Challenges Faced by E-Government Projects in Developing Countries

Brekhna
Comsats Institute of Information Technology Islamabad, Pakistan,
brekhna87@gmail.com

Dr Muhammad Asim Noor
Comsats Institute of Information Technology Islamabad, Pakistan,
asim_noor@comsats.edu.pk

Ghassan Husnain
Iqra National University Peshawar
ghassan.husnain@gmail.com

Abstract
E-Government is the usage of Information and Communication Technologies (ICT) in order to take provision of the processes of the public sector organization and as well as for the delivery of service/facilities to the citizen. These services will not only facilitate the individuals but will develop a strong relationship between the state and its citizens. Developed, developing and under developing countries pursue the information technologies in order to provide better services to the citizens. For this purpose these countries devise e-government projects in public sector. But most of these projects fail to achieve desired results either fully or partially in the developing countries. The main purpose of this paper is to identify all those challenges that are faced by E-government projects in the developing countries. Furthermore this paper will also categorize these challenges.

Key words
E-government, ICT, IT, Developing countries

1. Introduction

In recent years nothing has affected humanity as much as Information and Communication Technologies (ICTs). These technologies are used by individuals, organizations, governments and even multi-governments for simple tasks such as communication to complex tasks such as maintaining national databases and controlling worldwide air traffic (Silcock, 2001). For this purpose the government advises the public sector organization to provide services to the citizens by implementing e-government projects in the public sector organization.

The E-government provides digital interfaces between the government and its citizens, the government and government organizations and between the government and businesses. According to Wimmer "*E-government is not an objective but an advanced instrument of the organization of public governance in order to better serving individual citizens, communities, commercial and non-profit organizations as well as public authorities themselves. Thereby, technology creates more efficient and transparent possibilities for more participation, a higher level for the control of public affairs and of those to whom people invest their trust*" (Wimmer and Traunmüller, 2002). In developing countries these projects failed by facing numerous challenges. According to Heeks many e-government project fails because they try to change

too many things simultaneously. His study presents three categories of the project failure in the developing countries that are: ·

- "**Total failure**": The project initiative was never implemented or was implemented but nearly abandoned.
- **"Partial failure"**: key objectives for the project initiative were not achieved and/or there were major adverse results.
- **"Success"**: most stakeholder groups accomplished their major goals and did not practice important unwanted endings.

The study estimated that 35% projects are total failures, 49% projects are partial failures, and 15% are successes in the developing countries (Heeks, 2005; Heeks, 2002). This paper includes a literature review of the studies that have been conducted and a critical review has been derived from the problem covered in various studies.

2. Literature Review

Following is the literature review that explains the reasons of e-government projects failures. The projects of e-government provide a number of benefits and opportunities to the citizens who avail those services but face numerous challenges during its implementation process (Signore *et al.,* 2005). A project starts with the collection of its requirements, determination of the project design and elicitation of the main objectives of the clients. A good Requirement elicitation process is very important for an efficient automated system. Software industry faces number of challenges during the elicitation process. Challenges that are faced by an analyst are "Job Insecurity, Sense of Ownership, Lack of Skilled & Experienced Human Resources, Organizational Internal Politics, Resistance, Poor Communication, Leadership Style, Ego, and Gender issue" in gathering the information or requirements from its clients (Hayat *et al.,* 2010). Some other challenges in requirement elicitation are" Problem of scope, Problem of understanding, Problem of volatility" (Ashraf and Ahsan, 2010). (Choudhari *et al.,* 2011) also discussed that unclear requirements, and communication gap effects the successful implementation of e-government projects. According to Evangelidis "*e-government is not entirely a technology phenomenon. It is about re-inventing and re-organizing the way service providers (public/private) and citizens (or customers) interact in the society*". Accordingly the E-government projects are certainly multi-layered and implementation of these projects is not easy. It includes many issues that make the success of a project hard. He identified some "potential areas" that are risky "technological/implementation, social/human, security, financial, legal" (Evangelidis *et al.,* 2002). According to Heek "Design reality gaps" are the main causes of project failure and divides these gaps into three forms "Hard-Soft Gaps, Private-Public Gaps, Country Context Gaps". (Heeks, 2005; Heeks, 2002). One of his studies identified seven dimensions of e-government project that are:

- Information
- Technology
- Processes
- Objectives and value
- Staffing and skills,
- Management systems and structures
- Other resources, time and money

Moreover "potential cost", "lack of awareness" of this cost and "design reality gaps" are the key grounds of e-government project failure (Heeks, 2003; Wahid, 2011). (Ciborra, and Navarra, 2005) also discussed that "design-reality-gap" is cause of e-government projects failure, which make it hard for the users to accept the new technology. Similarly according to Matavire implementation of e-government in developing countries is usually more challenging in contrast to those in the developed nations. He identified some challenges to the e-government projects that are **"**Problem of stakeholder engagement,

Project fragmentation and Leadership". These challenges are the cause of distress in e-government project implementation. Some other issues he identified are "The development of information and communications infrastructure, Human resources development and employment creation, Insufficient legal and regulatory frameworks and government strategy, Limitation of funds, Unaware of IT" (Matavire *et al.* 2010). According to Dada the failures of e-government projects are defined as weaknesses and inabilities of a system to achieve its goals and objectives (Dada, 2006). The renovation of government to the new digital era is affected by "*external and/or internal challenges during the project implementation and due to this many organizational changes occur*" .In this regard, challenges identified are "Lack of trust between end users and government, and from agency to another, Lack of political desire can lead to slow or failure of e-project, Resistance to change, Fund/cost, Management skills, Top management vision and strategy is important, Stakeholders willingness and ability to use e-project is important and lead to successfulness" (Al-Rashidi, 2010). According to Ebrahim within a public sector organization the departments are connected through e-government. His study helps public sector to learn the appropriate use of IT and proposes an integrated architecture framework for e-government that presents the best use of IT infrastructure in public sector organizations. His study identified different dimension and barriers faced by the e-government projects and in its services adoption. He categorized the problems as "IT infrastructure, Security and privacy, IT skills, Organizational, Operational cost" (Ebrahim and Irani, 2005). According to Salem each country has its own combination of political, regulatory, economic and social constraints that differently affect the development of e-government. A country faces challenges at the initial, implemental and developmental levels of e-government projects. The study further argues that Policy issues and IT infrastructure issues effects the projects most (Salem, 2006). Other studies also point out that "*political issues, organizational issues and policy issues are the main challenges to the e-government projects*" (Leydesdorff, and Wijsman, 2007; Basu, 2004). (Elsheikh *et al.*, 2008; Hossan's *et al.*, 2006) studies showed that the success of these projects depends upon the context in which they are developed. Their studies identified many grave challenges that could hamper the successful implementation of these projects. According to their studies the "digital divide" is present between the developing countries and least developing countries can lead to the failure. Issues like policy issues, organizational issues and IT infrastructure issues are the causes of failure. The U.S Government conducted a study and found that the biggest cause of challenges to these projects is the policy issues (Jaeger and Thompson, 2003). Other studies have also pointed "policy issues, organizational issues and IT infrastructure issues" as the major challenges to these projects (Almarabeh and AbuAli 2010; Gil-García and Pardo, 2005). E-government performance depends upon the "economy, efficiency, effectiveness, and satisfaction of the customers". The purpose of e-government is to transform the government and public sector. These studies present that Organizational and IT infrastructure issue effect the successful implementation of an e-government project (Ya Ni and Tat-Kei Ho, 2005; Yang and Rho, 2007).

Kumar studied "the Sustainable Access in Rural India (SARI) project in Tamil Nadu, India" project. This project serves the people through information and communication service. The study discusses the main success factors and constraints. The project faced the organizational issues (Kumar and Best, 2006). In terms of expansion in productivity, it would not be suitable to interpret IT success in public sectors. When it comes to business value of IT in public sector, considering measures to evaluate that how well the system addresses the political goals of organization, is as much significant as addressing economic measures like productivity improvements. "*Acceptance of Information technology, political factors and financial factors*" are the challenges to ICT projects in public sector business (Lee, 2005). According to (Choudrie *et al.*, 2005; Kuk, 2003) with the successful use of ICTs, both public and private sector stakeholder and government get many benefits by linking up public sector services with the internet and provide online services to the public sector. According to their studies "Digital divide" is the great cause of all barriers. According to Valentine the organization, that is public or private if ignores the potential value and use of ICT may suffer from competitive shortcomings. ICT helps overcoming the challenges of entering to global economy (Ndou, 2004). ICT projects in public sector have a great contribution in the

"*competitiveness, growth, wealth creation, poverty reduction and spur of knowledge based economy*" despite the challenges it face. These challenges include "Project Management, Top Management, Technology Factors, Organizational Factors, Complexity /Size Factors, Process Factors" which are basically the organizational issues (Nawi *et al.,* 2012; Nawi *et al.,* 2012). Similarly Implementing ICT or e-government *project* for restructuring an organization faces many social, economic and political challenges. These challenges are the main barriers which restrict the decision makers to make an effective and efficient system through the use of new technology (Aichholzer and Schmutzer, 2000). Other studies have categorized the challenges into certain categories that are "infrastructure development, law and ICT policy, financial issues, management issues, equity issues, the digital divide and privacy and security (Sang et al., 2009; Gichoya, 2005). (Bwalya, 2009) discussed that the "lack of adequate ICT infrastructure and political issues, language compatibility, and lack of proper change management mechanism leads to e-government project failure. (Mutula and Mostert, 2010) discussed that E-government projects fail because of implementing technologies without knowing about the human skills and dimensions to manage. According to (Rehman and Esichaikul, 2011) Political difficulty, dangers from the system requirement specifications like system specifications are not adequately identified, lack of skilled personals and technological issues are the barriers to the ICT/e-government projects.

3. Critical Review

In the literature review section the challenges faced to E-government projects in different developing countries are discussed. In this section the challenges are combined and are categorized in nine (9) categories and sub-categories. The detailed information of the categories is given below in the table.

Table 1: Categories & Sub-categories of the Challenges

Category	Barriers	References
1. Technological issues	a. Absence of architecture interoperability b. Mismatched data standards c. Diverse security prototypes d. Rigidity of legacy systems e. Mismatched technical standards f. Acceptance of Information technology	(Lam, 2005) (Heeks, 2005) (Gil-García, 2005) (Nawi, 2010) (Ciborra, 2005) (Basu, 2004) (Lee, 2005)
2. Policy issues	a. E-Government strategy development b. Obstructive rules and principles c. Absence of inclusive vision d. Absence of accountability and transparency e. Absence of proper risk management strategy f. Inadequate permissible and supervisory agendas and government policy g. Dearth of ownership and governance	(Lam, 2005) (Ndou, 2004) (Hossan, 2006) (Almarabeh, 2010) (Ebrahim, 2005) (Gil-García, 2005) (Evangelidis, 2002) (Matavire, 2010)

	h. Lack of security rules, policies and privacy laws	
3. Organizational issues	a. Nonexistence of applicable internal supervision and practical skills b. Deficiency of operative headship provision and commitment between high-ranking public officers c. Absence of Participation of All Stakeholders **d.** Deprived project management e. Absence of configuration of organizational goals f. Numerous or incompatible goals g. Manager's attitudes and manners h. Absence of project plot. i. Deficiency of skills and information in project management **j.** Poor ICT background for Project Manager k. Inept in creation of decision on selecting ICT projects. l. Improper cost estimate. m. absence of satisfactory approaches for requirements documentation n. dearth of appropriate plan and maintainability o. Absence of understanding on ICT management **p.** Lack of proficiencies q. Lack of E-Literacy **r.** Deficiency of public sector talents, as a result E-government projects are outsourced to the private sector often. s. Shortage of staffs with additional skills t. Unqualified project manager	(Lam, 2005) (Ndou, 2004) (Hossan, 2006) (Ebrahim, 2005) (Gil-García, 2005) (Bwalya, 2009) (Nawi, 2011) (Elsheikh, 2008) (Al-Rashidi, 2010) (Evangelidi, 2002) (Matavire 2010) (Sang, 2009) (Mutula, 2010) (Gichoya, 2005) (Leydesdorff, 2007) (Basu, 2004) (Rehman, 2011)
4. IT Infrastructure	**a.** digital divide among states	(Ndou, 2004)

issues	b. Poor technological Infrastructure **c.** Huge "design-reality gaps" **d.** Absence of consistent systems and communication **e.** Composite and mismatched present systems f. Absence of documents specifically in the situation of custom systems **g.** Telecommunications infrastructure restraints h. Clashes of interest for ICT	(Dada, 2006) (Hossan, 2006) (Nawi, 2011) (Ebrahim, 2005) (Choudrie, 2005) (Salem, 2006) (Yang, 2007) (Kuk, 2006) (Elsheikh, 2008) (Sang, 2009) (Bwalya, 2009) (Gichoya, 2005)
5. Security and privacy issues	a. Lack of confidentiality of private data b. Deficiency of knowledge for safety hazards and penalties	(Almarabeh, 2010) (Ebrahim, 2005) (Matavire, 2010) (Elsheikh, 2008) (Sang, 2009) (Mutula, 2010)
6. Funding issues	a. Unavailability of economic recourses in public sector organizations b. Lack of funding **c.** Lacking resources	(Ebrahim, 2005) (Salem, 2006)) (Yang, 2007) (Gichoya, 2005) (Choudhari, 2011) (Rehman, 2011)
7. Change management issues	**a.** Culture resistance to modification b. Unfortunate change management due to nonexistence of change management hard work c. Resistance to change by top administration **d.** Staff resistance to change	(Ndou, 2004) (Almarabeh, 2010) (Ebrahim, 2005) (Evangelidis, 2002) (Gil-García, 2005) (Hayat, 2010) (Dada, 2006) (Sang, 2009)
8. Political issues	a. Supremacy of government b. Absence of political wish can lead to sluggish or disappointment of e-project c. Government uncertainty	(Hossan, 2006) (Dada, 2006)

9. Requirement elicitation issues	a. Job Insecurity b. Absence of Expert & Skilled Human Resources c. Administrative Inner Politics d. Resistance e. Deprived (Poor) Communication f. Gender problems g. Difficulty of understanding h. Indeterminate scope **i.** Indistinguishable requirements j. Indistinct project aims	(Hayat, 2010) (Ashraf, 2010) (Mutula, 2010) (Gichoya, 2005) (Heeks, 2003) (Choudhari, 2011) (Leydesdorff, 2007)

4. Conclusion

In this modern age the use of e-government services has become a necessity for developing countries. The implementation of E-government project is a complex process, although it is essential for the growth of these countries. However, there are certain challenges that prevent the successful implementation of e-government services. It is concluded from the studies discussed in the literature review section that there are major problems that any developing country facing. The problems/challenges are the Technological issues, Policy issues, organizational issues, IT infrastructure issues, security and privacy issue, funding issues, change management issues, political issues and requirement elicitation issues. In order to overcome these challenges it is necessary to implement some guidelines in each field by the government for the successful implementation of e-government projects.

References:

Al-Rashidi, H., (2010, April). Examining internal challenges to e-government implementation from system users perspective. In *proceedings of the European and Mediterranean Conference on Information Systems*.

Almarabeh, T., & AbuAli, A., (2010). A general framework for e-government: definition maturity challenges, opportunities, and success.*European Journal of Scientific Research.39*(1), 29-42.

Aichholzer, G., & Schmutzer, R.,(2000), Organizational challenges to the development of electronic government. In *Database and Expert Systems Applications, 2000. Proceedings. 11th International Workshop on* (pp. 379-383). IEEE.

Basu, S. (2004). E-government and developing countries: an overview. *International Review of Law, Computers & Technology*.*18*(1), 109-132

Bwalya, K. J., (2009). Factors affecting adoption of e-government in Zambia. *The Electronic Journal of Information Systems in Developing Countries*.*38*

Choudhari, R. D., Banwet, D. K., & Gupta, M. P. (2011). Assessment of risk in e-governance projects: An application of product moment correlation and cluster analysis techniques. *Electronic Government, an International Journal*.*8*(1), 85-102.

Ciborra, C., & Navarra, D. D. (2005). Good governance, development theory, and aid policy: Risks and challenges of e-government in Jordan. *Information technology for development*.*11*(2), 141-159.

Choudrie, J., Weerakkody, V.,& Jones, S.,(2005), Realizing e-government in the UK: rural and urban challenges, The Journal of Enterprise Information Management.18(5), 568-585

Dada, D., (2006). The failure of e-government in developing countries: A literature review, *The Electronic Journal of Information Systems in Developing Countrie.26(7)*, 1-10

Elsheikh, Y., Cullen, A., & Hobbs, D. (2008). e-Government in Jordan: challenges and Opportunities. *Transforming Government: People, Process and Policy*.*2*(2), 83-103.

Evangelidis, A., Akomode, J., Taleb-Bendiab, A., & Taylor, M., (2002). Risk assessment & success factors for e-government in a UK establishment. In *Electronic Government* (pp. 395-402). Springer Berlin Heidelberg.

Ebrahim, Z., & Irani, Z., (2005). E-government adoption: architecture and barriers. *Business Process Management Journal*.*11*(5), 589-611.

Gil-García, J. R., & Pardo, T. A., (2005). E-government success factors: Mapping practical tools to theoretical foundations. *Government Information Quarterly*.*22*(2), 187-216.

Gichoya, D. (2005). Factors affecting the successful implementation of ICT projects in government. *the Electronic Journal of e-government*.*3*(4), 175-184.

Hayat, F., Ali, S., Ehsan, N., Akhtar, A., Bashir, M. A., & Mirza, E., (2010, June) Requirement elicitation barriers to software industry of Pakistan (impact of cultural and soft issues). In *Management of Innovation and Technology (ICMIT), 2010 IEEE International Conference on* (pp. 1275-1278). IEEE.

Heeks, R. (2005). E-Government as a Carrier of Context, *Journal of Public Policy*.*25*(1), 51-74.

Heeks, R., (2002). Information systems and developing countries: Failure, success, and local Improvisations. *The information society*.*18*(2), 101-112.

Heeks, R., (2003). Most eGovernment-for-development projects fail: how can risks be reduced? (p. 5). Manchester: Institute for Development Policy and Management, University of Manchester.

Hossan, C. G., Habib, M. W., & Kushchu, I., (2006). Success and Failure Factors for e-Government projects implementation in developing countries: A study on the perception of government officials of Bangladesh. In *Proceedings of the 2nd European Conference on Mobile Government, Mobile Government Consortium International*.

Jaeger, P. T., & Thompson, K. M. (2003). E-government around the world: lessons, challenges, and future directions. *Government Information Quarterly*.*20*(4), 389-394.

Kuk, G., (2003), The digital divide and the quality of electronic service delivery in local government in the United Kingdom. *Government Information Quarterly*.*20*(4), 353-363.

Kumar, R., & Best, M. L. (2006), Impact and sustainability of e-government services in developing countries: Lessons learned from Tamil Nadu, India. *The Information Society*.*22*(1), 1-12.

Leydesdorff, E., & Wijsman, T. (2007). Why government ICT projects run into problems?. *NC o. Audit, Ed., ed. Netherlands*.

Lee, D. D., (2005, January). Contextual IT Business Value and Barriers: an E-Government and E-Business Perspective. In *System Sciences, 2005. HICSS'05. Proceedings of the 38th Annual Hawaii International Conference on* (pp. 129a-129a). IEEE.

Lam, W. (2005). Barriers to e-government integration. *Journal of Enterprise Information Management, 18(5), 511-530*

Mutula, S. M., & Mostert, J., (2010). Challenges and opportunities of e-government in South Africa. *TheElectronic Library. 28*(1), 38-53.

Matavire, R., Chigona, W., Roode, D., Sewchurran, E., Davids, Z., Mukudu, A., & Boamah-Abu, C. (2010). Challenges of e-Government Project Implementation in a South African Context. *Electronic Journal Information Systems Evaluation Volume.13*(2), 153-164.

Ndou, V., (2004). E-government for developing countries: opportunities and challenges. *The Electronic Journal of Information Systems in Developing Countries.18(1), 1-24*

Nawi, H. S. A., Rahman, A. A., & Ibrahim, O. Government ICT Project Failure Factors: Project Stakeholders' Views. Journal of Research and Innovation in Information Systems

Nawi, H. S. A., Rahman, A. A., & Ibrahim, O. (2011, November). Government's ICT project failure

factors: A revisit. In *Research and Innovation in Information Systems (ICRIIS), 2011 International Conference on* (pp. 1-6). IEEE.

Rehman, M., & Esichaikul, V., (2011, May). Factors influencing the adoption of e-government in Pakistan. In *E-Business and E-Government (ICEE), 2011 International Conference on* (pp. 1-4). IEEE.

Salem, F., (2006), Exploring e-government barriers in the Arab states. *Policy Briefs Series, Policy Brief.2*

Silcock, R., (2001). What is e-government,Parliamentary affairs.54(1), 88-101

Signore, O., Chesi, F., & Pallotti, M. (2005, June). E-government: challenges and opportunities. In *Proceedings of the CMG Italy XIX annual conference*.

Sang, S., Lee, J. D., & Lee, J. (2009, February). E-Government challenges in least developed countries (LDCs): a case of Cambodia. In *Advanced Communication Technology, 2009. ICACT 2009. 11th International Conference on* (Vol. 3, pp. 2169-2175). IEEE.

Wahid, F., (2011), explaining failure of E-government implementation in developing countries a Phenomenological perspective, Seminar Nasional Aplikasi Teknology Informasi

Wimmer, M., & Traunmüller, R. (2002). Integration-The Next Challenge in E-Government. *EurAsia-ICT, Shiraz-Iran,(29-31 October)*.

Ya Ni, A., & Tat-Kei Ho, A. (2005). Challenges in e-government development: Lessons from two information kiosk projects. *Government Information Quarterly*.*22*(1), 58-74.

Yang, K., & Rho, S. Y. (2007). E-Government for better performance: Promises, realities, and challenges. *International Journal of Public Administration*.*30*(11), 1197-1217.