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User Trust in E-Government - management perspective

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Abstract

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Abstract: A lot of money is being spent by the governments all over the world in developing and deploying Government to Citizen (G2C) e-government applications. These applications serve the purpose of providing better civic services to the citizens. The success of such applications is frequently heard and witnessed in the developed countries but there is a prevailing concern about the success and adoption of these services in the developing countries. Major focus of this research is to have management perspective about different factors, particularly citizens' or users' trust in e-government initiatives, that contribute towards the use of an e-government application. The secondary purpose is to evaluate an e-government service in Pakistan from management point of view. The service is offered by National Database and Registration Authority (NADRA) which is a government agency working under the ministry of Interior in Pakistan. This service is known as NADRA-Kiosk. In our research, we derived our own research model from the updated IS success model (2003) which was introduced by DeLone and McLean. Using the derived model we only focused on management perspective about the effect of system, information and service quality on users' or citizens' trust and in return how the users' or citizens' trust is helpful in order to make an e-government application useful. The findings of the study revealed that higher level of users' or citizens' trust in any e-government application or initiative plays a vital role for the use of that particular initiative. Furthermore, the six hypotheses which were developed to evaluate NADRA-Kiosk are also addressed.

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List of Acronyms

B2G	Business to Government
C2G	Citizens to Government
CNIC	Computerized National Identity Card
DGR	Directorate General of Registration
EGD	Electronic Government Directorate
EGDMIT	Electronic Government Directorate, Ministry of Information Technology
G2B	Government to Business
G2C	Government to Citizen
G2E	Government to Employee
G2G	Government to Government
G2N	Government to Non-profit
ICT	Information and Communication Technology
IEE	Internal Efficiency and Effectiveness
IQ	Information Quality
IS	Information Systems
N2G	Non-profit to Government
NADRA	National Database and Registration Authority
NB	Net Benefits
NDO	National Database Organization
PSD	Public Services Department
RQ	Research Question
SQ	System Quality
SV	Service Quality
U	Use
UT	User Trust

1. Introduction

1.1 Background

The digital revolution has affected almost every aspect of life. Starting from the individuals, businesses and now the governments, it has not only changed the methods of doing things but also contributed towards better access to information and improved services. Nowadays many governments have taken initiatives to use Information and communication technology (ICT) to serve the citizens better (Al-Mashari, 2007; Evans & Yen, 2006; Gil-Garcia & Martinez-Moyano, 2007; Reddick, 2006; Shareef et al., 2009; Sprecher, 2000). The governments have also realized that ICT can provide them a way for efficient and transparent governance (Prattipati, 2003). Three general types of electronic government (e-government) systems and services have been described by Wang and Liao (2007). These are: government to government (G2G), government to citizen (G2C), and government to business (G2B). In any G2C system there are different services such as forms for tax filing, information about public policy, employment, and business statistics and opportunities, electoral voting, registration of vehicles or property, registration or renewal of license, and feedback forms to submit suggestions to the officers appointed by the government (Ali & Khan, 2010).

Due to increase in connectivity and technology infrastructure citizens have demanded more and better services from their governments based on ICT, therefore the governments are developing and deploying systems to deliver these services. Moreover, the success of an e-government system, particularly in the context of G2C, is dependent on the user i.e. citizen and not on the technology (Akman et al., 2005). Users' intention to use an e-government system is dependent on many factors and these factors are: the level of users' trust, the compatibility between the system and the users' values, experiences and needs, beliefs, and the perceived ease of use of the system (Carter and Belanger, 2005).

Since the governments operate in a complex stakeholder environments and their performance is managed and judged by various stakeholders (Chan & Pan, 2008), therefore, like the evaluation of other information systems (IS), e-government system's evaluation must be carried out while considering the multiple perspectives of the stakeholders (Alshawi & Alalwany, 2009). Moreover, evaluation of the IS, deployed by government, enable the government agencies to measure their performance and capability to provide the required services to the citizens (Gupta & Jana, 2003).

For the evaluation of G2C e-government system, Wang & Liao (2007) and DeLone & McLean (2003) argue that updated IS success model is the best fit model. DeLone and McLean in 1992 came up with IS success model. They faced criticism about the model from many researchers and introduced a revised model in 2003. After that they asked the researchers to test the model in different contexts (DeLone & McLean, 2003). Since then the model is tested by different researchers to evaluate e-government applications.

1.2 Purpose

Governments all over the world have been contributing great technical and financial efforts to develop and deploy G2C e-governments applications to provide better quality of services to their citizens. These applications are considered successful in the developed countries but there is a prevailing concern about the success and the adoption of these services in the developing countries. Major focus of this research is to have a view of management or the government on the factors, especially citizens' or users' trust in e-government, which contribute towards the use of an e-government application. The secondary purpose is to evaluate an e-government service in Pakistan from management (government) point of view. The service to be evaluated is offered by National Database and Registration Authority (NADRA) which is a government agency working under the ministry of Interior in Pakistan. This service is known as NADRA-Kiosk. The reason to conduct the research from management point of view is to find out whether the management thinks about those factors and if yes, then what steps and the initiatives they take in order to make an e-government application useful.

1.3 Research Questions

The performance and adoption of e-government services is measured from two perspectives the citizens' perspective and the government's perspective. From citizens' point of view it depends upon many factors including ease of use, perceived usefulness, transparent interaction with the government and the perceived safety or risk of providing information to government, experience with e-services and government, and the perception about the quality of information and services (Clark, 2003; OECD Observer, 2003; Gilbert et al., 2004; Skok and Ryder, 2004; Swartz, 2004; Carter and Belanger, 2005).

The factors such as poor IT infrastructure, complexity of the department or providing agency paradigm, lack of skilled personnel and lack of financial resources are the barriers to the adoption of IS from government's perspective (Clark, 2003; OECD Observer, 2003; Swartz, 2004; Norris and Moon, 2005). According to Elliman and Tassabehji (2006), the main factor of success and adoption is to improve citizens' trust with the government services by fulfilling their demands for new and better services.

In our research we will focus on management perspective about the effect of the factors such as system, information and service quality, on the users' or citizens' trust for e-government applications. Keeping on viewing all the factors and the objectives of the research, we have developed two research questions which are as follows:

Q1. According to management or government point of view:

- a) **In what way the use of an e-government application is related to users' or citizens' trust?**
- b) **How the features of an e-government application e.g. system quality, information quality, and service quality affect users' or citizens' trust in the application?**
- c) **What is the relationship between the citizens' or users' trust and the use of an e-government application and how the exposed benefits or advantages of an e-government application affect the trust of the citizens?**

Q2. How could we use six different constructs of our research model; based on DeLone and McLean's updated IS success models (2003), to evaluate NADRA-Kiosk?

We developed the first research question (RQ) to explore the effects of a major factor of citizens' or users' trust on the usage of any e-government application. The second research question is specific to the evaluation of the e-government service offered by NADRA to the citizens of Pakistan.

Here, we expect that with the help of these research questions we will be able to find a relationship between the use of any e-government application and the trust of the users or the citizens. In the previous researches about the acceptance and success of e-government applications the researchers who used the updated IS success model of McLean and DeLone (2003), did not consider the trust of the users as a construct. For example, in the researches of Wang & Liao (2007) and Ali and Khan (2010), the researchers used the updated IS success model to evaluate e-government applications in Taiwan and in Sweden respectively but they did not take users' trust or citizens'¹ trust into account.

We will find the answers of the research questions by using our research model which is based on updated IS success model but with the replacement of a construct "user satisfaction" with a new construct i.e. "user trust", and also with some changes in the relationships among those six constructs. The data will be collected by conducting interviews with the people working in operational and compliance teams of NADRA-Kiosk.

¹ In the thesis we are using the terms 'citizens' and 'users' interchangeably.

1.4 Delimitations

This research is conducted to know management point of view about different factors, mainly user trust, which contribute towards the use of any G2C e-government application by the citizens, hence the focus is on the standpoint of the management. Furthermore, as Dada (2006) has stated the reasons for developing countries failing to adopt e-government applications, the lack of consideration of the human issues and poor IT infrastructures are two of them. And these two reasons are in the management aspect. Therefore, we just discuss user trust in e-government in Pakistan from the management point of view. Hence, we omit the aspects about the citizens' perspectives to make our thesis more focus. We aware the disadvantages for not conducting this research in the citizens' perspective, but it is not the part of the study here.

2. Literature Review

In this chapter, we have reviewed previous literature to define e-government, trust, users' or citizens' trust in e-government, and challenges and problems in evaluating e-government applications. In the last section, to evaluate any IS, we introduced IS Success models by DeLone and McLean (1992, 2003) and for this particular research we came up with our own model and the hypotheses to be tested.

2.1 Definition of E-Government

Various definitions of e-government have been described in different contexts (Karokola, 2010). Abramson and Means (2000; cited in Karokola, 2010) argue that e-government is the electronic interactions, such as information exchange and transaction, between the government and the citizen, business and the employee. Some other definitions regard e-government as the use of electronic means or information technology to enhance the efficiency and accessibility (Brown & Brudney, 2001), to explore the relationship between government and its customers and suppliers (Mean & Schneider, 2000; cited in Karokola, 2010), and to enable to transform the relations (Busu, 2004). United Nations (2008) states that e-government can be regarded as the tool which changes the way of interaction between citizens and government by using the new information and communication technology.

All the definitions explained above have their own specifics and different focus. A broader definition is required to fulfill this thesis and study field. The broader meaning for definition is presented by World Bank (2001; cited in Karokola (2010, p3)), and it is as follows:

“The government owned or operated systems of information and communication technologies that transform relations with citizens, the private sector and other government agencies so as to promote citizens' empowerment, improve service delivery, strengthen accountability, increase transparency, and improve government efficiency”.

According to Guo (2010) and Fang (2002), there are eight types of e-government:

- 1) Government-to-Citizen (G2C)
- 2) Citizen-to-Government (C2G)
- 3) Government-to-Business (G2B)
- 4) Business-to-Government (B2G)
- 5) Government-to-Employee (G2E)

- 6) Government-to-Government (G2G)
- 7) Government-to-Nonprofit (G2N)
- 8) Nonprofit-to-Government (N2G)

By implementing these types of e-government, it will bring benefits to all the participants involved, such as government, citizens, business, employees, nonprofit organizations as well as the political and social organizations.

2.2 E-Government and Users' or Citizens' Trust

Trust of the citizens in government is considered as the success for the government. Blind (2007) in his article, while explaining how trust can help building good and effective governance, defines trust as any efficient mean which can lower the cost of transaction in any social, economic and political relationship or setup. Trust plays very important role whenever a new policy is announced by the authorities. In this scenario, trust is considered as the most important factor which can determine the legitimacy and the effectiveness of any political system. Two variants of trust are mentioned which are political trust and social trust. In general, political trust is in the public political field, where exist many unknown, risks and less predictability (Norris, 1999). According to Norris (1999) political trust is strongly related to the membership of the political organizations. With a more modern perspective, Blind (2007) argues that political trust can be described as the trust of the citizens towards political system and its different segments as well as on individual political leaders. These different variants of political trust work together and create an overall perception about the whole political or governance system. Social trust is expressed in terms of citizens' trust in each other as members of a society or community.

Political and social trust both are not mutually exclusive, because the former neither emerges and nor it operates independently. According to the theory of social capital by Putnam (2000) the increase of the overall social trust in a society depends upon the civic engagement in a community and the trust among its members. In developing countries the political trust decreases as the citizens start taking part in civic activities because it exposes the illegal and corrupt practices of different public departments on daily basis while this civic engagement increases political trust in the industrialized or developed countries. Moreover, for good governance every state must operate to maintain a trust culture. The trust culture is defined as the environment where citizens feel that they could participate in a political process equally and they can be the part of any political decision making. (Blind, 2007)

According to Carbo (2007), for the use and then the success of an e-government application, trust must be earned through transparent interactions between the government and the citizens, and by addressing the cultural differences among the users or the citizens. The dynamic nature of e-government itself is another challenge which should be properly addressed because the trust of users or citizens in a system, available on a given day may not

be the same when there is a dramatic change in the system (Carbo, 2007). Some researchers also argue that the citizens likely to adopt e-government services where they have trust in government agencies (Carter and Belanger, 2005; Elliman and Tassabehji, 2006).

Governance and trust are related in a circular manner. Trust in government, increases good governance and in return good governance ensures trust among the citizens (Blind, 2007). In case of governance, trust can be sub categorized as moral trust, economic trust, political trust, social trust and technological trust. Moral trust is defined as taking steps for public good with consistency in plans and actions. Steps taken to improve the economic conditions of the people improve the rating of economic trust. Implementing political reforms along with avoiding corruption, perceptions of corruption and the scandals, and taking steps for benefits of the people adds to the political trust while introducing social reforms along with the political reforms to strengthen the civil society increases social trust. Technological trust is defined as the adoption of technological innovations to make more efficient, inclusive, and accessible governments for the citizens. These innovations include e-government and e-participation. (Blind, 2007)

According to Blind (2007), information and communication technology (ICT) can be used to increase citizens' participation, accelerate economic growth, and control or reduce poverty. Technology can be used in many sectors such as in government departments for civil services, for health care, and for the training of the citizens to improve their life. Due to the implementation of e-government, the processes in the government departments become transparent and the corruption is reduced which adds to the citizens' trust.

2.3 E-Government Evaluation and Challenges

The definition of e-government from World Bank (2001; cited in Karokola (2010)) states, e-government could be regarded as the specific Information System (IS) which has its special usage to transfer the relationship between government and citizens, business, employee as well as other government agencies. According to Jansen (2005), to determine and explore various perspectives is the first most challenging task. Since there are multiple participants involved in e-government, it does not only need to meet the general requirements of citizens, but also need to consider the demands of other specific group who are using or supplying a particular e-government service (Alshawi & Alalwany, 2009).

Another challenging task for the e-government evaluation is to measure and classify the benefits of initiatives. As stated before, the stakeholders in the e-government are various. The initiatives of e-government differ in different context and in different goals and targets, so the benefits of the initiatives will also be different in accordance with stakeholders' different viewpoints (Beynon, 2005). In order to have an excellent evaluation, it should take both

technical and social contexts of use (Mingers & Stowell, 1997) or technical and social related issues and challenges (Karokola, 2010) into account.

Previously many researchers conducted researches to evaluate e-government applications using different approaches. Most of them used traditional approaches including return on investment, cost benefit analysis, present worth and payback period (Alshawi & Alalwany, 2009). The major criticism on these traditional approaches is about the limited definition of stakeholders, and calculation of tangible benefits only while leaving the intangible benefits insignificant. According to Wang & Liao (2007), the knowhow of the actual factors affecting the success of an IS in e-government and the creation of a dependable method to measure the success, are necessary. The efforts to find out the best possible model with the most significant factors affecting the success of an IS in e-government are still in progress (Rai et al., 2002).

2.4 E-Government Evaluation Model

The success and the effectiveness of IS have been widely measured by the IS researchers. However, the researchers are still trying to figure out the model which could best measure the success of any IS (Rai et al., 2002). Like many other researchers, different IS success measures were reviewed by DeLone and McLean (1992) and they came up with six different measures which could have impact on the success and adoption of IS. Since then, many IS researchers used this model and proposed enhancements. That is why DeLone and McLean (2003) addressed the suggestions and came up with an updated model which relates system quality, information quality, service quality, use, user satisfaction and net benefit. According to DeLone and McLean (2003), further development and validation are needed by testing the model in different contexts of information systems. The IS success models have been accepted and used by many researchers to evaluate traditional IS but there is a little research that has been conducted to investigate the success of e-government applications using this model (Wang and Liao, 2007). Therefore, some argumentations would be that this updated model or another model based on this model with some variations could be used to measure the use and success of any e-government information system. Moreover, the successful evaluation of an e-government application or IS can provide a method to the e-government managers to evaluate the success of e-government system (Wang and Liao, 2007).

2.4.1 IS Success Models

DeLone and McLean (1992) defined six interrelated constructs which could be used to measure the success of any IS. These six variables or constructs are (1) system quality, (2) information quality, (3) IS use, (4) user satisfaction, (5) individual impact, and (6) organization impact (see Figure 2.2). Information systems are mostly evaluated on the basis of system and information quality. During the usage of the system, either the user is satisfied

or

not, the system has some impact on the user which could in return is the cause of organizational impact (DeLone & McLean). In addition to that,

“In this model, *system quality* measures technical success and *information quality* measures semantic success while the constructs of *use*, *user satisfaction*, *individual impacts*, and *organizational impacts* measure effectiveness success” (Ali and Khan, 2010, p.9).

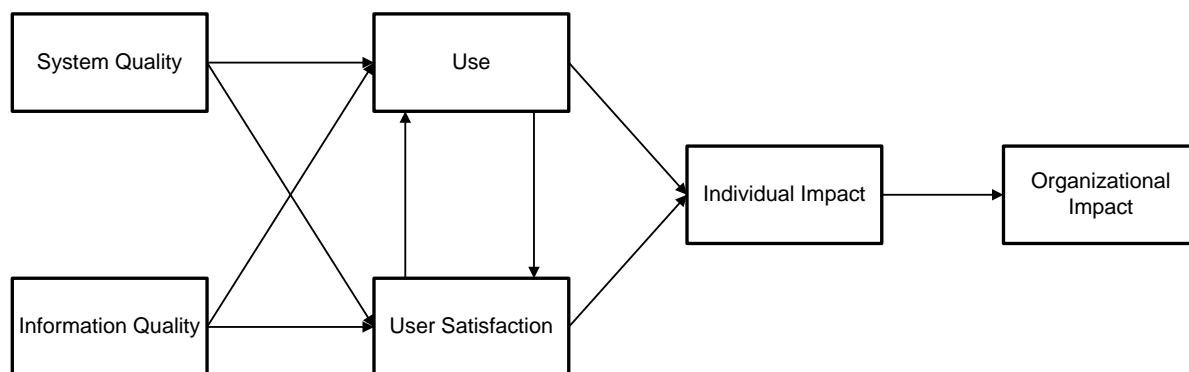


Figure 2.1 DeLone & McLean IS Success Model (DeLone & McLean, 1992)

The model here does not only show the process but also explains that system quality and information quality can effect use and user satisfaction. Both use and user satisfaction can affect each other either positively or negatively and there is an influence by both of them on another construct named “individual impact”. Last but not the least; individual impact leads towards organizational impact. All of these variables or constructs should be used carefully in connection with their items to measure the success of any information system (DeLone & McLean, 1992).

Once the model was introduced, many researchers evaluated the model, criticized it and suggested modifications to it. According to McGill et al. (2003) and Seddon (1997), the model has contributed towards the understanding of IS success. First of all it has categorized different factors which are described in the literature to measure IS success and secondly, it provides relationship and describes interdependencies between the categories. Moreover, the model was tested by Seddon and Kiew (1994) and they replaced the construct “use” with “usefulness” and added “user involvement” as a new variable. Their result supported DeLone and McLean (1992) model, partially. On the introduction and rapid growth of ecommerce and on the suggestions from many researchers DeLone and McLean (2003) proposed an updated model of IS success which is shown in figure 2.2. The updated model added “service quality” construct as a new dimension. Furthermore, they grouped all the impacts such as individual impact and the organizational impact (DeLone and McLean, 1992), work group impacts (Myers et al., 1998), interorganizational impacts (Clemons & Row, 1993), consumer impacts

(Brynjolfsson, 1996), and societal impacts (Seddon, 1997), in a new construct called “net benefits”.

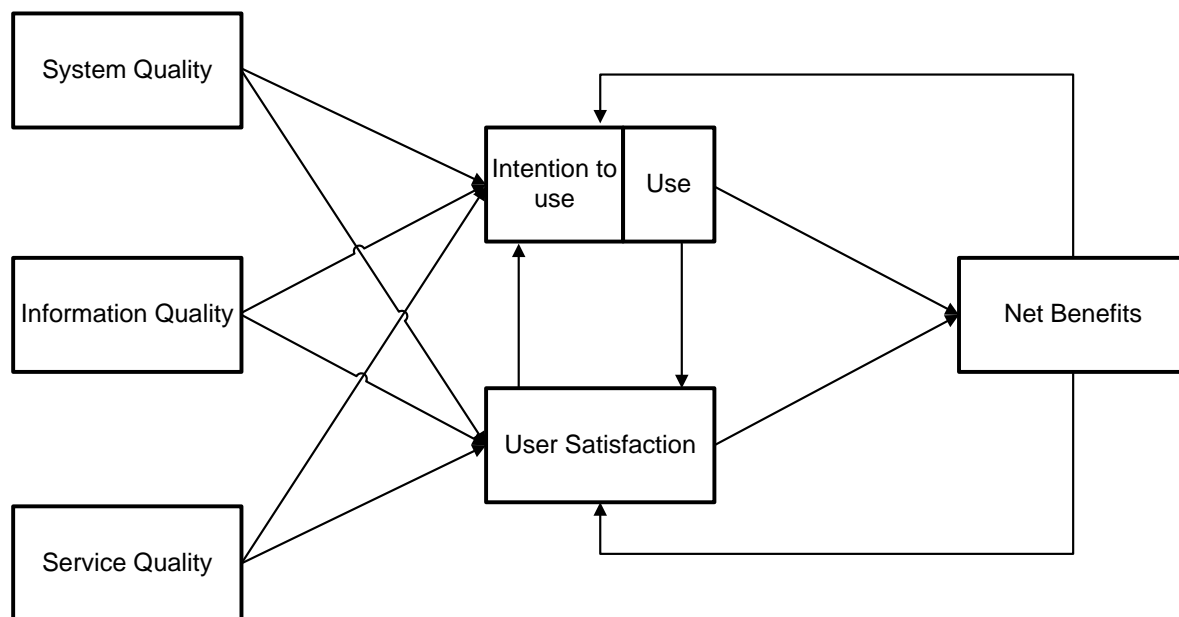


Figure 2.2 DeLone & McLean IS Success Model (DeLone & McLean, 2003)

Clarification of the use construct by the introduction of “Intention of use” is the final enhancement made to the model. It is also explained that the use of information system leads to user satisfaction if the experience is positive, so that the use should come first and thus this higher user satisfaction should lead towards intention to use (DeLone & McLean, 2003).

2.4.2 Definition of Constructs and Use in Previous Research

In this section we will define the constructs used in DeLone and McLean’s (2003) IS success model and will review their use in some previous literature.

System Quality

System quality is described as the important characteristics of any information system and the main aim of any system is to produce information which could be used by its users (DeLone and McLean, 1992). According to Seddon (1997) the issues such as system bugs, ease of use, user interface, quality and maintenance of program codes are related to system quality. Petter et al. (2008) argue that system quality is related to the performance of information system in terms of reliability, ease of use, convenience, functionality and other metrics of the system. There are different measures which have been used in literature to measure the quality of an IS. These measures are reliability, stability, flexibility, usefulness, ease of use, user friendly

interface and response time (Doll & Torkzadeh, 1988; Rai et al., 2002; Yusuf et al., 2004; Bailey & Pearson, 1983).

Information Quality

According to Rai et al. (2002), information quality is all about content, accuracy and the format. Seddon (1997) argue that it is referred to the quality of the information which is produced by the system in order to make decisions and it is considered as an important factor to evaluate information system. The most common measures for the information quality mentioned by different researchers are timeliness, consistency, accuracy, relevance and completeness (DeLone & McLean, 2003). Seddon and Kiew (1996) included relevance, format and timeliness for measuring information quality while accuracy, content, format and timeliness were considered as measures of information quality by Doll and Torkzadeh (1988).

Service Quality

DeLone and McLean (2003) added this construct in their updated model and it is defined as the support provided by a service provider and the service provider may be an internal IS department, a new unit in the same organization or a third party. According to DeLone and McLean (2003) it is an important measure; because in many information systems users are customers and if the user support is poor, the chances of losing customers or the users increase. Parasuraman et al. (1988), define service quality as the degree to which a provided service meets the requirements of customers or users. Zeithaml et al. (2002), included efficiency, fulfillment, system availability and privacy as the measures to evaluate the service quality of an IS.

Use

According to Seddon (1997) system use is defined as usage of system for the completion of everyday tasks and work. Petter et al. (2008) define it as the manner and degree to which staff and the users especially customers use the information system as per its capabilities. DeLone and McLean (2003) describe use as a suitable construct to measure success but they argue that it carries no precise definition at any level. In the context of an electronic system, use measures visiting a website, navigating within the site, retrieving information and executing transaction (DeLone & McLean, 2003). The researchers mentioned that system use can be measured in terms of frequency of use, time of use, number of access, dependency and usage pattern, and the number of users (DeLone & McLean, 2003; Seddon, 1997).

User Satisfaction

In the previous research, user satisfaction has been defined as one of the measures for the acceptance and quality of an IS and the researchers have developed many methods to measure it (Seddon and Kiew, 1996; DeLone & McLean, 1992, 2003; Seddon, 1997; Rai et al., 2002; Doll & Torkzadeh, 1988). Bailey and Pearson (1983) defined user satisfaction, in a

situation specific context, as feeling and attitude of someone towards many factors affecting the situation. DeLone and McLean (1992) consider it as an important measure to analyze users'

opinions. Many researchers mentioned measures such as accuracy, reliability, timeliness, relevancy, content, and ease of use to evaluate user satisfaction (Bailey & Pearson, 1983; Petter et al., 2008).

Net Benefits

According to Petter et al. (2008), net benefits measures the impact of an IS on the success and achievements of individuals, groups, organizations, industries and nations. Moreover, positive and negative impacts of the electronic commerce on the customers, suppliers, employees, organizations, markets, industries, economies and societies can be captured through this construct (DeLone & McLean, 2003). Net benefits could be measured in a most common way through perceived usefulness or impact of IS on job (Petter et al., 2008). In case of impact on a person's or end user's job the net benefits could be evaluated by using four measures and these are: improved user's quality of work, ease in the end user's job, end user's saved time and the fulfillment of the needs and requirements of the end user's job (Etezadi-Amoli & Farhoomand, 1996).

2.5 Research Model and Hypotheses

One dimension of the study is to find out the impact of system quality, information quality and service quality on the level of users' or citizens' trust in e-government IS from government or management point of view. For this purpose we have used five constructs i.e. system quality, information quality, service quality, use and net benefits from DeLone and McLean (2003) model in order to come up with our own research model.

In our model (figure 2.3) we have replaced "user satisfaction" with a new construct of "User trust". The reason to replace "user satisfaction" with "User trust" is that the measures identified by different researchers, in the section 2.4.2 under the definitions of the constructs, "user satisfaction" are also the measures for other constructs. For example the measures such as content, relevance, timeliness and accuracy are used to evaluate information quality (IQ) while ease of use and reliability are used to measure system quality (SQ) of any IS. These measures could be answered through IQ and SQ that is why we have replaced "user satisfaction" with a new construct "user trust".

As described in section 2.4.2, the system and information quality are the part of any IS while service quality is related to the service provider. In case of an e-government scenario, system and information quality are related to an e-government application while service quality is on the part of the government or the agency which provides the services. As per the definition of technological trust described in section 2.2 we can argue that high system and information quality of an e-government application increases the trust of the users in the technology or the

application. From the definition of political trust in the context of governance, described in section 2.2 by Blind (2007), it could also be argued that the availability of better service

quality for the users by the government to make the process transparent is the cause of high level of political trust in the citizens. In our model we have related system quality, information quality, and service quality with “user trust”. Therefore we say that the construct “user trust” in our model is the combination of technological and political trust. In order to make it easier and simpler, we will use the term user trust in the thesis.

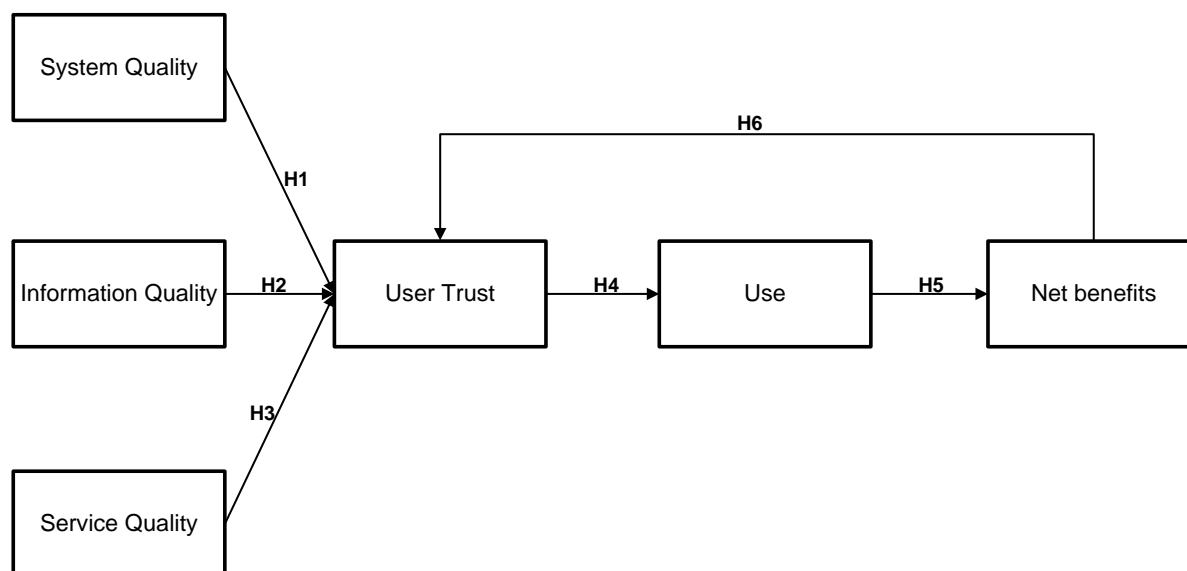


Figure 2.3 Research Model

In our model we considered “use” instead of “intention to use”. According to DeLone and McLean (2003), “intention to use” is more acceptable in the context where usage of the system is mandatory. In our case, the use of NADRA-Kiosk is not mandatory for the citizens but it is entirely voluntary so, the system use which is an actual behavior is closer in meaning to success than intention to use. Furthermore, the interdependencies are also changed. Higher system quality, information quality and service quality must be provided by the government or government agencies through transparent interactions (Carbo, 2007). Carbo (2007) also states that these features increase the users’ or citizens’ trust in the agencies. Due to this high trust level in the governments or the agencies, the citizens start using e-government systems willingly and they have benefits (Carter and Belanger, 2005; Elliman and Tassabehji, 2006). When these benefits are exposed to the users, they start using it frequently and get use of the system which increases their trust level in the application (Hung et al., 2006).

In the study, we have used the research model (figure 2.3) in context of e-government and we developed our interview guide for both of the research questions based on this model. Moreover, the model is specially used to measure the performance of NADRA-Kiosk from management point of view, by using the following six hypotheses:

H1: System quality will have effect on the trust of the user of the NADRA-Kiosk.

H2: Information quality will have effect on the trust of the user of the NADRA-Kiosk.

H3: Service quality will have effect on the trust of the user of the NADRA-Kiosk.

H4: Higher level of user trust in the NADRA-Kiosk will lead towards its use.

H5: Use of the NADRA-Kiosk will expose the net benefits to the citizens or the users.

H6: Net benefits exposed after the use of NADRA-Kiosk, will affect the users' trust.

The above mentioned six hypotheses clearly mention the relationships among the six different constructs of the research model. One part of the empirical study focused on finding the relationships among these constructs in the context of NADRA-Kiosk. As a whole, the major focus is still on the use of an e-government application from management point of view in the context of users' or citizens' trust.

3. Object of Study

The chapter will introduce our object of study for the research. First part of the chapter is e-government infrastructure in Pakistan. The second part of the chapter describes NADRA itself as an organization and in the last part we have introduced an e-government initiative which is NADRA-Kiosk.

3.1 E-Government in Pakistan

Internet emerged in few large cities in Pakistan in the year 1995, and at that time only some hundreds users had the access to connect to the internet. The government of Pakistan took concrete measures to build the internet infrastructure in the country, and by the end of year 2007, the internet access have been available in 800 cities and the number of the internet users has reached to 10 million at that time. The intention to put the efforts was not only to build Internet infrastructure, but also to develop the opportunities to have easily accessible information about government, corporate sectors, and businesses. (Ahmad, 2007)

Electronic Government Directorate, Ministry of IT (EGDMIT), which was established in October 2002, is built to pay greater attention to e-government and has regarded e-government as a priority area in the first national IT Policy and Action Plan. The goals for implementing e-government for the Government of Pakistan is to increase both effectiveness and efficiency of the government and the transparency and accountability about the official decision-making, and to enhance delivery of public services to the citizens and reduce the cost. In the context of the Federal Government of Pakistan, e-government could be defined as the combination of internal electronic enablement and the external provision of e-Service to businesses, other government agencies or departments, citizens and its employees. (EGDMIT, 2005)

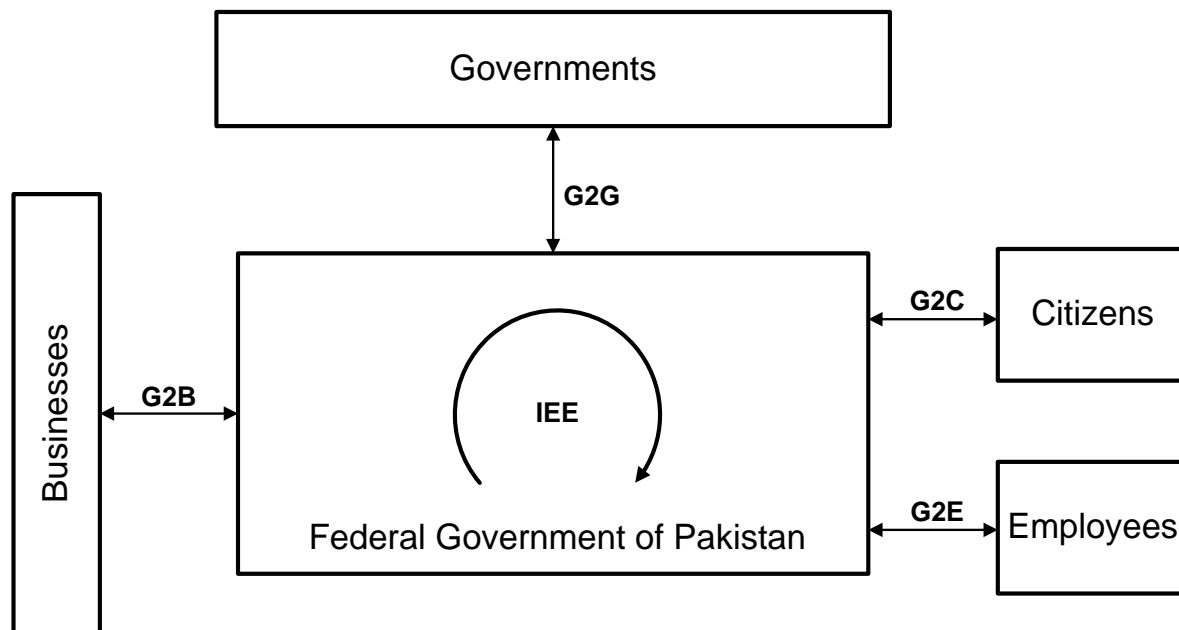


Figure 3.1 Scope of e-government in Pakistan (Source: EGDMIT (2005))

- G2B: referring to Government-to-Business, includes all suppliers and businesses procuring services and deals with different actors, arenas, and government agencies, private sectors and market relationships. It reduces the burden on businesses from the government by accelerating government process vis-à-vis businesses, erasing redundant data collection, and better balancing E-business communication technologies. (EGDMIT, 2005)
- G2G: referring to Government-to-Government, includes all federal, Provincial, local government as well as other international and other countries' governments agencies (EGDMIT, 2005) and indicates the interrelationship among different government agencies and units (Almarabeh & AbuAli, 2010).
- G2C: referring to Government-to-Citizen includes all citizens in Pakistan. It aims to build easy-to-find, easy-to-use and one-stop point-of-service with higher speed, better quality and more accessibility (EGDMIT, 2005).
- G2E: referring to Government-to-Employee includes all the employees who work in any government unit in Pakistan. The intention is to provide easy-to-find, easy-to-use and one-stop point-of-service with higher speed, better quality and more accessibility. (EGDMIT, 2005)
- Internal Efficiency and Effectiveness (IEE): it includes the good usage of modern technologies. By taking good industry practices, the aim is to reduce the cost and enhance the quality of the federal government of Pakistan. (EGDMIT, 2005)

According to the Electronic Government Directorate (EGD, 2002), the main objectives of e-government in Pakistan are described in the following:

- Make the processes in the government departments clear and transparent for the public.
- Make public services modernized, effective and efficient as well as with more accessibility to government institutions.
- Make the responsiveness of the government more effective and to shorter the response time when the government sectors deliver services to the public.
- Make the relation between Government and citizens closer by improving accessibility to information through kiosks, internet, telephone, personnel computers and other resources.

3.2 NADRA & NADRA-Kiosk

National Database and Registration Authority (NADRA) was firstly established as National Database Organization (NDO) in 1998, as an attached department of the Ministry of Interior in the Government of Pakistan. In 2000, NDO and Directorate General of Registration (DGR) have merged into NADRA with the requisite autonomy of independent operation and the intention of facilitating good governance. The first task for NADRA was to issue secure multi-biometric Computerized National Identity Cards (CNIC) for all Pakistanis, replacing the paper based personal Identity System of Pakistan. With the skilled workforce of over 11,000 technical and management employees, NADRA created its own centralized Data Warehouse, Network Infrastructure and Interactive Data Acquisition System in a short span of time, and till now, more than 96 million citizens have re-registered themselves in the newly system and more than 70 million of them have received the new CNIC. (NADRA, 2006a)

For now, NADRA has acquired the international recognition for all the success to provide the solution and service with a high security for the public sector clients, such as the solution for identification, secure documents and e-governance. Furthermore, as one of the top System Integrators in the sector of global identification with the extensive experience from designing to implementing and operating solutions for the public and corporate, NADRA has successfully implemented the solution of multi-biometric electronic passport (e-Passport) for Pakistan, for Kenya passport issuing system, high security driver's license for Bangladesh, as well as the civil registration management systems for Sudan etc. (NADRA, 2006a)

Based on the biometric Identification technologies and online verification, NADRA has launched Kiosk, electronic point of sale (ePOS), in October 2006. It is a voluntary service and the citizens are not bound to use it. This Kiosk project is the first step to provide the value-added usability for the CNIC. The initial aim for this CNIC centric product is to facilitate all the Pakistanis to use the electronic bill (e-bill) payments and electronic transactions (e-transactions) (NADRA, 2006b). In order to increase the utility and guarantee the readability for each citizen, the Kiosk system is available in two languages i.e.

English and Urdu. There are five kinds of services provided by NADRA-Kiosk (NADRA, 2006b):

- **Bill Payments:** Although there are other ways of paying utility bills like banks and post offices, yet all utility bills, such as electricity, gas, telephone and water, etc. can be easily paid by using the Kiosk machine. Since the bills have the unique consumer number, which is provided by the utility companies. All of the utility companies are state owned companies. After the payment with Kiosk, consumer number could be mapped with CNIC and then the subsequent bills could be automatically updated monthly.
- **Online Verification:** online verification of CNIC for each individual is available at Kiosk. It can enable verification of any Individual in any domestic or business transaction, such as purchasing of buying of automobiles, hiring of employees, ownership transfer, and sales and purchase of property.
- **Telecom Scratch Cards:** There are many options to buy mobile phone scratch cards such as stores and cellular companies' outlets but the payment of scratch cards to different telecom companies can also be paid through the Kiosk machine.
- **Account Modification:** after creating a user account, the registered users can change his or her status and add or delete the utility and service companies to the account. The user also can check or view all the previous paid bills or transactions with this particular account.
- **Franchise Model:** this model is based on the public-private partnership to facilitate the low-income educated youth and small businessmen to make the contribution of their share to the economy.

In June 2008, NADRA introduced a new business model i.e. franchise scheme for the Kiosk. The model was introduced with the name of e-Sahulat (e-Sahulat, 2008). e-Sahulat services are franchised to small businesses and individuals on easy terms and conditions using the same Kiosk. The franchise scheme is based on pre-paid model where a certain amount is given to the franchisee as credit. The credit received by the franchisee is equal to the deposit he or she makes while applying for the service. Once the credit is utilized, it can be recharged through the branches of the designated banks. In order to facilitate less educated and computer illiterate people, the franchisee can pay the bills or carry out other transactions on their behalf. In addition to that, franchisee is paid a commission on each transaction. (e-Sahulat, 2008)

Corporate businesses can also take some benefits from this model. These businesses can use e-Sahulat to collect money or receivables from their clients located in different areas of Pakistan. Due to the integrated system, e-Sahulat provide them the facility to pay their utility bills, post paid cellular bills, and telecom tower bills in a quick and efficient way. (e-Sahulat, 2008)

In the context of e-government, the maturity model is used to evaluate the maturity of the e-government service and products by clarifying the key practical activities during the implementation or usage process. For the models developed by institutions, there are United

Nations' the five stage model (2008), Gartner Group's four stage model (2000), World Bank's Three stage model (2003), etc. For the models developed by individual researchers, there are Layne and Lee's four stage model (2001), Moon's five stage model (2002) and Hiller & Belanger's five stage model (2001), etc. The details of these models are available in appendix A.

Considering the World Bank's three stage maturity model (appendix A) and NADRA Kiosk, we can easily found that there are much basic information disseminate in the static website, such as the introduction to Kiosk and the basic function, features, etc. Moreover, it provides the download capability for official document as well as the contact information, as the interactivity phase. All the users could purchase and transfer through Kiosk machine and have the access to modify their personal information within their own account, so it also fulfills the third stage which is completing transaction.

In the report we will refer the system as NADRA-Kiosk instead of e-Sahulat because the word KIOSK is easy to read and understand than that of e-Sahulat.

4. Research Methods

The chapter starts with the introduction of different research approaches, explains the methods to collect data in qualitative research and quantitative research, and defines our approach of conducting research and collecting data. In the next section, established data analysis techniques are introduced with the chosen one in our study and the last section deals with the quality of the collected data, and the ethical issues while writing the report for the readers.

4.1 Introduction

Quantitative and qualitative research approaches are the two main research approaches for conducting a research. Quantitative approach deals with the numerical measurement, such as quantities, which is based on numbers. Quantitative approach is used to answer ‘how many’ and ‘how much’ types of questions, test the hypothesis with proper technique and to identify the difference between variables or groups (PSY, 2011). Generally, the data is generated and collected by experiments, surveys, questionnaires and other research strategies (Oates, 2006). In the analysis phase, the data should be converted into the numerical form to make statistical calculations and draw the conclusion (Alzheimer, 2009). Qualitative approach uses the non-numeric data, such as words, sounds and images, to have a naturalistic and interpretive approach to the world (Denzin & Lincoln, 2005).

In a qualitative research, there are different types of methods to collect data which mainly answer ‘how’, ‘why’ and ‘what’ questions. Interviews, observations, and review of documents or artifacts are among those methods. The most common types of interviews are structured interviews, semi-structured interviews, un-structured interviews, one to one interviews or focus group interviews. (Creswell, 2007; Myers & Newman, 2007) In observation the processes or the flow of events are noted and then recorded for the research by the researcher. The researcher himself or herself is not allowed to participate or interact in the process. In qualitative observation researcher understands the complex connections among different objects. (Creswell, 2007) Interpretation of documents and artifacts is another method in a qualitative research to collect data. According to Hodder (1994), documents such as diaries, field notes, and letters are developed or prepared for personal use or purposes while records such as building or tenancy contracts, bank statements, driving licenses fall in the category of official documents. In the research along with interview and observation, interpretation of documents and records could be used to reduce bias (Hodder, 1994).

We are conducting a qualitative research because our research is based on ‘what’ and ‘how’ questions and not on ‘how much’ or ‘how many’ types of questions. To get the viewpoint of the management, and the deeper understanding of relationship between different constructs of our research model, we decided to conduct interviews. According to Myers & Newman (2007) the qualitative interview is a powerful research tool, an excellent method of collecting data and has been used profoundly in information systems research. Seven stages of an interview based research have been defined by Kvale & Brinkmann (2009). These stages are thematizing, designing, interviewing, transcribing, analyzing, verifying and reporting. Based on these seven stages, we prepared ‘what’ and ‘why’ questions about the investigation to be carried out in the thematizing phase. In the designing phase we are concerned with the interview questions and the data collection methods. In interviewing stage we have conducted interviews based on interview guide to collect the data. We have categorized the three stages of thematizing, designing and interviewing under one phase, which is data collection phase. We grouped transcribing and analyzing stages in the data analysis phase. In our case the interviews are self-transcribed and we analyzed these transcribed interviews using coding techniques. The stage where we deal with the quality parameters such as objectivity, validity, and reliability, is called verifying stage and it is concerned with the quality phase. The reporting is the stage in which we focus on ethical issues in the investigation, and we make the results available in the form of a report for the readers. We have categorized it in ethics phase.

4.2 Data Collection

According to Creswell (2007), data collection is described as a set of interrelated activities. The main purpose of these activities is to collect information which could be helpful to find out the answers of research questions. For any research there are several factors which affect the data collection strategy or method. In a quantitative research the suitable methods for data collection are surveys and experiments (Linda et al., 2008) while there are many approaches for data collection in a qualitative study including interviews, observations, interpretation of documents and artifacts (Creswell, 2007).

4.2.1 Interview Guide

According to Kvale & Brinkmann (2009) the interviews can have explorative or hypothesis testing purposes. The explorative interviews are less structured and focus on areas to be explored while the interviews with the purpose of hypothesis testing are more structured, standardized and focused. In this case the hypotheses could be tested by conducting only one interview or by the series of interviews. Based on our research model, we plan our interview with simple and brief questions. And in any type of interview there are three major or key questions which are ‘why’, ‘what’ and ‘how’ (Kvale & Brinkmann, 2009). We used all these types of questions to address different areas to be investigated. ‘Why’ is used to define or describe the purpose of our study, ‘what’ is used to obtain the knowledge about the different subjects to be studied, and ‘how’ is used to analyze the subject or the situation. Moreover, in

any interview ‘why’ and ‘what’ type of questions must be asked before ‘how’ type questions (Kvale & Brinkmann, 2009). To get the answers of our both research questions we built the following interview guide:

Table 4.1 Interview guide

Constructs	Interview Questions	RQ
User Trust (UT)	1) What is your opinion about the users’ or citizens’ trust and the use of any e-government application?	1a
	2) How did you manage to earn citizens’ or users’ trust in NADRA’s e-government applications specifically in NADRA-Kiosk?	1a
System Quality (SQ)	1) Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	1b
	2) What do you think about the effects of system quality on users’ or citizens’ trust in the context of e-government application?	1b
	3) How do you achieve system quality in NADRA-Kiosk?	2
Information Quality (IQ)	1) Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	1b
	2) In the context of an e-government application, what is your opinion about the effects of information quality on users’ or citizens’ trust?	1b
	3) How did you ensure information quality in NADRA-Kiosk?	2
Service Quality (SV) ²	1) Do you think that in addition to system and information quality, service quality has any role in the use of any IS? By service quality we mean i) efficiency i.e. data is well organized and can be accessed quickly, ii) fulfillment i.e. the system provides what is stated, and iii) availability of the system when required.	1b
	2) How does service quality affect users’ or citizens’ trust in the context of e-government application?	1b
	3) What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?	2
Use (U)	1) Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?	1c&2
Net Benefits (NB)	1) Need your comments on the net benefits (e.g. ease for the citizens, saving users’ or citizens’ time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	2
	2) Do you think that the exposed net benefits to the users or the citizens have increased their trust on the system?	1c&2

² We used acronyms ‘SV’ for Service Quality and ‘SQ’ for System Quality.

The above table shows the interview guide. The first column mentions the constructs we have in our research model, the second column contains the interview questions related to that particular construct and the last column shows the relationship of every question in each construct either with research question (RQ) 1, with research question (RQ) 2 or both 1 & 2.

The questions in the guide are supported by the constructs in our research model. We started with the first question where we asked for the opinion of the interviewee about users' or citizens' trust and how this trust level could be the cause for the use of an e-government application. In the next step there are specific questions which are related to the system, information, and service quality and their impact on users' or citizens' trust. In the last step or section the questions are related to the use of NADRA-Kiosk, the exposed net benefits to the users or citizens after its use and the increase or decrease in users' or citizens' trust level.

Moreover, the hypotheses which are developed in chapter 2 will be answered through this guide. Since the six hypotheses reflect the relationship of the constructs in our research model, each hypothesis could be tested through the findings of interview. For instance, the hypotheses related to system, information, and service quality i.e. H1, H2 and H3 will be answered through the combination of the questions in the constructs of information, system and service quality respectively. The other three hypotheses i.e. H4, H5 and H6 are expected to be answered through the questions in the construct of Use (U) and the Net Benefits (NB).

4.2.2 Conducting Interviews

According to Kvale & Brinkmann (2009), in a research interview two participants, the interviewee and the interviewer, talk about a theme of common interest. The knowledge created in this conversation or in the setting is based on the experience of interviewee and the point of view of the interviewer or the researcher. The interview guide must be used as a script. The interviewer uses the script to set the stage. Interview must be started with a briefing about the scope of the interview and after the interview there must be some debriefing session. In the debriefing session the interviewee must be asked if he or she wants to add anything. In different situations interviews can be conducted in different ways. If the interviewee and the researcher are at the same place then face-to-face interview is preferred but in some cases where both the participants are apart, telephonic interviews or computer assisted interviews can be conducted (Kvale & Brinkmann, 2009). Kvale & Brinkmann (2009) state that computer assisted interviews can be conducted through synchronous and asynchronous interaction with respect to time. Interviews conducted through email correspondence fall in the category of asynchronous interaction while the interviews conducted through text chat or voice chat, are more synchronous in time.

For our research, we first established a trust relation between us and NADRA by sending an email to one of their correspondent from the student email account provided by the department. The reason to use student's email account is to provide them the proof of being the students of LUND University. In the email we mentioned our intention and the area of

interest and they acknowledged the email by replying that they are interested to provide us the required information. Furthermore, it was not possible to conduct face to face interviews, so that we relied on computer assisted interviews. Asynchronous computer assisted interviews were conducted with the two members of the operational team and the two members of compliance team of NADRA-Kiosk. Both of the teams are working under a department named Public Services Department (PSD). Operational team has the ownership of the system and is responsible for day to day operations while the compliance team ensures that all the franchises of e-Sahulat, formerly NADRA-Kiosk, are working according to standard operating procedures provided by NADRA. Out of the two interviewees of the operations team one is an Assistant Manager and the other one is a supervisor. We have called them as *Informant A* and *Informant B* respectively in the report. Moreover, the two interviewees from compliance team have the designation of Assistant Manager and supervisor; they are called *Informant C* and *Informant D* respectively.

While planning the data collection activity we first decided to conduct synchronous computer assisted interviews with the management of NADRA-Kiosk in Pakistan using Skype, because the face to face interviews were not possible. We also considered the option of telephonic interviews but it would have been costly enough so we skipped that option. Once we decided to conduct synchronous interviews, it was then realized that due to the problem of load shedding or unscheduled availability of electricity in summer in Pakistan it was impossible for us to coordinate with the interviewees properly with respect to time. Therefore, at the end we opted for asynchronous computer assisted interviews through email. The major drawback of asynchronous interviews was that we could not ask the follow up questions at the same time but we managed to clear the vague ideas or the concepts through short telephonic conversation. Moreover, before conducting the interviews we also sent the interviewees the questions in the interview guide so that they could identify ambiguity or point out mistakes if they find any.

4.3 Data Analysis

The next two stages i.e. transcribing and analyzing out of the seven stages of an interview research constitute the data analysis phase. The interviews are once conducted then these are transcribed and in the next step the transcribed interviews are analyzed.

Kvale & Brinkmann (2009) argue that transcription is actually the interpretation of the oral interview or speech in words. The interviewer should be very carefully specially in the selection of proper words for the speech. The choice of single wrong word can change the meaning of the whole phrase or sentence. In most of the cases the interviews are recorded using an audio recorder and then these are transcribed. In our case where we have email based asynchronous computer assisted interviews, there is one major advantage; such types of interviews are self-transcribing, more authentic and the text in the given answers is readily

available for the analysis (Kvale & Brinkmann, 2009). Once the interview is transcribed, it is available for analysis. Researchers use different techniques to analyze the transcribed interviews. These techniques are coding, categorization and meaning condensation. In coding a keyword is added to the text to differentiate it.

Coding can be concept driven or data driven. In concept driven coding method the researcher develops the codes in advance based on some theory or the previous literature while in data driven coding method the codes are developed through the reading of the material. These codes are recorded in code memos with code name and description of every code. Whereas categorization technique is used to reduce the large interview texts in the form of tables and figures while meaning condensation divides the interviews in logical subparts (Kvale & Brinkmann, 2009).

In our case we used concept driven coding to analyze the data and it was useful because our interview questions were based on six different constructs of our research model. The code memo for this technique is shown in table 4.2.

Table 4.2 Code Memo

Code	Code Description	Use of Code for RQ
eGUT	Use of e-government application and users' or citizens' trust	1a
SQUT	System quality and users' or citizens' trust	1b
IQUT	Information quality and users' or citizens' trust	1b
SVUT	Service quality and users' or citizens' trust	1b
NKUT	NADRA Kiosk and users' or citizens' trust	1a
NKSQUT	System quality of NADRA-Kiosk and its effect on users' or citizens' trust	2
NKIQUT	Information quality of NADRA-Kiosk and its effect on users' or citizens' trust	2
NKSVUT	Service quality of NADRA-Kiosk and its effect on users' or citizens' trust	2
NKUTU	Users' or citizens' trust and the Use of NADRA-Kiosk	1c&2
NKUNB	Use of NADRA-Kiosk and its net benefits for the users	2
NKNBUT	Net benefits exposed after the use of NADRA-Kiosk and effect on users' or citizens' trust	1c&2

The table shows that the codes are related to the constructs in our research model and each code has its description and its use, either to analyze research question 1 or research question 2. The code memo is used during the analysis of our empirical findings. The empirical findings from the interviews are discussed in chapter 5, and chapter 6 is about the analysis and discussion about those findings.

4.4 Research Quality

Quality of a qualitative research has great importance. As researchers we should accept that even with the availability and application of the methodological rules, quality cannot be ensured. There exist two schools of thought. One argues that if certain methodologies and rules are applied the quality can be achieved but the other claims that the selection of rules and methodologies is not only based on the need of the time but also on the experience of the researcher. (Seale, 1999) Quality in a research includes the concepts of objectivity, validity, and reliability and all these concepts complete the verifying stage.

Objectivity is referred to the freedom from bias. To maintain the objectivity the researcher should see other people as they actually are and he or she should not influence them or should not impose his or her own biases on them (Kvale & Brinkmann, 2009). In our research, we provided the questions to the participants and conducted asynchronous computer assisted interviews which reduces the bias factor.

Validity is considered as a process to measure the accuracy of the findings or it measures that the data acquired during the investigation is actually what is needed. Peer review or debriefing, negative case analysis, triangulation, member checking are different techniques that could be used as the strategies for validation. (Creswell, 2007) Although we already had detailed interview questions yet at some points the informants had problems in understanding some parts or the meanings. The common example is the clarification of the term users' or citizens' trust. To overcome the problem they sent us emails and we replied them through short telephonic conversations. In our reply we clarified the term in the context of technological trust i.e. system and information quality, and political trust i.e. service quality. The other example is the understanding about the question number 2 in the construct of Net Benefits. The common question was how they could define increase in the trust level? They had two different points. The one point was about the increase in the number of users and the other point was the use of the system by the same user periodically. As per our model we cleared them that the question is about the user who has already used the system. It contributed to data validation. In addition to that we also adopted the technique of peer review or debriefing where our thesis supervisor acted as an external check for the research process.

According to Creswell (2007), reliability deals with intercoder agreement among the multiple coders of the data sets when they analyze the transcribed interviews and code the different parts of the interviews according to the coding technique. To ensure reliability we, the two thesis group members used the code memo as intercoder agreement. Moreover, we coded the asynchronous interviews together to enhance the reliability.

4.5 Ethics in Research

The last and the final stage, is reporting which deals with the presentation of the findings of the study in a readable form. During the phases of data collection, data analysis and the writing of the report a researcher has to deal with many ethical issues.

According to Creswell (2007), before conducting interviews the interviewees or the subjects should be briefed about the nature and the purpose of the study and during the interviews the researcher should not share his or her views with the subject because it may reduce the information shared by the participant. In our research, before conducting the interviews we briefed the participants about the scope and the purpose of our study. As we conducted asynchronous computer assisted interviews therefore we did not have any influence on the participants for information sharing.

During data collection the subjects or the interviewees may ask for anonymity and we can do it by assigning them unique identification number instead of publishing the names in the report (Creswell, 2007). We also asked the participants if they want to be anonymous but no one had the apprehension to be disclosed. Therefore, we have mentioned the name, the designation, the team, the department, and the organization of each informant in the self-transcribing interviews presented in the appendix B. The use of alphabets such as A, B, C and D for the informants is for the ease of the reader.

According to Israel & Hay (2006), another way for the researcher to establish his or her trust among the participants of the study is to avoid fabricating quotations and gaining information by conducting false interviews. Therefore to maintain the trust among the participants, all the conducted interviews are real and there is no fabrication and falsification in the interview data.

5. Empirical Results

5.1 Introduction to Informants

To explore the problem area we conducted four different interviews with the people in the management of NADRA-Kiosk. NADRA-Kiosk or e-Sahulat is mainly dealt by Public Services Department (PSD) of NADRA. NADRA carries out its operations in the country through its eight Regional Head Quarters (RHQ) and every regional head quarters has PSD. We selected the PSD of RHQ Multan to conduct the interviews. There are two different teams working under this department. The first one is operations and the other one is compliance. We selected two interviewees from each of the team. These interviewees or informants are discussed as follows.

Informant A is working as an assistant manager in the operations team of PSD. He has seven years of work experience with NADRA. He is an office bearer and looks after the day to day operational issues of NADRA-Kiosk in the region through his team and reports to the manager of PSD. The person was relevant because of his current position and work experience with NADRA.

Informant B is working as a supervisor in the operations team of PSD. He has five years of work experience in NADRA. He works in field under the assistant manager and carries out day to day activities related to operations through a team led by him. The operational issues are mainly related to the connectivity of the Kiosk to secure internet connection and the availability of the system. We selected the person for the interview because he has hands on experience related to the technical issues of the system.

Informant C is working with NADRA as an assistant manager for compliance team. He has been working in NADRA since 2004. He is an office bearer who reports to the manager of PSD. He ensures, through his team that the standard operating procedures provided by NADRA are implemented at every outlet of NADRA-Kiosk or e-Sahulat in the region. The informant was selected for the interview because of the nature of his job and experience.

Informant D has been working as a supervisor in compliance team for the last three years. He works in the field under the assistant manager of compliance and ensures the implementation of the standard operating procedures at different Kiosk's outlets. We selected him because he interacts with the franchises directly and knows about the day to day usage of the system.

5.2 Disposition of Interview Results

Based on our research model, the interview questions are thematized into the following parts or constructs: user trust, system quality, information quality, service quality, use and net benefits. These six constructs together reflect the outline of the research area. In order to make our empirical interview findings to be better understood, each interview question and its answer have been presented in its own theme, by using the floating text, quotations as well as tables. The answers shown in tables are the short summary of the reply from each informant for the questions. The original responded answers from each informant are presented in appendix B. Moreover, to make a clearly descriptive presentation of the interview results in the following floating text, we decided to use a four letter pattern referencing technique to an informant idea or quotation. The first two letters are from the acronym of the construct, third letter represents the informant and the last letter represents the question number in that construct. For example, UTA1 should be read as the answer given by informant A, for the question 1 of the construct ‘User Trust’.

5.2.1 User Trust (UT)

The construct user trust had two questions to be answered by each of the informants. The table below shows the summarized empirical results for the questions.

Table 5.1 Summarized empirical results for User Trust

Questions, and Answers from Informants A,B,C,D		
	1) What is your opinion about users' trust and the use of any e-government application?	2) How did you manage to earn citizens' or users' trust in NADRA's e-government applications specifically in NADRA-Kiosk?
A	Based on users' or citizens' trust, governments around the world are focusing on automated operations.	By providing quality of data and quality of service.
B	Trust of users in an e-government application is very important.	Citizens' awareness campaign is used to earn and manage trust.
C	Usage of an e-government project is associated with the trust of its users.	Initially NADRA-Kiosk was trusted because of its initiation by the government agency but maintaining trust is an ongoing process.
D	Citizens' distrust may lead to the failure of any e-government initiative.	Through periodic citizens' awareness campaigns.

We are living in a digital and an automated world where people are going to adopt the operations from manual to automated, and during this process people have been building and

enhancing their trust on the electronic operations (UTA1). As to the e-government applications, a common idea is shared by the informants, that user's trust has the closer relationship with the use of e-government applications. If an agency or government fails to manage or build the trust of the citizens then an e-government initiative could be a failure, on the other hand, if the trust has been built in properly then it will help to lead the e-government applications to be useful (UTA1; UTC1; UTD1). As informant B mentions during the interview:

“Positive level of trust plays vital role in attracting the citizens to use e government application” (UTB1).

Due to the questions of how to earn the users' trust in the context of NADRA-Kiosk, the informants have their own ideas and thinking. In the perspective of the initial trust, it is easy to earn the citizens' initial trust for NADRA-Kiosk since NADRA is the government owned IT Company, under the ministry of Interior Pakistan (UTB2, UTC2). But the maintenance and increase of the trust is the ongoing process which is not easy and requires more attention (UTC2). Informant B and informant D agreed that launching citizens' awareness campaigns could be a good factor to earn both technical and political trust of the users. They also added that awareness campaigns are launched for the citizens so that they could be introduced with the functions, features and the benefits of the system. NADRA introduced the self operated electronic machine to provide a new payment method for the utility bills. During the usage of this machine, citizens save their time and energy and experience the real time response and surety of payment. All these experiences will be the key factors of increasing citizens' trust and the acceptability of NADRA-Kiosk. (UTA2)

5.2.2 System Quality (SQ)

The second construct of system quality in our research area had three questions. The first one was related to the importance of system quality in any IS, second one was related to the effects of system quality on the users' or citizens' trust and the last question was specifically about the implementation of system quality in NADRA-Kiosk. The table below shows the summarized answers of the informants.

Table 5.2 Summarized empirical results for System Quality

Questions, and Answers from Informants A,B,C,D			
	1) Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	2) What do you think about the effects of system quality on users' or citizens' trust in the context of e-government application?	3) How do you achieve system quality in NADRA-Kiosk?
A	Usage of an information system is based on its quality parameters such as ease of use and user friendly interfaces.	Better system quality increases citizens' trust.	The use of Kiosk is made easier for the citizens by guiding them about the functions of the Kiosk in real time.
B	The quality parameters are the essential attributes of an IS in any organization with respect to the usefulness.	Use of e-government application increases with improved system quality.	Usefulness of the system is made understood through awareness campaigns.
C	Assurance of system quality is a key to the usage of the system.	System quality and citizens' trust are directly related.	Through user friendly interface.
D	System quality is one of the causes for the use of an IS.	The better quality of the parameters of system quality increases users' trust.	Through user friendly interface and by giving an option to select a language either Urdu or English.

The common argumentation is shared by the informants, that the implementation of these different parameters of system quality is a key for the use of any IS. A good design could achieve the high usage (SQD1), and the reliability and stability of system, ease of use and user friendly interfaces are all the essential attributes to ensure the system usefulness (SQA1, SQB1, SQC1, SQD1). If a system is without user friendly interfaces and the ease to operate or use features, it cannot be accepted and used by the general public, and only the system with these parameters could be easy to understand, easy to handle and well accepted by the citizens (SQA1).

Informant C expresses his opinion on the effects of system quality on users' trust in the quite direct way:

“System quality and technical trust are directly proportionate to each other, high system quality: high trust and vice versa” (SQC2).

Other three informants also present their ideas to complement this quotation. According to informant B, a complex system could lead to be a failure due to hard to use and hard to understand by users. To increase the usability of any e-government system, we must improve the system quality. When the unskilled citizen operates one system, the user friendly interface may help to understand and operate the machine (SQA2). A system with better system quality could increase the usage. Furthermore, it could enhance the trust of the users in the technology or the application. (SQD2)

The informants present the different examples and the facts to describe the way how NADRA-Kiosk achieves the system quality. Both informant C and informant D regard NADRA-Kiosk as a successful story. In the technique perspective, it provides a touch screen with the easy to use graphical interfaces (SQD3) and this kind of user friendly interface helps to gain the market quickly (SQC3). It also provides the different language options for users to choose from, such as Urdu and English (SQD3). In the social point of view, the employees in NADRA are trying to provide good communication and education for the citizens. In the beginning, NADRA engaged employees on the Kiosk machines to support and guide the citizens to use and operate it. (SQA3) They are also working hard to achieve system quality through awareness campaigns. More the citizens are educated about the NADRA-Kiosk, the more the citizens will come to know about it. (SQB3)

5.2.3 Information Quality (IQ)

The next construct of information quality was also inquired using three questions. The answers to the questions by the informants related to the questions of the construct are summarized in the table below:

Table 5.3 Summarized empirical results for Information Quality

Questions, and Answers from Informants A,B,C,D			
	1) Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	2) In the context of an e-government application, what is your opinion about the effects of information quality on users' or citizens' trust?	3) How did you ensure information quality in NADRA-Kiosk?
A	Yes, it plays a vital role for the usage of an IS.	Information quality may lead the citizens towards trust or distrust about the application.	It is managed through different tools and techniques.
B	Yes, quality of data increases the reliability of the system.	Improved information quality makes any e-government application dependable.	Different methods are applied to ensure timely and reliable data.
C	Yes, it does.	Substandard information quality is the cause of citizens' distrust.	Before being fed to the database server, the data is first verified.
D	Yes, it is required for IS use by the users.	Poor information quality leads towards decreased citizens' trust	Through proper monitoring of the information and its flow.

Quality of information in an IS cannot be compromised is agreed by all the informants. As informant C straightforwardly states the importance for the parameters of information quality for the use of the IS:

“Any information System is incomplete if the crucial element ‘information’ is not relevant, accurate and timely. These all are considered as usage factors” (IQC1).

If a user gets the wrong or non-relevant information from one system, he or she probably will try to avoid using that system for the next time and it will decrease the level of trust for using that system (IQA1).

In the context of the e-government applications, poor information quality may cause negative results and problems, such as the citizen might distrust the system or do not trust at the same level as before (IQA2), that specific system's reputation might be damaged (IQB2), the organization might get the bad name (IQC2) and the management probably will lose the citizens' trust in the technology (IQD2). On the other hand, timely, accurate and relevant data and information may be the cause of citizens' trust in the e-government system and will lead to the dependability and acceptability of that e-government application (IQA2; IQB2).

In order to ensure the timely and reliable data and increase the credibility of NADRA-Kiosk, NADRA has managed the information quality through various tools and techniques (IQA3; IQB3). Each transaction on NADRA-Kiosk involves the transfer of payment so it is impossible to feed inaccurate and irrelevant information in database server (IQC3).

5.2.4 Service Quality (SV³)

The questions in this construct are related to the support provided by any agency or government to the users when an e-government application is started for the users. The three questions of the construct and the summarized answers from the informants are presented in the following table.

Table 5.4 Summarized empirical results for Service Quality

Questions, and Answers from Informants A,B,C,D			
	1) Do you think that in addition to system and information quality, service quality has any role in the use of any IS?	2) How does service quality affect users' or citizens' trust in the context of e-government application?	3) What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?
A	Yes, it has a major role for the use and success of an IS.	Better service quality increases the level of citizens' trust in the government policies.	Service quality is achieved through standard operating procedures.
B	Yes, it is parallel with system and information quality.	Citizens' trust can be achieved through better quality of service.	Service quality can further be enhanced by implementing some new steps.
C	Yes, it also has a role and it describes the efficiency of the system.	Citizens' trust and service quality are directly related.	Technically, the Kiosk offers all the stated features.
D	Yes, it has the same importance as the other two.	If the application fails to provide what is claimed then it will add to citizens' distrust.	Continuous and proper monitoring for the availability of the system and the payment of utility bills is carried out.

All the informants stated that the availability of system when needed, and timely accessible and appropriate data are very important parameters. Furthermore, the availability of all the stated features also adds to the use of any IS (SVA1; SVB1; SVC1; SVD1). Service

³ Since acronyms SQ represents the 'System Quality', so we use SV to represent 'Service Quality'.

quality and citizens' trust are directly proportional. Better quality of service for the citizens increases their trust in the steps taken by the government and vice versa (SVA2; SVB2; SVC2; SVD2).

Informant A and B talked about the steps and methods taken by NADRA to ensure quality of service. Both of them stated that the issuance of the printed slip after the payment of the bills, and reliable data provided to the Kiosk's operator, are the features of the service quality. Further steps such as issuance of electronic slip on cellular phones after any transaction may increase the service quality (SVB3). To guarantee the high usability of Kiosk, NADRA also ensures the availability of the system with proper monitoring (SVD3).

5.2.5 Use (U)

To measure the relationship between users' trust and the use of any e-government application we asked a specific question from our informants. The question was:

Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?

The informants were agreed at one point that the use of the Kiosk is increased with the passage of time. Informant B had a point that the use is increased both in urban and rural areas. According to Informant C, in a short period of three years there are more than 6000 outlets operating throughout the country.

“My department is directly related with the franchises of the system. We have observed and witnessed that there is a significant increase in the number of users of the Kiosk with the passage of time. The increase in the use of the system is due to increasing trust of the users on the system. Franchisers deal with the users in a respectable way. They provide them proper guidance and the users in return trust them.” (UD1)

Data about the payment of bills from Multan Electric Power Company (MEPCO) shows that during the last three years there is an increase in the use of the Kiosk. According to the data, 19.71% of the consumers paid their bills through the machine in 2008-2009 which increased in the next year and till December 2010 it was 41.34%. (UA1)

5.2.6 Net Benefits (NB)

The first question in this construct measured the benefits exposed to the users' of NADRA-Kiosk. The other question is general and it asked the informants about the relationship of the advantages exposed to the users and their trust level for the system.

Table 5.5 Summarized empirical results for Net Benefits

Questions, and Answers from Informants A,B,C,D		
	1) Need your comments on the net benefits (e.g. ease for the citizens, saving users' or citizens' time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	2) Do you think that the exposed net benefits to the users or the citizens have increased their trust on the system?
A	Time is saved and users' avoid paying extra or additional charges.	Yes, it has.
B	The main advantage is the saving of users' time.	People come again and it means that they have higher trust in the system.
C	It has brought a social change.	Yes, because many users come again and again. They use the system on monthly basis to pay utility bills.
D	Many options under one roof.	Yes, It did.

The system has made the life of the people, in both urban and rural areas, more convenient and easier. By using NADRA-Kiosk, users could enjoy many solutions under just one roof. (NBD1) Users can buy scratch cards for the mobile phone and make CNIC verifications (NBA1; NBB1). Banks are closed at 5 PM while the most of the Kiosks or e-Sahulat operate till midnight, therefore users can use the machine till late night to pay the utility bills (NBB1). In addition, people also save their time by avoiding long queues outside the banks (NBD1). By engaging in using NADRA-Kiosk, people are shifting their payment habits to an ease way and have the good feelings of technology-based services (NBC1).

The net benefits are enjoyed by the users and they come periodically to pay their bills. It is reported that 82% of the Kiosk outlets in the region have maintained their users and some of them are also increasing the number of their users. (NBA2) The users of the system who use it frequently start trusting the system. This phenomenon is observed when the users or the citizens come to the franchisee give him or her billing invoices with the money to be paid and collect the stamped receipts later on. (NBD2)

6. Analysis and Discussion

In the last chapter we presented the findings from the interviews conducted with the members of operations and compliance teams in PSD at NADRA. In this chapter we will analyze those interviews and find the answers of our two research questions. To make a clear understanding of the results, the structure of this chapter is based on the constructs of the interview guide. We have analyzed the answers construct by construct. The developed code memo for analysis is used, and according to the code memo we marked the areas in the transcribed interviews. The marked areas actually represent the answers for our study.

6.1 User Trust

Blind (2007) argued that due to e-government initiatives the processes in the government departments become transparent and the element of corruption also reduces. These two factors add to the citizens' trust. In the first part of our first research question we wanted to investigate that, is there any relationship between the use of an e-government initiative and the trust of the users?

The informants were agreed upon the fact that the usage of any initiative taken by a government to become electronically accessible by the citizens depends upon the trust of its citizens in the government. They also argued that to become digital on government level is not only a growing phenomenon in the developed world but it is also gaining attention among the governments of the developing world. (UTA1; UTC1, Table 5.1)

From their own experiences while working in NADRA they mentioned the steps taken to earn citizens' trust. The most effective way or method they adopted was the citizens' awareness campaigns through electronic and print media (UTB2; UTD2, Table 5.1). Once the project was initiated, the other features such as assurance of data quality and better service quality for the citizens contributed to increase both the technological and political trust of the citizens in the system (UTA2, Table 5.1).

The empirical data shows us that the informants are agreed upon a point. They argue that trust of the citizens either technological or political in any e-government initiative is very important for the usefulness of the application. For the second question there were different opinions or answers. Informant A connected the trust of the user in the Kiosk to data quality and quality of service. Informant B and D described citizens' awareness campaigns as the measures taken by NADRA to earn citizens' trust while Informant C pointed out that the trust of the citizen was due to the image of NADRA as a government agency. From this discussion we could argue that, according to our study user trust in an e-government initiative is very

important for its use. Moreover, different measures are taken by NADRA to earn the trust of the citizens.

6.2 System Quality

In the second part of the first research question we wanted to investigate about the features of an e-government initiative and their effect on users' trust. These features are according to our research model (figure 2.3). System quality is among one of the features. Many researchers defined different parameters to measure the quality of any IS. In our research we focused on four parameters of the system quality which are reliability and stability of the system, usefulness of the system, ease of use for the user, and user friendly interface of the application.

To evaluate the importance of system quality for the use of any IS we asked the informants a question. The informants had a consensus that the system quality has very important part for the usage of an IS (SQA1; SQB1; SQC1; SQD1, Table 5.2). Answering the specific question related to the system quality of an e-government application and users' trust, they argued that quality of system such as user friendly interface, ease of use, and reliability and stability of the system collectively contribute towards the usefulness of the system and in return it increases the trust of the users in the system. Moreover, it is also added that the e-government applications are almost used by all the segments of the society including the laymen so the ease of use and the development of user friendly interfaces must be given a special attention (SQA2; SQD1). The informants commented positively on the relationship between system quality of an IS and the trust of the users in the IS. From this discussion we could argue that, this study explores; good system quality parameters in an e-government application as a key for the higher trust of the users in the application and its use.

For the answers of our second research question we also asked an additional question about the accomplishment of system quality in NADRA-Kiosk. Informant A and Informant B had an agreement that the campaigns launched by NADRA are helpful to ensure system quality. Through these campaigns the citizens understand the purpose, different functions and the use of the system. Informant C and Informant D had a different opinion. They agreed that the user friendly interface of the Kiosk and the option to select language either Urdu or English makes it more acceptable among the citizens. The informant B, C and D agreed that the higher value of the parameters of system quality add to the citizens' trust. From the above discussion we can find the answer for the first hypothesis and it could be concluded that higher system quality has positive effect on the trust of the users of the Kiosk and the poor system quality will lead the users towards distrust.

6.3 Information Quality

The second feature of any e-government application or system is information quality which also affects users' trust. Information quality is defined by using many parameters by the researchers but in our research we focused on content, in time availability, accuracy and relevance of data.

Following the similar pattern as stated before, first question in the construct of information quality was about its importance in the context of IS use. A direct relationship between the use of any IS and the quality of information was supported. Quality of data or content and its timely availability keeps the users of an e-government application satisfied. The citizens trust the stated position of the government about such initiatives and the position could be at stake if the expectations of the users' are not satisfied. (IQD2) Accuracy and relevance of the data in the context of e-government applications are very important. In the absence of relevance and accuracy of data the users of any system will not use the system in future (IQA2; IQB2). Higher quality of information provided by an e-government application is the cause of increase in the trust of the citizens in the system (IQA3; IQD3). We did not come across any argument from the informants where they find any doubt about the relationship of the quality of information and the trust of the users. From all the above arguments and the research we conducted, we could say that for this particular study better quality parameters of information lead the citizens where they trust in e-government system. Moreover, these quality parameters also lead them to the use of the system.

The third question in the construct was about our second research question. Informant C and informant D argued that the quality of information is ensured through the verification of data before it is fed to the database server at NADRA's headquarters. The franchises access the data from the centralized servers. The information produced for the citizens' about the Kiosk or the system is also verified before being published (IQD3). In order to change or edit the data a control board is provided (IQC3). Maintaining the quality of information is an essential part at the end of NADRA because it increases the credibility and technical trust of the system among the users or citizens (IQA3; IQB3; IQD3). It is clear from the above discussion that in the context of this study, trust of the users in the NADRA Kiosk is dependent on in time availability, higher accuracy and higher relevance of data or content. Hence we could say that better information quality will have positive effect on the trust of the users of the NADRA-Kiosk while poor or bad quality of the parameters of the information will lead the users towards distrust.

6.4 Service Quality

Service quality is the third feature of an e-government application or system and it is one of the constructs of our research model. Researchers measured service quality in terms of

efficiency, fulfillment, and system availability (Zeithaml et al., 2005). In our research we asked the subjects about the relationship of these three parameters with the trust of the users.

There was an agreement in the informants about the service quality as an important feature of an IS. Efficiency of the system counts and it adds to its usage (SVC1). The availability of the system should be made possible whenever it is needed (SVB2). Moreover, the service provider should provide what is claimed because the users of the system may have expectation about the system and if these expectations are not fulfilled then the users cannot have confidence on the system in the future (SVD2). Another argument was about the steps taken by the government to improve the quality of the service in an e-government initiative. It is unanimously said that such types of steps taken by the government may increase the trust of the citizens in the government or the agency which provides the services. There was no apprehension among the respondents for the relationship between service quality and the users' trust. From the point of view of this research we could say that better quality of service of an e-government system adds to the trust level of the users which they have in the system.

For the third question informant A and B argued that with the assurance of reliable data provided to the users and by providing a printed slip or sending a short message to the mobile phones of the users after any transaction, service quality is maintained in case of NADRA-Kiosk. Informant D added that with the appointment of the resource at each NADRA-Kiosk in the beginning, they managed to improve the service quality. The availability of the system and the proper billing of the utility bills at the franchises are also monitored through the compliance department (SVD3). NADRA took these steps in order to keep the process transparent and maintain the trust of the users' which they have in the system (SVB3; SVD3). The empirical findings imply that all the initiatives taken by the management to improve the service quality lead towards the result of increasing the trust of its users in the system. Therefore, as an outcome of this research we could say that higher or better service quality will improve the trust level of the users in them for the system.

6.5 Use

The first segment of the last part of first research question is about the effect of increase in the trust level of the users in the use of an e-government application. In order to find out the answer to the question we asked one question each from all the informants in the context of NADRA-Kiosk. The reason to ask the only question for this construct is clear. NADRA-Kiosk is an active e-government application and if we find the answer for the question in relevance with the system we could find the relationship between the users' trust and the use of an e-government application for our study.

According to the informants the use of the Kiosk is increasing day by day. Kiosk has gained the popularity not only in urban areas but also in rural areas. The facts and the figures show

that since 2008-2009 till December 2010 the use of the Kiosk in terms of paying utility bills has increased by two times. (UA1) In addition to that, even though there are other options such as banks and post offices which are available for the payment of utility bills, the users have started using the system frequently mostly for paying the bills. There is also increase in the database of the users. The role of the franchisers is also very positive in this respect. They guide the citizens in a proper way when they approach them for the payment of the utility bills or any other transaction. (UD1)

From the arguments and the answers provided by the informants in the context of NADRA-Kiosk it could be said that according to our study the increasing trust of the users in an e-government application convinces the citizens or the users to use the system. This higher trust in the system is achieved through better system, information and system quality as discussed earlier and from the point of view of this study we can conclude that higher trust in the Kiosk leads the users towards its use.

6.6 Net Benefits

For the second research question we developed a hypothesis which states that the use of the NADRA-Kiosk exposed the benefits to the citizens or the users. In order to verify our hypothesis we asked the subjects question about the benefits which the users may have while using the system. In the previous researches the researchers measured net benefits in terms of ease of use for the users, saving of time of the users, and the fulfillment of need and requirements of the users. We formulated our question on the same parameters.

People are inclined to use the system because it provides them ease; to pay the utility bills, to buy scratch cards for the mobile phones and to carry out other transactions (NBC1). The main benefit is the saving of time. With the implementation of the system the users are not required to stand in long queues outside the banks or post offices to pay their utility bills (NBA1; NBB1; NBD1). The Kiosk can also be used to verify computerized national identity card of any citizens at any time which is an additional benefit (NBD1). These answers to the question in the context of NADRA-Kiosk and this study, lead us to the conclusion that the benefits are exposed to the users or the citizens after the use of the system. This conclusion also satisfies our fifth hypothesis about the Kiosk for this study.

The last part of the first question focused on the relationship between the net benefits exposed to the users after the use of an e-government application and the effect of these benefits on the trust level of the users. We also developed a hypothesis which states that the exposed net benefits will affect the level of trust of the users of the Kiosk.

There was a consensus among the informants on a point that the advantages of the application convince the users to use the system or application again. It is reported that 82% of the

franchise outlets of the Kiosk in Multan Region maintained their user and some of them are increasing their user database. These figures indicate that the people keep on using the system periodically and franchises are also trying to create more customers or users for their outlets.

From the above discussion we could say that the phenomenon of periodic use of the system by the same users is an indication of increase in their trust level for the system. Therefore, from this research or study we could answer the last hypothesis and we can say that the net benefits exposed after the use of NADRA-Kiosk affect positively on the trust level of the users for the system.

In the chapter we analyzed the transcribed interviews and discussed their relevance with our research questions. We also found out the answers to our questions from the interviews, discussed those answers and succeeded to answer the hypotheses about NADRA-Kiosk.

7. Conclusion

In the previous chapter we analyzed and discussed the findings of the study. This chapter concludes both research questions, comments about the implementation of our research model and it also includes self-criticism.

7.1 Research Question (RQ) 1

Our first research question was a detailed question. It had three sub-parts. The first part asked the management about the use of an e-government application and its relationship with the trust of the citizens or the users in that application. In the second part three features i.e. system quality, information quality, and service quality of any IS in general and of an e-government application in particular were discussed in the context of users' or citizens' trust. The last part revealed the relationship between the users' trust and the use of an e-government application, the benefits exposed to the users after the use of the application and the effect on the level of users' trust after getting those benefits.

After the analysis of the answers in the study related to the first research question, it is clear that the management considers trust of the users or the citizens as a key for the use of any e-government application. According to the respondents, governments or the management initiating such applications consider themselves responsible to build the trust of the users in these initiatives through various means, and maintain it with the passage of time otherwise the investment in terms of money, time and human effort could be in vain. From technical point of view the management believes that the improved technical features such as system quality and information quality could improve the technological trust of the citizens in the system and the steps taken to improve the service quality of the system add to the political trust of the citizens which they have in the government. The management of NADRA-Kiosk considered these both parts of user trust, and has developed strategies and carried out actions to maintain and improve system, information and service quality of the system. Furthermore, when the users have trust in the system they use it and can enjoy benefits. In the context of NADRA-Kiosk, management believes that the users of the Kiosk enjoy many benefits and these are ease for paying the bills, verification of CNIC for businesses, employment and other purposes, saving of citizens' time, long operating hours of the Kiosk etc. The study also explored that the users who enjoyed those benefits, started using the system frequently which shows that they trust the system and this trust increases with the passage of time.

From the above discussion and in the context of our research we could conclude that the investment by the governments on developing, deploying and implementing e-government applications could be useful if they focus on the ease of the citizens in general and on the

trust of the citizens in the applications in particular. The trust can be built through reliable, stable, useful system assembled with timely available, accurate and relevant data and also with user friendly interface which provides ease of use for the users as well.

7.2 Research Question (RQ) 2

The second research question was about to evaluate an existing e-government application using our new research models based on the updates IS success model. For this question we developed six hypotheses and the results are summarized in the Table 7.1 as follows:

Table 7.1 Hypotheses Results

Hypotheses Results	
Hypothesis	Result
H1: System quality will have effect on the trust of the user of the NADRA-Kiosk.	From the discussion we have concluded that higher system quality has positive effect on the trust of the users of the Kiosk and the poor system quality will lead the users towards distrust.
H2: Information quality will have effect on the trust of the user of the NADRA-Kiosk.	From the findings we could conclude that good information quality will have positive effect on the trust of the users of the NADRA-Kiosk while poor or bad quality of the parameters of the information will be the cause of users' distrust.
H3: Service quality will have effect on the trust of the user of the NADRA-Kiosk.	As an outcome of this research we say that higher service quality will improve the trust level of the users for the system and vice versa.
H4: Higher level of user trust in the NADRA-Kiosk will lead towards its use.	From the arguments and the discussion we have concluded that users use the NADRA-Kiosk because of their higher trust in it.
H5: Use of the NADRA-Kiosk will expose the net benefits to the citizens or the users.	As per the results of the study, the net benefits such as saving of time, verification of identity cards, and buying of scratch cards for mobile phones, after the use of Kiosk, are exposed to the citizens.
H6: Net benefits exposed after the use of NADRA-Kiosk, will affect the users' trust.	From this research we can say that the net benefits exposed after the use of NADRA-Kiosk affect positively on the trust level of the users for the system that is why the same users use it frequently.

From the above table it is clear that the hypotheses we developed to evaluate NADRA-Kiosk, corresponding to the different constructs of the research model and the relationship between them, are answered in the study. In our case system quality, information quality, and service

quality are provided by the management for the ease of the users and as trust building measures for the citizens. The management adopts different methods or procedures such as the use of graphical user interface, use of the option to select a language either Urdu or English, and the launch of citizens' awareness campaigns to build and maintain citizens' trust. These steps have increased the use of the Kiosk and the citizens start enjoying the benefits. These exposed benefits for the users have gained attention of other people and the trust base for the system has increased with the passage of time. Therefore, we could conclude that from management point of view the investment done by the government in Pakistan on NADRA-Kiosk in terms of money, time and human effort is not in vain and it made the life of the citizens easier.

7.3 Implementation of Our Research Model

Our research model provided us the guideline to conduct the entire study. Using the constructs in the model we developed the interview questions, the answers of the questions were presented in the empirical finding chapter as per constructs, then the answers were analyzed using the code memo which is also in relation to those constructs and finally we presented the analysis of the research in the context of those constructs. Furthermore, we presented our analysis and discussion with a combination of the research model, empirical finding and our own reflections. Overall, we have successfully implemented our research model in this study.

7.4 Self-criticism

Our study is based on the qualitative research to explore management point of view about citizens' trust in an e-government application. In order to test the users' trust in a broader context of e-government initiatives and G2C perspective, more objects of study should be explored and investigated using this research model. On the other hand, it also would be very interesting and reasonable to conduct a research based on surveys or questionnaires. This type of quantitative study could be helpful to evaluate the citizen's trust in the context of NADRA-Kiosk from citizens' point of view. Moreover, since the research model in this study is a modified version of the updated IS success model, it needs to be tested and validated.

Appendix A: Electronic Government Maturity Models and their respective stages

S.N	Model Description	Model Dimensions (Stages)					
		1	2	3	4	5	6
1	Howard (2001)	Publishing	Interacting	Transacting			
2	World Bank (2003)	Publishing	Interactivity	Completing transactions			
3	Chandler & Emmanuel (2002)	Information	Interaction	Transaction	Integration		
4	Gartner (2000)	Presence	Interaction	Transaction	Transformation		
5	Layne & Lee (2001)	Cataloging	Transaction	Vertical Integration	Horizontal Integration		
6	West (2000)	Billboard stage	Partial Service delivery	Full integrated service delivery	Interactive democracy with public outreach and accountability		
7	Hiller & Blanger (2001)	Information desalination	Two-way communication	Transformation	Vertical and horizontal integration	Political Participation	
8	Moon (2002)	One-way communication	Two-way communication	Transformation	Vertical and horizontal integration	Political Participation	
9	UN & DPEPA (2008)	Emerging	Enhanced	Interactive	Transactional	Full Integration (Seamless)	
10	Asia Pacific (2004)	Internetwork email system	Enabling inter organization and public access to information	Allowing two way communication	Allowing exchange of value	Digital democracy	Joined up government
11	Deloitte & Touche (2001)	Information Publishing	Official two-way transaction	Multipurpose portal	Personalized Portal	Clustering of communications	Full integration and enterprise transformation

Source: Karokola, R, G. (2010). *A Systemic Analysis of e-government Maturity Models: The Need for Security Services – a Case of Developing Region*. Stockholm: US-AB

APPENDIX B

SELF-TRANSCRIBING INTERVIEWS

Appendix B1- Self-Transcribing Interview Transcript from ‘Informant A’

Date: 2011-05-03

A = Informant A

Ijaz-ur-Rehman Khan, Assistant Manager Operations (Ops) Public Services Department (PSD) Regional Head Quarters (RHQ) NADRA Multan, Pakistan

Constructs	Q. No	Questions and Answers	Code
User Trust (UT)	1	What is your opinion about the users’ or citizens’ trust and the use of any e-government application?	
	A	Today’s world is a digital world where every organization is going towards being automated, it saves citizens time and extra effort, nowadays people have complete trust on electronic operations as it is the requirement on current automated world, not only modern countries but also third world countries are switching their operations from manual to automated as per the citizens trust and acceptability.	eGUT
	2	How did you manage to earn citizens’ or users’ trust in NADRA’s e-government applications specifically in NADRA-Kiosk?	
	A	NADRA is the pioneer in e-government application in household sector and is owned by the government itself. It introduced payment of utility bills through an electronic machine which can be self operated. Using that particular machine any citizen can save his/her time and energy that he/she wastes in the lengthy queue outsides banks and post offices. Kiosk also ensures real time response and the payment of bills. In NADRA KIOSK application we believe that the users’ trust is achieved by providing quality of data and quality of service to the citizens. I refer it to the technological and political trust both as per the understanding I am given by you.	NKUT
System Quality (SQ)	1	Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	

	A	If we want to implement an information system of any organization for the convenience of citizens then it should be user friendly and easy to operate because if it will not be user friendly it will not be accepted by the general public, its interface should be well designed and easy to understand, an easy to handle Information System is well accepted by citizens and considered to be good in quality.	
	2	What do you think about the effects of system quality on users' or citizens' trust in the context of e-government application?	
	A	In context of e-government application, system quality is of high importance as it has to be operated by a laymen who may not be well aware of information systems it is the interface that may help the citizen to understand and operate that machine.	
	3	How do you achieve system quality in NADRA-Kiosk?	
	A	In NADRA e-government application we achieve quality through better communication to citizens about our operations and increase the ease of use. For this purpose initially we engaged an employee on our KIOSK machines, who was supposed to guide citizens about the operations of that application so that next time the users must be well equipped to use that application. This practice also increased their trust or confidence in the system.	NKSQUT
Information Quality (IQ)	1	Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	
	A	High quality of data plays a vital role in any IS as it creates the technological trust and increases the credibility of that IS. If a citizen will not get the relevant and true information based on true facts he or she will not use that IS next time which could be the cause of failure for that IS and organization as well.	
	2	In the context of an e-government application, what is your opinion about the effects of information quality on users' or citizens' trust?	
	A	In the context of e-government application quality of information affects the level of trust of the citizens. It lowers the technical trust towards the IS or the application, if the quality is low and it also damages its repute. However, timely, efficient and trusted information leads towards the dependability and acceptability of that IS.	IQUT
	3	How did you ensure information quality in NADRA-Kiosk?	
	A	In NADRA kiosk machine we manage the quality of data through various tools and techniques to ensure timely and reliable data so that it may increase the credibility of that e	

		government application. In KIOSK machine quality of data include the actual amount of bills and other products and their timely payment verification.	NKIQU
Service Quality (SV)	1	Do you think that in addition to system and information quality, service quality has any role in the use of any IS? By service quality we mean i) efficiency i.e. data is well organized and can be accessed quickly, ii) fulfillment i.e. the system provides what is stated, and iii) availability of the system when required.	
	A	Service quality is also very important tool for the betterment of any information system in addition to the data quality and system quality. Any successful IS should provide relevant and timely information and that information must be easy to understand for the consumer or the user.	
	2	How does service quality affect users' or citizens' trust in the context of e-government application?	
	A	In today's market everybody competes on service, so in the e-government application where the key to usage and success is the quality of information and service quality, service quality gradually affects the level of trust in the minds of citizens for the steps taken by the government which may lead to loyalty of that very product or service.	SVUT
	3	What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?	
	A	In case of NADRA KIOSK we may follow the following steps for the assurance of service quality : <ul style="list-style-type: none"> • Ensure the reliability of data provided to consumer. • Ensure the electronic receipt provided to the consumer. • Ensure the working conditions of electronic parts of machine • Ensure the connectivity of application with the main server. 	
Use (U)	1	Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?	
	A	Usage of NADRA KIOSK is increasing day by day with the passage of time and it is due to the reliability and acceptability of our IS in the consumers' mind, the reason is that we provide the accurate information and we keep our customers on priority, our customer can pay their utility bills till late night without any extra charges that is the key factor of our success. If we talk about the numbers, I give you some facts. You know that the Kiosk also provides a facility to pay the utility bills of electricity, water, gas, and telephone. As an example, we have a data from Multan Electric and Power Company (MEPCO) and it is responsible for the transmission of electricity to the households in Multan Region. According to the data of the last	NKUTU

		three years, there were 19.71% consumers who paid their electricity bills through the machine in 2008-2009. In the next year of 2009-2010 it reached at 27.10% and from September 2010 till December 2010 it is 41.34%. I also want to mention that according to area or coverage MEPCO is the largest distribution company in Pakistan. The area it covers has almost the second lowest literacy rate in the country. Therefore, I say that even with this hurdle of less education level, Kiosk has shown progress.	
Net Benefits (NB)	1	Need your comments on the net benefits (e.g. ease for the citizens, saving users' or citizens' time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	
	A	Our consumers can get the benefits in terms of saving time, saving extra charges and value in terms of extra services such as scratch cards and verifications.	NKUNB
	2	Do you think that the exposed net benefits to the users or the citizens have increased their trust on the system?	
	A	Yes of course the net benefit exposed to the citizens has increased their trust on the system. They find our system reliable, flexible and easy to use when they carry out any transaction. As a matter of fact, utility bills are paid through a reference number. This reference number is actually the consumer number in the bill and it is recorded in our database. For the use of the management we generate a report based on the consumer numbers and a particular kiosk outlet to verify the frequency of the use of the system by consumers. This report helps us in taking different steps. If we have most of the consumers who frequently pay the bills through the machine every month we feel comfortable with the performance but we still try to improve the quality to increase the users. On the other hand, if we have most of the consumers who only come once or twice and then they disappear we start special monitoring of that particular Kiosk outlet to identify the reason of losing users. Till now the system has reported that 82% of NADRA-Kiosk outlets in Multan Region are not only maintaining their users but also increasing the user database.	NKNBUT

Appendix B2- Self-Transcribing Interview Transcript from ‘Informant B’

Date: 2011-05-03

B = Informant B

Mohsin Raza Bukhari, Supervisor Operations (Ops) Public Services Department (PSD) Regional Head Quarters (RHQ) NADRA Multan, Pakistan

Constructs	Q. No	Questions and Answers	Code
User Trust (UT)	1	What is your opinion about the users’ or citizens’ trust and the use of any e-government application?	
	B	Positive level of trust plays vital role in attracting the citizens to use e-government application. Nowadays e-touch points (or touch screen) strategy is being introduced to reduce time and make the interface simpler in order to increase the use of an e-government application.	eGUT
	2	How did you manage to earn citizens’ or users’ trust in NADRA’s e-government applications specifically in NADRA-Kiosk?	
	B	Citizens’ trust leads to adoption and use of e-government systems. It has two dimensions: trust on the governments and trust on Internet . To manage and to earn citizens’ trust awareness campaign tactics are being used. By trust on governments I mean Political trust as explained by you and Internet represents the technical perspective or trust.	NKUT
System Quality (SQ)	1	Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	
	B	While we implement the IS for any organization, the essential attributes (i.e. reliability, stability, usefulness, easy to use and user friendly) must be incorporated. For example e touch points are introduced to facilitate the rural area people.	
	2	What do you think about the effects of system quality on users’ or citizens’ trust in the context of e-government application?	
	B	In context of e-government application, system quality plays vital rule, as a simple or common user may easily understand the system. A complex system leads to failure. So improved system quality take the citizen towards technical trust which increases the use of any e-government system.	SQUT
	3	How do you achieve system quality in NADRA-Kiosk?	

	B	In achieving system quality in NADRA Kiosk, we worked hard through awareness campaigns. Citizens must be educated and in this way usefulness of the system can be propagated. The more they learn about the system the more level of their satisfaction or confidence on technology or application increases.	NKSQUT
Information Quality (IQ)	1	Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	
	B	Quality of data plays a vibrant role in any IS as it creates the belief and increases the credibility of that IS. If a simple person didn't get the accurate information, why he or she will attempt to use the same again.	
	2	In the context of an e-government application, what is your opinion about the effects of information quality on users' or citizens' trust?	
	B	Insufficient data and poor data quality in any IS leads towards unacceptability of that IS. It damages the reputability of the system. However timely, efficient and trusted information will lead towards the constancy and acceptability of that IS.	IQUT
	3	How did you ensure information quality in NADRA-Kiosk?	
	B	In NADRA Kiosk the information given is accurate and comprehensive. All transaction logs are efficiently logged. We manage the quality of data through various tools and techniques to ensure timely and reliable data so that it may increase the technical trust or acceptance of that e government application.	NKIQUT
Service Quality (SV)	1	Do you think that in addition to system and information quality, service quality has any role in the use of any IS? By service quality we mean i) efficiency i.e. data is well organized and can be accessed quickly, ii) fulfillment i.e. the system provides what is stated, and iii) availability of the system when required.	
	B	Service quality is also very important for the usage of any information system in addition to the data quality and system quality. The application should be available when needed and it should provide appropriate and well-timed information. Moreover, the provided information must be of users' benefit or advantage.	
	2	How does service quality affect users' or citizens' trust in the context of e-government application?	
	B	Today everyone competes on quality of service, so in the e-government application, the system must be available when needed. Any government has an advantage to face minimum competition where the key to success is to gain citizens' trust for the steps taken by her through service quality.	SVUT

	3	What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?	
	B	<p>We increase the service quality by following ways</p> <ul style="list-style-type: none"> • Electronic printed slip / SMS after bill payment • Accurate data provided to operator's <p>In future the following steps may increase the service quality and these are:</p> <ul style="list-style-type: none"> • A Software which will be used by mobile phone's • Recharge mechanism of NADRA Kiosk may be reviewed <p>All these possibilities or steps are regarded as 'after sales service'. It increases the use of the system by the citizens because they have the trust that their bills are actually paid on the Kiosk and it makes the process transparent.</p>	NKSVUT
Use (U)	1	Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?	
	B	It has increased with the passage of time and captured both the rural and urban areas. It is because of the citizens' or the users' who started trusting NADRA-Kiosk.	NKUTU
Net Benefits (NB)	1	Need your comments on the net benefits (e.g. ease for the citizens, saving users' or citizens' time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	
	B	Our valued customer gets the benefits of time; they pay bills when bank hours close, and save themselves from paying additional charges. Our products are very attractive in use as the users can buy scratch cards, have ID verification, and can pay Utility bills.	NKUNB
	2	Do you think that the exposed net benefits to the users or the citizens have increased their trust on the system?	
	B	People only come again when they get ease of service. We have the figures that the users of the Kiosk come again to use it and it shows their higher trust. One more thing, trust travels from word of mouth which is beneficial for both the consumer and for the e-government application.	NKNBUT

Appendix B3- Self-Transcribing Interview Transcript from ‘Informant C’

Date: 2011-05-03

C = Informant C

Mohsin Iqbal, Assistant Manager (Compliance) Public Services Department (PSD) Regional Head Quarters (RHQ) NADRA Multan, Pakistan

Constructs	Q. No	Questions and Answers	Code
User Trust (UT)	1	What is your opinion about the users’ or citizens’ trust and the use of any e-government application?	
	C	E-government application needs lot of concern regarding building users’ trust if this is not built properly then it is very difficult for a project to be useful.	eGUT
	2	How did you manage to earn citizens’ or users’ trust in NADRA’s e-government applications specifically in NADRA-Kiosk?	
	C	The bigger edge is that our project is initiated by a leading IT company (NADRA) which has owned by the Govt. of Pakistan and works under the Interior ministry, so developing initial trust is very easy but maintain and increasing that trust is not as easier.	NKUT
System Quality (SQ)	1	Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	
	C	System quality is much more important for the usage of an IS. Fortunately in terms of system quality our application is very reliable and user friendly.	
	2	What do you think about the effects of system quality on users’ or citizens’ trust in the context of e-government application?	
	C	System quality and technical trust are directly proportionate to each other, high system quality: high trust and vice versa.	SQUT
	3	How do you achieve system quality in NADRA-Kiosk?	
	C	NADRA Kiosk/e-Sahulat is a success story of NADRA. Due to its user friendly interface it gained the market very quickly, and caused a social change and up gradation. One more thing, this user friendly interface makes the user feel at ease and they come	NKSQUT

		frequently to use the system. According to me it is an indication of their trust in the system as well.	
Information Quality (IQ)	1	Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	
	C	Any information System is incomplete if the crucial element 'information' is not relevant, accurate and timely. These all are considered as usage factors.	
	2	In the context of an e-government application, what is your opinion about the effects of information quality on users' or citizens' trust?	
	C	If the quality of information in e-government application is not up to the mark the users may hesitate to use it again. It creates lot of problems and bad name to organization as well as to the government by the citizens.	IQUT
	3	How did you ensure information quality in NADRA-Kiosk?	
	C	Before loading information on our database server, the information is verified then it is going to be launched on server. Because if the irrelevant or inaccurate information is shared then it can be financially risky because online cash transfer is related with every transactions. All the franchises access the data from our centralized server in the headquarters. There is also a change control board if information is needed to be changed.	
Service Quality (SV)	1	Do you think that in addition to system and information quality, service quality has any role in the use of any IS? By service quality we mean i) efficiency i.e. data is well organized and can be accessed quickly, ii) fulfillment i.e. the system provides what is stated, and iii) availability of the system when required.	
	C	Yes, Service Quality is as much important as system quality and information quality, the efficiency does matter.	
	2	How does service quality affect users' or citizens' trust in the context of e-government application?	
	C	We all know time is money, if the efficiency is low then it creates tension in mind of customer because cash is involved in every transaction in our case. Specifically speaking citizens' trust in the system has direct relationship with the efforts done by the management to improve service quality.	SVUT
	3	What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?	

	C	By the grace of God, our Service quality is much more better than the competitors available in market. Fastest application we have. From fastest application we mean the data access time is less than that of the other Kiosks or point of sales in the market. In addition to that, the system provides the same functionalities what we have stated.	
Use (U)	1	Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?	
	C	Yes it is increasing day by day, now we have over 6000 outlets with Pakistan, just within 3 years of launch of e-Sahulat. So, we can say that the citizens of Pakistan have started trusting the Kiosk and its functions.	NKUTU
Net Benefits (NB)	1	Need your comments on the net benefits (e.g. ease for the citizens, saving users' or citizens' time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	
	C	e-Sahulat model is a great social change, people are shifting towards that ease, to pay their utilities' bills and other financial transactions, everyone who approached our system, admire the technology advancement and feel proud to use the technology.	NKUNB
	2	Do you think that the exposed net benefits to the users or the citizens have increased their trust on the system?	
	C	The net benefits mentioned earlier added to the trust of the users. The major indication is that the users come again to use the system and we monitor it through reports. Mostly, the users come on monthly basis for the payment of utility bills. The bills are paid through consumer numbers and these are saved in our database.	NKNBUT

Appendix B4- Self-Transcribing Interview Transcript from ‘Informant D’

Date: 2011-05-10

D = Informant D

Asad Malik, Supervisor (Compliance) Public Services Department (PSD) Regional Head Quarters (RHQ) NADRA Multan, Pakistan

Constructs	Q. No	Questions and Answers	Code
User Trust (UT)	1	What is your opinion about the users’ or citizens’ trust and the use of any e-government application?	
	D	Like any information system, e-government application needs users’ satisfaction for its use. In my opinion, users’ or in the case of e-government application, citizens’ trust is very important. An initiative taken by government cannot be useful if the citizens’ do not trust in the government.	eGUT
	2	How did you manage to earn citizens’ or users’ trust in NADRA’s e-government applications specifically in NADRA-Kiosk?	
	D	We have an advantage of being an agency which works under the ministry of Interior Pakistan. People started trusting us when we took the step for the Kiosk. We also launch citizens’ awareness campaigns periodically to propagate our message to the citizens. These campaigns are helpful in informing the citizens about the technical and the service quality features of the Kiosk. In this way we work to build technical and political trust of the users on the system.	NKUT
System Quality (SQ)	1	Why it is important to ensure system quality (e.g. reliability and stability of any system, usefulness of the system, ease of use for the user, user friendly interface of the system) in an information system?	
	D	Any IS without reliability and stability is useless. In addition to that, if a system does not have the features like ease of use or user friendly interface or the system does not ensure usefulness then the system is a poorly designed system. Therefore, I think that system quality plays an important role in the usage of any IS.	
	2	What do you think about the effects of system quality on users’ or citizens’ trust in the context of e-government application?	

	D	The features related to the quality of a system have direct effect on the users. Any e-government application without reliability, ease of use and user friendly interface cannot gain the attraction from the masses. All these features add to the usefulness of the system and the quality of these features enhances the technological trust of the citizens.	SQUT
	3	How do you achieve system quality in NADRA-Kiosk?	
	D	NADRA-Kiosk is a success story. We have achieved system quality by providing easy to use graphical interface with a touch screen. We have also provided an option to the user to select either Urdu or English as a language for the Kiosk. In my opinion both of these features really contributed to attract the users and increased its credibility among the citizens. The credibility means the trust the users have in the system.	NKSQUT
Information Quality (IQ)	1	Does the quality of information (e.g. content, availability of data in time, accuracy and relevance of data) play an important role in the use of IS?	
	D	Yes, It plays its role and availability and accuracy of data are the required features for any useful IS.	
	2	In the context of an e-government application, what is your opinion about the effects of information quality on users' or citizens' trust?	
	D	Timely availability of data and its quality makes the users satisfied. In case of e-government application where the citizens' have to deal with the government through an interface, quality of information is a key. Citizens believe in what is provided and stated by the government so if the information quality is poor the citizens' will lose their trust on the technology.	IQUT
	3	How did you ensure information quality in NADRA-Kiosk?	
	D	While working in compliance department, we have the responsibility to monitor the franchisers constantly. We ensure that the data which is fed to the database servers is accurate. We check that the information given to the citizens about the Kiosk from any source is authentic and unambiguous. These technology oriented steps are taken to maintain the reliability of the system and ensure its credibility among the users.	NKIQUT
Service Quality (SV)	1	Do you think that in addition to system and information quality, service quality has any role in the use of any IS? By service quality we mean i) efficiency i.e. data is well organized and can be accessed quickly, ii) fulfillment i.e. the system provides what is stated, and iii) availability of the system when required.	
	D	Yes, service quality is as important as system and information quality because it deals with another aspect of trust which is	

		political trust.	
	2	How does service quality affect users' or citizens' trust in the context of e-government application?	
	D	I believe that the service quality is related to the expectations of the users. The expectations of the users depend upon the claims by the service provider. If the expectations are not fulfilled the users do not use the service in the future. That is why in my opinion in case of e-government application, political trust of the citizens depends upon the quality of the service. If the application does not provide what is claimed or stated then the citizens would not trust anymore.	SVUT
	3	What steps or procedures do you adopt for the quality of service in case of NADRA-Kiosk?	
	D	For the quality of service, in the beginning we provided a resource at every kiosk to facilitate the citizens. We also ensure the availability of the system and proper billing of the utility bills at the franchises through continuous and proper monitoring. It helps us to attract the citizens by making the process clear and transparent, and make them trust in the steps taken by us.	NKSVUT
Use (U)	1	Do you think that the use of NADRA-Kiosk is increased or decreased in terms of number of users with the passage of time, and Why?	
	D	My department is directly related with the franchises of the system. We have observed and witnessed that there is a significant increase in the number of users of the Kiosk with the passage of time. The increase in the use of the system is due to increasing trust of the users on the system. Franchisers deal with the users in a respectable way. They provide them proper guidance and the users in return trust them.	NKUTU
Net Benefits (NB)	1	Need your comments on the net benefits (e.g. ease for the citizens, saving users' or citizens' time and the fulfillment of the needs and requirements of the users or citizens) exposed to the users or citizens after the use of NADRA-Kiosk.	
	D	With the introduction of the system people enjoyed a lot of benefits. They do not need to stand in long queues outside the banks and post offices to pay their utility bills. They do not need to go to some gazetted officer for the attestation of their national identity cards. The identity cards can be verified through the machine and these verified cards could be used to carry out any financial transaction. The machines are operational in urban as well as rural areas of the country so these are easily accessible. So the users can enjoy many solutions under one roof.	NKUNB
	2	Do you think that the exposed net benefits to the users or the	

	citizens have increased their trust on the system?	
D	<p>Yes, the exposed benefits to the users explained above always convince them to use the system again. I can say that because I deal directly with the franchises. We have asked them to maintain a register either electronically or paper based where they should keep the record of the users who come again and again. Their record is checked against the system reports and then we take certain decisions. In my case for the last month 77% of the reports from different franchises matched with our reports from the system. The franchises which provided reports based on false data we took strict action against them. According to the reports it is clear that the most of the users come again to make different transactions but mostly they come for the payment of bills on every month. The most interesting thing which I have observed is the trust of the users in the franchisee. In most of the cases NADRA provided the system in a locality to the franchisee who is the resident of that particular area. The people of that area know the franchisee and on weekdays before going to their jobs they come to him or her and hand over their utility bills with the money to the person and the franchisee can pay the bills on their behalf. Later on, the consumers come any time and get the receipt for the payment of the bill with a stamp on it. It makes the payment of the utility bills easier for the citizens. In my opinion, it shows the trust of the users in the system as well as in the franchisee.</p>	NKNBUT

References

- Abramson, M. A., & Means, G. E., (2001). *E-government 2001*, Rowman & Littlefield Publishers, Oxford. In Karokola, R. G., (2010). *A Systemic Analysis of e-government Maturity Models: The Need for Security Services – a Case of Developing Region*. Stockholm: US-AB.
- Ahmad, S., (2007). *E-government initiatives in Pakistan*. [online] Available at: <<http://www.apng.org/9thcamp/Papers/Ahmed.pdf>> [Accessed 13 March 2011].
- Akman, I., Ali, Y., Mishra, A., & Arifoglu, A., (2005). EGovernment: A global view and an empirical evaluation of some attributes of citizens. *Government Information Quarterly*, 22(2), 239–257.
- Ali, M., & Khan, Z., (2010). *Validating IS Success model: an evaluation of Swedish e-taxing system*. Masters in Information Systems, Lund University.
- Almarabeh, T. & AbuAli, A., (2010). A General Framework for E-government: Definition Maturity Challenges, Opportunities, and Success. *European Journal of Scientific Research*, Volume 39(1), Pages 29-42.
- Al-Mashari, M., (2007). A benchmarking study of experiences with electronic-government. *Benchmarking, An International Journal*, 14(2), 172–185.
- Alshawi, S., & Alalwany, H., (2009). E-government Evaluation: Citizen’s Perspective in Developing Countries. *Information Technology for Development*, 15(3), 193-208.
- Alzheimer, (2009). *The four main approaches*. [online] Available at: <<http://www.alzheimer-europe.org/DE/Research/Understanding-dementia-research/Types-of-research/The-four-main-approaches>> [Accessed 30 April 2011].
- Bailey, J. E., & Pearson, S. W., (1983). Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, 29(5), 530–545.
- Beynon, D. P., (2005). Constructing electronic government: The case of the UK Inland Revenue. *International Journal of Information Management*, 25(1), 3–20.
- Blind, P. K., (2007). Building trust in government in the twenty first century: Review of literature and emerging issues. In: UNDESA (United Nations Department of Economic and Social Affairs), *7th Global Forum on Reinventing Government: Building Trust in Government*. 26-29 June 2007. Vienna, Austria.
- Brown, M. & Brudney, L., (2001). Achieving advanced electronic government services: an examination of obstacles and implication from an international perspective, *National Public Management Research Conference*.
- Brynjolfsson, E., (1996). The contribution of information technology to consumer welfare. *Information Systems Research*, 7(3), 281–300.
- Busu, S., (2004). e-government and Developing countries: An overview. *International Review of Law Computers & Technology*. Volume 18(1), Pages 109-132.
- Carbo, T., (2007). Information Rights: Trust and Human Dignity in e-government. *International Review of Information Ethics*. Volume 7 (09/2007), 1-7.

- Carter, L., & Belanger, F., (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal* 15 (1), 5–25.
- Chan, C.M.L., & Pan, S.L., (2008). User engagement in e-government systems implementation: A comparative case study of two Singaporean e-government initiatives. *Journal of Strategic Information Systems*, 17 (2008) 124-139.
- Clark E., (2003). “Managing the transformation to e-government: An Australian Perspective”, *Thunderbird International Business Review*, 45(4):377-397.
- Clemons, E. K., & Row, M. C., (1993). Limits to interfirm coordination through information technology: Results of a field study in consumer goods packaging distribution. *Journal of Management Information Systems*, 10(1), 73–95.
- Creswell, J. W., (2007). *Qualitative inquiry and research design: choosing among five traditions*. 2nd ed. SAGE Publications, London.
- Dada, D., (2006). The failure of e-government in developing countries: a literature review. *London School of Economics and Political Science*, London, UK.
- DeLone, W. H., & McLean, E. R., (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60–95.
- DeLone, W. H., & McLean, E. R., (2003). The DeLone and McLean model of information systems success: A tenyear update. *Journal of Management Information Systems*, 19(4), 9–30.
- Denzin, N.K., & Lincoln, Y.S., (2005). *The Sage handbook of qualitative research*. 3rd ed. Thousand Oaks, CA: Sage.
- Doll, W. J., & Torkzadeh, G., (1988). The measurement of end-user computing satisfaction. *MIS Quarterly*, 12(2), 259–274.
- e-Sahulat, (2008). *NADRA e-Sahulat*. [online] Available at: http://www.e-Sahulat.com.pk/sub_pages/about_e-Sahulat.php [Accessed 07 January 2011]
- EGDMIT, (2005). *E-government Strategy and 5-Year Plan for the Federal Government, issued by Government of Pakistan*. [online] Available at: < http://portal.punjab.gov.pk/portal/docimages/14240Action_Plan.pdf> [Accessed 29 March 2011]
- EGD, (2002). *Electronic Government Directorate*. [online] Available at: <<http://www.e-government.gov.pk/>> [Accessed 29 March 2011]
- Elliman, T., & Tassabehji, R., (2006). Generating citizen trust in e- government using a trust verification agent: a research note. *European and Mediterranean Conference on Information Systems (EMCIS)*, July 6-7 2006, Costa Blanca, Alicante, Spain.
- Etezadi, A. J., & Farhoomand, A. F., (1996). A structural model of end user computing satisfaction and user performance. *Information and Management*, 30(2), 65–73.
- Evans, D., & Yen, D. C., (2006). E-government: Evolving relationship of citizens and government, domestic, and international development. *Government Information Quarterly*, 23(2), 207–235.

- Fang, Z., (2002). E-government in Digital Era: Concept, Practice and Development. *International Journal of the Computer, The Internet and Information*, 20, 193-213.
- Gilbert D., Balestrini P., & Littleboy D., (2004). “Barriers and benefits in the adoption of e-government”. *The International Journal of Public Sector Management*, 17 (4):286-301.
- Gil, G. J. R., & Martinez, M. I. J., (2007). Understanding the evolution of e-government: The influence of systems of rules on public sector dynamics. *Government Information Quarterly*, 24(2), 266–290.
- Guo, Y., (2010). E-government: Definition, Goals, Benefits and Risks. *2010 International Conference on Management and Service Science*, 2010, Pages 1-4.
- Gupta, M. P., & Jana, D., (2003). EGovernment evaluation: A framework and case study. *Government Information Quarterly*, 20(4), 365–387.
- Hung, S. Y., Chang, C. M., & Yu, T. J., (2006). Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. *Government Information Quarterly*, 23 (2006) 97–122
- Hodder, I., (1994). The interpretation of Documents and Material Culture. *In Handbook of Qualitative Research*, ed. Norman K. Denzin and Yvonna S. Lincoln: 392-402. London: SAGE Publications.
- Israel, M & Hay, I., (2006). *Research ethics for social scientists: between ethical conduct and regulatory compliance*. SAGE Publications, London.
- Jansen, A., (2005). *Assessing e-government progress—why and what*. Department of e-government studies, University of Oslo.
- Karokola, R, G., (2010). *A Systemic Analysis of e-government Maturity Models: The Need for Security Services – a Case of Developing Region*. Stockholm: US-AB
- Kvale, S. & Brinkmann, S., (2009). *Interviews: Learning the Craft of Qualitative Research Interviewing*, 2nd ed. SAGE Publications, London.
- Linda K., Amy D., & Thomas D., (2008). *Essentials of social research*, McGraw Hill Open University press.
- McGill, T., Hobbs, V., & Klobas, J., (2003). User-developed applications and information systems success: A test of DeLone and McLean’s model. *Information Resources Management Journal*, 16(1), 24–45.
- Means, G. & Schneider, D., (2000). *Meta-capitalism: The e-business revolution and the design of 21st century companies and markets*. New York: John Wiley & Sons, Inc., p.121. In Karokola, R, G., (2010). *A Systemic Analysis of e-government Maturity Models: The Need for Security Services – a Case of Developing Region*. Stockholm: US-AB.
- Mingers, J. & Stowell, F., (1997). *Information systems: An emerging discipline? Information Systems Series* (pp. 239–266), McGraw-Hill, London.
- Myers, B. L., Kappelman, L. A., & Prybutok, V. R., (1998). A comprehensive model for assessing the quality and productivity of the information systems function: Toward a theory for information systems assessment. In E. J. Garrity, & G. L. Sanders (Eds.), *Information systems success measurement* (pp. 94–121). Hershey, PA: Idea Group.
- Myers, D. M., Newman, M., (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization* 17 (2007) 2–26.

NADRA, (2006a). *National Database and Registration Authority*. [online] Available at: <<http://www.nadra.gov.pk/>> [Accessed 07 January 2011]

NADRA, (2006b). *National Database and Registration Authority*. [online] Available at: <<http://www.nadra.gov.pk/downloads/solutions/other-kiosk.pdf>> [Accessed 07 January 2011]

Norris D.F. & Moon M.J., (2005). “Advancing e-government at the grassroots: Tortoise or Hare?” *Public Administration Review*, 65(1):64-75.

Norris, P., (1999). *Critical citizens – global support for democratic governance*. Oxford University Press, Oxford.

Oates, B. J., (2006). *Researching information systems and computing*, SAGE, Thousand Oaks, CA.

OECD Observer, (2003). “The e in e-government”. Organisations for Economic Co-operation and Development. *The OECD Observer*, Sep 2003 .239 pp.45.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L., (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions. *Journal of Retailing*, 64(1), 12.

Petter, S., DeLone, W., & McLean, E., (2008). Measuring information systems success: models, dimensions, measures, and interrelationships, *European Journal of Information Systems* 17, pp 236-263.

Prattipati, S. N., (2003). Adoption of e-Government: Differences between countries in the use of online government service. *Journal of American Academy of Business*, 3(1/2), 386–391.

PSY, (2011). *Quantitative and qualitative approaches to research*. [online] Available at: <http://www.psy.dmu.ac.uk/michael/qual_aims.htm> [Accessed 30 April 2011]

Putnam, R., (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster

Rai, A., Lang, S. S., & Welker, R. B., (2002). Assessing the validity of IS success models: An empirical test and theoretical analysis. *Information Systems Research*, 13(1), 50–69.

Reddick, C. G., (2006). Information resource managers and e-government effectiveness: A survey of Texas state agencies. *Government Information Quarterly*, 23, 249–266.

Seddon, P. B., (1997). A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*, 8(3), 240–253.

Seddon, P. B. & Kiew, M.Y., (1994). A partial test and development of the DeLone and McLean model of IS success. In J. I. DeGross, S. L. Huff, & M. C. Munro (Eds.), *Proceedings of the international conference on information systems* (pp. 99–110). Atlanta, GA: Association for Information Systems.

Seddon, P. B., & Kiew, M. Y., (1996). A partial test and development of DeLone and McLean’s model of IS success. *Australian Journal of Information Systems*, 4(1), 90–109.

Seale, C., (1999). *The quality of qualitative research*. SAGE Publications, London.

Shareef, M. A., Kumar, U., Kumar, V., & Dwivedi, Y. K., (2009). Identifying critical factors for adoption of e-government. *Electronic Government: An International Journal*, 6(1), 70–96.

Skok W. & Ryder G., (2004). “An evaluation of conventional wisdom of the factors underlying the digital divide: a case study of the Isle of Man”. *Strategic Change*, 13(8):423-428.

Sprecher, M. H., (2000). Racing to e-government: Using the internet for citizen service delivery. *Government Finance Review*, 16(5), 21–22.

Swartz N., (2004). “E-government Around the World”. *Information Management Journal*, 38(1):12.

United Nations, (2008). *E-government Survey report 2007/08*. [online] Available at: <<http://unpan1.un.org/intrdoc/groups/public/documents/un/unpan028607.pdf>> [Accessed 12 February 2011]

Wang, Y. S. & Liao, Y. W., (2007). Assessing eGovernment systems success: A validation of the DeLone & McLean model of information systems success. *Government Information Quarterly*, 25 (4), 717-733.

World Bank , (2001). *Issue Note: E-government and the World Bank. November 5, and World Bank (2003) World Development Indicators*, [Available at <http://www.worldbank.org/data/wdi2003/>, Last accessed on 10th of January, 2009] in Karokola, R, G., (2010). *A Systemic Analysis of e-government Maturity Models: The Need for Security Services – a Case of Developing Region*. Stockholm: US-AB.

Yusuf, Y., Gunasekaran, A., & Abthorpe, M. K., (2004). Enterprise information systems project implementation: A case study of ERP in Rolls-Royce. *International Journal of Production Economics*, 87, 251–266.

Zeithaml, V.A., Parasuraman, A., & Malhotra, A., (2002). Service quality delivery through web sites: a critical review of extant knowledge, *Journal of the academy of marketing science*, Vol. 30, No 4.