Impact of eGovernment on Citizen Satisfaction: A Case of Federal Government Agencies in Pakistan

Muhammad Akmal Javaid[1]
and Muhammad Irfanullah Arfeen[1,2(✉)]

[1] QASMS, Quaid-i-Azam University, Islamabad, Pakistan
[2] United Nations University-Operating Unit on Policy Driven Electronic Governance (UNU-EGOV), Guimarães, Portugal
arfeen@unu.edu

Abstract. The present study is an attempt undertaken to examine the relationship between eGovernment services and citizens' satisfaction in the context of federal agencies in Pakistan. Almost all the developing nations are still struggling to whether initiate these services or fully benefit from the already initiated e-services. This study proposed government to citizen satisfaction model considers the role of website content, trust, security or privacy, e-readiness, and quality of services while measuring the citizen satisfaction. Five hypotheses have been developed. A total of 500 questionnaires have been distributed of which only 302 received back with a response rate of 60.4%. On the collected data, quantitative and qualitative tests have been applied. Besides this it has been concluded form the analysis that all hypotheses were supported based on the contemporary research findings. The findings and recommendations can be successfully utilized for the betterment of the e-services and public service delivery tools.

Keywords: Agencies · eGovernment · Citizens · Satisfaction · E-services · Pakistan

1 Introduction

eGovernment is known as an essential element in the modernization of any government. This increased level of efficiency and effectiveness will eventually result in increased citizen satisfaction [1]. Government of Pakistan established Electronic Government Directorate (EGD) in 2002 which was transformed into National Information Technology Board, hereafter NITB, in 2014 decided to merge Pakistan computer bureau (PCB) and EDG into one whole [2]. The aim of the directorate was to achieve much needed transparency, fairness, efficiency, effectiveness and accountability. However, the fruitfulness of the eGovernment services is strongly dependent on the willingness of the customers to adopt, and their ability to avail from the eGovernment services [3]. eGovernment evaluation is referred to as a process of observing and measuring the ability of an eGovernment system to achieve its predetermined objectives [4]. It is the aim of the study to analyze the satisfaction from the

© Springer International Publishing AG 2017
M. Themistocleous and V. Morabito (Eds.): EMCIS 2017, LNBIP 299, pp. 221–237, 2017.
DOI: 10.1007/978-3-319-65930-5_19

citizen's point of view [5]. Furthermore, the study will conclude the efforts undertaken by the federal government agencies (FGA) in Pakistan and their impact on the direct beneficiaries or the people. The focus would be on the Government to Citizen (G2C) model of eGovernance.

Information and Communications Technologies (ICT) have influenced the human life, be it trade, services, manufacturing, government, education, research, entertainment, culture, defense, etc. [6]. A readiness index developed by United Nations determines the relative ranking of the eGovernance readiness index. Pakistan has many success factors in his pockets such as NADRA and DGIP has successfully implemented the eGovernance mechanism [5]. However, Provinces department have also started the application of ICT in governance. Punjab has successfully implemented the Land Record Management System (LRMS). Beside this the government has also allocated weight to the future initiatives including online tax filing, arm licensing, and identity registration [7].

For this study, the research questions are narrated below:

1. What role eGovernment services play in the public service delivery?
2. What impact e-services leave on Service Quality and Service Delivery?

2 Literature Review

eGovernment ensure its citizens certain advantages such as fairness and transparency in the processes of the governance, efficiency in the delivery of the government services, simplification of the complex procedures, improvement in office management, and friendly attitude of the public personnel serving in the public offices [8]. But yet the efforts of adoption of eGovernment have challenges especially in the developing countries [9, 10] such as lack of infrastructure, awareness among the citizens, poor human resource capacity, lack of technical skills, ineffective governing regulations and the expansive technology for the delivery of the services through the eGovernment portals.

In developing countries, one of the most important reasons for the low-level of adoption of eGovernment services is that the needs and requirements of citizens are ignored. In the South Asian region, most portals and government web sites remained dormant in 2010 [9]. In 2010 and 2012, UN eGovernment world surveys ranked Pakistan 146th and 156th, respectively. However, as a whole the South Asian region regressed in the 2012 survey and remains far below the world average. The rankings of South Asian countries in eGovernment survey [11] are as shown in Table 1.

2.1 eGovernment and Pakistan

According to Pakistan Telecommunication Authority, PTA (2014) and National Database and Registration Authority (NADRA) some of the major projects under the umbrella of eGovernment are, Sahulat, Cellular Village Connectivity, National Rabta Portal, NADRA kiosk and E-Pakistan Vision 2020 at national and provincial levels.

Table 1. Pakistan eGovernment ranking in South Asia

World eGovernment ranking					
Country/year	2005	2008	2010	2012	2014
Afghanistan	168	167	168	184	173
Bangladesh	162	142	134	150	148
Bhutan	130	134	152	152	143
India	87	113	119	125	118
Iran	97	108	103	105	100
Maldives	77	95	92	95	94
Nepal	126	150	153	164	165
Pakistan	136	131	146	156	158
Sri Lanka	94	101	111	115	74

Source: [9, 11]

PTA has also reported the telecom indicator, as cellular connectivity is an important tool in the eGovernment cycle for the delivery of the service, with a total density of 70.87% in April, 2016 and 70.33% in March of the same year. Whereas the tele-density stood at the 69.05% in April, 2016 compared to 68.51% in March of the same year [7]. Local Line mainly hosted by the Pakistan Telecommunications Limited (PTCL) stood at 3,141,700 connections with a downfall from the 3,172,344 in the last year. This downfall is mainly because of the increased ease of access and features introduced by the cellular companies (PTA 2016). A severe blow was brought to the landline connection by the introduction of the 3G and 4G services by the government which has abolished the monopoly of internet connectivity by landline operators. However, the total telecom investment in the economy stood at $1001.0 billion (PTA 2016).

One important factor of eGovernment is the design of websites. Those websites are preferable which are easy to access and easy to use for the customers. Web-based services are provided to the public on government Web sites [5]. Mostly government websites are citizen-centric. These are prepared on the needs and demands of the public. The citizen-centric features include search capability, links to other governmental bodies and personalized interfaces [7, 12]. Based on the above discussion, the following hypotheses have been proposed:

H1: eGovernment website design will have a positive influence on citizen's satisfaction.

H2: Perceived Trust in eGovernment services will have a positive influence on citizen's satisfaction.

H3: Available ICT infrastructure and its awareness (E-readiness) have a positive impact on citizen's satisfaction.

H4: Quality of eGovernment Service has a significant positive effect on citizen's Satisfaction.

H5: Security of the eGovernment services has a positive influence on Citizen's Satisfaction from eGovernment services.

A successful initiative by the government is dependent on the support of the citizen. Many developing countries eGovernance adoption has remained only on paper than in the field [13]. Although, the reformer of the public administration has been keen to the adoption of the eGovernance mechanism as they ensure effectiveness, efficiency and responsiveness in the administration, a goal of the services delivery [14–16].

2.2 Theoretical Framework

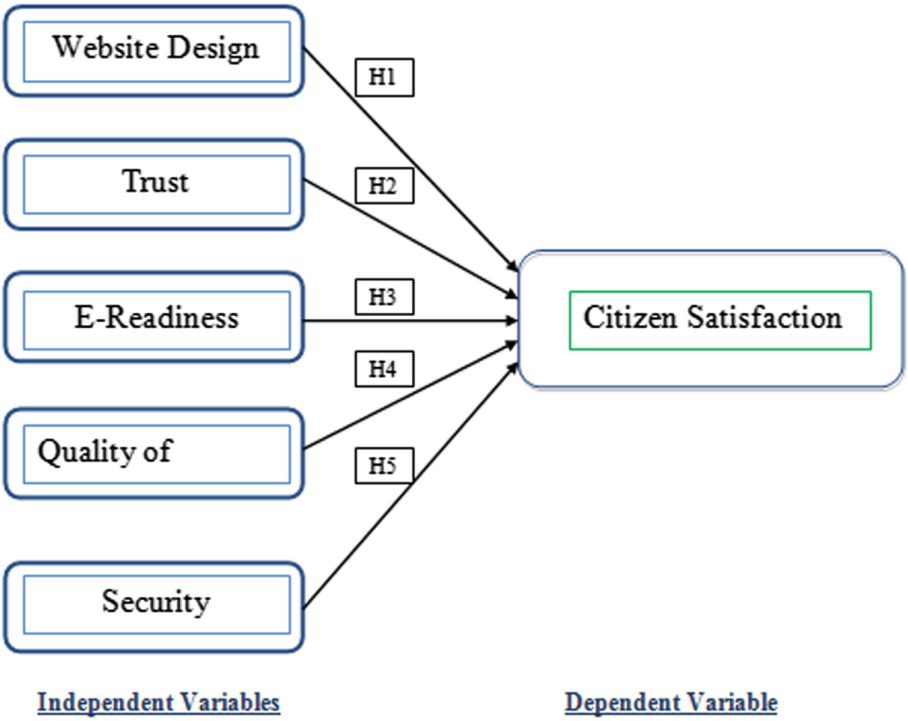

Fig. 1. Proposed theoretical framework – Government to Citizen (G2C)

3 Research Methodology

The study undertakes the evaluation of the e government in two dimensions, i.e. the government perspective and citizen's perspective. The framework refers to the service availability and its quality to enhance and in cases ensure the quality service delivery to the citizens as a whole [17]. It (Framework; shown in Fig. 1) has five variables i.e. Service Quality, Trust, E-readiness, Website Design, Security or Privacy concern. Each of the variables has its relevance to the other variable/variables. The relevance can directly be assessed and in cases can be assessed in underlying way for example the relevance between the service quality and e-readiness is somewhat associated but

cannot be measured in quantitative terms because of its complexity [18]. The demand side includes those variables which are related to needs of the citizens and are demanded by the citizens in the form of the eGovernment services [7]. The frame work (shown in Fig. 1) and its other three variables, Trust, Security, and website are related. Although the existing researches have exerted enormous weight behind these variable but none were able to fully undertake and analyses the area of influence of these stated variables [19].

The study is aiming to find out the impact which e-services exert on the citizen satisfaction. The study undertakes both the qualitative and quantitative approaches and relies on the triangulation to conclude the results. In testing the hypotheses, which are developed in line with the extensive study of the literature, the study describes the positivism approach [5, 20–22]. The researcher's own ideas cannot influence the study as the main focus has been on the objectivity of the research. The findings and results are backed by the data interpretations which further rely on the validity and reliability. In order to make sure the reliability and validity of the data the long standing rich test has been applied to validate the stated fact [23]. The results of these tests are in line with the long standing historical values which serve as a recognized source of acceptance and rejection. In addition to this the research ethics have been duly followed in all the stages of the research whether it is data collection, analysis and interpretation [17]. As a triangulation study the data for qualitative and quantitative analysis has been collected through relevant techniques.

The data has been collected from methods through the use of internet, social network sites and hard form [24]. Qualitative data has been collected by use of interview techniques. For sampling and the sampling size the purposive method of the sampling has been adopted for the study. As the e-government is still developing in Pakistan and limited class from the population has known how about it so, somewhat educated class has been targeted for the sampling.

The study has been conducted through a sample size of some 300 respondents who were asked to fill a questionnaire and besides this some e-government practitioners were also interviewed for the purpose of qualitative data collection [5, 25–27]. Keeping in view the convenience and other limitations of the study the researcher has decided to conduct eight interviews from the e-government practitioner who are mainly civil servants of the government of Pakistan. Qualitative data had been conducted by conducting in-depth interviews with the government officials from different ministries, departments and autonomous agencies which have recently applied e-government technologies in the services delivery [17].

For data collection a questionnaire was adopted from the literature and it was refined further by tasking the experts considerations into account besides this it is also important that how the questionnaire is disseminated and administered to the respondents [15]. For that reasons the same questionnaire was uploaded on the Google Docs (a web feature of Google incorporation) and its link has been mailed to the potential respondents [28]. After the initial mail a reminder to those respondents who have not yet filled the questionnaire has been mailed after a gap of two weeks [29]. A similar reminder was followed after another gap of two more weeks.

4 Data Analysis and Results

Demographic data was obtained against eight variables during the process of obtaining data from the employees through questionnaire [17]. The demographic data was obtained to have a better and systematic understanding about the research sample. All the demographic variables are discussed as follows;

The first variable used for obtaining demographic data was gender. 68.2% of citizens are male while 31.8 are female in the study. The frequency shows that the questionnaires filled by male citizens were 206 in count while 96 women were available for questionnaires (see Table 2).

Table 2. Gender profile of the respondents

Gender profile					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Female	96	31.8	31.8	31.8
	Male	206	68.2	68.2	100.0
	Total	302	100.0	100.0	

The third variable used to collect demographic data was education. The data was collected from the citizens and 55.3% employees have bachelor's degree while 44.7% had master's degree (see Table 3). The distribution of the sample participants was in this manner that 167 members of the research had bachelor's degree while the other 135 had a master's degree.

Table 3. Education status of respondents

Education					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Bachelors	167	55.3	55.3	55.3
	Masters	135	44.7	44.7	100.0
	Total	302	100.0	100.0	

The internet usage experience variable was designed on the likert scale for a better data understanding and concise results. The experience scale was divided into 4 points i.e. 1–3 years, 4–6 years, 7–10 years and 11 years or above. In this study 17 participants lie in the age range of 1–3 years that makes a percentage of 5.6 (see Table 4). Then 102 citizens has the experience between 4–6 years making it only 33.8%. 26 citizens are of experience range between 7–10 years making it 8.6% of the whole study and 157 citizens have an experience of 11 years and above making it a 52% of the entire research.

The scale of Pakistan eGovernment portal awareness was a yes/no scale. In this study all the participants are well aware with the Pakistan eGovernment system and services (see Table 5). They may not be using it but they all are well aware of such services.

Table 4. Internet usage experience of respondents

Internet usage experience					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	1–3	17	5.6	5.6	5.6
	4–6	102	33.8	33.8	39.4
	7–10	26	8.6	8.6	48.0
	11 and above	157	52.0	52.0	100.0
	Total	302	100.0	100.0	

Table 5. E-portal awareness among respondents

Pakistan eGovernment portal awareness					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	302	100.0	100.0	100.0

Measurement of Inter-correlation Among Variables

The next step was to calculate inter-correlations among the variables. In order to do so, a correlation matrix was generated using SPSS software. Through the statistical methods applied over data collected the variables were studied for correlation. The correlation coefficient measure the strength of linear relationship between two variables. The correlation coefficient ranges between +1 and −1. The closer the correlation is to +1 and −1, the closer to perfect linear relationship. Detail of relationship among variables is showing under in Table 6.

Table 6. Inter-correlation among variables

Correlation						
	CS	WD	ER	SEC	QOS	TST
CS	1					
WD	.491**	1				
ER	.973**	.469**	1			
SEC	.177**	.320**	.180**	1		
QOS	.403**	.821**	.403**	.268**	1	
TST	.307**	−.014	.280**	.186**	−.057	1

Website design and citizen satisfaction has a strong positive relationship as the Pearson correlation value stood at 0.491**. Similarly, e-readiness also reflects a strong positive relation with dependent variable citizen satisfaction as the value of "r" is 0.973**. However, security has a weak positive relationship with the dependent variable as the correlation value is 0.177**. On the other hand, quality of service and trust also have a positive relationship with citizen satisfaction as the correlation coefficient value for both of the independent variables relationship is 0.403** and 0.307** respectively. All these relationships between independent and dependent variable are significant as the p value is 0.000 for each relationship, which is less than 0.05.

Regression Analysis

Linear regression technique was used to analyze the significance of variables and their relationships. The factor R^2 shows that how much impact or effect does one variable have on the other variable (see Table 7).

Table 7. Regression analysis

Regression						
Variable	R square	Adj R square	b	t	F	Sig.
Combine impact of IVs on CS	.953	.951			1171.802	.000
WD			.093	3.971		.000
ER			.937	61.264		.000
SEC			−0.18	−1.299		.195
QOS			−.043	−1.930		.055
TST			.047	3.366		.001

Combine Impact of Independent Variables on Citizens' Satisfaction

If the combine impact of website design, e-readiness, trust, security, and quality of service on citizen satisfaction is checked through regression it can be observed that all the variables explain 95% of citizen satisfaction as the value of adjusted R square is 0.951 (see Table 8). This impact is highly significant as the value of F is 1171.802 and p value 0.000. The beta value explains in the impact of each variable in the presence of all the independent variables. Security and quality of service have a negative relationship with citizen satisfaction as the beta value of −0.18 and −0.043 respectively. While trust has a weak positive relationship with citizen satisfaction as the beta value is 0.047 but the relationship of security and trust with citizen satisfaction is insignificant as the p value is 0.195 and 0.055 respectively which is greater than 0.05.

Table 8. Combine impact of independent variables on citizens' satisfaction

Individual IV regression with CS						
Variable	R square	Adj R square	b	T	F	Sig.
WD-CS	.241	.238	.491	9.755	95.169	.000
ER-CS	.948	.947	.973	73.680	5428.670	.000
SEC-CS	.031	.028	.177	3.123	9.751	.002
QOS-CS	.163	.160	.403	7.633	58.260	.000
TST-CS	.094	.091	.307	5.589	31.239	.000

Qualitative Analysis

In this study the researcher has heavily relied on the interview transcripts which were developed by the researcher after a thorough and detailed discussion with the eGovernment practitioners. Anwer *et al.* [7] has analyzed various factor to answer these questions and concluded that these initiatives have a positive impact on the citizen

satisfaction, however, the response to these findings and their intensity also vary differently [3]. These views are also endorsed by some other researchers [18, 19, 24, 30]. Moreover, the eGovernment adoption and its impact on citizen satisfaction are illustrated by the answer of one of the interviewees in the following words when he was asked to comment on the eGovernment and its impact on citizen satisfaction.

> *"In my opinion, the Government has been trying to automate the existing system by introducing e-services in different departments, ministries and attach departments. But unfortunately, the governmental will is very poor which consequently leads to a poor pace of the eGovernment services introduction. Imagine this we have been working on the eGovernment since 2000 when NADRA was established, it was followed by establishment of EGD in 2002 and later on the same was molded into NITB in 2014. However, ironically there are only a few examples of eGovernment projects out of which many are still in their development phases. The offered services also lack many basic requirements such as their website is faulty or often remains hanged or busy, the lack of provision of updated contents is another such problem, similarly, the government has failed to ensure the safety and security of these services. All these failures on the government end are leading to the poor service delivery and poor users' satisfaction."*

In addition to this the quality of the services is also another key area which is being heavily commented by the respondents, in the words of one interviewee the quality of services is also lacking some basic grounds, he commented on this in the following manner; *"The quality of these services still needs improvement. The improvement is required in front office and back office channels the quality of these services is a big challenge for the government. The current quality challenges are incapacity of the officials, the hardware and software incapability and poor organization of the systems to provide these services."*

Further the same respondent commented; *"In public sector financial management the compatibility issue is so convoluted that the e-practitioners are failed to develop an integration model. Each department and institution has its own procedure to follow. State bank has its own system, accounting offices has its own software and version, FBR is using oracle based system and same goes for E&D which has a different system. They all lack synchronization. Basically the government has created Islands of eGovernments or patch works of the government. It is the need of hour that government must launch a compatibility mechanism. So that, all the institutions can work in harmony. So that, the tax and financial administration can bring the desired fruit."*

Similarly when they were asked about the trust and usability of these services in e-services and its efficacy the respondents replied in the following words; *"Yes people are capable of using these services. But the issue is with interface development which is not in line with their requirements. For example the question of language doesn't mean that someone is illiterate rather it's the responsibility of the government to provide them suitable channel for the development of the services. On the other hand, the Para-lingual website of the government provides only two options which are either Urdu or English but what about the provincial languages like Balochi or Sindhi's who are eloquent in speaking English but yet they are unable to benefit from these services. The solution of this problem could be better quality of the graphical or interactive user interface which encourage user to use services with an increased pace of service quality."*

In these themes one thing appears to be common that every variable is in the right direction but it needs improvement and reinforcement to strengthen its impact and also to provide the people more efficient service. This view is endorsed by many other researchers as well [24, 30, 31], however, their view slightly differ from the variable point of view.

The respondents were also asked about the e-readiness which reflects the governmental ability and the readiness of the resources to offer the needed services through the eGovernment domain the respondents expressed their views in the following manner; *"Presently, the government has ensuring citizens security by enacting the preventive legislation. The recent enactment of cyber crime bill is one of the key elements of this strategy. In the present age of technology where the e-information of citizens is at great risk of being hacked, government is still performing poorly to take some bold steps. However, few measures have been taken to ensure the security of e-information. In the previous year, few lunatic students who identified themselves with heroic names were able to hack the website of the ministry of health. Such happenings can only curtail by means of strict surveillance of the social media and by enacting necessary legislations."*

The biggest hurdle in readiness endeavor is the attitude of the employees. The traditional bureaucratic organization and the attitude of the office bearer is basically hindering the overall development of the eGovernment to its full [32]. Despite of the political government will and the increased financial allocation the eGovernment projects are in doldrums. This is mainly because of the poor or no interest on part of the bureaucracy as opined by the one respondent that the government is failed to change the attitude of its employee.

Security/Privacy of E-Services and Its Impact on CS

The security and privacy concerns are among those variables which were significantly talked about by the interviewees. The word tree (see Fig. 2) reflects this phenomenon by reflecting the most repeated words in word frequency which are government, security, services and information; suggests that the security puts a great challenge to the offered e-services.

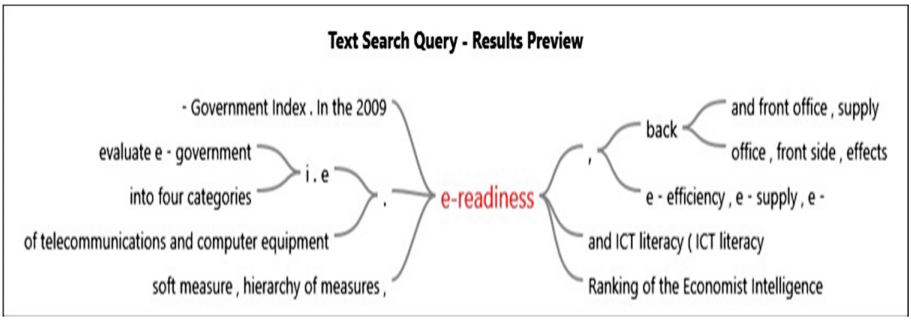

Fig. 2. Word tree - e-readiness

Similarly a respondent concluded the same question in the following manner;

> "…it refers to protection of the information systems, assets and the control of access to the information itself. It is a vital component in the trust relationship between citizens and government. Security issues may present the largest obstacle to the development of eGovernment services. Thus, security policies and standards that meet citizen expectations are an important step toward addressing these concerns."

E-Readiness and Its Impact on CS

The e-readiness is one of the decisive factors in the study of the eGovernment and its impact on the citizens' satisfaction. The following readiness talk by the respondent is on such example;

> "…..United Nations issued eGovernment Readiness Ranking using measures of human capacity, infrastructure and access to information and knowledge. Pakistan ranked 131st i.e. pretty much at the bottom. In the following years, regional countries like Bangladesh and Iran improved their rankings, While Pakistan went down to 146th place in the 2010 eGovernment Development Rankings of the UN and slipped further down to 156th place in the 2012 UN eGovernment Index. In the 2009 E-Readiness Ranking of the Economist Intelligence Unit, Pakistan ranked 66th out of 70 countries assessed. But the present trends are showing some what good trends such as the same report published by UN in 2014 shows a better view where Pakistan among the second categories countries. Similarly, the improvement in other indicators i.e. ease of doing business is an obvious outcome of the better governance."

Testing of Hypothesis

H1: The e-government website design has a positive influence on citizen satisfaction in Pakistan.

H1 hypothesis states positive relationship between website design and citizen satisfaction. Correlation matrix shows a significant strong relationship between the two variables of $-.491^{**}$. Moreover the relationship is highly significant with p-value < 0.01. The hypothesis is accepted on the basis of both correlation matrix and regression.

H2: Available ICT infrastructure and its awareness (E-Readiness) have a positive impact on citizen's satisfaction.

H2 hypothesis states positive relationship between E-readiness and citizen satisfaction. Correlation matrix shows positive correlation of $.973^{**}$ between the two variables. Moreover the relationship is highly significant wit p-value < 0.01. The hypothesis is supported by the correlation matrix and regression analysis so it is accepted.

H3: Security of the e-government services has a positive influence on Citizen's Satisfaction from E-government services.

According to H3 hypothesis security has a positive relationship with citizen satisfaction of employees. Correlation matrix shows weak positive correlation of $.177^{**}$ between the two variables. The relationship is positive, moreover the relationship is significant with p-value < 0.01. The hypothesis has been supported by correlation matrix and regression analysis.

H4: Quality of service has a positive effect on citizen satisfaction in Pakistan.

According to H4 hypothesis quality of service is positively related to citizen satisfaction. Correlation matrix shows positive correlation of .403** between the two variables. The relationship is positive, moreover the relationship is significant with p-value < 0.01. The hypothesis has been supported by correlation matrix and regression analysis.

H5: Perceived Trust in e-government services exert a positive influence on citizen's satisfaction in Pakistan.

According to H5 hypothesis trust is positively related to citizen satisfaction. Correlation matrix shows positive correlation of .307** between the two variables. The relationship is positive, moreover the relationship is significant with p-value < 0.01. The hypothesis has been supported by correlation matrix and regression analysis.

All hypotheses are accepted in the light of the quantitative and qualitative analysis which not only conclude that perceived Trust in eGovernment services exert a positive influence on citizen's satisfaction in Pakistan, but also helped in the identification of the other themes which are helpful for future work, as they can act as preset guidance for the new study.

Discussion

Majority of the citizens whether literate or illiterate lack the English language ability which is the prime language of almost all the e-services websites. This feature helps the citizens to effectively use the services as they are able to see the contents in their native language. The citizens of Pakistan are willing to use these services in their local languages and with a lower literacy rate and poor standards of education in the country it becomes essential aspect which needs government considerations [3]. Despite of the fact, that government has established EGD fifteen years ago, yet eGovernment is in its developing phase in Pakistan.

The Ministry of IT is trying to learn from the pilot projects and it has great results in some areas [33]. The ministry is focusing to automate the process to make the quality of service better and effective. In addition to this the employees of the government lack ICT skills to effectively deliver the services to the citizens. They prefer to avoid the computer related task. This behavior of the employees need modifications by means of building their capacity to use a system effectively and for developing public value [34]. The information quality is also hugely impact by this incapacity of the employees as they usually failed to understand the impact of their task. Consequently, the website remains inefficient un-updated and lacks the needed contents which waits in the drawer of a particular employee instead of being uploaded on the website. Despite of initiation of the use of the ICT services in the public service delivery many government employees rely on the traditional paper based work which happens to be way more easy for them as they are well trained in it, but the same traditional method proves to be inefficient and costly when compared with the modern methods of service delivery such as eGovernment services [31]. The employees as well as their government must realize that it is the need of the hour to follow the slogan of the reinventing government which was chanted in lieu of reforming the traditional method of government business.

The availability of the resources to use services at home and work also impacts the citizen's level of satisfaction. These resources include the internet facility, computers or other devices such as tablets, mobiles, and handheld computers to access the websites, eventually use the government services [31]. Additionally, the awareness about the services and their use also affect the satisfaction of an individual. For that reason the objective of the government is to educate the people and make them able to use these services and benefit from that. MoITT is actively pursuing for the fulfillment of this objective, it has prepared many training modules for the capacity building of public sector employees.

In a society which is suffering from multiple ills such as illiteracy, instability, terrorism, extremism, and poor infrastructure the adoption and application of the e-services becomes too tough. In addition to this the prevailing energy crisis further deteriorates the situation as the whole eGovernment infrastructure is dependent of the availability of the electricity. With a average load shedding of some six to eight hours in urban areas, not to mention of rural areas where load shedding further plunges to the peak, the application and use of e-services is nothing more than an utopian thought.

Recommendations and Conclusion

In the light of the current research work some suggestions are made to improve the current state of eGovernment and their usability. These suggestions can work as a guiding principle for the policy makers, practitioner, public sector managers, think tanks, researchers and academics. The key recommendations are as follows:

The government of Pakistan needs to realize that there are different levels of e-service delivery, so that the citizens can be categorized accordingly and genuine effort can be made to help citizen avail their needed set of e-services. For example the for financial matters, e-filing and online submission of tax returns can be designed more effectively by targeting those customer who are currently under the domain of FBR instead of general public.

The citizen classification can be made according to certain demographic indicators such as their education level, background, and age and internet usage experience. Besides this, another variable for the categorization can be identified by analyzing the e-service usage level. As the eGovernment is still new to Pakistan, therefore, the citizens are at the initial stage of using these e-services. Thus, it becomes essential that for a greater usability rate the citizens should be made aware of the benefits of the e-services. Similarly, at the transaction level the government needs to build citizens trust in internet and then in government so that the citizen may use the services in a secure and trustworthy environment.

eGovernment services bring desirable fruits for all of the stakeholders only when they are used at a large scale for specified services delivery [18, 19]. In order to effectively introduce these service citizens must be taken into confidence and should be familiarized with these services first for the effective implementation and afterwards increased level of citizen satisfaction.

It is also essential that in order to boost the citizen satisfaction the government must educate its citizen about the presence of online service. This will eventually result in increased adoption rate and eventually to increased citizen satisfaction [35]. Without creating the necessary awareness among citizen the higher level of satisfaction cannot

be achieved as they are not tilted towards the usability and efficacy of the newly enacted e-services. In other words they must also be ensured about the benefits of these e-services in terms of time and cost.

Another significant factor which can affect the citizen satisfaction is the availability of the infrastructure that enables the citizen to use these services. It is also important to note that in many developing countries including Pakistan the citizen lack necessary ICT infrastructure in terms of internet connectivity and devices. This makes everything stagnant as despite of the fact that the citizens are aware and willing to use e-services yet they lack the capacity to use these services. The statistics of the UN survey state that only 11% of the total population of Pakistan is internet users [11]. The recent sale of third generation and fourth generation of internet connectivity brought the revolution in the internet usage but yet the government needs to ensure the availability of e-services in remote and under developed areas. For that reasons government must establish internet hubs at town and Tehsil levels where citizen can access these services with necessary assistance.

This study also reveals some concerns of the citizens about trust and security in government and of their private information. The citizens concerned with the information and transaction stage are concerned about the trustworthiness of the e-services providers. Further the government must improve the security conditions of the e-services so that the increased usability can be ensured. This increased usability will further result in the increased cost and time benefits. Similarly it is the need of the hour that government of Pakistan must bring efficiency and effectiveness in its service delivery and also enhance the quality of good governance. To materialize this government of Pakistan needs to overcome the prevailing hindrances in the way of adoption of the e-service. These hindrances include lack of internet facility, incapacity of the citizens, poor ICT infrastructure, lack of political and bureaucratic will, red tape, and rigid system which is resistant to change to name a few. Government of Pakistan must also enlighten the minds of its citizens about the perceived benefits of internet and also help them to have increased interest in the service delivery.

According to the findings the citizens are reluctant to use these services because they feel insecure. The government must enact the necessary legislation to ensure a vibrant security mechanism which is in line with the needs of the current cyber environment.

The research reveals that according to the citizen perceptions, the information available on the government website is not updated and links accessible on the government web site are broken [19]. Therefore, citizens do not trust in the information available on the government web site, which ultimately leads to low usage of available eGovernment services. The GoP should give surety to the citizens about the accessibility and trustworthiness of information provided on the government website to make sure that their trust in the government websites, website contents and updated information lead to higher level of citizen satisfaction from eGovernment services [18].

Research Limitations

Although, the current research work is designed to evaluate the current level of eGovernment services and their impact on the citizen satisfaction yet the model can be improved by including further variables in it. These include, service availability, digital

divide, and social divide. If included these three variables can help in proposing a successful government to citizen evaluation model which will further help in the doing a research work which will bring more actual, sophisticated and unbiased results.

Future Dimensions

This study aims to evaluate the current level of e-services and their impact on the citizen satisfaction from their perspective. The constructed model helps in measuring the level of satisfaction from the services. The model measures the citizen satisfaction from five different possible dimensions which are in line with the societal dynamics of Pakistan. A single criterion cannot give the overall picture of the citizen satisfaction so an integrated mechanism is devised to measure the overall dynamics. The study concludes that the overall performance of the available services is satisfactory; however, the government must ensure the provision of the services to the remote and underdeveloped areas. For that reasons the country needs to enhance its effort to transform its traditional method to the modernize one. It is also important that the existing traditional bureaucratic system is also causing a hindrance in this transformation as they lack the necessary skill and will for transformation for their own vested interest. The services quality as suggested by the SERVQUAL model contributes more to the citizen satisfaction than any other model. These factors as a whole explain that the government of Pakistan has to enhance its EGDI ranking. Currently, Pakistan stood at seventh position in the list of nine South Asian countries leaving only Nepal and Afghanistan behind.

Acknowledgment. This paper is a result of the project "SmartEGOV: Harnessing EGOV for Smart Governance (Foundations, methods, Tools)/NORTE-01-0145-FEDER-000037", supported by Norte Portugal Regional Operational Programme (NORTE 2020), under the PORTUGAL 2020 Partnership Agreement, through the European Regional Development Fund (EFDR).

References

1. Nograšek, J., Vintar, M.: eGovernment and organisational transformation of government: black box revisited? Gov. Inf. Q. **31**(1), 108–118 (2014)
2. National Information Technology Board, NITB: Nitb.gov.pk (2014). http://www.nitb.gov.pk/. Accessed 29 July 2016
3. Malik, B., Mastoi, A., Gul, N., Gul, H.: Evaluating citizen e-Satisfaction from eGovernment services: a case of Pakistan. Eur. Sci. J. **12**(5) (2016). http://dx.doi.org/10.19044/esj.2016.v12n5p346
4. Syamsuddin, I.: Evaluation of eGovernment initiatives in developing countries: an ITPOSMO approach. Int. Res. J. Appl. Basic Sci. **2**(12), 439–446 (2011)
5. Alawneh, A., Al-Refai, H., Batiha, K.: Measuring user satisfaction from eGovernment services: lessons from Jordan. Gov. Inf. Q. **30**(3), 277–288 (2013). http://dx.doi.org/10.1016/j.giq.2013.03.001
6. Arfeen, M.I., Kamal, M.M.: eGovernance implementation model: case study of the federal government agencies of Pakistan. In: European, Mediterranean & Middle Eastern Conference on Information Systems 2013 (EMCIS 2013), 17–18 October 2013, Windsor, United Kingdom (2013)

7. Anwar, M., Esichaikul, V., Rehman, M., Anjum, M.: eGovernment services evaluation from citizen satisfaction perspective. Transform. Gov.: People Process Policy **10**(1), 139–167 (2016). http://dx.doi.org/10.1108/TG-03-2015-0017
8. Laudon, K., Laudon, J.: Management Information Systems, 11th edn. Prentice-Hall/University of Manchester, Upper Saddle River/Manchester (2009)
9. UN eGovernment Survey: eGovernment for People. United Nation, New York (2012)
10. Gupta, M., Jana, D.: eGovernment evaluation: a framework and case study. Gov. Inf. Q. **20** (4), 365–387 (2003)
11. UN eGovernment Survey: eGovernment Survey 2014. United Nation, New York (2014)
12. Segovia, R.H., Jennex, M.E., Beatty, J.: Paralingual web design and trust in eGovernment. Int. J. Electron. Gov. Res. (IJEGR) **5**(1), 36–49 (2009)
13. Kumar, V., Mukerji, B., Butt, I., Persaud, A.: Factors for successful eGovernment adoption: a conceptual framework. Electron. J. eGov. **5**(1), 63–76 (2007)
14. Cook, A., Sheikh, A.: Descriptive statistics (part 2): interpreting study results. Prim. Care Respir. J. **8**(1), 16–17 (2000)
15. Gibson, W., Brown, A.: Working with Qualitative Data. SAGE, London (2009)
16. Sivia, D., Skilling, J.: Data Analysis. Oxford University Press, Oxford (2006)
17. Wray, N., Markovic, M., Manderson, L.: "Researcher saturation": the impact of data triangulation and intensive-research practices on the researcher and qualitative research process. Qual. Health Res. **17**(10), 1392–1402 (2007)
18. Rehman, M., Esichaikul, V., Kamal, M.: Factors influencing eGovernment in Pakistan. Transform. Gov.: People Process Policy **6**(3), 258–282 (2012)
19. Ovais Ahmad, M., Markkula, J., Oivo, M.: Factors affecting eGovernment adoption in Pakistan: a citizen's perspective. Transform. Gov.: People Process Policy **7**(2), 225–239 (2013)
20. Alghamdi, I., Goodwin, R., Rampersad, G.: eGovernment readiness assessment for government organizations in developing countries. Comput. Inf. Sci. **4**(3) (2011). http://dx.doi.org/10.5539/cis.v4n3p3
21. Atkinson, P., Delamont, S.: SAGE Qualitative Research Methods. SAGE, London (2010)
22. Banerjee, S., Katare, J.: A quality assessment index for evaluation of district eGovernance websites. Int. J. Electron. Gov. **8**(2), 140 (2016). http://dx.doi.org/10.1504/ijeg.2016.078122
23. Creswell, J., Plano Clark, V.: Designing and Conducting Mixed Methods Research. SAGE Publications, Thousand Oaks (2007)
24. Rehman, M., Kamal, M., Esichaikul, V.: Adoption of eGovernment services in Pakistan: a comparative study between online and offline users. Inf. Syst. Manag. **33**(3), 248–267 (2016)
25. Verdegem, P., Verleye, G.: User-centered eGovernment in practice: a comprehensive model for measuring user satisfaction. Gov. Inf. Q. **26**(3), 487–497 (2009). http://dx.doi.org/10.1016/j.giq.2009.03.005
26. Zhou, Y.: Voluntary adopters versus forced adopters: integrating the diffusion of innovation theory and the technology acceptance model to study intra-organizational adoption. New Media Soc. **10**(3), 475–496 (2008)
27. Trainor, A., Graue, E.: Qualitative Methods in the Social and Behavioral Sciences. Routledge (Taylor and Francis), New York (2013)
28. Tsohou, A., Lee, H., Irani, Z., Weerakkody, V., Osman, I., Anouze, A., Medeni, T.: Proposing a reference process model for the citizen-centric evaluation of e-government services. Transform. Gov.: People Process Policy **7**(2), 240–255 (2013)
29. Yin, R.: Case Study Research. Sage Publications, Thousand Oaks (2003)
30. Weerakkody, V., Irani, Z., Lee, H., Hindi, N., Osman, I.: A review of the factors affecting user satisfaction in electronic government services. Int. J. Electron. Gov. Res. **10**(4), 21–56 (2014)

31. Haider, Z., Shuwen, C., Burdey, M.: eGovernment project obstacles in Pakistan. Int. J. Comput. Theory Eng. **8**(5), 362–371 (2016)
32. Alshehri, M., Drew, S.: A comprehensive analysis of eGovernment services adoption in Saudi Arabia: obstacles and challenges. Int. J. Adv. Comput. Sci. Appl. **3**(2) (2012). http://dx.doi.org/10.14569/ijacsa.2012.030201
33. MoITT: Moitt.gov.pk (2008). http://www.moitt.gov.pk/. Accessed 20 Aug 2016
34. Shuler, J., Jaeger, P., Bertot, J.: Editorial: eGovernment without government. Gov. Inf. Q. **31** (1), 1–3 (2014)
35. Varavithya, W., Esichaikul, V.: Dealing with discretionary decision making in eGovernment: an open government approach. Electron. Gov. Int. J. **3**(4), 356 (2006). doi:10.1504/eg.2006.010799