

Evaluating Government ICT Policies: An Extended Design-Actuality Gaps Framework

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INTRODUCTION

The issue of gaps between ICT policy design and their outcomes is the subject of debate in academic research on information systems in developing countries. This paper extends the *design-actuality gaps* (Heeks, 2002) framework to provide a theoretical foundation for the evaluation and analyses of the gaps between government policy design and actual outcomes of the implementation of these policies. The design-actuality framework has traditionally been used in understanding success, failure and local improvisations of information systems in developing countries (Pozzebon and Heck, 2006; Gerhan and Mutula, 2007, Best and Kumar, 2008). This framework has also been used to explain success and failure of specific government projects (Gichoya, Hepworth, and Dawson, 2006). This research extends the framework to develop a theoretical foundation for government ICT policies evaluation and analysis.

Several developing nations are dealing with typical ICT issues such as lack of appropriate products, cost of ICT devices, education, local language content, human resources and robust regulatory framework for ICT growth (POST, 2006). In order to overcome these challenges, governments in developing countries are designing and adopting ICT policies and action plans. The policies and action plans are important tools for governments in developing countries in attracting foreign investments (UNCTAD, 2009). The lack of a theoretical foundation in making and adopting these policies often results in gaps among policy design and actual outcomes and effectiveness of policy implementation. The challenge of theoretical basis hinders developing

countries in learning from gaps between policy design objectives and actual outcomes. The research presents an extended design-actuality framework within the context of evaluating government policies for ICT growth in a developing country, namely Pakistan. Since, Pakistan is a developing country, lessons learned from the evaluation of government ICT policies and ICT growth will be valuable and significant for other developing countries.

LITERATURE REVIEW

The literature on policy evaluation prescribes several evaluation methods to discover "*best practices*" in government policies (Mann and Schweiger, 2009; Gibbons, 2008; Rossi and Freeman, 1993; Shadish et.al., 1991; Berk and Rossi, 1990). The policy evaluation process can be prospective, *i.e.*, *ex ante*, monitoring studies and retrospective, *i.e.*, *ex post*, (Becher and Kuhlmann, 1995). *Ex ante* policy evaluations are done for outcome estimation and alignment of goals, objectives and action plans associated with the policy. Monitoring studies support policy implementation and make changes to the policies if necessary. *Ex post* evaluations focus on analyzing actual outcomes of the policy and provide subsequent legitimacy to policies. The purpose of these policy evaluation processes is to find out "*what works and what does not*" in the policy design and implementation process. This problem is indicative of the lack of theoretical foundation in policy evaluations. The extent of recent research on ICT policy evaluation is limited to the identification of successes and failures of national ICT policies in several countries (Olsson, 2006; Samarajiva and Zainuddin, 2008; Gao & Rafiq, 2009). The categorization of ICT policies into successes and failures without critical theoretical grounding runs into problems of evaluation subjectivity: a failure for one person could be success for another, and evaluation timing: today's success might be tomorrow's failure (Heeks, 2002).

The *design-actuality gaps* framework (Heeks, 2002) recognizes the existence of partial successes, where some of the information systems objectives were met, but not all. For an objective evaluation of the information systems in developing countries, the evaluation of success, failure and local improvisations can be done across seven dimensions of design and actuality, *i.e.*, information, technology, processes, objectives and values, staffing and skills, management systems and structures, and other resources. This framework has been used in several research publications (e.g., Gichoya, Hepworth, and Dawson, 2006). We approach the identification of dimensions from two perspectives in this research. (a) The dimensions of *design*

derived from grounded theory analysis of government policy and action plan documents, (b) The dimensions of *actuality* derived from interviews and focus groups with citizens. These dimensions are further informed by the insights from interviews with officials who made or influenced government policies. Since the dimensions of *design* and *actuality* are derived from two different perspectives, any differences in the *design* and *actuality* dimensions depict dimensional gaps (i.e., a dimension of *design* might not be a dimension of *actuality* and vice versa). For each dimension of *design* and *actuality*, elements of the dimension are identified. The concept of *elements of dimension* is important in the sense that it breaks down each dimension into measurable pieces. Any differences in the elements of *design* and *actuality* allow for further depth in understanding the gaps. Since the elements of each dimension of *design* and *actuality* are derived from two different perspectives, any differences in the elements of *design* and *actuality* dimension depict elemental gaps (i.e., *elements of design dimension might not be identical to the elements of actuality dimension*).

RESEARCH METHOD

In order to develop a better understanding of design-actuality gaps in government ICT policies for ICT growth, two different types of data sets are selected to represent *design* and *actuality*. The *design* is understood in terms of government policies and action plans for ICT growth. A grounded theory approach is used to identify dimensions of *design* from ICT policy and action plan documents. The *actuality* is understood in terms of citizens' perspective of ICT in their lives. A grounded theory approach is also used to identify dimensions of *actuality*. A total of 54 officials who played an integral role in developing ICT policy were interviewed. These interviews were supplemented with the careful analysis of policy documents such as IT policy and action plan, telecommunication deregulation policy, broadband policy, and Cyber Law of 2007 among others. To understand citizen's perspective, qualitative data were collected from 46 citizens. The two perspectives were evaluated for the identification of gaps. The interviews were done in four languages: English, Urdu, Punjabi and Siraiki. Most interviews were recorded on video tapes. These interviews were digitized (by video capturing which transfers video from a tape cassette to computer hard drive) and imported in a qualitative analysis software package, NVivo 8.0.

DIMENTION OF POLICY DESIGN

Dimensions of policy design were discovered from the analysis of qualitative data collected from officials who were instrumental in policy formulation during 1999-2007. These interviews were supplemented by the review and analysis of policy documents released by the government of Pakistan during 2000-2007. The analysis is give in Table 1.

Identification of categories of codes and Themes from ICT policies, action plans and related government documents						
<i>Dimensions</i>	<i>HR Development</i>	<i>E-Government</i>	<i>Incentives</i>	<i>Legal Framework</i>	<i>Industry Development</i>	<i>ICT Use</i>
Elements of Design Dimensions	National accreditation and testing services	IT in Government	Incentivizing IT investments	Telecom convergence/deregulation	IT market development	Broadband internet growth
	Training Programs	Government Databases		Recognition of e-records	Software industry development	
	Scholarships and non-binding loans	Standards Development	Venture capital	Digital signatures	Software Exports	E-Commerce
	Foreign Faculty Hiring	Data Sharing among agencies	Microcredit	Intellectual property rights	Hardware industry development	
	Online libraries			Cyber laws		

DIMENSIONS OF ACTUALITY

Interviews with citizens were used to identify dimensions of actuality as they understood the value delivered by the spread of ICT throughout the country. Table 2 provides qualitative analysis of interview data.

Identification of categories of codes and themes from interviews/focus groups with citizens, interviews with policy making/influencing officials						
<i>Dimensions</i>	<i>HR Development</i>	<i>E-Government</i>	<i>Impediments</i>	<i>Legal Framework</i>	<i>Industry Development</i>	<i>ICT Use</i>
Elements of actuality dimensions	National accreditation and testing services	IT in Government	Corruption	Telecom convergence/deregulation	Ignored Hardware Industry	Broadband Internet growth
	Training Programs	Government Databases	Taxes	Cyber laws		
	Scholarships and non-binding loans	Standards Development	Government Business Processes		Intellectual property rights	Software Exports
	Foreign Faculty Hiring	Data Sharing among agencies				
	Online libraries					

DISCUSSION AND ANALYSIS OF EXTENDED DESIGN-ACTUALITY GAPS

The analysis shows significant design actuality gaps where design objectives were not met at all or were partially met. Table 4 shows the extended design-actuality gaps for government policies and actual ICT growth within the context of this research. In some cases, the elements of different dimensions did not match up between *design* and *actuality*. For example, recognition of e-records and digital signatures that were identified as elements of legal framework in *design* dimensions did not appear as elements of legal framework *actuality* dimension.

Several dimensions of *design* did not appear in *actuality* and some could have been executed in a better manner. The following analysis of the *design-actuality gap* has lessons for developing countries that need special attention in the development and execution of ICT policies, plans and strategies. The purpose of this analysis is not to paint a rosy or a gloomy picture; but to identify missed opportunities, so that future plans can cater to these shortcomings, and policymakers in other countries can learn from them. Table 3, shows elements of this dimension of *design* that depict plans and objectives in the ICT policy.

CAUSES OF GAPS

The gaps identified in the previous section are opportunities that developing countries can capitalize on for an increased role of ICT in reducing ambiguities in government and business transactions with citizens and customers. This section provides a discussion of the causes of gaps identified in this paper. These causes are identified from the qualitative analysis of the interviews with citizens and government officials.

There are several reasons for the existence of gaps between policy design and actuality. Most of these gaps come from the issue of subjectivity in evaluating the gaps, e.g., consumer rights, business interests and government interests. Depending upon the point of view, significance of the gaps might change. It is therefore important to identify these gaps from multiple perspectives that might help in reducing these gaps. The synergetic effect of focus on the interests of different perspectives helps ICT growth in developing countries. This discussion and analysis has implications for policymakers and encourages them to design policies that assure consideration for different types of interests.

Table 3: Extended Design-Actuality Gaps Across Identified Dimensions*		
Elements of Design (from public policies)	Elements of Actuality (from Interview data)	Gaps
HR Development		
National accreditation and testing services	National accreditation and testing services	Limited scope; testing services to find scholarship recipients remained active for four years but scholarship funds no longer available
Training Programs	Training Programs	Limited success; Plans to establish seven IT universities shutdown in 2008
Scholarships and non-binding loans	Scholarships and non-binding loans	Funding is no longer available; no implementation of non-binding loans
Foreign Faculty Hiring	Foreign Faculty Hiring	Funding became scarce; no longer active
Online libraries	Online libraries	Implemented but use is limited
E-Government		
IT in Government	IT in Government	Isolated success stories; overall use of IT in Government is limited
Government Databases	Government Databases	Isolated success stories; overall use of Government databases limited
Standards Development	Standards Development	No notable implementation
Data Sharing among agencies	Data Sharing among agencies	No notable implementation
Incentive		
Incentivizing IT investments		Limited and vanishing incentives
Venture capital		No Implementation
Microcredit		No Implementation
Impediments		
	Corruption	Bribes in setting up and execution of private sector business
	High Taxes	High sales, activation and corporate taxes levied on ICT industry.
	Government Business Processes	Complicated government businesses processes; inter-agency coordination
Legal Framework		
Telecom convergence/ deregulation	Telecom convergence/ deregulation	Deregulation successfully completed; lack of focus in evolving regulations
Recognition of e-records		Limited discussion; No Implementation
Digital signatures		Limited discussion; No Implementation
Intellectual property rights	Intellectual property rights	Limited discussion; No notable implementation
Cyber laws	Cyber laws	Cyber law passed in December 2007; limited awareness/implementation
Industry Development		
IT market development		Little to No Implementation
Software industry development		Little to No Implementation
Hardware industry development	Ignored Hardware Industry	Completely ignored this area of ICT sector
Software Exports	Software Exports	No substantial gains in exports
ICT Use		
Broadband Internet growth	Limited broadband internet growth	Limited growth – 130,281 broadband subscribers
E-Commerce		No Implementation
	Cell phone use growth	91.5 million subscribers in April 2009 up from 306,493 in June 2000

*Dimensions and elements of “design” are identified from government ICT policy documents and actions plans. Dimensions and elements of “actuality” are derived from interviews with citizens. Further insights are gained from interviewing officials making or influencing government policies for ICT growth.

Lack of Citizens' Involvement in Policy Design

The importance of experienced officials and visionary technocrats cannot be denied in policy design but the lack of citizens' involvement in this process only widens the design-actuality gaps. In the case of ICT policy design process in Pakistan, the proposed policy document was placed on Ministry of Science and Technology's website for public comments and review during 2000. This was an unusual step in government policy making and did attract some feedback from citizens. However, there were several problems with the level of citizens' participation. First, the proposed policy document was written in English which is not the national language of Pakistan and only a small number of educated people can understand it. Second, internet access was limited and expensive in 2000 (only 10 major cities had dial-up internet service). As a result the public comments were not only limited in number but also ignored a large segment of society. A participant said: *"We have bureaucrats and technocrats who think they know everything that's good for citizens. It is easy for special interest groups to influence their opinion in a culture of corruption. May be their policies will be well received and win citizens' support if they had actually made an effort to find out citizens' needs and then formulated public policies"*.

It is therefore imperative to increase citizens' participation in policy design in order to bridge *design-actuality gaps*. The public comments can be solicited through communication avenues that are already available to citizens such as newspaper, radio and TV announcements. The citizens' involvement could also mean protection of consumer interests that affect ICT growth positively.

Inter-Agency Coordination and Inconsistent Policies

Policy evolution is a natural phenomenon which can be expected in an environment where policy designers do not have a great deal of experience with formulating successful policies. The inconsistencies in policies which lead to coordination gaps between government agencies make it difficult to fulfill the promises made to businesses. A participant reflected on this situation: *"The promised incentives in IT policy attracted significant amount of investment and ICT infrastructure grew rapidly. The Federal Board of Revenue realized that ICT growth could increase government revenues. They started taxing everything... 21% in sales tax on ICT services and equipment, high service activation tax and several other taxes. 'One-window*

operation' to facilitate business setup process only remained a promise. Now, ICT Service providers are facing tough time in justifying their investment decision due to fierce competition and disregard from Government officials for ICT service providers concerns”.

The import duty on ICT products is another example of inconsistent government policy which hampers local ICT products manufacturing. The policy requires manufacturers to pay 5% import duty on parts and collect 15% general sales tax with 6% advance tax on their finished products. However, the importers have to pay only 5% import duty if they import finished products. This creates discouraging tax implications for local manufactures. Similarly, dispute resolution mechanism that involves local, provincial or federal judicial system is not only costly but also requires following several years of court proceedings for minor disputes.

It is therefore important to ensure consistency in policies and coordination among government bodies to fulfill promises made with investors. It is essential for government agencies and regulatory bodies to balance consumer interests and business interests that can help bridge design-actuality gaps and help ICT growth.

Political Instability – Changes in Government Interests

Political instability and frequent changes in governments hamper the continuity of policies and negatively impact local and foreign investments. Between 2002 and 2008, five prime ministers took control of the government in Pakistan i.e., Zafarullah Khan Jamali (Nov 2002- Jun 2004), Chaudhry Shujaat Hussain (Jun 2004-Aug 2004), Shaukat Aziz (Aug 2004-Nov 2007), Muhammad Mian Soomro (Nov 2007-Feb 2008), Yousaf Raza Gillani (Feb 2008-Present). The frequent changes in governments, political confrontations and assassinations have been detrimental to ICT growth in the country. A participant said: *“You cannot expect an investor to keep investing when you don't know what mayhem might await your business... a riot, a mob or may be a political showdown”.* Political instability has another downside in the form of change in priorities and unavailability of committed funds to ICT development projects. The controversial role of Pakistan Electronic Media and Regulatory Authority (PEMRA) in controlling ICT services such as television and broadcast services was mentioned in the interviews frequently. Citizens expressed displeasure with government's policy of shutting down news channels during political crises such as civil society movement against Musharraf

regime in 2007-2008 and “*long march*” against Zardari regime in 2009 to restore Chief Justice of the Supreme Court of Pakistan.

Political stability plays a role in ensuring protection of ICT service providers’ business interests and consumers’ rights. The growth is difficult when ICT service providers and investors are not assured of their interests and consumers feel alienated from the policy design process. Political instability also hampers government’s ability to keep promises and enable supportive environment of ICT growth. The perspectives and interests of politicians and policy makers change with time. Therefore, political instability translates into lack of political support for ICT growth.

Lack of Protection for Private Sector Business Interests

While increasing competition among private sector ICT products and services providers is fierce, there is a need to ensure protection of their business interests in order for ICT growth to continue. For example, ICT tariff policy allows *Pakistan Telecommunications Authority* (PTA) to control tariff by ICT service providers and interconnect fees for completing service requests among ICT service providers. This policy has benefitted citizens by lowering services rates but little control to set ICT services tariff threatens private sector’s business interests. This leads to a situation where services providers focus on the development of ICT services and markets that are more profitable. The neglect is apparent in the broadband internet services, software development for local markets, and hardware manufacturing industry, which ultimately impedes ICT growth.

PTA interacts with representatives of select private sector businesses in developing and implementing ICT policies (such as involvement of mobile service providers). However, this involvement is not at a level that satisfies private sector business interests. There is a need to broaden the involvement of private sector businesses.

CONTRIBUTIONS AND CONCLUSION

This paper contributes to the design-actuality gaps framework by introducing the concept of *dimensional gaps* and *elemental gaps*. The extended framework explains gaps between government’s ICT policies and citizens’ actualities in the case of a developing country, i.e., Pakistan. These extensions strengthen the framework in explaining gaps when the *design* and

actuality dimensions or the *elements* of each dimension might not be the same. This flexibility allows for a greater depth in the assessment process and in identifying ways to bridge gaps by enhancing the design process. The research contributes to literature on ICT for development and ICT in developing countries as it explains the case of ICT growth in Pakistan. The literature on policy evaluation is also enriched by developing a method to assess policy design success in terms of design objectives and citizens' actuality. The implications of this research for policymakers include the need of a thorough assessment tool that encourages involvement of citizens and business representatives in the policy design process, in order to avoid design-actuality gaps and have a greater impact on the country's ICT growth.

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