in practice undergoing a development process; UNDESA (2003a) reports that the failure rate of eGovernment projects has been estimated somewhere between 60-80%. Given the amount of time and money being spent today on eGovernment, the public sector needs to ensure accountability by spending more time in measuring the effects of such efforts. It becomes increasingly important for governments to define measures of success and

regularly monitor and measure performance (Stowers, 2004). Regular monitoring and evaluation of eGovernment readiness (EGR) is considered an important study to the success of eGovernment initiative where such assessment would raise awareness, and would describe the environment in which eGovernment development occurs confirming the viability of application of eGovernment approaches (UNDESA, 2003a). EGR Assessment would also help politicians, economists and other stakeholders to compare their initiatives with similar ones in others countries, to make sure that their efforts are moving the government in the right direction (Jansen, 2005).

Benchmarking eGovernment initiatives has been developed and studied for around a few years now (Salem, 2007). There are several well-established surveys on eGovernment that employ different assessment models for eReadiness, digital divide and other relevant factors, leading to varying conclusions on the global state of eGovernment. Evaluation of eGovernment is wide ranging and relatively fragmented largely because, information systems in the public sector is a process of experiential and subjective judgment which is grounded in opinion and world views (Irani et al, 2005). There is still a need for some common understanding to allow for assessment, comparison and explanation of current efforts to vis-à-vis past and future investments in the eGovernment enterprise and on increasing cross functional efficiencies (Grant and Chau, 2005). It is thus argued that these different approaches are not likely to provide a comprehensive framework (Esteves and Joseph, 2008) that may help to assess, classify and compare different eGovernment programs (Hu et al, 2005).

The aim of this paper is to review the recent work in this area and to demonstrate the rather large variety of different approaches to modeling and assessing both eReadiness and EGR to investigate their viability in assessing EGR. Most appraisal models developed are more suitable for the appraisal of the overall development of eGovernment; they are not directly focusing on the problems that exist in eGovernment projects or on the internal factors affecting transformation of a government organization due to ICT adoption. Moreover, most of these approaches ignore the view of government employees (Heeks, 2006), even though they constitute the cornerstone in the success of any eGovernment project as the direct users. After conducting a comparative analysis of a number of eReadiness and EGR assessment frameworks, the paper highlights their deficiencies, and by drawing on their merits, it discusses the importance of developing an EGR framework of eGovernment success in a public organization. Such framework focuses on electronic management (eManagement) - which although being one of the four key dimensions of eGovernment: electronic services (eServices), electronic democracy (eDemocracy), and electronic commerce (eCommerce) - is often slighted because it is mostly invisible to the public but should not be ignored by governments (Dawes, 2002).

2. Theoretical Background

Definition of eGovernment

eGovernment is a largely amorphous concept with different meanings for different people (Seifert and Relyea, 2004). Based on the fact that eGovernment is a multidimensional and multidisciplinary field and its scope is a concept that is in a constant state of development (Jaeger, 2003) and given the diversity of eGovernment implementations, it is becoming increasingly difficult to identify a workable definition of it (Roy, 2003). There exits a number of different definitions of eGovernment in the literature ranging from being too narrow and specific into extremely general and broad reflecting different meanings and definitions to different people. Some of these definitions are rather narrow focusing on using ICT particularly the Internet to enhance the access to and delivery of government services to citizens (eServices), business partners and employees (Deloitte Consulting, 2000) while others view eGovernment more broadly as efforts to transform government's internal functions (eAdministration) with reinforcement of participatory elements (eDemocracy) to achieve objectives of balanced eGovernment (Bertelsmann Foundation, 2002).

Organization for Economic Cooperation and Development-OECD (2003a; 2003b) views eGovernment as the use of ICT, particularly the Internet, as a tool to achieve better government, or smarter government (Netcaucus, 2001) whereas The World Bank (2003) sees that ICT is used mainly to transform the relations with citizens, businesses, and other government entities. The European Commission's Information Society describes eGovernment being "for people to be online, not in line" (Europa, 2001). Reinermann (2001) sees it as "the transformation of public institutions into 'cyberspace' – an area without restrictions caused by space, time or hierarchies".

As alternative one could classify eGovernment into three different dimensions: 1- the democratic dimension, focusing on the political processes and interaction

between the constituents and the government (Grönlund 2000; Heeks, 2001; Wyld, 2004; Dawes, 2002); 2- the service dimension which comprises the delivery of all types of electronic services (Grönlund 2000; Turban et al, 2002; Heeks, 2001; Prins, 2001; Wyld, 2004; Dawes, 2002); and 3- the administrative dimension including various types of management work and internal routines (Grönlund 2000; Heeks, 2001; Chadwick and May, 2003; Wimmer, 2002; Koh et al, 2006; Kearns and Taylor, 2003; Dawes, 2002). For the purpose of this paper, eGovernment is defined as "the transformation of public-sector internal and external relationships through Internet-enabled operations and information and communication technology to optimize government services delivery, constituency participation and internal government processes" (Maio et al, 2002).

eReadiness Measurement Tools

Electronic Government Readiness (EGR) is an important component of a country's overall eReadiness (Kovacic, 2005), which dictates the need to investigate eReadiness. A country's "eReadiness" is essentially "the degree in which a community is qualified to participate in the Networked World" (Budhiraja and Sachdeva, 2002). GeoSINC International (2002) identifies five main areas of activities that contribute to the overall eReadiness of a country: 1- access and connectivity, 2- training, education and public awareness, 3- government leadership, 4- business and private sector initiatives; and, 5- social development that builds up on the result of initiatives taken in other areas but should also be promoted. A thorough investigation of 18 eReadiness models identifies five key categories of assessment criteria: IT infrastructure, human resources, policies and regulations, environment (economical, political, cultural), and eGovernment transformation (addressing internal factors affecting eGovernment such as public websites and ICT usage by government). Table 1 lists each category, and the underlying items associated with it.

eReadiness tools are classified into two major categories offering different underlying goals: one that seeks to measure eEconomy metrics and another that looks at eSociety indicators (Bridges.org, 2001). Table 2 shows a comparative analysis between the most applied eReadiness assessment models (Bridges.org, 2001, 2005). The table presents each model, its focus, and the main components it measures based on the classification presented in the study.

Reference table 2, the analysis indicates that some eReadiness tools, such as CIDCM, ITU, and WITSA do not include eGovernment in their assessments. The other tools (CID, KAM, NRI, and USAID) do not consider all internal factors affecting EGR; they only assess availability and number of online services, and promotion and usage of ICT by the public sector. This can be applied on additional tools included in eReadiness literature such as, Asian Pacific Economic Cooperation - APEC (Luyt, 2006; Budhiraja and Sachdeva, 2002; Bui et al., 2003), The Computer System Policy Project – CSPP (Budhiraja and Sachdeva, 2002; Bui et al., 2003), Computer McConnell International-MI (Luyt, 2006; Bui et al., 2003), World Economic Forum-WEF (Budhiraja and Sachdeva, 2002), Mosaic-MQ, Metric-Net-E-Economy Index-M-N, Information Society Index-IDC, Economist Intelligence Unit-EIU, Crenshaw and Robinson-C&R, Center for International Development & Conflict Management-CIDCM, Country Development Gateway-CDG (Bridges.org, 2005).

eReadiness assessment tools do not undertake in-depth research concerning eGovernment; they ignore vital elements, such as culture and technology acceptance of public officials (Dada, 2006), quality of ICT in government, strategic alignment, etc. In addition, eReadiness indicators are over-simplified measurements not reflecting a veritable eGovernment status, omitting more relevant dimensions difficult to be measured (Bannister, 2004). Altman (2002) concludes that there is no direct relation between eReadiness and eGovernment implementation in a country; this clarifies Jansen's (2005) recommendation to focus on the most particular factors to eGovernment when attempting to measure it. Based on the analysis presented, the study confirms the inadequacy of eReadiness tools for assessing EGR.

Table 1 – Assessment Criteria for eReadiness Tools

Area	Content
Information Technology Infrastructure	Usage in terms of type and quality of services available, software and hardware
Human Resources	General in terms of the information technology sector
Policies and Regulations	Information and communication technology policy in terms of security policy, security standards, legal recognition of digital signature, intellectual property rights (IPR) protection and privacy policy
Environment	Economy implications on the information technology sector as well as the political structure, culture, eLeadership (key players – negotiations)
eGovernment Transformation	Availability of government websites and public eServices in terms of information and communication technology usage in the government

Table 2 – Comparative Analysis Between eReadiness Tools

Tool	Focus	IT Infrastructure	HR	Policies and Regulations	Environment	eGovernment Transformation
Center for International Development – Harvard University and IBM (CID)	e-society	√	√	√	√	o Government effectiveness in promoting the use of ICT o Availability of online government services o Extent of government Websites o Business Internet interactions with government
Center for International Development and Conflict Management (CIDCM)	e-society	√	√	√	√	
International Telecommunication Union (ITU)	e-society	√				
World Bank (Knowledge Assessment Methodology - KAM)	e-economy	√	√		√	o Availability of eGovernment services
World Economic Forum, Infodev & INSEAD (Network Readiness Index - NRI)	e-economy	√	√	√	√	o Government use of ICT for its own services & processes o Volume of transactions that businesses have with governments o Presence of government services online
U.S. Agency for International Development (USAID)	e-society	√	√	√	√	o ICT usage in government (hardware, software, and networks in each ministry)
The World Information Technology and Services Alliance (WITSA)	e-economy	√	√	√	√	

EGR Frameworks

The construction of EGR frameworks started around 2000 (Hu et al, 2005). Since then and until nowadays, at least three yearly EGR assessments are published in addition to one-off ones (Bannister, 2007). Such assessments propose basic assessment criteria, conceptualizing eGovernment development and implementation (Jansen, 2005). Table 3 presents several EGR frameworks, the corresponding regions or countries measured, and the measurement criteria used by each model.

The analysis of the above frameworks reveals that all models do not cover all dimensions and aspects of EGR. Most of them focus on one dimension of eGovernment: eServices, evaluating services offered by governmental websites (West, 2006; UNDESA, 2003b, 2004, 2005, 2008; Cap Gemini Ernst and Young, 2003, 2004, 2006); but measuring only the front of public websites is a too narrow view on eGovernment (Peters, Janssen, and Engers, 2004). UNDESA (2003b, 2004, 2005, 2008) reports go further to evaluate the telecommunication infrastructure and the human capital. Whereas, Commonwealth Centre for Electronic Governance (2002) considers the availability and usage of broadband connection and existence of a public key infrastructure to secure interaction with government websites. Bertelsmann Foundation benchmarking (2002) investigates both eDemocracy and eAdministration dimensions, but is limited only to the efficiency and change management behind the eServices provided by the case studies investigated. Also, WASEDA University addresses important issues related to the back office but eAdministration encompasses a wider range of elements. Moreover, the rationale behind the selected criteria is not stated and also the methodology used is not indicated.

Accenture publishes a yearly eGovernment evaluation since 2000 but stresses mainly on the concept of treating citizens as customers from the part of public institutions. This paper focuses on the latest three years reports to discuss their most advanced research. In 2005, the company ranks 22 countries according to two main criteria: the maturity of the services offered at their national government websites, and the extent to which governments are managing and maintaining relationship with their customers. In 2006, Accenture does not conduct a country's ranking and decides to perform an in-depth qualitative research through conducting interviews with eGovernment policy makers. In its 2007 report, Accenture adds to the previous criteria a third component that considers the citizens' feedback in the same countries. In addition, the company obtains real-life lessons from 52 senior government executives in 17 of the 22 countries selected in the ranking.

While much research focuses on the front-office and the use of eServices by citizens and businesses, it seems that there is less attention to the streamlining of back office operations (Homburg and Bekkers, 2002) prescribing how governments need to reorganize to meet the challenges and opportunities represented by ICT. This is not surprising, as almost exactly the same conclusion has been drawn from the first phase of the "dot.com" wave in which enterprises went on Internet without changing its internal business organization (Jansen, 2005).

To summarize, all developed EGR frameworks have several shortcomings: first, they are all result-oriented, focusing mainly on quantifiable results and seldom addressing several unquantifiable but important factors of eGovernment. Although Accenture reports include important qualitative information, it is mainly centered on customer service and is not considered in the evaluation criteria. In addition, Bannister (2007) poses reservations about Accenture reports as being driven by marketing objectives concentrating on commercial interests to the company. Second, they are one-sided (citizen-centered), and emphasize the promotion of the eService dimension, appraising only the websites to facilitate quantification, which makes the appraisal of eGovernment inaccurate. Third, they do not concentrate on factors directly related to eGovernment. They rather investigate external ones such as IT infrastructure, and human capital which, although important, are already addressed in eReadiness assessments.

Fourth, for those EGR frameworks that approach the eAdministration dimension (Koh and Prybutok, 2003; Bertelsmann Foundation, 2002; WASEDA University, 2006); they limit their assessment on developed countries without verifying their applicability on developing countries. Moreover, when assessing eGovernment back office management, they do not address all aspects affecting EGR. Only in its latest report, UNDESA (2008) recognized the importance of back office assessment through providing a chapter in its report that contains several issues crucial to back office in public organizations. The end of the chapter includes these issues in the form of a checklist to help policy makers check their availability in their organizations.

Table 3 – Comparative Analysis between EGR Frameworks

Framework	Countries/Regions	Measurement Criteria
Accenture (2005)	22 countries	o Service maturity (breadth, depth) o Customer service maturity (citizen-centered interactions, cross-government service interactions, multi-channel service delivery, proactive communication and education)
Accenture (2007)	22 countries	o Service maturity (breadth, depth) o Customer service maturity (citizen-centered interactions, cross-government service interactions, multi-channel service delivery, proactive communication and education) o Citizen voice
Bertelsmann Foundation (2002)	12 case studies from developed countries (eGovernment portals belonging to governments, regions and local authorities)	o Benefit (quality and quantity of eServices) o eParticipation o eTransparency o Change management o Efficiency (IT architecture and infrastructure, resource planning, human resources)
West (2006) - Brown University	Websites in 198 countries	o Features of government websites
Commonwealth Centre for Electronic Governance (2002)	5 developed countries	o Public access and usage of broadband connectivity o Citizens' access of eServices o Readiness of a public key infrastructure (PKI)
Koh and Prybutok (2003)	City of Denton, Texas	o Internal and external eGovernment functions in 3 categories: informational, transactional, operational) o eGovernment transformation at 3 levels: strategic, system, data
UNDESA (2003b, 2004, 2005, 2008)	179 UN country members	o Web presence o Telecommunication infrastructure o Human capital
Cap Gemini Ernst and Young (2003, 2004, 2006)	18, 28, 28 European countries	o Quality and usage of public eServices
WASEDA University (2006)	Japan	o IT infrastructure o Online systems and applications o Management optimization (enterprise architecture, ICT investment, system optimization, integrated network system, administrative and budgetary systems, public management reform by ICT) o Homepage features o CIO related aspects o Promotion of eGovernment (priority of planning and strategy, promotion activities, legal framework, evaluation system)

Certainly, this chapter represents a remarkable progress in recognizing the value of back office management, yet it does not provide answers to several questions such as, can these issues be categorized into different dimensions? What about the relationship between them? Do they all have the same weight in affecting the government back office?

Fifth, except for Koh and Prybutok (2003), all frameworks approach eGovernment in a macro or national level, rather than in a micro one, i.e. over an organization (Hu et al, 2005). Finally, these models are assessed relying on one or more of three methodologies: 1) secondary data; 2) citizens' feedback; or 3) policy makers of eGovernment projects. Except for the model developed by Koh and Prybutok (2003), all other models do not investigate EGR from the perspective of government employees; how they perceive eGovernment, and to what extent they are aware of all aspects related to the eGovernment projects and to their viability. This group could be the best candidate to identify the most important factors affecting EGR since civil employees are one of the major project's stakeholders and are aware of most of the organization's functions and activities. Additionally, it is very important to investigate the extent of communication between government employees and eGovernment policy makers to investigate the degree of the employees' involvement in the organization.

3. Discussion and Conclusion

In all assessment models presented, the use of different sets of indicators and different weights assigned to them lead to varying conclusions on the performance of the countries in terms of eReadiness and EGR. Limiting surveying and ranking different nations according to their scores on selected indexes removes the attention from more fundamental issues related to transforming the government by use of ICT.

In an attempt to overcome the several shortcomings that exist in previous EGR assessment models, a framework encompassing all internal factors affecting EGR should consist of the following four dimensions: strategy, people, process, and technology. These dimensions are highlighted in Gartner's four phases of eGovernment model developed by Baum and Di Maio (2000), but are restricted to government websites only. Baum and Di Maio (2000) consider strategy, people, process and technology as requirements to be associated with each of the four website phases: presence, interaction, transaction, and transformation (see figure 1).

Although website existence is an integral part of eGovernment, eGovernment encompasses other means to provide services to citizens. Moreover, referring to the definition of eGovernment discussed earlier, eAdministration should not be completely related to Web presence; a public organization can start its IT strategy focusing on eAdministration first, and then establish a web presence. As a result, the above four dimensions can be applied on eAdministration as well, which is the main topic of this study. An EGR assessment framework should be developed based on the four dimensions: strategy, people, process and technology. A number of elements (derived from information systems success, eCommerce success, eReadiness, and EGR literature) should be covered under each dimension (see figure 2). Such framework would act as a prototype in the form of a checklist. A public organization can verify the presence or absence of each element under each dimension of the framework.

As government agencies move to an eGovernment environment, integration of eGovernment initiatives with organizational strategic plans is imperative to ensure success. eGovernment is more effective with a comprehensive strategic planning process that first considers the need for change and then prescribes appropriate actions (Koh et al., 2006). It is thus essential to conduct regular evaluation on electronic government readiness (EGR) of public organizations to pinpoint weaknesses and try to provide appropriate solutions.

This paper investigates previous appraisal models of electronic readiness and EGR. These models could then be used as a theoretical foundation for developing a framework aiming to cover all internal factors affecting EGR of a public organization. Such framework should take into account all eGovernment building blocks which are: IT strategy, processes, technology, and people and consider the interrelation between them.

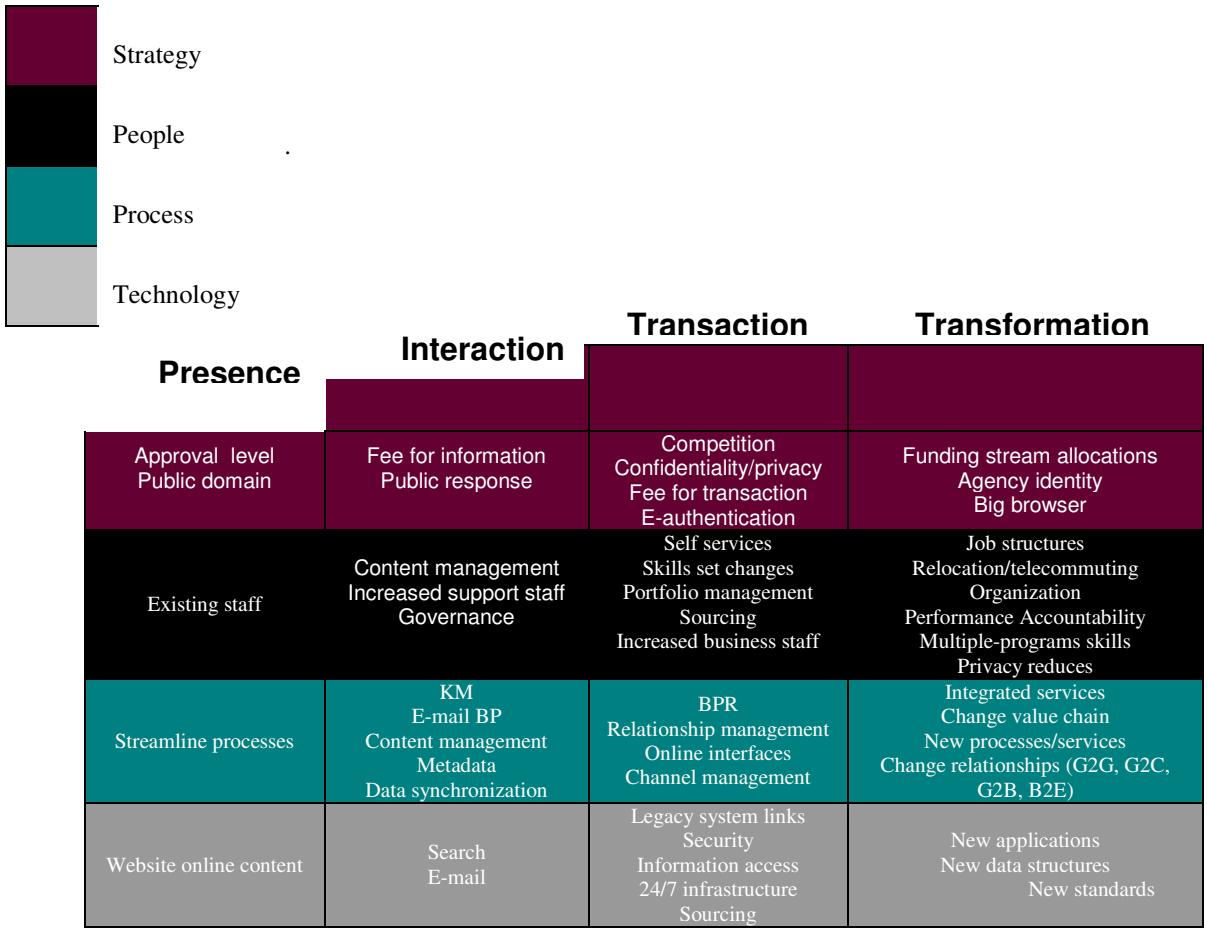

Figure 1 – Gartner's Four Phases of eGovernment (Baum and Di Maio, 2000)

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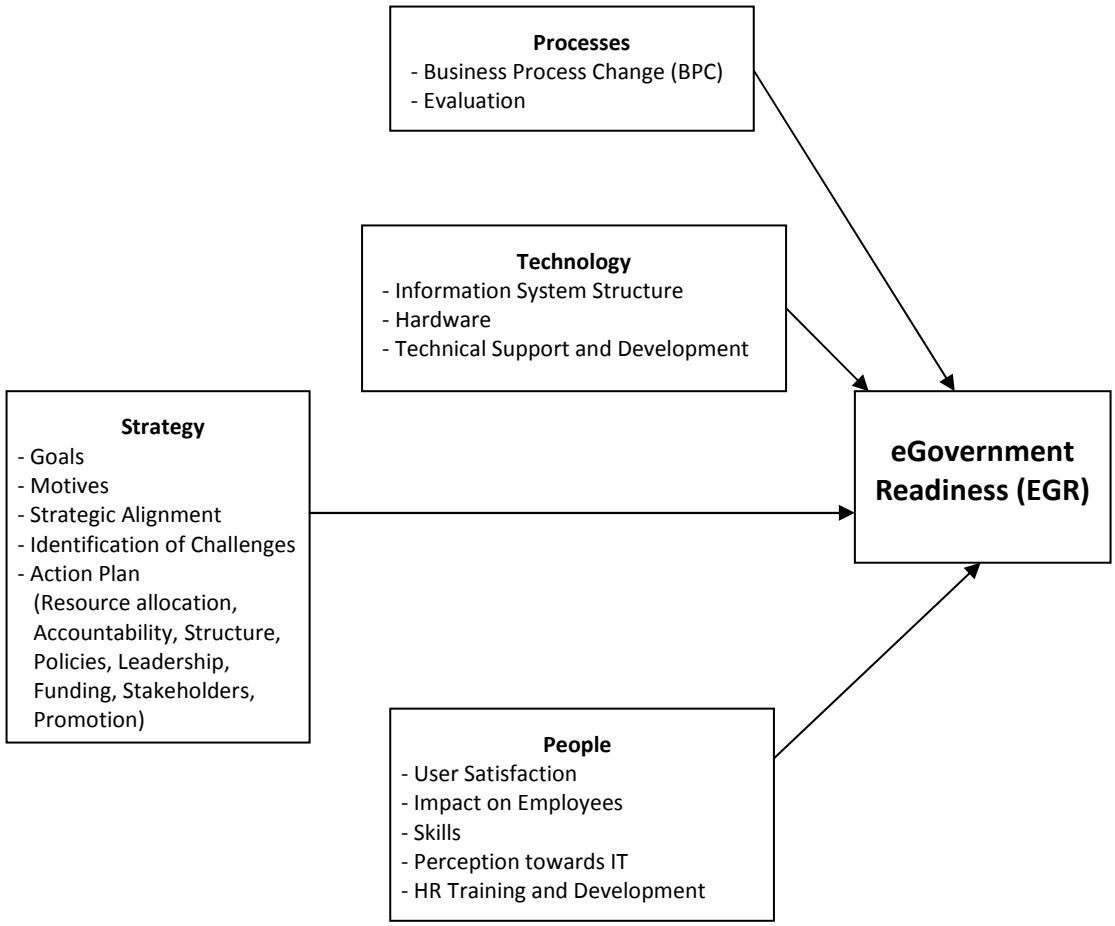

Figure 2 – eGovernment Readiness (EGR) Framework

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