

## **Public Sector Innovation: Case Study of e-government Projects in Pakistan**

M. IRFANULLAH ARFEEN and NAWAR KHAN

### **INTRODUCTION**

The word innovation means to introduce new thing. Without innovation capability, there would be no computers, aero-planes, high tech television, internet and wireless technology, just to name a few. Innovation has been practiced throughout human history and has become a way of improving human life.

The importance of the innovation in the private sector is well recognised and is considered as the main force for the firm survival and profit. This is not the case for the public sector, where innovation has suffered from not only the lack of research seeking to understand it, but also a considerable lack of recognition of its importance, contrary to the case in private sector. Innovation has been seen only as a supplement to the main role and activities to the government. Hence, it is difficult to find innovative individuals and organisations in the public sector as compared to the private sector. Innovation skill and practice are not always considered as the main drive for the government in enhancing its service internal organisations and also to citizens and businesses.

Since much of the topic and studies on innovation are focusing only on the private sector, it is aim of the study to analyse the process of innovation, mainly in the ICT in the public sector. Many scholars and consultants have provided comprehensive studies and models on how to innovate in the private sector. Innovation capabilities in the private sector and their success stories have influenced the public sector to begin appreciating and practicing innovation seriously. One would assume that it is only a matter of

M. Irfanullah Arfeen <Irfanullah.Arfeen@mbs.ac.uk> is Doctoral Research Visitor, Manchester Institute of Innovation Research, Manchester Business School, University of Manchester, United Kingdom. Nawar Khan <nwr\_khan@yahoo.com> is Dean of the Department of Engineering Management, National University of Science and Technology, College of Electrical and Mechanical Engineering, Rawalpindi.

*Authors' Note:* This is part of PhD research work, second case study is based on 'Need Assessment Survey' conducted by the author and funded by the United Nations Development Programme. The project investigates the perception of government officials for implementing e-government projects in Balochistan. It is based on 45 interviews of public sector officials carried out at provincial and district level in Balochistan. Data was gathered on the field in late 2008. The author wishes to acknowledge the support and very useful comments provided by Sheryar Taj and all other staff of AGRP-B during interviews conducted in Balochistan. Thanks extended to Prof. Ian Miles, Prof. Kate Barker and Dr Khaleel Malik (all of University of Manchester) for guidelines received during research work in the Manchester Institute of Innovation Research at Manchester Business School, University of Manchester, United Kingdom.

transferring the same theories available in the private to the public sector. In the other words, just by transferring the good practices and styles, similar success could be achieved.

In reality, this is not the case. Innovation in the public sector demands its own study although there are some theories from private sector that can be adopted. It is not the aim of this study to do a comparative study with the private sector, as this not only a larger scope of this study, but also tends to limit the ability of this study to explore and highlight the issues that exists and may have been overlooked in the field of public sector innovation research. This study concentrating on the latest trend of innovation effort in the public sector i.e. electronic e-government. To do this, this research will look at the case study of the ICT diffusion or e-government in the public sector of Pakistan. Interestingly, despite the claimed potential and benefits of e-government, the outcomes are more frustrating due to the chaotic and high uncertainties present in it. The experience of implementing e-government in Pakistan will be used to this study in providing a better understanding of how innovation is actually carried out in the public sector.

The rise of the information society has been argued as a driver for the government to start utilising ICT to meet the challenging and complex demand of citizens and businesses. Some studies have shown that many ICT projects in government around the world have resulted in partial and complex failures. This paper discussed the literature gap that exists in the study of e-government and the need to illuminate the understanding from the field of innovation.

### **LITERATURE REVIEW**

Economic growth is always on a nation's agenda in order to achieve prosperity. Schumpeter (1934, 1939) was among the first economists to realise the importance of new products to economic growth. Innovation is actually the engine of economic growth. He argued that changes in the prices of existing products were not as significant as the competition posed by new products. The development of new products such as pharmaceutical drugs and computer software are more likely to result in economic growth rather than the reduction of prices of existing products such as cars and mobile phones.

Invention is the creation of an idea for new product or process and when this new product or process is introduced or implemented, it is then called innovation [see, Fagerberg (2005) and Hartley (2006)]. Innovation in firms require a combination of several types of knowledge (e.g., production and market knowledge), capabilities (e.g., good logistic system), skills (e.g., good leader) and resources (e.g., budget). An innovation cannot be produced without the availability and ability to combine all of these factors together.

Invention and innovation are complementary. A single innovation is actually the result of a lengthy process involving many interrelated innovations and inventions. This is why it is more interesting to study innovation from the system prospective rather than individual innovations.

The OECD's Oslo Manual (2005) has included the 'marketing innovation' and 'organisational innovation'. Marketing innovation cover new marketing method

aimed at opening up new markets with the aim of increasing profits. Organisational innovation, on the other hand, is concerned with the implementation of new organisational methods and practices for sharing knowledge, new organisational structures and distribution of responsibilities and decision-making; changes in governance and new ways of interacting with external organisations such as other firms and public research institutions.

Another proposed type of innovation is the service innovation. The definition of the term ‘services’ is very imprecise as it can cover many activities that range from providing after sales services to white collar and low level jobs such as cleaner. Services exists in all sectors (including manufacturing) although they differ from manufacturing as the outputs are often intangible, hard to store and transport, and difficult to demonstrate in advance to potential clients [Metcalf and Miles (1997), p. 3]. There has been a significant growth of the service industries especially where there is a strong demand for specialist workers to perform service functions (such as design and research and development). These functions normally provided by firms—service firms which later showed in the growth of the service sector.

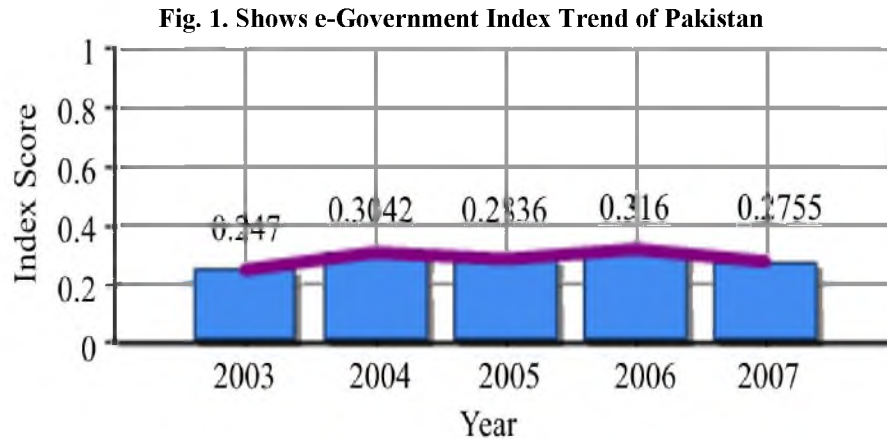
The treatment of the importance of service and its roles in innovation especially in technological change has been largely ignored until the emergence of ICT. The rapid development of ICT has made many services dependent upon technology. The ICT investment by the service sectors and new ICT developments (such as mobile and PC technology) has increased significantly.

In 1976–97, Pakistan Public Administration Research Centre formulated and submitted more than 200 recommendations to the committee for improving the quality of services and to modernise the public administration by use of ICT. Out of those, 106 recommendations were approved which cover approximately 53percent of the total recommendations. Despite these developments, it was realised that the existing system of public service is still cumbersome, outdated and out of step with the requirements of modern administration. This has given rise to wide inefficiency, malpractices and corruption, resulting in a loss of government revenues and general public dissatisfaction.

It is essential for public sector organisations to use ICT to support processes within the government for the delivery of services to its customers. The basic aim of e-government is to improve the ability of all people to access the information and to enhance the efficiency and effectiveness of all kinds of government services.

e-Government can be directly linked to main dimensions of “good governance” [Leitner (2003)], such as:

- *Coherency of Policy Making*: it supports better quality co-ordination of policy making both on the horizontal and vertical level;
- *Participatory Democracy*: it supports active participation of all players in policy making processes;
- *Consistency, Efficiency and Effectiveness of Policy Implementation*: it support cooperation and networking in policy implementation phase, makes them faster, simpler and more cost-effective; and
- *Transparency and Openness of Political Processes*: it provides general access to information at a very low cost.



Source: United Nations e-Government Development Knowledge Base (UNKB).

In the United Nations e-Government Survey 2008 Pakistan (0.3160) took the position at 131st out of 192 countries. In the 2010 survey, Pakistan had a major dropped, went to 146 as shown in the above Figure 1. This survey is based on the United Nations e-Government Readiness Index that is a composite index comprising the *Web Measure Index*, the *Telecommunication Infrastructure Index* and the *Human Capital Index*. And this situation is so despite the allocation of billions of rupees by the Ministry of Information Technology and Telecommunication Division for e-government in Pakistan.

The e-government programmes of the government of Balochistan reflect the realities of its limited web access, infrastructure and human capital capacities while balancing the priorities of its development needs. Government of Balochistan is advancing toward the stage where government is without boundaries; in this way put all provincial and district data and services online which can be access anywhere of the world at anytime. As compared to other provinces, in Balochistan enabling e-government environment is definitely weak [Arfeen (2009)]. Addressing the deficiency in its web access, infrastructure and human capital measure should be a high priority for the government of Balochistan. Help of Federal government, international organisations and private sector is urged.

Lack of connectivity to the web, inferior technology, limited e-mail capacity, absence of intranets all need to be addressed at provincial and district level before the Government of Balochistan can realistically expect online service delivery to be effective. Outside ICT community, there seems to be a limited sense of e-governance as a major driver of transformation and public sector reform.

### The Core Research Problem

In Pakistan many e-government projects have been implemented, most of them have failed to reach the deadlines. A study is then crucial to be conducted to explore why there is inertia in the e-government projects, examining this with the context of public sector innovation. Hence the problem statement it: *Why have e-government programmes been implemented at different rates?*

### Research Questions

1. What is the nature of public sector innovation within the context of ICT i.e., how is e-government carried out?
2. How do rationales of public sector innovation influence the implementation of e-government?—how and what group of actors were influential in the decision-making process?
3. What are the factors that hinder innovation in the public sector?
  - a. How has early use of IT shaped innovation in e-government?
  - b. What are the structures required for innovation?
  - c. How have aspects such as management capability, culture and change management affected the process of innovation?
  - d. Why is the formulated policy not implemented?
  - e. What forms of partnership with the private sector promote innovation in the public sector?

The core of the study is based not only on the question of ‘what is happening?’ but also ‘is this what is expected?’ and ‘why is it happening as it is?’ Therefore, this will explain ‘what is happening in the Pakistan’s e-government and why?’

### Types of Public Sector Innovation

Although the topic of innovation in the public sector has received increased attention only recently, it does not imply that there has been no innovation being practiced before. In fact, innovation has been tried and tested in the public sector using various models and principles, which were mainly influenced by experiences from the private sector. For example, new public management (NPM) was implemented with the core tools and ideas borrowed heavily from the private sector in order to fix the issue of inefficiency in the public sector. The main types of public sector innovation are outlined below:

- a. Management Innovation—e.g. New Public Management (NPM) and good governance.
- b. Accountability and transparency—e.g. performance management, programme budgeting, and citizens focus.
- c. Policy—e.g. changes in policy formulation and implementation.
- d. Good fiscal management—e.g. budget reforms, output-oriented systems, accrual accounting, capital charging, competitive tendering and contract monitoring.
- e. Regulatory change—e.g. deregulation and simplification.
- f. Devolution and decentralisation—e.g., reallocation of responsibilities from central to local authorities, ‘mixed’ type of public institutions appeared such as quasi-public and quasi-private and privatisation.
- g. Partnership—e.g., contracting out, market testing, public-private partnerships (PPPs), joint-venture, more consultations and interactions with the citizens.

- h. Organisational—e.g., horizontal integration to avoid silos and promote information sharing among government agencies, more empowerment to employees, recognising achievement of staffs, new recruitment practices, flexible staffing and emphasis on leadership.
- i. Service Improvement—e.g. more responsive, 24/7 services and personalised customer services.
- j. Research and development—e.g. creating a strategic centre, creation of incubation centre and cooperation with educational institutions and private sector.
- k. Harnessing ICTs—electronic e-government, business process re-engineering for back and front office operations, citizen portal, e-enabled, e-democracy, and e-business.

*Source:* IDeA (2005, pp. 8-9).

The types of innovation shown in the above figure have been given more prominence at different times, some are top-down politically driven and some are driven by technological change i.e. ICT driven.

According to IDeA Knowledge (2005), innovation in the public sector has not been featured as a critical determinant of survival as it is operating under a different set of pressures, interests, restrictions and demands. Furthermore, it added that the incentive to innovate for public sector organisations and their employees has been low and the risk associated with the innovation is high. As such, innovation is not deemed a high priority in the public sector but circumstances today has made innovation a must and no longer a luxury choice.

The public sector is a large organisation that consists of a complex system of operations, a variety of actors and cultures, different set of interests and a variety of stakeholders' expectation to be met. A private organisation is concerned only with perhaps one mission, one market, and specific customer requirements but is strongly engaged in innovation.

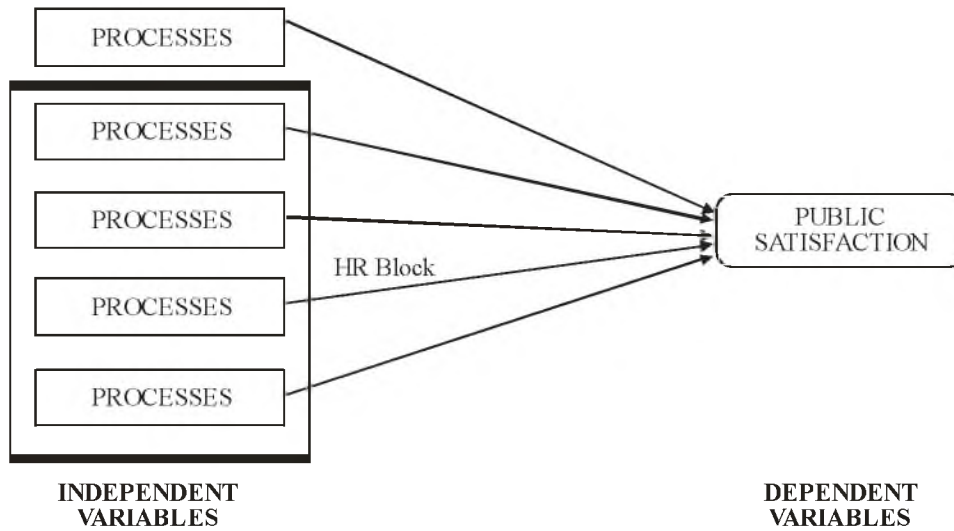
The last twenty years or so, however, have seen a growing realisation among policy-makers on the importance of public sector innovation. It could be highly valuable for studies of public sector reform to look from a new perspective, i.e., innovation, to recognise and understand better the complexity of managing change in the government.

### **THEORETICAL FRAMEWORK**

In this research study, there is only one dependent variable; the public satisfaction which is the outcome of number of variables, that one is trying to predict and explain. For example, if a study is done to determine how one know that people are more/less satisfied with one service provision of public sector organisations than others, public satisfaction is the dependent variable, that is, how much do people trust the provincial government to do the right thing most of the time?

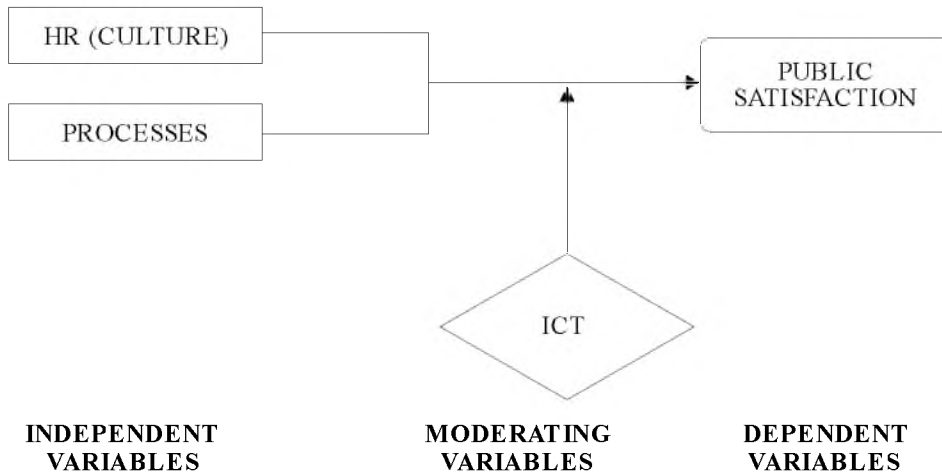
The independent variables, also known as the predictor or explanatory variables, are the factors that explain variation in the dependent variable as shown in Figure 2. In other words, these are the causes of the outcome. For example, people can be more satisfied with service provision of public sector organisations if government departments

**Fig. 2. Variables of e-Government**



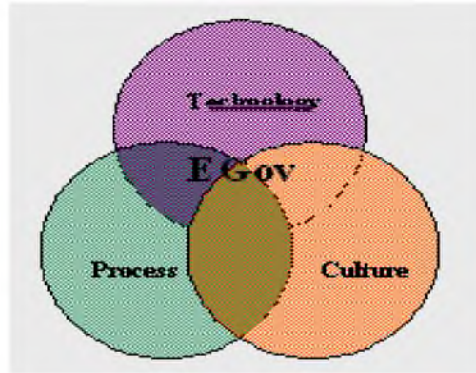
use ICT to innovate processes bring visibility and become accessible. So ‘processes’ are the independent variables, and ‘public satisfaction’ is the dependent variable whereas ICT can be considered as moderating variable. This is shown in Figure 3:

**Fig. 3. Dependent, Moderating and Independent Variables of e-Government**



**RESEARCH AIM**

This aim of this research study is to focus on the use of ICT for public sector innovation. In this scenario, it is building a new platform (model) for government to be based on three pillars making it extremely sturdy structure and difficult to tip over as shown in Figure 4. It can also be called as overlapping circles diagram which show the major actors of e-government.

**Fig. 4. Three Pillars Platform (Model) for Government**

### RESEARCH OBJECTIVES

Three objectives are set for this research

1. *Process innovation* for improving the productivity of government.
2. Change in the *culture or behaviour* of those doing the work.
3. Use of *Information and Communication Technology* to facilitate implementation of both of these changes.

All three pillars need to be present for improving the government effectiveness. Take away any one and the structure will fall over. For instance, changing work processes and culture without using ICT can produce less than optimum results. Using ICT to enable process innovation leads to disappointment with the outcomes when the culture prevents the changes from taking effect. And using ICT and cultural change programmes only ignores the need to shift work processes from a top down orientation to one that focuses on customers and workers. Finally, we would enable these changes and improve citizen trust in government by using information technology to innovate process of government departments to make it much more transparent, quick and less time consuming.

### E-GOVERNMENT PROJECTS AS A CASE STUDY

In February 2005, Electronic Government Directorate (EGD) took the responsibility for automation of the Hajj Wing of the Ministry of Religious Affairs Government of Pakistan, wanted to make it a single point of access for all major services, from registration, data verification, group formation, balloting and selection of applicants, automatic printing of Hajj passports, to tracking and search of pilgrims and their luggage, from scheduling to confirmation/changes of flights for pilgrims during the Hajj.

#### 1. Hajj Process Before Automation

A number of standalone sub-systems were developed by the Computer Cell of Ministry of Religious Affairs, to facilitate citizens and other stakeholders of the concerned departments, regarding tracking of pilgrims during the Hajj. During Hajj, there was not any automated coordination among different agencies like Banks, Airline



companies, DG offices at Jeddah and Hajji Camps in Pakistan. Furthermore, data was not provided by these agencies electronically for planning and performance measurement of Hajj activities. Thus, Computer Cell of Ministry of Religious Affairs had to feed data of all the Hajj Applicants manually. In old procedures, tracking of luggage of Pilgrims, transportation and flight scheduling of deceased pilgrims and most of the Post-Hajj processing was done manually.

### **Objectives for Automation of the Process**

e-Services to be provided by the Ministry of Religious Affairs' website include Registration, filling in of Hajj applications by citizens, dissemination of information regarding selected candidates through ballot, their group name/code, flight schedule. In same way, information about pilgrims' luggage and deceased/sick pilgrims must also be made available on the website. Availability of updated information 24 hours a day and 7 days a week, real-time *update* of status of pilgrims during the period of Hajj must be available. The status of pilgrims can be updated from any authenticated terminal within and outside Pakistan i.e., from Hajji Camps and from offices of Directorate General Hajj (DGH), Jeddah, Mecca or Medina etc. Update of status of the pilgrims will be done through a *secure, reliable* and *efficient* manner after proper *authentication* and *authorisation* of the requesting terminal. However, the dissemination of information will be done through a simple and easy-to-use interface provided to pilgrims and their relatives on the Hajj website.

## **FINDINGS**

Government of Pakistan is spending millions of dollars on e-government projects. In the end, spending all amount, achieving all milestones on papers and getting hardly 40 percent results due to deficiency of skilled manpower. However purchasing all kind of hardware but not able to develop user-friendly software.

### **1. A Case Study of e-government Projects in Balochistan**

*Needs assessment process can help policy-makers;*

To know the ICT perception of people; assess ICT infrastructure and availability;

To see public opinion about e-government challenges and set the priorities according to their needs;

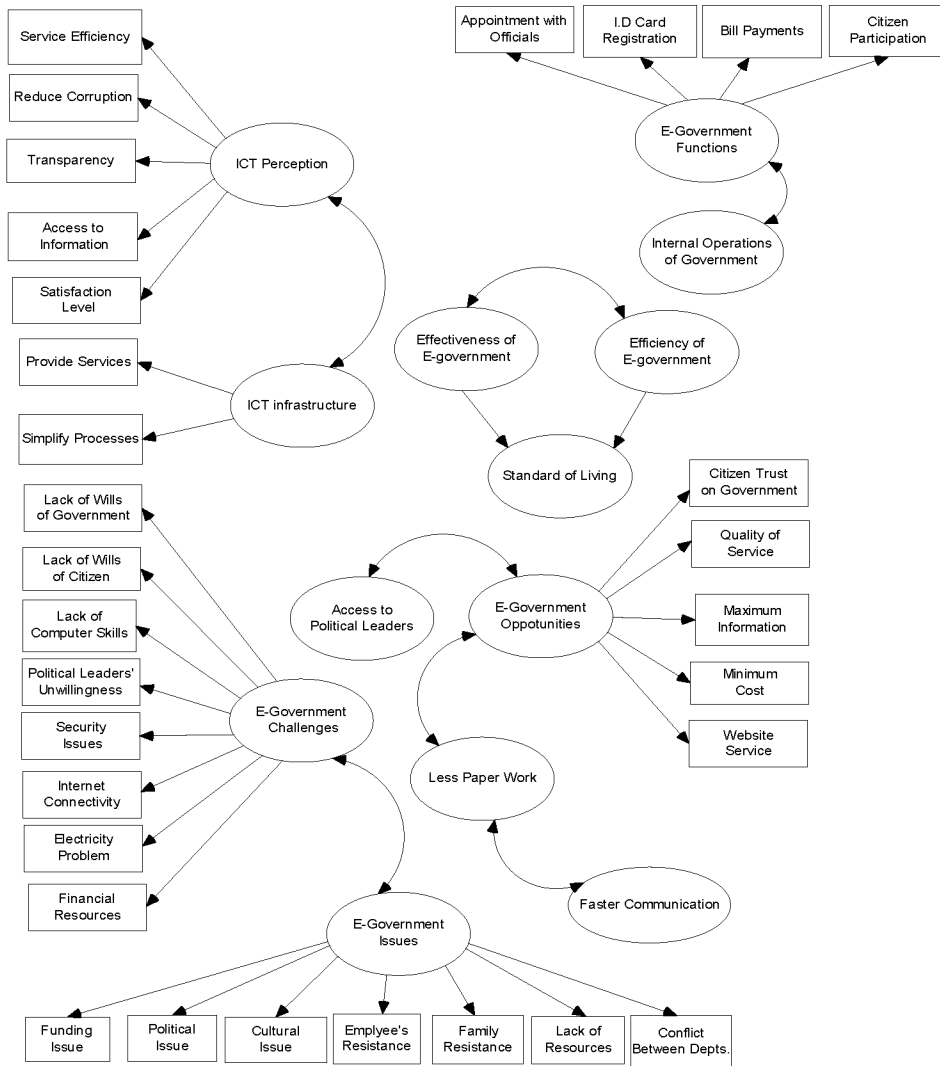
Systematically evaluate e-government functions/services and planning for improve productivity of government departments;

Provide justifications or explanations for budget and grant requests; improve standard of living and citizen trust on government departments through public sector innovation;

Build an increased citizen participation and give them access to information, and develop a greater "sense of ownership" through public involvement;

Empower the citizen, give them access to "Political Leaders" through e-services and examines the e-government issues as shown in Figure 5.

**Fig. 5. Factors Involve in Policy Making of e-Government**



**Government of Balochistan; Departments Overview—  
Discussions/Interviews Based**

Quetta, Ziarat, Loralai and Lasbela were visited to conduct District level meetings in order to carryout e-Governance need assessment survey. Author visited provincial government departments such as IT, Health, Education, Social Welfare, Local Government, Livestock and etc. and to follow the Peshawar/Karachi e-government model and study their land reform system. Also, visited Rural Development Authority, had a meeting with Director and Instructor, visited Karachi, Peshawar and studied their success stories and possibility to replicate it in Balochistan as well.

### **Balochistan Public Service Commission**

Balochistan Public Service Commission announced 12 vacant positions for District Officers (IT) BPS-18 but able to hire only 4 people, now commission wants to relax the criteria to hire the officials at BPS-17 level.



### **Agriculture Department**

Agriculture Policy and Agriculture Water Management System must be put online for information of the farmers/agriculturists; similarly website must be developed to highlight its three essential components:

1. Research;
2. Agriculture engineering; and
3. Facilities extended by the agriculture secretariat.

### **Education Department**

BEMIS—Balochistan Education Management Information System established in 1990. BEMIS data is use by decision makers and planners. Normally, they were required to collect data twice a year in the month of April and October but they have been collecting in the month of October only because of financial constraints. They used to collect data from 11895 schools annually. Education department was interested to update the BEMIS and put the data online to make it available for public.

### **Finance Department**

New account model, aided programme, offered one week training that was not sufficient; the government policy must be made available on website; letters being sent to remote areas which take more than a week to reach its destination; there is contradiction in the figures given in files and net that must be the same; the budget preparing process starts in the month of March and takes four months to its announcement but within next 15 days the policy revealed to be changed which shows inefficiency of preparing budget process.

### **Educational Institutions**

In Balochistan, about 1500 computers were distributed in 95 schools, approximately 10–15 computers in each lab of each school; it is observed that headmasters of most of the schools kept the computers locked in the lab because of non-availability of computer instructor and fear that students will wrongly handle the computers and spoil them. The computers became obsolete and useless as it remained unused by the students during the last four years. The purpose of provision of computers was not achieved.

### **Higher Educational Institutions**

In the Khuzdar Engineering University, data computer lab was established with the expenditure of rupees 25 million provided by HEC that was shown to be burnt out within few months without any apparent evidence of fire. If this incident is proved to be true, one may conclude that some segment of society may not welcome advancements in IT literacy or have some vested interest in such negative actions.

### **IT Institute Quetta and Rural Development Authority**

About 450 government officials got IT training, out of them only 250 was able to pass the exam in the IT Institute of Quetta. Rural Development Authority is facing financial constraints; the staff was never provided facility for foreign training to enhance their capability for use in the department; the local training programme is not functioning properly because of limited promotion chances for training instructor, moreover, training equipment is not available; to meet the requirement, to some extent computers, networking and DSL connections may be provided.

### **District Quetta**

In the Quetta District, IT department furnished data based forms to the 9700 employees to fill and return to the department for statistical analysis but only 2000 employees responded to return the forms in a year which show unsatisfactory response.

### **District Lasbela**

DCO Lasbela confirmed that ten IT centres exist with the facility of website at district level on website: [www.districtgovtlasbela.com](http://www.districtgovtlasbela.com) which provide training to the interested students in Lasbela. The online exam software has been developed and being used successfully. In addition for Tehsil High Schools, IT training labs have been established including development of IT vision 2010.

Jam Kamal Yousaf, son of former Chief Minister and Nazim District Lasbela while using advanced techniques/methods as a practice sent his recommendations to the concerned department through email and in this way he solved problems efficiently with speed and minimum cost.

### **Short Questions Based Recommendations**

In response to the questioner, recommendations for provision of computer hardware and software, training facility, and human resource development were made.

The availability of computers in government offices with connectivity of internet must be ensured. Basic introductory workshops about the computers for the people should be conducted. The duration of the computer training should be at least of one month to train maximum number of persons.

Adequate provision of funds and resources should be ensured. e-Government directly depends on the availability of electricity and trained/skilled persons because without these two essential requirements, will not solve the problems and expected results would not be achieved. e-Government provides good interaction between public and private organisations with quick response and coordination amongst these important entities.

### **Officials Views/Suggestions**

An official suggested that computer skilled employees working in low scale must be given promotion to motivate all officials to get computer training.

All the tender notices for provision of goods / material / equipment and construction of government buildings, labs, roads, bridges, etc. should be put on website for transparency of awarding the contracts.

Recommendations by an official that schooling at nursery level be started with the provision of computers; need to link the government departments with internet and field offices as well. He observed that education level was low and did not have computer skills.

E-mail service must be recognised as a legal document and ratification should be done for the purpose by the government of Balochistan.

The domicile certificate should be issued on the basis of computerised system linked with the NADRA to route out unauthorised/illegal issuance of the certificates.

### **Data for Web Portal**

Data relating to ongoing, under process projects, developmental activities of the department, personal CV of its officers, developmental/non-developmental budgets, district government plans and its budgets, provincial plans for next 5-10 years, information of budget, furniture, equipments etc. in any office, training module, training calendar of each institution, training curriculum for each training course/centres, list of resource persons and their specialisation, basic information of Local government, HMIS data, disease data, health staff data, new information about diary farming, poultry farming, livestock management, information about slaughter houses, number of existing tube wells, about modern technique regarding agriculture and food and contact numbers of all the officers should be available on website of the Government of Balochistan. Newly created Prosecution department should be made available online. In a single click of mouse, all information about relevant departments would be available.

## **OPERATIONAL ISSUES**

Financial, law and order, lack of qualified manpower in IT sector and lack of incentives for IT experts in government departments and frequent transfer are the major issues in ICT at provincial and district level.

## **RECOMMENDATIONS**

### **Provincial Level**

Results of “Need Assessment Survey” showed that in Balochistan very limited people have the access to Internet whereas in some government departments position is better but most of the employees does not have computers in their rooms. They are using dial-up connection. In civil secretariat; P&D, Finance and IT departments are comparatively better than other departments in the availability of computers and networking.

Government employees are optimistic and willing to work in paperless environment. At the initial stage, automation of civil secretariat should be started as pilot project from IT department, after that link with other departments be established in a period of three years. In this regard, there remains a need to replicate the software which is in use at Provincial level in Sindh government departments in Karachi. Also, need to adopt policy of ‘one official one computer’.

### **District Level**

No study has been carried out at district level. There are indication that most of government institutions are not having access to computers at district level but few districts are better due to support of United Nations and some other international organisations. It would be useful to take the Lasbela city as the pilot project, integrate DCO Office and other departments and later on replicate it in other districts. It would be better to bound government to not transfer DCO during the implementation phase of the project.

### **Participatory Information System (PIS)**

It is very essential element of service innovation. It provide a very comprehensive socio-economic picture of community, it would be better to put PIS data online and later on replicate it in other districts in Balochistan (see Annex–A).

### **Land Record Computerisation in District Quetta**

Land is the most valuable asset of humans being. It is also an important asset of any country. Without land, there can be no county. Moreover, the wealth of a nation and its economic development are dependent on the state of the land and its usage. The availability of funds depends on tax collection. It is apparent, therefore, any information concerning land is valuable information which serves as a key to financial investment, commerce, industry and agriculture. Therefore, making land rights secured, reducing the potential for disputes and enabling an improved investment climate are urgent tasks as part of public sector innovation and have been prioritised at the highest levels of the government. One of the key elements of this agenda is to improve the revenue record system. There is a very keen political commitment in making hassle-free services available to the citizens and, at the same time, diminishing the scope for litigations and land-related disputes.

China did lot of work on land record information system. Senior Revenue Officer should send to study China Land Record Information System. IT Directorate of Peshawar is also working on Land Record Computerisation, if possible it be replicated as pilot project in Quetta district level. Also, it is necessary to established IT cell in the department of Board of Revenue, Government of Balochistan.

### Advisory Committee

Advisory Committee under the supervision of Governor of Balochistan should be established in order to monitor the implementation of e-government projects. Advisory Board/Steering Committee should be composed of 10-15 individuals representing a variety of community interests, including the government departments, CBOs, NGOs, public representatives, etc.

### Automation of Driving Licence and Other Government Services

In Peshawar, automation of driving licence improves government revenue from 3 lac to 44 lac per months so it can be considered as best practice and replicate it in Quetta.

### Health Management Information System (HMIS)

In the last 2 years, there is not a single output. There is deficiency in reliable data. Foxpro software is used for HMIS which is out dated now.

### Balochistan Education Management Information System (BEMIS)

It has deficiency in reliable data and need to put all data online. Secondary data can be collected through EDOs, counter check can be done through collection of primary data. These data should be available on website for public.

## SWOT ANALYSIS

In this section, the challenges of public sector innovation for Pakistan as a developing country is analysed.

Table 1

### External Strategic Factor Analysis Summary (EFAS)

External Strategic Factors	Weightage/ Importance	Relative Rating (Scale 1-5)	Weighted Score	Comments
<b>Opportunities</b>				
e-government	.20	4	.80	Public Sector Innovation
Access to information	.05	3	.15	Transparency
Connected government	.05	2	.10	Seamless/fast communication
IT education/skills development	.10	4	.40	Knowledge worker
Poverty reduction	.10	2	.20	Bridging gap
<b>Threats</b>				
Dependency on technology	.10	2	.20	Load shedding / system down
Piracy, plagiarism	.10	3	.30	Misuse
Brain drain	.10	3	.30	Skilled worker highly paid by developed country
Privacy	.05	2	.10	Hacking
Corruption	.15	3	.45	Viruses
Total	1.00		3.00	

Table 2

*Internal Strategic Factor Analysis Summary (IFAS)*

Internal Strategic Factors	Weightage/ Importance	Relative Rating (Scale 1-5)	Weighted Score	Comments
<b>Strengths</b>				
Everything is new: no negative legacy	.10	3	.30	Leapfrogging possible
Internet as a pull factor	.05	3	.15	ICT is facilitator
e-government projects	.15	5	.75	Service Innovation
Technology diffusion	.10	3	.30	Linked departments / transformation
Transparency in process	.10	4	.40	Simplification/improvement
<b>Weaknesses</b>				
High cost of projects	.15	3	.45	Limited Internet access
Lack of IT standards	.10	3	.30	Lack of cyber laws
Skill shortage: literacy rate	.10	4	.40	IT literacy/limited access to IT facilities
Language barrier/Software license	.05	2	.10	70 percent cannot utilise information
Deficiency in software development	.10	2	.20	Wastage of funds/not getting desire results
Total	1.00		3.35	

Above rating is given on the basis of observation and survey where 1 (poor) and 5 (outstanding). According to above analysis implementation of e-government projects are at satisfactory level in Pakistan but still we are not getting desire results.

Computerisation in Government departments is not just a matter of installing hardware, buying relevant software, or setting up of Networking is also important for public sector innovation. Whereas in order to reap its benefits, its users i.e., the Government, Citizens and Business have to be e-ready to skilfully exploit the opportunities provided to them.

### CONCLUSION

The public sector innovation and its impact on the society have been experienced all over the world. IT has influenced every aspect of human life, be it trade, services, manufacturing, government, education, research, entertainment, culture, defense, communications etc. It has undoubtedly become the determinant of progress of nations, communities and individuals.

Information Technology as a tool provides tremendous opportunities for Pakistan especially its province Balochistan to overcome its historical disabilities and leapfrog (by compressing time) concept can be used to attain a position of economic strength.

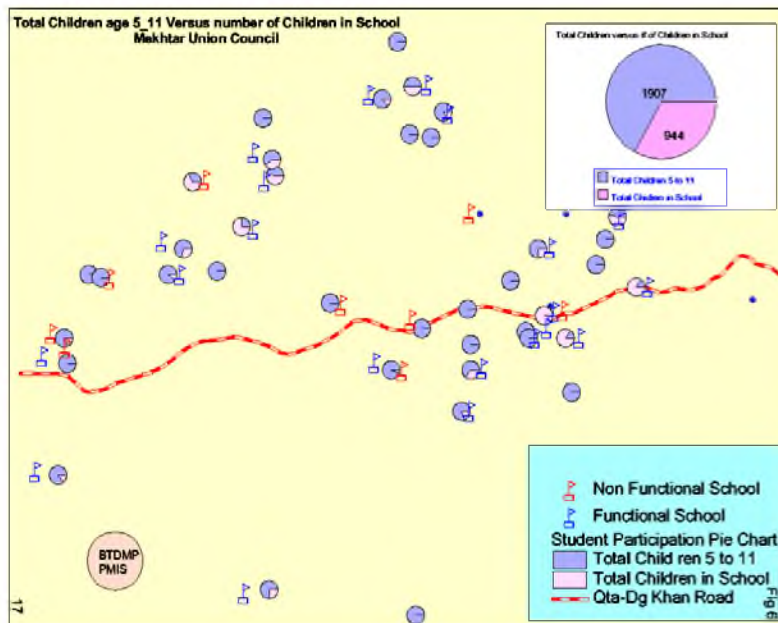
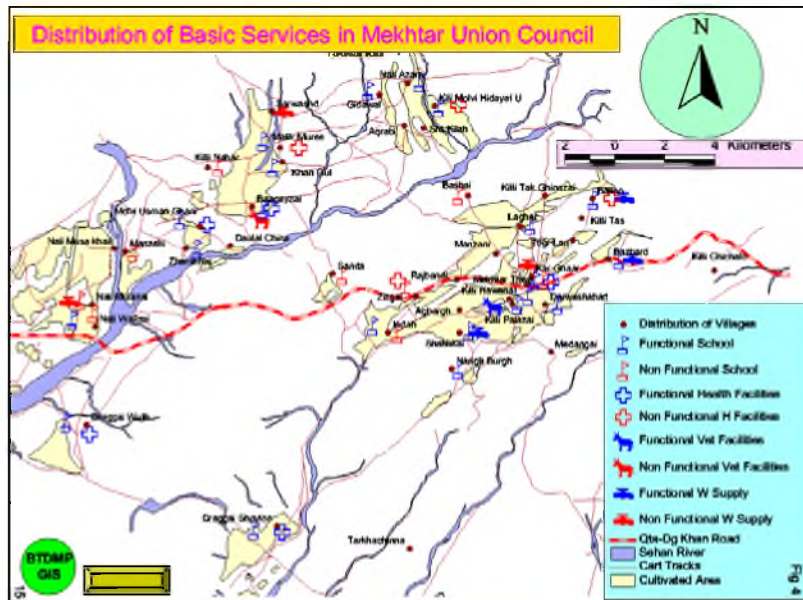
Recognising the power of ICT, Pakistan can promote it as a way of helping businesses improve efficiency, create jobs and reduce poverty. ICT has already shown its potency in increasing the productivity and effectiveness of public sector organisations. The use of ICT is fundamental to linking government organisational functions. It can form the base for management a technology environment. The ultimate test is whether governments of Pakistan can use e-government as a technology to operate more efficiently, to design and implement better policies, and to provide programmes and provide services more effectively or not.

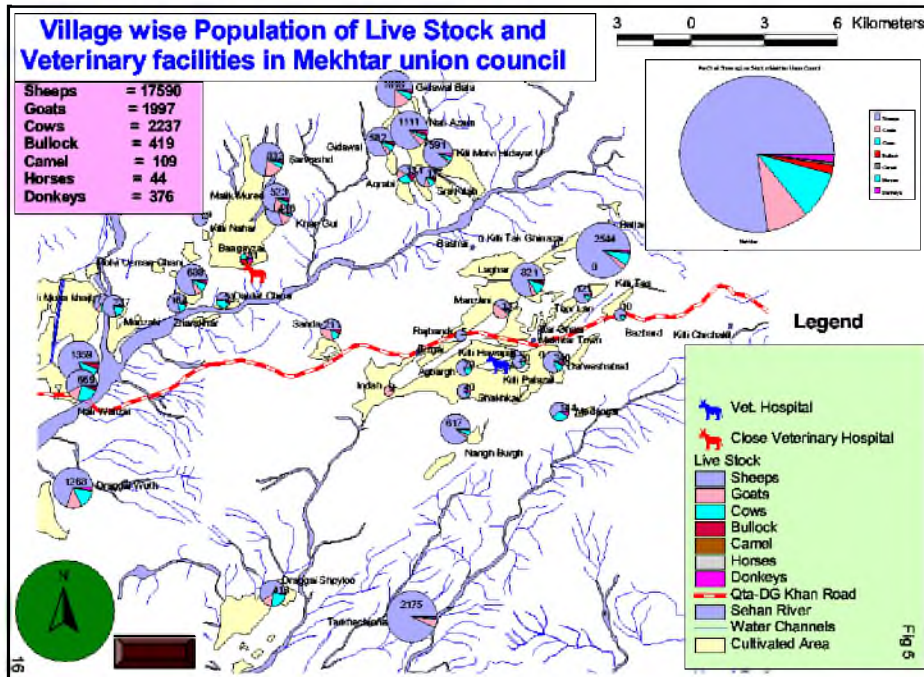
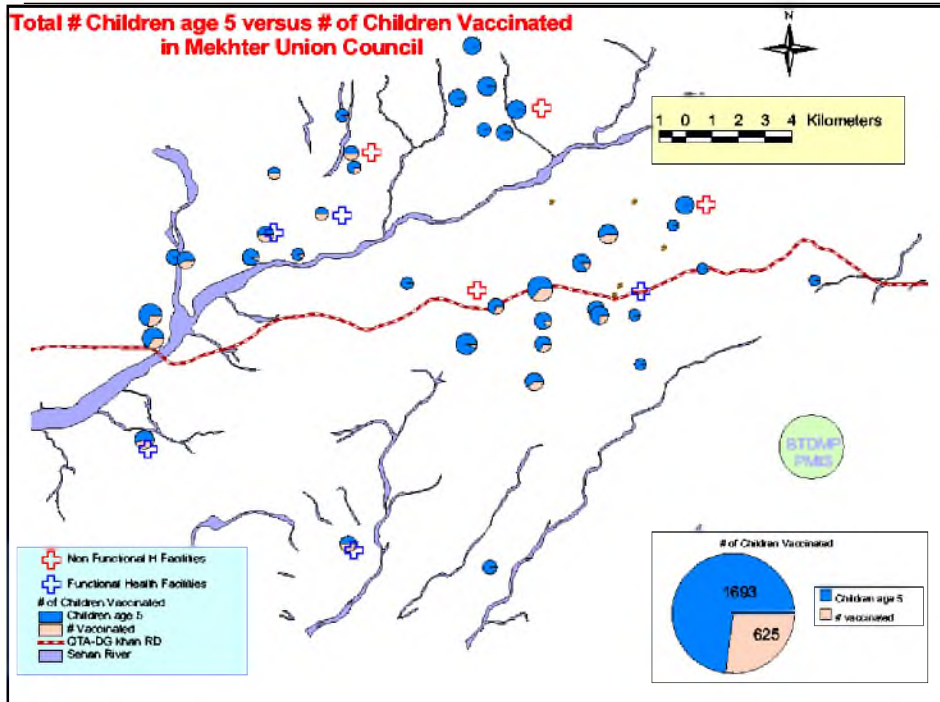


The recommendations put forward by the officials quoted are very relevant and suitable for integrating ICT in its normal process.

*Annexure A*

**Participatory Information System: A Decision Support System to help Decision Makers in Monitoring, Planning and Implementation of Public Services**





## REFERENCES

- Arfeen, M. I. (2009) *Government of Balochistan: Provincial and District Level e-Governance Need Assessment Report*. AGRP-B, UNDP, Islamabad.
- Eggleston, Karen, Robert Jensen, and Richard Zeckhauser (2002) Information and Communication Technologies, Markets, and Economic Development. In *The Global Information Technology Report 2001-2002: Readiness for the Networked World*. New York: Oxford University Press.
- Electronic Government Directorate (2005) *Automation of Hajj Wing of the Ministry of Religious Affairs*. Islamabad.
- Fagerberg, J. (2005) Innovation: A Guide to the Literature. In J. Fagerberg, *et al.* (eds). *The Oxford Handbook of Innovation*. Oxford: Oxford University Press. 1–26.
- Hartley, J. (2006) *Innovation and its Contribution to Improvement: A Review of Policy Makers, Policy Advisors, Managers and Researchers*. May, London: Department of Communities and Local Government.
- IDEA Knowledge (2005) *Innovation in Public Services: Literature Review*. Retrieved: October 20, 2009 from <http://www.idea.gov.uk/idk/aio/1118552>
- Leitner, Ch. (ed.) (2003) *e-Government in Europe: The State of Affairs*. European Institute of Public Administration, Maastricht, Holandsko.
- Metcalf, S. and I. Miles (1997) *Services: Invisible Innovators*. Paper presented at the CSLS Conference on Service Sector Productivity and the Productivity Paradox, April 11-12. Canada. PREST and CRIC, University of Manchester.
- OECD (2005) *Oslo Manual: Guidelines for Collecting and Interpreting Data. The Measurement of Scientific and Technological Activities* (3rd edition.). A Joint Publication of OECD and Eurostat. Retrieved: October 20, 2009 from [http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/OSLO/EN/OSLO-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/OSLO/EN/OSLO-EN.PDF)
- Schumpeter, J. (1934) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. Cambridge, Massachusetts, Harvard University Press.
- Schumpeter, J. (1939) *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. Vol. 1. New York: McGraw-Hill.
- United Nations (2008) *e-Government Survey 2008 From E-Government to Connected Governance*. Department of Economic and Social Affairs, Division of Public Administration and Development Management, New York.
- UNKB (Nations E-Government Development Knowledge Base) (2010) *e-Government Survey 2010*. Department of Economic and Social Affairs, Division of Public Administration and Development Management, New York. Retrieved: January 15, 2010 from <http://www2.unpan.org/egovkb/profilecountry.aspx?ID=128>
- World Bank (2000) *Entering the 21st Century—World Development Report*. Oxford University Press.