Sindh Univ. Res. Jour. (Sci. Ser.) Vol.44 (4) 587-592 (2012)

SINDH UNIVERSITY RESEARCH JOURNAL (SCIENCE SERIES)

E-Government in Pakistan: SWOT and PEST Analysis

S. QAMAR, S. JAN*, L. HASAN* I.A.MEMON**

Faculty of Computing and IT, King Abdul Aziz University, Jeddah, Saudi Arabia

Received 19th May 2012 and Revised 7th September 2012

Abstract: Developing countries are realizing the importance of e-government to provide the best possible public services to the citizens and businesses. However, several problems have been faced by the organizations in implementation of the electronic government. In this paper, we analyzed Pakistan's e-government based on the United Nation (UN) e-government survey reports (2003 - 2012). We also conducted SWOT (Strengths, Weaknesses, Opportunities and Threats) and PEST (Political, Economical, Sociological and Technological) analysis to identify different factors which have positive and negative effects on Pakistan's e-government.

Keywords: E-government, EGDI, ICT, UN, SWOT, PEST.

1. INTRODUCTION

E-government has been defined by different researchers in different ways. Some have discussed its basic concept and architecture while others have discussed the post implementation challenges faced by the e-government. In order to simplify the definitions from the literature, we can simply say that the use of modern communication technologies such as the Internet, mobile and World Wide Web (WWW) by the government sector and citizens to interact with each other without time and geographical restriction is called e-government. E-government's strategic framework has three target groups: Government to Citizens (G2C), Government 2 Business (G2B) and Government 2 Government (G2G) (Fang, 2002). E-government is not a new concept anymore, almost every country in world has implemented this system in some form or another with the aim to provide efficient and effective public services to citizens and businesses. The goals of the e-government is to provide best possible e-services to the citizens and businesses, increase the efficiency and effectiveness of the public sector and to reduce the cost (Cordella, 2007). The developed countries realized the importance of e-government long time ago and now taking full advantages of the system while the developing countries are still in the infant stage of its deployment (Valentina, 2004). The public sector organizations in the developing countries, which provide services to the citizens in traditional ways, are not efficient and effective because of corruption, lack of professionalism and transparency (Basu, 2004). The basic question of governmental services provisioning to the citizens and businesses electronically can solve the above mentioned problems in the public sector or not still needs to be answered; especially, in the context of the developing countries. The United Nations e-government survey was initiated by the Department of Economics and Social Affair (UNDESA) in 2001 to assess the member nation's efforts in e-Government and Information and Communication Technology (ICT) for socio-economic development (UN Global e-government Readiness Report, 2004). United Nations has conducted six e-government surveys so for. The first survey was published in 2003, while the last e-government survey has been published in the year 2012. In UN e-government survey 2012, 193 UN member nation's e-government development was assessed according to quantitative composite index. Mathematically, E-Government Development Index (EGDI) consists of Online Services Index (OSI), the Telecommunication Infrastructure Index (TII) and the Human Capital Index (HCI) (UN E-government Survey, 2012).

$$\text{EGDI} = (0.34 * OSI) + (0.33 * TII) + (0.33 * HCI)$$

In order to find the online service index value, the researchers at UN have assessed each member country's national portal, *e.g.*, the electronic services and electronic participation portals. For this purpose, they have assessed the websites of five ministries, *i.e.*, education, health, finance, social services and labor (UN e-government Survey, 2012). The TII is an arithmetic average composite of five indicators (UN e-government Survey, 2010). These five indicators are: estimated internet users per 100 persons, number of main fixed telephone lines per 100 persons, number of mobile subscribers per 100 persons, number of fixed internet subscriptions per 100 persons, and the count of fixed broadband facilities per hundred people. According to the UN e-government survey reports, the international Telecommunication Union (ITU) is the primary data source for each case, respectively. The HCI is a weighted average signifying two prime indicators *i.e.*,

++ Corresponding author S. QAMAR e-mail: sqamar@kau.edu.sa
*University of Engineering and Technology, Peshawar, Pakistan [sadaqat,laiqhasan]@ nwfpuet.edu.pk +92-91-9216796
**Institute of Physics, University of Sindh, Jamshoro, Pakistan

the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio with 2/3 weights assigned to adult literacy rate and 1/3 weight assigned to the gross enrolment ratio, respectively. According to the UN e-government survey reports, the prime source of data for both these indicators is the United Nations Educational, Scientific and Cultural Organization (UNESCO).

In this paper, the development in Pakistan's e-government has been analyzed using United Nation e-government surveys. Also, we have conducted SWOT and PEST analysis on e-government in Pakistan in order to identify the positive and negative aspects of Pakistan's e-government.

Many studies have been conducted previously to explore the importance of the e-government in developing countries. In developing countries, e-government is still not performing well as compared to the developed one. This fact is clear from the UN e-government survey reports, which showed that the EGDI for most of the developing countries is below the world's average. In (Rajapakse, 2011), the authors have discussed the challenges and opportunities for the successful implementation of e-government in the developing countries and argued that poor ICT infrastructure and lack of legislations are the two main challenges for developing countries. In (Al-Shafi *et al*., 2010), the authors have identified the factors effecting the adoption of e-government program in Qatar. Their studies were based on the surveys and have recommended that strong ICT infrastructure and security and privacy of personal information are critical issues need to be addressed for successful e-government program in Qatar. The author in (Al-Nuaim, 2011) has addressed the current state of the Saudi Arabia's e-government by evaluating its ministries websites using citizen centered e-government approach. Her findings have demonstrated that the Saudi Arabia e-government is not citizen centered which results in citizen dissatisfaction and frustration. In (Alsaghier *et al*., 2009), the authors have shed light on the importance of citizen trust for the success of the e-government and argued that for sharing the personal information by citizens, trust is the most important factor which makes them comfortable. Further, it makes online government transactions easier for the masses while acting on e-government advices. The author in (Bokhari, 2009) has presented an analysis of the Layne and Lee model (Layne *et al*., 2007) of e-government and has pointed out its weaknesses for developing countries. In (Khan *et al*, 2010), the researchers have analyzed the e-government in Pakistan and have identified some challenges faced by the Pakistan's e-government. The authors in (Shin *et al.,* 2010), have argued that finance, lack of skilled people, culture and leadership style are some of the prime factors which are responsible for the failure of the e-government projects in the developing countries. In (Shah *et al.,* 2011), the authors have discussed the project management practices adopted by the Electronic Government Directorate (EGD) of Pakistan during the implementation of e-government project in Pakistan. They have argued that for a successful e-government project deployment in Pakistan, the adequate project management methodologies are immensely important. In (Rehman *et al.*, 2011), the authors have argued that the success of the e-government implementation is not only dependent on the government but also the willingness of the citizens to use the system. The authors considered Pakistan as a case study and identified different factors influencing the adoption of e-government in Pakistan. Based on their observations, the authors have proposed e-government adoption model for Pakistan. In this research, we have analyzed the e-government in Pakistan based on the United Nation e-government survey reports in order to find the positive and negative trends in the e-government indicators. The SWOT and PEST analysis has also been conducted to scan the internal strengths and weaknesses and external opportunities and threat to the e-government in Pakistan.

2. MATERIALS AND METHODS

E-Government Development in Southern Asia Region.

Asia is the home for 60% people in the World (UN Environment Programme, 2012). United Nations divide the Asian countries into six sub-regions. This study focuses on the Southern Asia region which includes Maldives, Iran, Sri Lanka, India, Bhutan, Pakistan, Nepal and Afghanistan. The EGDI and ranking of Southern Asian countries are shown in the (**Table 1)**. It is clear from these countries EDGI values and its ranking that this region is not performing well and lags far behind than the developed countries of the World. The average of Southern Asia region is 0.3464 which is below the World's EGDI average (0.4882) according to UN e-government survey 2012.

Table 1: E-government Development in Southern Asia Region

Country	E-Gov Development Index	E-Gov Development Ranking
Maldives	0.4994	95
Iran	0.4876	100
Sri Lanka	0.4357	115
India	0.3829	125
Bangladesh	0.2991	150
Bhutan	0.2942	152
Pakistan	0.2823	156
Nepal	0.2664	164
Afghanistan	0.1701	184

In Southern Asia region, Maldives with the EGDI of 0.4994 is leading the sub region, followed by Iran with the EGDI value of 0.4876 and Sri Lanka with EGDI value 0.4357. Comparing the EDGI of South Asian countries with Central Asia, Eastern Asia, South Eastern and Western Asian countries, it suggests that all countries in the southern Asian region should improve their E-government Development Index in order to provide efficient, effective and transparent e-government services to citizens and businesses.

E-Government Development in Pakistan

We have collected the EGDI values for Pakistan, during the period of 2003 -2012, from the six UN e-government surveys and the results are presented in the **Table 2.** It is clear from the EGDI values that the performance of Pakistan's e-government is not satisfactory. EGDI value of Pakistan is far below than world's average in all of the six surveys. As can be seen in the **(Fig. 1)**, the e-government development index ranking of Pakistan has shown a decreasing trend as compared to the World's average.

Table 2: E-Government Development Index of Pakistan

Year	EGDI	Rank	World's Average
2003	0.2470	137	0.4020
2004	0.3042	122	0.413
2005	0.2836	136	0.4267
2008	0.3160	131	0.4515
2010	0.2755	146	0.4406
2012	0.2823	156	0.4882

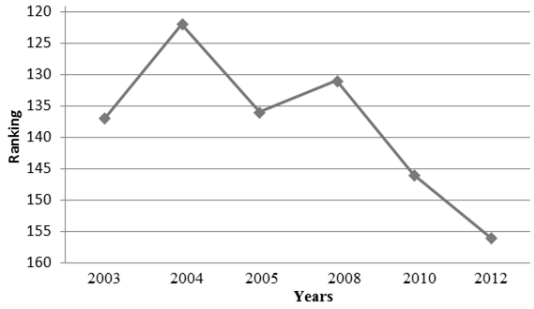


Fig. 1: E-government Ranking of Pakistan

Table 3 shows the OSI, TII and HCI values for Pakistan between the years 2003 and 2012. The trend values of three indicator groups are calculated in order to find out if these factors are performing well or not in Pakistan. The positive slope value (+0.0191) indicates that the telecommunication infrastructure in Pakistan is continuously growing while the negative slope values (-0.0097 and -0.0244) indicate that the online services and HCI are not performing good in Pakistan.

Table 3: Online Services, Telecomm Infrastructure and Human Capital Indices of Pakistan

Year	OSI	TII	HCI
2003	0.297	0.026	0.5026
2004	0.475	0.028	0.4659
2005	0.4269	0.0238	0.4000
2008	0.4247	0.0540	0.410
2010	0.2476	0.0771	0.42
2012	0.3660	0.1239	0.3572
Trend (Slope)	-0.0097	0.0191	-0.0244
Y-Int	0.4068	-0.0112	0.05114

Table 4 and the **Table 5** show the values of five TII and two HCI for Pakistan between 2003 and 2012. Slopes of each component in TII and HCI are calculated. Investment in telecommunication, being one of the long-term opportunities for the government, Pakistan's index has increased to 0.12396 since 2010. Since 2003, Pakistan's telecommunications infrastructure has been gradually increasing which is good sign for the country but still there is a large gap between Pakistan and the other countries in southern Asia region. Due to the significance of the communication among the masses, Pakistan's government should struggle to accomplish the goal of providing more fixed telephone lines per 100 persons. Besides this, to have a competitive pace with the world's developed nations' level of telecommunications infrastructure; efforts should be made for the provision of total fixed broadband per 100 persons because its index value is not good as compared to other countries in the region. Accordingly, a decreasing trend has been noted in the Pakistan's human capital index from 0.42 to 0.3572. Pakistan's government should also focus is adult literacy because 55.53% literacy rate is not enough. The combined gross enrolment ration for primary, secondary, and tertiary schools index value is 42.01 %, which is also very low as compared to other countries in the world. Pakistan should concentrate on both indictors in order to improve its human capital index value, which will definitely help Pakistan in improving its overall EGDI value.

Table 4: Telecom Infrastructure Indicators per 100 persons

Year	Internet Users	Fixed Telephones	Mobile Users	PCs	Broadband Users
2003	0.344	2.48	0.56	0.41	-
2004	1.03	2.5	0.85	0.42	-
2005	1.00	2.66	1.75	0.400	-
2008	7.64	3.34	21.98	0.52	0.04
2010	10.45	2.50	49.74	0.44	0.09
2012	16.78	1.97	59.21	-	0.31
Trend (Slope)	3.345	-0.053	13.14	0.016	0.135
Y-Int	-5.5007	2.762	-23.6	0.39	-0.123

Table 5: Human Capital Index Trend Analysis

Year	Adult Literacy (%)	Gross Enrolment (%)
2008	49.9	40.011
2010	54.20	42.37
2012	55.53	42.01
Trend (Slope)	2.815	0.9995
Y-Int	47.58	39.465

3. RESULTS AND DISCUSSION

SWOT and PEST Analysis of E-Government in Pakistan

Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis is a commonly used technique which scans internal strengths and weaknesses of a product or service industry and identifies the opportunities and threats of the external environment (Valentin, 2005). The four components of SWOT are analyzed by examining the PEST factors, *i.e.,* Political, Economic, Social and Technological. The SWOT and PEST analysis of e-government in Pakistan is carried out with the help of available literature.

A. Strengths

The political wiliness and public policies are the two important factors for the success of the e-government implementation. Pakistani government showed its commitment to improve ICT infrastructure in the country by launching the Ministry of Information Technology (MoIT) in 2002. MoIT is a national focal ministry which is working towards the planning, coordinating and directing efforts for initiating and launching the IT and telecommunication based projects in the country (Ministry of Information Technology, Pakistan web site). In the same year, the E-Government Directorate (EGD) establishment was formalized within the administrative domain of the Ministry of Information Technology. The sole aim of the EGD was to give a helping hand to the public sector by deploying the ICT facilities in their premises in order to increase the overall responsiveness, efficiency and effectiveness (E-government Directorate, Pakistan). In the last three years, Pakistan's economy has been shifting and is passing through its stabilization phase. One of the important factors is the restoration of macroeconomic stability which is essential for provisioning the platform of growth generation, people's life quality improvement and providing jobs to the masses (Pakistan Economic Survey, 2011/2012). Along with political wiliness, citizens also play an important role in the success of e-government projects. The success of the e-government is directly dependent on the citizen adoption of the e-government system. The social strength of e-government in Pakistan has been demonstrated by the education system in the country which produce good workforce for the IT and telecommunication industry (Hussain, 2005). Computer science is a compulsory subject in the schools and colleges in Pakistan and the young age people have eager to learn IT skills. The use of ICT for governmental services is actually an e-government. Therefore, good ICT infrastructure in a country is very important for successful implementation and adoption of e-government. In Pakistan there is a good ICT infrastructure available used by the government and citizen to interact with each other 24/7 without time and geographical location restrictions.

B. Weaknesses

Pakistan has facing a lot of political problems which have severe effects on the performance of public sector organizations. The struggle for the power between different political parties made the political situation worst in Pakistan as a result there is no consistency in the governmental policies and often policies are short term. E-government implementation is government project, therefore funds will also be provided by the government (Dada, 2006). Without sufficient funds there is no or little chance to implement e-government successfully in Pakistan. Due to the terrorism problem in Pakistan, government is spending too much money to tickle terrorism which resulted in the e-government as the second priority on the agenda and a reduction in the resources for its deployments.

Socially, large portion of population in Pakistan is illiterate and find it difficult to use computer and internet (Kundi *et al.,* 2009). The low literacy rate and poor basic education in Pakistan are significantly effecting the adoption of electronic services. Another issue in the government sector is the low salary packages, therefore skilled people are not interested to join public sector. Technologically, some of the government ministries websites are not user friendly therefore it is difficult for the people to get maximum benefits from these websites. The ICT infrastructure in Pakistan is good but the problem is high cost of using these technologies which is restricting the citizens to use the e-services provided by the government.

C. Opportunities

Besides the weaknesses as discussed in the Section (B), the opportunities for the e-government growth in Pakistan and gain public acceptance are very high. The establishment of EGD within the Ministry of Information technology demonstrate the political will to support and finance e-government in Pakistan. As for as economic opportunities are concerned, the people with good IT skills have better opportunities of employment in Pakistan since Information Technology and Information Systems are the requirements for most of the industries in Pakistan. More than 60% of Pakistan's

total population are below 25 years of age and are interested in learning new IT skills therefore cheap workforce is available to work in public and private sector.

Internet is the basic requirement to access the e-services provided by the government. In Pakistan there is an increasing trend in internet users which reached to 29 million by the end of 2010 (WB Report, 2009). The introduction of the Digital Subscriber Lines (DSL) and Worldwide Interoperability for Microwave Access (WiMAX) in Pakistan enables the citizens and businesses for fast Internet connectivity. The deployment of these new technologies at mass level as well as the business provides more opportunities for easy, cost-effective, efficient and effective electronic services.

D. Threats

The political instability in Pakistan is a continuous threat to e-government. Due to the political instability, there is no continuation in the government policies (Qureshi *et al*., 2012). Every new government wants to work in its own way and thus does not continue the previous government's policies. There is no significant legal framework for the e-government in Pakistan which is also holding back Pakistan's e-government projects. Pakistan poor economy is a major threat to the successful e-government implementation and adoption. The power crises, declining exports, unprecedented inflation and war on terror are the important factors responsible for the worst shape of Pakistan economy (Haq, 2012).

Socially, the digital divide is an important factor which has negative effects on the e-government in Pakistan. Digital divide is a social issue which is linked to the difference in the level of information between the citizens (Sarkar *et al*., 2008). Due to demographic characteristics, some people don't have access to the information, which leads to information divide, the low IT literacy and skills leads to skill divide problem and the people of rural areas in Pakistan have almost no access to the Internet. Similarly, no or low opportunities of good education and employment has created the demographic divide problem. The poor economy and law and order situation has also been affecting the growth of telecommunication and IT sector in Pakistan. Due to the high prices of telecommunication services in Pakistan, people are not using the e-services. Also power crisis in Pakistan is a major technological threat to the e-government.

The summery of SWOT and PEST analysis of e-government in Pakistan has been presented in the (**Table 6).**

.

Table 6: Summery of the SWOT and PEST analysis of e-government in Pakistan

SWOT/PEST	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
POLITICAL	-Political Wiliness -Public Policies -Ministry of IT	-Political Instability -Inconsistent Policies	-Political willingness and management support -E-government Directorate (EGD)	-Short term policies -No legal framework for e-government
ECONOMIC	-Restoration of Micro-economics	-Spending on war on terror-Corruption	-Better opportunities for IT professionals	-Poor Economy
OCIAL	-Education System -Availability of Manpower	-Low literacy rate -Poor basic education -Low salary packages in public sector	-63% population below than 25 years of age	-Digital Divide
TECHNOL OGICAL	-Good ICT infrastructure	-High cost of telecom technologies -Unfriendly ministries website	-DSL and WiMAX technologies	-Power Crisis/shortage

4. CONCLUSION

The Developing Countries Have Realized The Importance Of Ict Deployment In The Public Sector In Order To Provide Efficient And Effective Services To The Citizens. This Paper Analyzed The Current E-Government Situation In Pakistan Using United Nations E-Government Surveys Reports (2003, 2004, 2005, 2008, 2010 And 2012). Pakistan's E-Government Lags Far Behind Than Developed Countries And Southern Asia Region Countries. In Order To Find The Factors Responsible For Pakistan's E-Government Poor Performance, Swot And Pest Analysis Were Conducted In This Study. The Swot And Pest Analysis Resulted That Poor Economy And Digital Divide Are The Main Threats To E-Government In Pakistan

REFERENCES:

Al-Nuaim H. (2011) An Evaluation Framework for Saudi E-Government, Journal of e-Government Studies and Best Practices, 2011. Available from: www.ibimapublishing.com/journals/JEGSBP/2011/.../820912.pdf [Last Accessed: 15th February 2012].

Alsaghier H, M. Ford, A. Nguyen and R. Hexel. (2009) Conceptualising Citizen's Trust in e-Government:

Application of Q Methodology. Electronic Journal of e-Government Vol. **(7):** Issue 4, 295-310.

Al-Shafi S. and V. Weerakkody. (2010) Factors affecting e-government adoption in the state of Qatar, in proc. of European and Mediterranean Conference on Information Systems.

Basu S. (2004) E-government and developing countries: an overview., International Review of Law, Computers and Technology, Vol. **(18):** No.1. 23-28.

Bokhari H. (2009) Realising hybrid model of e-Government for citizen centric eServices in developing countries. Analysis of eSahulat programme in Pakistan in proc. of IEEE 13th International Multi topic Conference.

Cordella A. (2007) E-government: towards the e-bureaucratic form, Journal of Information Technology Vol. **(22**): 265–274.

Dada D. (2006) E-government implementation is government project therefore funds will also be provided by the government. The Electronic Journal on Information Systems in Developing Countries. Vol. **(26):** Issue 1, 1-10

E-government Directorate Pakistan. http://www.e-government.gov.pk/ [Last Accessed 26th March, 2012]

Fang Z. (2002) E-government in Digital Era: Concept, Practice, and Development, International Journal of the Computer, the Internet and Management, Vol. **(10):** No.2, 1-22.

Khan F., S. Khan, B. Zhang. (2010) E-Government Challenges in Developing Countries: A Case Study of Pakistan, in proc. of IEEE International Conference on Management of e-Commerce and e-Government.

Kundi G. And B. Shah. (2009) IT in Pakistan: Threats and Opportunities for eBusiness. The Elec. Jour. on Info. Systems in Developing Countries. Vol. **(38):** 8.1-31.

Layne K.. J. Lee, (2001), Developing Fully Functional E-Government-A Four Stage Model. Government Information Quarterly, Vol. **(18):** Issue 2. 122-136.

Ministry of Information Technology, Pakistan. http://www.moitt.gov.pk/ (Last Accessed 26th March, 2012).

Pakistan Economic Survey 2010-2011. Available from: http://docs.brecorder.com/budgets/11_12/highlights.pdf [Last Accessed 25th March, 2012]

Quershi M. and K. Ali. (2010) Political Instability and Economic Development: Pakistan Time-Series Analysis. International Research Journal of Finance and Economics. Vol. **(12):** Issue 56.77-82.

Rahman M. and V. Esichaikul. (2011) Factors influencing the adoption of E-government in Pakistan in proc. of IEEE International Conference on E-Business and E-Government (ICEE).

Rajapakse, M. (2011) E-government Adoption in Developing Countries: Lessons Learned from a Sri Lankan Case Study in proc. of IEEE International conference of research and Innovation on Information Systems.

Sarkar P. K and M. Singh., (2008) Narrowing the digital divide: the Australian situation. International Journal on Computer Science and Information Systems. Vol. **(3):** No. 2, 27-35.

Shah S., A. Khan and M. Khalil. (2011) Project Management Practices in e-Government Projects: A Case Study of Electronic Government Directorate (EGD) in Pakistan. International Journal of Business and Social Science, Vol. **(2):** No. 7.134-142.

Shin S., H. Song and M. Kang. (2008) Implementing e-government in developing countries: its unique and common success factors in proc. of Annual Meetings of the American Political Science Association.

The World Bank. http:// search.worldbank.org/data?qterm=paistan%20internet%20users&language=EN [Last Accessed 10th April 2012]

UN Global e-government Readiness Report 2004: Towards Access for Opportunities. Available from: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan019207.pdf , (Last Accessed on 12th March, 2012)

UN E-government Survey (2012) E-Government for the people. Available from: http://unpan1 .un.org /intradoc /groups/public/documents/un/unpan048065.pdf , (Last Accesses on 15th April, 2012).

UN e-government Survey 2010: Leveraging e-government at the time of financial and economical crises. Available from: http://unpan1.un.org/intradoc /groups/public/documents/un-dpadm/unpan038853.pdf (Last Accessed on 15th January, 2012).

United Nation Environment Programme, 2012. http://www.unep.org/themes/Freshwater/Regions/index.asp?case=roap (Last Accessed 25th March, 2012)

Valentin E. K. (2005). Away with SWOT Analysis: Use Defensive/Offensive Evaluation Instead. The Journal of Applied Business Research. Vol. **(21):** No 2, 91-104.

Valentina N. (2004) E-government for developing countries: Opportunities and challenges. The Electronic Journal of Information Systems in Developing Countries. Vol. **(18):** No. 1, 1-24.