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# E-government Adoption in Developing Countries: Need of Customer-centric Approach: A Case of Pakistan

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**Abstract**

The e-government implementation in developing countries is always less successful and objectively hard to achieve and the reason behind is a less citizen-centric approach. Therefore, the effect of trust and social influence will be studied while understanding the adoption behavior of citizens in developing countries. Specifically, a case of selected e-service (e-filling of taxation by 'Federal Board of Revenue' (FBR)) will be studied in Pakistan. The sole purpose of the study is to pull the external factors like trust and social influence to increase e-government adoption in the massively populated region of the world. The quantitative approach will be followed where the current users of selected e-service will be inquired under the modified version of a generic framework of 'Technology Adoption Model' (TAM). The sample size of 153 is filtered and analyzed by using Structural Equation Modeling (SPSS AMOS) to study the intentions of the citizens. In methodological terms, deductive, quantitative method is adopted in interpretive philosophical manner. Collectively, trust and social influence are studied in order to find the impact on the intentions of citizens in the developing countries. However, the trust is the strongest predictor after social influence is recorded. Similarly, the usefulness observed to be a strong predictor of intentions in comparison of ease of use in the current scenario.

**Keywords:** e-government, e-service, trust, perceived ease of use, perceived usefulness, social influence, Pakistan

## 1. Introduction

Electronic government (hereafter e-government) as a multi-disciplinary research area is under the limelight since past two decades. Interestingly, most of the existing academic and applied research in this field can be mapped on the continuum of technological and social prospects. However, both the optimistic and pessimistic approach is adopted during the research in order to elaborate the observable realities. Philosophically, the purpose of e-government is to provide the 'Information Communication technologies' (ICT) based support to make the efficient interaction and the better delivery of service for the citizens, business and governing bodies (Basu, 2004; Heeks, 2001). From the design point of view, e-government is the citizen centric approach to provide government service, as it increases the citizen's participation and visibility (Nam, 2014; Thompson et al., 2005). Apart from the less bureaucratic approach, the strengthening attributes for e-government includes the enriched availability of information for better decision making (Heintze & Bretschneider, 2000), one-window service offering for citizens (Azad & Faraj, 2008), reduction in the operational cost (Bhatnagar, 2002), technologically redefined quality of service (S á et al., 2016), seamless connection among stakeholders, and the transparency and accountability in the governing system (Azeez et al., 2012; Babovi & Jovi, 2007). The intention to adopt any IT-based intervention in the traditional governing and administrative systems is to generate new value for the citizens and for potential business. For example, by the fusion of existing general (informational) and transactional (service) e-government, the participation of the citizens can help in formulating policy and making decisions (Nam, 2014; Thompson et al., 2005). Critically, the success rate of adoption of e-government is variated across the globe. In developed regions, around 25% e-government projects never touched the growing phase of its life cycle, and 33% failed to get mature as per the scope designed in the beginning of the project (Chen, 2006; Heeks, 2002b). Moreover, in the case of developing countries, the successful implementation and

acceptance rate is not more than 15% (Heeks, 2003). The success of e-government demands high participation of citizens to get involved in each phase of its life cycle. In other words, the end-user should be strategically valued while designing the vision of customer-centric innovation in the real world. As the result, a limited amount of citizen participation is the emerging challenge for the e-government success around the world (Gupta et al., 2008; Rana & Dwivedi, 2015; Al-hujran et al., 2015). In the recent decade, the technological aspect is intensively discussed and reviewed. The literature regarding the evaluation and implementation of e-government is more focused towards gaps and problems related to information technology, process re-engineering, staffing, managerial aspects and resources allocation (Heeks, 2003; Heeks, 2002a), and it helps to define more understanding about the e-government implementation issues in the developed countries. However, the fluctuating trends of adoption due to different social, psychological, demographical and economic factors are comparatively lesser in the discussion (Carter et al., 2011).

The concentrated pool of research exists and is getting further populated about the citizen's adoption of e-commerce in developing countries. For example, the hospitality (Cao & Yang, 2016; Hua et al., 2015), retailing (Shim et al. 2016) and 'small and medium enterprises' (SMEs) (Kurnia et al., 2015; Ueasangkomsate, 2015; Rahayu & Day, 2015). In contrast, the e-government adoption and the examination of citizens' perception towards e-government in developing countries are faintly observed in the academic literature (Shajari & Ismail, 2012; Azeez et al., 2012; Kharel & Shakya, 2012). Among the hard, soft and country specific contextual gaps, the contextual variables are complex and inimitable in the case of developing countries (Heeks, 2003). Specifically, the macro level forces in the form of political, economic and cultural considerations are the critical success factors and less discussed for e-government adoption in developing countries (Dada, 2005; Ciborra, 2005). Therefore, in order to accommodate the citizen's expectations in cultural context, and to sketch the overview of perceived value from the available e-government platform in developing countries, the case of Pakistan will be studied. In this case, the 'Social Influence' and 'Trust' as external variable in the 'Technology Acceptance Model' (TAM) will be adopted. Specifically, the case of offered services by 'Federal Board of Revenue' (FBR) in the country', will be studied in the different provinces of the country. The purpose of this study is to investigate the tax payer's (citizens) behaviour in terms of social influence and trust in the existing e-services by the (FBR) government while filing their tax online, and to measure the intentions to use it while observing PEOU and PU as a part of independent factors. Current section will be followed by the comprehensive literature review about the existing e-government modelling and e-government related development in Pakistan, after defining the hypotheses for the current study, the methodological aspect will be discussed. It will be lead further to the findings and analysis section of the paper. In the sum-up, the conclusion with the possible future studies will be highlighted.

## 2. Literature Review

### *2.1 E-government in Pakistan*

The nation with 59% youth population (age below 30 years) is witnessing the gradual increase in its literacy rate, and reviving human index with the high rate of urbanization (Mahar, 2014). The future of the country demands decent approach by the government to reach their basic needs (Arfeen & Khan, 2009). In year 2005, the 'e-government directorate' (EGD) suggested 5 years plan with the priority to provide transparent, agile and efficient e-governing platform in the country (Ali, 2013). Likewise the most of the developing nations, the vision to implement e-government projects experienced prolonged struggling phase because of weak infrastructure and internal misalignment of public sector organizations. Specifically, 40 primary projects were initiated with the financial budget of USD $40 million, but political instability, corruption, and lack of stakeholders' co-ordination deaccelerated the performance of EGD in the country (Ahmad & Zafar, 2012; Arfeen & Kamal, 2014). According to the 'United Nations Public Administration Country Studies' (UNPACS), the 'e-government development index' (EGDI) and 'e-Participation' (ePart) in the case of Pakistan is slightly decreasing every year, and presently the country holds 158thand 97th rank respectively (Hongbo, 2014). Every developing nation usually take the e-government initiative by idealize the goal of political strengthening in the form of electronic voting and citizens participation (Sæbø et al., 2008), economic progress by decrease in agencies' operational cost (Gupta et al., 2008; Bwalya & Zulu, 2012), and by technological advancement for providing agile security, confidentiality and accessibility (Rifkin, 2013; Bwalya & Zulu, 2012). However in the case of Pakistan, this lack of effectiveness in the EGD policies and plan is the output of poor 'Online Service Index' (OSI), insufficient 'Telecom Infrastructure Index' (TII) and unconvincing 'Human Capital Index' (HCI) are the greatest challenges to making it real and successful (Hongbo, 2014; Arfeen & Khan, 2009; Arfeen & Kamal, 2014; Ahmad & Zafar, 2012).

*2.2 Need of Citizen Centric Approach in E-government in Developing Countries*

Citizen's participation is always challenging for e-government in developing countries. In the case of Pakistan, by 2012 only 10% of the population had internet access, however the 66% population of the country was mobile phone subscriber (UNICEF, 2013). In the case of developing countries, most of the exiting frameworks and models of e-government are emphasizing the importance of resource driven approach as shown in the Table 1. However, the customer-centric approach is comparatively less in discussion, though it plays critical role for e-government success as shown in the Table 1.

Table 1. E-government Frameworks and models used in the developing countries

| Author(s) | Year | Country | Dimensions discussed | Resource base view (RBV) VS Customer-Centric View (CCV) |
|---|---|---|---|---|
| Khanh, Ngo Tan Vu | 2014 | Vietnam | Processes, Governing, Social, Technical, Diffusion (5 factors) (Khanh, 2014) | RBV |
| Electronic Government Directorate (EGD), Pakistan | 2005 | Pakistan | Internal effectiveness and efficiency, Top-level management, Coherent policy, Legislation, Government Data centres (Directorate (EGD), 2005). | RBV |
| MAHAPATRA, Raghunath PERUMAL, Sinnakkrishnan | 2004 | India | Technology, Managerial aspect, Resources, e-Culture (Mahapatra & Perumal, 2004). | RBV / CCV (Hybrid) |
| Shakya, Subarna | 2008 | Nepal | Infrastructure, Applications (G-G,B and C), Private sector, Empower Government staff, Human Resource development (Shakya, 2008). | RBV |
| Rainford, Shoban | 2005 | Sri Lanka | Leadership, Policies, Infrastructure, ICT industry and Human Resource Development (Rainford, 2005). | RBV |
| Al-Omari, Hussein | 2006 | Jordan | Infrastructure, Law and policy, Design and managerial issues (Al-Omari, 2006). | RBV |

It is generally observed that the database, network, monitoring and office automation related technology is always addressed in more sophisticated manner, in contrast of customer-centric value creation, especially in the case of developing countries (Snellen, 2002). Citizens to get involved in the e-government by e-participation and e-opinion is still not distinctly observable trend globally, as only 11% and 9% of world's e-government have the feature of e-participation and e-opinion respectively (United Nations, 2008). In terms of sophistication level of e-government, it can be stated that the e-government in developing countries is still hooked up in a process of engaging, enhancing and information-interacting. However, the developed economies are enjoying the transactional and networked value from the e-government (United Nations, 2010).

*2.3 Recent E-government Related Research in Pakistan*

The bifurcates the public value of e-government as the (1) e-service delivery, (2) outcome of e-services and (3) trust, specifically the e-service delivery embraces the cost of operations, fairness in the operations, choices and satisfaction of citizens towards e-services (Kearns, 2004) Conversely, the turnkey operations and foreign consultation about e-government in developing countries is creating reality-design gap in the implementation of e-government (Vintar, 2006). In Pakistan, the performance of EGD is highly criticized as the most of the project are going through the initialization phase because of weak IT-policy implementation and follow-ups (Arfeen & Kamal, 2014). It can be concluded that the analysis of IT competency in terms of, intangible resources and culture are least considered while designing and implementing e-service by government in the country (Arfeen & Khan, 2009; Arfeen & Kamal, 2014; Haider & Shuwen, 2015). The Table 2 is the quick overview of recent analysis of the e-government in the country.

Table 2. Recent e-government related researches in the country

| Author(s) | Year | Dimensions discussed related to e-government in the country |
|---|---|---|
| Haider, Zulfiqar<br>Shuwen, Chen<br>Burdey, Muhammad Bux | 2016 | Macro level forces (political, infrastructural, economic, social and legal) are the major obstacles in the e-government adoption (Haider et al., 2016). |
| Mastoi, Abdul Ghaffar<br>Hussein, Ahmed<br>Ahmed, Alsherbiny | 2016 | Studied the (mobile) e-service adoption (Land RecordManagement Information System – LRMIS) through 'Social Cognitive Theory'. |
| Haider, Zulfiqar<br>Shuwen, Chen | 2015 | Studied the demand side, citizens expectation by using UTAUT (Haider & Shuwen, 2015). |
| Khan, Farooq Alam<br>Ahmad, Basheer | 2015 | Studied factors affecting e-government adoption in internet users using UTAUT (Khan & Ahmad, 2015). |
| Arfeen, Muhammad<br>Kamal, Muhammad | 2014 | Highlighted terrorism, international funding, lack of capability and infrastructure as the emerging challenge for e-government in the future (Arfeen & Kamal, 2014). |
| Mariam Rehman,<br>Vatcharaporn Esichaikul,<br>Muhammad Kamal | 2013 | Studied Impact of website quality on trust and intentions to use e-government on the basis of conceptual model (Mariam Rehman, Vatcharaporn Esichaikul, 2013). |
| Ahmad, Muhammad Ovais<br>Markkula, Jouni<br>Oivo, Markku | 2013 | Citizen's adoption of e-government on the basis of conceptual model include the essence of 'Social Cognitive Theory' and 'Innovation Diffusing Theory' (Ovais Ahmad et al., 2013). |
| Kamal, Muhammad Mustafa<br>Hackney, Ray | 2012 | Organizational, social, political and strategic view discussed while defining stakeholders of e-government (Kamal & Hackney, 2012). |
| Kayani, Muhammad Bilal<br>Haq, M Ehsan<br>Perwez, M Raza<br>Humayun, Hasan | 2011 | Organization and citizen level problems discussed and raised the issues related to ICT infrastructure, terrorism, access to the e-service and finance as the serious challenges in the current phase of adoption (Kayani et al., 2011). |
| Qaisar, Nasim<br>Ghufran, Hafiz | 2010 | Organization level adoption, challenges of infrastructure and finance as the critical findings (Qaisar & Ghufran, 2010). |
| Arfeen, Irfanullah<br>Khan, Nawar | 2009 | Process re-engineering, ICT infrastructure and Human resource are critical to address e-government adoption (Arfeen & Khan, 2009). |

In the list of literature provided in Table 2, the adaptation of socio-psychological modelling is observed while analysing citizen's behaviour towards e-government. The next section of this paper will focus on the existing socio-psychological models which can be used in the current study to understand the situation.

### *2.4 Conceptual Model and the Hypotheses*

Purposefully, the e-government is a technology-based solution for the government institutions to service citizens (Heeks & Bailur, 2007; Bhatnagar, 2002). Therefore the behavioural studies are vital to focus specifically, when the citizens are diverse in the terms of age, language, norms and ethics. The series of classic behaviour models include 'Theory of reasoned Action' (TRA) (Fishbein & Ajzen, 1975), 'Theory of Planned Behaviour' (TPB) (Ajzen, 1991) and, 'Social Cognitive Theory' (SCT) (Bandura, 1977). In terms of innovation and technology adoption models, 'Innovation Diffusion Theory' (IDT) (Rogers, 1995), 'Technology Acceptance Model' (TAM) defining the importance of perceived ease and usefulness (Davis, 1989) and 'Unified Technology Acceptance and Use of Technology' (UTAUT) as the most comprehensive technology adoption view (Venkatesh et al. 2003) are the dominating ones. Furthermore, the evolution of classic behaviour and innovation adoption models produced 'Decomposed Theory of Panned Behaviour' (DTPB) discussing the importance of facilitating facilities and the in-depth view of social influence (Taylor & Todd, 1995), 'TAM2' by overlapping traditional TPB and TAM (Venkatesh, 2000). Through the secondary sources, it is observed that the 'UTAUT' and 'TAM' are the highest adopted models to explain and predict the technology adoption behaviour (Dwivedi et al., 2011; Chuttur, 2009). In the constructive fashion, TAM has been challenged for holding less contextual values while defining individual's behaviour (Chuttur, 2009). As Bagozzi (2007) argued that TAM can't differentiate the desired and intended set of actions and goals. Similarly, Benbasat and Barki (2007) highlighted the TAM as a model with black-box nature as TAM not defines the list of external variables which drives the intentions and use of individuals. In order to, deal with the emerging challenges and arguments regarding the reliability of the TAM as a model, researchers are adding the flavour of different variables i.e.'time' (Fayad & Paper, 2015) and 'trust' (Agag & El-Masry, 2016) in e-commerce, 'culture' with 'trust', (Al-hujran et al., 2015) and 'Social Norms' with 'Facilitating facilities' (Dwi & Aljoza, 2015) in e-government related studies in terms of modeling, different researchers used the dynamics of 'Perceived Usefusdslness' and 'Perceived Ease of Use' to justify the psychological forces to adopt IT-based innovation (Davis, 1989). The 'Perceived Usefulness' (USE) calculates the perceived benefits an individual can achieve by adopting innovation. As naturally, IT-based solutions are to enhance efficiency and performance of the operations, instead of making the processes complex (Qiu & Li, 2008). On the other hand, the 'Perceived Ease of Use' (EASE) explains the individual's perception about the

effort required to adopt IT-based innovation (Chuttur, 2009). The basic structure of TAM will be adopted in the current study where the intentions (INTENT) will be defined as the product of EASE and USE and can be summarized as the conclusive hypotheses (H5 and H6) for the current study.

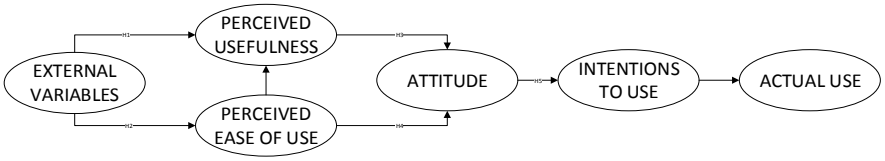


Figure 1. Technology Acceptance Model (TAM) (Davis, 1989)

Apart from the previously discussed challenges regarding the external variables for TAM, intensive e-government related studies have adopted this model to define and understand human behaviour towards technology (Mohammadi, 2015; Lu et al., 2010). The 'trust' as a variable comprises 'institutional', 'process based' and 'characteristics based' issues to concern (Mahmood, 2013). The organizational trust in the case of e-government has already been discussed and defined as critical in variuos studies and also been concluded as a critical variable while summing up the intensions of any individual towards innovation adoption (Mahmood, 2013; Downey, 2011). In the current study, the 'trust' in the form of 'institutional' and 'technology / service' will be discussed as single entity. In contrast of e-commerce, the trust in e-government service is more important as the end-users don't have any other electronic option to interact with the government (Warkentin et al., 2002). In general, trust defines as the belief of one's promise to be depends on (Rotter, 1971). In e-commerce and e-government related studies, trust as independent variable has been discussed and concluded as an critical variable to define citizens perception and intentions to use innovation (Belanger & Carter, 2008; Carter et al., 2011; Dwi & Aljoza, 2015; Belanche et al., 2012; Lee et al., 2011). The first two hypotheses (H1 and H2) will highlight the relationship between trust and traditional components of TAM (Persecived Ease of Use (EASE) and Perceived Usefulness (USE)). The conceptual model for the current study is shown below in the Figure 2.

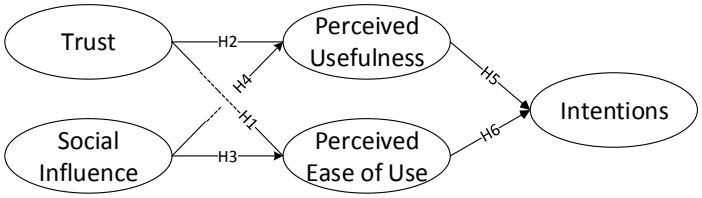


Figure 2. Conceptual model for the current study

Furthermore, the 'social influence' (SOCIO) about the service / technology will be likewisely considered apart from Perceived usefulness (USE) and Perceived ease of Use (EASE) as an external factor from the environment.social influence is highlighted as more critical to address in technology adoption since it is considered a vital part in UTAUT and TPB, where it defined as a strong predictor of intentions (Nasri & Abbas, 2015; Ahmad et al., 2013; Ozkan & Kanat, 2011; Alryalat et al., 2013). The external influence on individual to adopt innovative services, as the sqeezed social influence sometimes works as a catalyst to increase e-government service adoption (Akar & Mardikyan, 2014; Shen et al., 2006; Liu et al., 2014). The next two hypotheses will discuss the existance of relationship of Social influence (SOCIO) with EASE and USE respectively. Specifically, the list of hypotheses for the current study are mentioned below in the Table 3.

Table 3. List of hypotheses for the current study

| Hypo. | Description | Literature supported |
|---|---|---|
| H1 | Trust$^{+}$→ Usefulness$^{+}$ | (Praveena & Thomas, 2013; Al-hujran et al., 2015; Alsaghier & Ford, 2009; Ayo et al., 2015) |
| H2 | Trust$^{+}$→ Ease of use$^{+}$ | (Alateyah et al., 2013; Dwi & Aljoza, 2015; Sahari & Abidin, 2012; Meftah et al., 2015) |
| H3 | Social Influence$^{+}$→ Usefulness$^{+}$ | (Akar & Mardikyan, 2014; Zafiropoulos et al., 2012; Liu et al., 2014; Alryalat et al., 2013) |
| H4 | Social Influence$^{+}$→ Ease of use$^{+}$ | (Dwi & Aljoza, 2015; Shen et al., 2006; Park, 2009) |
| H5 | Usefulness$^{+}$ → Intentions$^{+}$ | (Jahangir & Begum, 2008; Abdelghaffar & Magdy, 2012; Shyu & Huang, 2011) |
| H6 | Ease of use$^{+}$ → Intentions$^{+}$ | (Khattab et al., 2015; Almahamid et al., 2010; Carter & Belanger, 2005) |

The current study can be concluded as unique, as the above defined hypotheses have never been discussed while holding suggested schema (conceptual model). The next section of the document will discuss the methodological

aspects addressed to conduct the current study as it always drives the credibility and authenticity of the research.

## 3. Methodology

In terms of the strategy, survey was adopted in the research as it is most frequently observed strategy in technology and innovation management studies (Venkatesh, Viswanath et al., 2003). The purpose of the study is to understand the intentions and perceived value of the online tax paying platform in the country. Only mono-method on the cross sectional time-span was used, and all data collection and analysis performed in the quantitative manner.

### *3.1 Data Sample and Profile*

The mixed mode of online and offline questionnaire surveys spread across the three selected urban cities (namely in the Lahore, Faisalabad and Multan) in the country where the target audience was the tax payers who have interacted with FBR and online tax filling system for citizens. The structured questionnaire survey was intentionally adopted because of research being deductive in nature, and easy to grasp selected set of information (Saunders et al., 2009). In total, 177 offline and online questionnaires were positively acknowledged out of 270 sent requests to participate. In other words, the response rate of 65.55% was recorded. However, only the 153 were considered for the study after filtering incomplete and inappropriate response sets from the survey. Interestingly, more than 40 percent of the surveyed sample just started using online tax filling system in last 2 years. Almost equal representation from each age group is observed during the descriptive overview of the results. As far as the educational background is concerned, about 77% of the surveyed sample have at least attended the college.

### *3.2 Instrument*

The questionnaire survey was designed on the basis of validated scale of matrics extracted from the studied literature. Specifically, the scale for construct ‘Usefulness’ (USE) and ‘ease of use’ (EASE) adopted by Davis (1989), ‘Influence’ (SOCIO) and ‘Intentions’ (INTENT) by Todd and Taylor (1995), and ‘Trust’ (TRUST) by Gefen (2003) as mentioned in the Appendix A. The intentional purpose to adopt existing scale from the literature is to enhance the validity of the current research (Chen & Chengalur-Smith, 2015). Furthermore, the complete set of scale is mentioned in the ‘appendix A’ of the document. The likert scale of 5 (1=’strongly disagree’ to 5=’strongly agree’) was used as it is most preferred scale observed while studying human perception and behaviour (Saunders et al., 2009). The pilot test suggested to refine the arrangement of words In the questionaire to be more meaningful and affective. Furthermore, the results from relibility test (Cronbach's alpha) was observed which was recorded above the desired limit of 0.70 (Nunnally & Bernstein, 1997).

## 4. Analysis

In the recent e-government related researches, the trust and social influence are rarely discussed while mapping over it to TAM. However the observed research highlights the vital role of each of the variable while creating intentions (Ghalandari, 2012; Al-Jamal & Abu-Shanab, 2015; Nasri & Abbas, 2015; Alateyah et al., 2013). In the current study, to review the reliability and validity test, the confirmatory factor analysis (CFA) observed which leads to the model testing where each of the hypothesis was challenged and reviewed (Anderson & Gerbing, 1988). The SPSS Statistics v23 by IBM and SPSS-AMOS 21 by IBM is used to make the quantitative findings for the study.

The analysis of the quantitative data started by following the methodology which suggested to be composed of Exploratory Factor Analysis (EFA) and the comprehensive technique of SEM. In the initial stage of the following part of the document the findings from the EFA will be discussed which will lead to the SEM related findings to define citizen's intentions' determinants in the present study.

***Step 1:*** To briefly uncover the relationship among variables, and to validate the data and to make the results more reliable, EFA helped to expose the relational structure among the focused set of variables. Specifically, the computer aided software tool (SPSS) was used to reduce the dimensions and analysing the structure of the data. Through the initial tests to measure sampling adequacy by KMO (Kaiser-Meyer-Olkin) and sphericity by Bartlett test the favorable results were observed where the KMO value of .801 which is higher than the preferred limit of .70 (Hair et al., 2014). Similarly the significance of p-value in the Bartlett test also supported the analysis to be performed.

***Step 2:*** During the analysis of internal reliability of each of the construct, the ‘Cronbach Alpha’ (CA), ‘Composite reliability’ (CR) and the ‘Average Variance Extracted’ (AVE) is analized and recorded as shown in the Table 4. In the context of literature, the recorded values shouldn’t be lower than the .70 except in the case of AVE, where it shouldn’t be less than .50 (Hair et al., 2014). Moreover the factor loadings for each of the item is

also recorded with the values considered to be higher than 0.70. This procedure of reliability testing is also been followed by different researches before while studying e-government adoption (Belanger & Carter, 2008; Al-hujran et al., 2015). Hence these findings can state this research as 'convergently reliable'.

Table 4. Confirmatory Factor Analysis (CFA) related findings

| Variable | Item(s) | Factor Loading | Cronbach Alpha (CA) | Composite Rilibility (CR) | Average Variance Extracted (AVE) |
|---|---|---|---|---|---|
| Perceived Usefulness (USE) | USE1 | .867 | .911 | .900 | .752 |
| | USE2 | .871 | | | |
| | USE3 | .863 | | | |
| Perceived Ease of Use (EASE) | EASE1 | .820 | .829 | .854 | .661 |
| | EASE2 | .846 | | | |
| | EASE3 | .773 | | | |
| Trust (TRUST) | SOCIO1 | .843 | .882 | .879 | .707 |
| | SOCIO2 | .847 | | | |
| | SOCIO3 | .834 | | | |
| Social Influence (SOCIO) | COMPAT1 | .885 | .816 | .886 | .796 |
| | COMPAT2 | .900 | | | |
| Intentions (INTENT) | INTENT1 | .861 | .802 | .835 | .631 |
| | INTENT2 | .850 | | | |
| | INTENT3 | .656 | | | |

In order to, keep the research findings valid and credible, the Table 5 is listing the means (m) and the standard derivation (SD) for each of the variable with the discriminant validity (DV) by showing latent variables correlation. The DV helps to assure that any 2 of the latent variables are discussing different aspects of respondent's opinion. To make the DV more reliable, the square root value of AVE for each of the variable is mentions in the diagonal row of the Table 5. The square root of AVE should be higher than the value of latent variable correlation in each case to make the data credible and discriminatory reliable (Chin, 1998). In the sum-up, the positive results from DV can be observed as discussed in the Table 5.

Table 5. Mean, Standard deviation, AVE's square-root in diagonal (underlined and bold), and correlation analysis of observed variables

| Variable(s) | Mean (m) | Standard Deviation (SD) | USE | EASE | SOCIO | COMPAT | INTENT |
|---|---|---|---|---|---|---|---|
| Perceived Usefulness (USE) | 4.004 | .671 | .821 | | | | |
| Perceived Ease of Use (EASE) | 2.885 | .715 | .379[a] | .808 | | | |
| Trust (TRUST) | 3.568 | .789 | .467[a] | .574[a] | .843 | | |
| Social Influence (SOCIO) | 2.388 | .855 | .208[b] | .395[a] | .361[a] | .842 | |
| Intnetions (INTENT) | 3.776 | .635 | .634[a] | .405[a] | .414[a] | .293[b] | .814 |

a: $p<0.01$; b : $p<0.05$

The purpose of the Structural Equation Modeling is to measure the fitness of the model, confirmatory factor analysis and the path analysis (Hair et al., 2014). The related indices for model fitness evaluation can be summarized in Table 6. The CMIN value of 1.392 is observed where the x2 of 93.233 and df of 67 is calculated. However, the preferred range of CMIN is suggested to be ranged between 1 and 3 (Chin & Todd, 1995). As the x2 (Chi-square) is highly sensitive to the sample size so the other relevant indices are also preferred to study model fitness (Hooper et al., 2008). Specifically, fitness indices include the absolute (GFI and AGFI), relative (NFI and TLI) and non-centrality indices (RMSEA and CFI). The absolute fitness indices neither use alternate models nor the baselines to measure the difference. Precisely the suitable value of GFI and AGFI is .90 (Hooper et al., 2008) and partially supported as AGFI is higher than .885 in the present analysis. Relevant fitness tests uses x2 of null (where no correlation observed among variables) and experimented model. In the current study, NFI and TLI are tested where the partially supported results found as NFI is observed higher then .925, while supporting the literature the both values should be above .95 (Hu & Bentler, 1999; Hooper et al., 2008). Regarding the non-centrality indices, the value of RSMEA (elaborates the discrepancy over the df) and CFI are preferred to be <.06 and >.90 respectively (Hooper et al., 2008) and supported in the current document as discussed in the Table 6 below.

Table 6. Summary of Model fitness

| Measuring Index(es) | Observed Value In CFA | Observed Value In MODEL | Recommended Value |
|---|---|---|---|
| Chi-Square ($X^2$) | 93.233 | 97.362 | -- |
| Degree of freedom (df) | 67 | 70 | -- |
| CMIN (Chi-Square ($X^2$) / Degree of freedom (df)) | 1.392 | 1.391 | Less then 3.0 |
| GFI | .927 | .923 | Above .90(Bollen, 1990)<br>When factor loading is high (Hooper et al., 2008) |
| AGFI | .886 | .885 | Above .90(Hooper et al., 2008)<br>Above .80 (Belanger & Carter, 2008) |
| RMSEA (room-mean square error of appox.) | .051 | 0.51 | Less then .08(Hooper et al., 2008) |
| CFI | .979 | .978 | Above .95(Hu & Bentler, 1999) |
| NFI | .931 | .928 | Above .95(Hu & Bentler, 1999)<br>Above .90 (Malaquias & Hwang, 2016) |
| TLI | .972 | .972 | Above .95(Hooper et al., 2008) |

Although the recorded values of AGFI (.885) and NFI (.928) for the current model are challengeable as both are lower than the desired limit (Hu & Bentler, 1999). However, these both results are considered acceptable as different researches have used the lower limit of '.85/.80' and '.90' respectively to define these indices in the literature (Malaquias & Hwang, 2016; Belanger & Carter, 2008; Al-hujran et al., 2015). In the intial phase of the analysis, most of the indices were not accounted as the desirable results, but with the support of the modification indices, the relations among the variables reviewed until the fitness indices produced the resireable results and the least recommend values by the existing pool of literature, as a few of the fitness indices are discussed in the table 5 above and the further details about incremental, parsimonious and absolute fit indices are following: (1) the measures for absolute fit as GFI, AGFI and RMSEA are .923, .885 and .051 respectively. (2) Likewise, the Incremental fitness measures as NFI, CFI, IFI and RFI are recorded as .928, .978, .979 and .907 respectively. (3) Furthermore, the parsimonious fits measured for the current study as PGFI, PNFI, PCFI and CMIN/df are observed as .616, .714, .753, and 1.391 respectively.

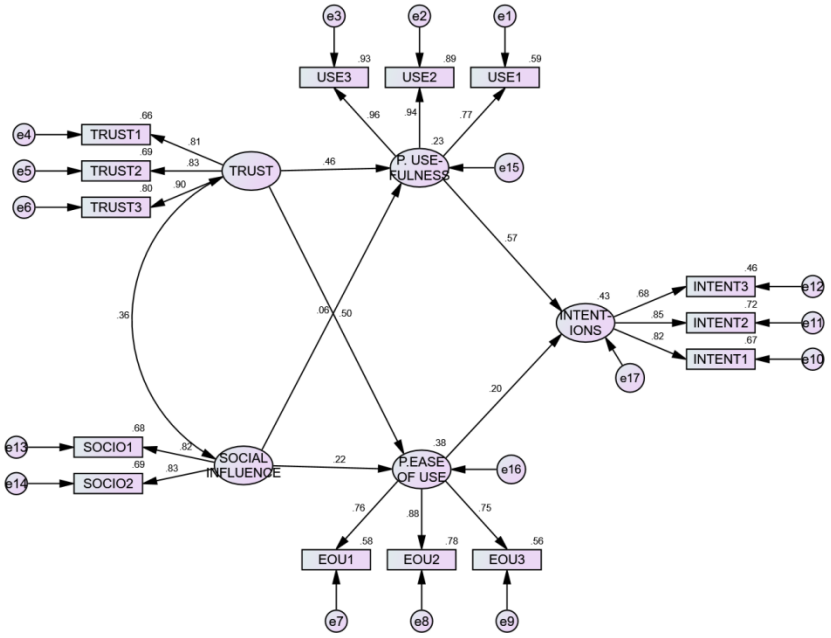


Figure 3. Path coefficient for the Computed model

After challenging the derived model and identification of the model, the relationship among the two exogenous (TRUST and SOCIO) and three endogenous (EASE, USE and INTENT) variables are examined, The Figure 3 graphically explains that the exogenous variables (SOCIO and TRUST), and two endogenous variables (USE and EASE) collectively explains around 43 percent of the variance regarding the intention of citizens towards e-government adoption. Specifically on the basis of hypotheses presented in the table 3 at the end of 'literature and model conceptualization'. The result of the challenges hypotheses is listed in the Table 7.

Table 7. Hypotheses evaluation and path analysis

| Hypothesis | Description | Nature / Direction | Beta (b) | Significance value(s) | Result(s) |
|---|---|---|---|---|---|
| H1 | TRUST→ USE | + | .225 | <0.05 | Supported |
| H2 | TRUST→EASE | + | .06 | >0.05 | Not Supported |
| H3 | SOCIO→USE | + | .50 | <0.001 | Supported |
| H4 | SOCIO→EASE | + | .46 | <0.001 | Supported |
| H5 | USE→INENT | + | .57 | <0.001 | Supported |
| H6 | EASE→INTENT | + | .20 | <0.05 | Supported |

Five of the stated hypotheses supported from the conceptual model which include H1, H3-H6, however the relationship between 'TRUST' in the e-government service and 'Perceived Ease of Use' (H2) is not succeed to be identified in the case of Pakistan's e-service adoption. Now each of the Hypotheses will be discussed and will be reviewed in context of existing secondary literature in the discussion phase. The sum-up of TRUST and SOCIO explains 23 percent variance of the USE of currently offered e-government service as per the current study. Statistically, $\beta = .22$, $p<0.05$; $\beta = .50$, $p<0.001$ respectively is recorded. On the other hand, The fusuion of TRUST and SOCIO defined 38 percent variance of EASE in the focused research. Quantiitatively it can be concluded as $\beta = .06$, $p>0.05$; $\beta = .46$, $p<0.001$ respectively. However, the relationahip between SOCIO and EASE is not significantly suppoted from the current study. The research concluded that the influence of USE in contrast of EASE is much higher while summing-up intentions in the current study. Numerically, the coefficient r and p values are following: $\beta = .57$, $p<0.001$; $\beta = .20$, $p<0.05$ respectively. The brief summary can be observed in the Table 7.

## 5. Discussion

The present study focused the e-government service which acts vitally to generate revenue for the government. The 'Social Influence' (SOCIO) as a strong predictor of intentions (INTENT) in e-commerce adoption have already been researched and concluded to have positive association (Shen et al., 2006; Tuck & Riley, 1986; Akar & Mardikyan, 2014; Huang & Chuang, 2007). Furthermore, in the scenario of e-government multiple researches challenge this association in different manner (Nasri & Abbas, 2015; Alryalat et al., 2013; Ovais Ahmad et al., 2013). The findings regarding the association of 'Social Influence' and its effect of the USE and the EASE of the e-government are partially supported by the previous researches (Akar & Mardikyan, 2014; Liu et al., 2014; Alryalat et al., 2013). As the H2 is not supported where the 'Social Influence; studied as the independent for 'perceived EASE' of e-government service in the current case.

The Trsut as an independet factor in different forms (Khurshid, 2014; Gefen et al. 2003; Goudarzi et al., 2013) have already been analysed in previous researches regarding innovation adoption and e-commerce, where the positive strong relationship is observed over the USE, EASE and Intentions (Wahab et al., 2009; Praveena & Thomas, 2013; Ghalandari, 2012). The findings regarding e-government service from the current document are supported by the previous researches where the trust is defined as strong positive indicator of individual's adoption of e-government while considering EASE and USE as mediator (Alsaghier & Ford, 2009; Meftah et al., 2015; Ayo et al. 2015; Al-hujran et al., 2015; Praveena & Thomas, 2013). In TAM, TAM2, DTPB, different scientist have used EASE and USE to define Intentions of individuals to define their behaviour towards innovation. In the current document the impact of USE is recorded higher over intentions in contrast of EASE. Intrestinly, it has been observed in the past studies (Carter & Belanger, 2005). However the positive association in the H5 and H6 are supported by the existing pool of scientific studies (Jahangir & Begum 2008; Abdelghaffar & Magdy 2012; Almahamid et al., 2010; Shyu & Huang, 2011; Khattab et al., 2015).

### *5.1 Implications (Extraction from the Current Study)*

The literature regarding the citizen centric view to design and implement the e-government service is rarely observed in the literature in the focused region, as concluded from the studied literature only very few of the governments in the south Asian region are addressing citizen as the critical stakeholder to address. In the existing practices the managerial and technological capabilities, form and duration of stay of the governing authority are critical to observed (Chen, 2010; Arfeen & Kamal, 2014). However, the current document underlined the positive trend of e-readiness as people are perceiving e-government initiative as positive change in the social and economic development. The element of 'Ease of Use' (EASE) is can be observed as the least observed construct in the current study by the e-service provider as the interfaces and the procedure to achieve task is less friends and easy to understand which is also observe as critical construct to increase adoption (Carter & Belanger, 2005; Belanger & Carter, 2008; AlAwadhi & Morris, 2009; Venkatesh, 2000).

It can be recorded through the present study that the active essence of 'Social Influence' (SOCIO) can be

recorded as a sensitive strategic tool as 'SOCIO' in the form of cultural attribute can help to increase the adoption of e-government in the country. In the present study, less supportive Social influence is recorded as a deterministic factor for the adoption. Moreover, the existing literature supports the existence of the positive association between 'Social Influence' (SOCIO) and the Intentions (INTENT) of e-service adoption (Ghalandari, 2012; Sahari & Abidin, 2012; Park, 2009; Nasri & Abbas, 2015).

The current document challenged the existing trend of translating the impact of 'Trust' and 'Social Influence' on the 'Intentions' of the citizens to adopt or reject the e-government service as discussed in the literature of the document. Through the current study, the re-defined association of trust and social influences as it can be observed as the exogenous variables for the prediction of Ease and Use (EASE), Usefulness (USE) and Intentions (INTENT) as endogenous variables in the case of e-government services.

*5.2 Limitation (Research Perspective)*

The cross-sectional nature of the study reserved the findings to be reviewed with the evolving time and spectrum of offered services to the citizens. Moreover, the likert scale of 7 can improve the quality of findings and a few researches regarding e-government services have adopted seven-point likert scale for the studies (Carter et al., 2011; Zhao et al., 2014; Karunasena & Deng, 2012; Rana & Dwivedi, 2015). Although the collected sample was addressing urban cities, however other provinces and states can be counted in to enrich the findings from the present study. The current conceptual model can be used to review other currently offered e-government services within the country, as it will help to profiling the e-readiness and the e-quality satisfaction among the citizens.

## 6. Conclusion

The intentionally discussed exogenous factors in the conceptual model as external factors in TAM is directing the need of customer centric approach of designing and deploying e-service as the trust in the government's institute is less debatable in the current scenario, the interactivity with citizens is less observed which is leading to less 'perceived EASE, USE and Intentions as the procedure to get online account for filing FBR in Pakistan is not convenient for the end-users. Moreover, the usefulness of e-service is appreciated by the citizens as observed in the current study. However, less affecting power of 'ease' is observed while creating intentions, as supported by most of the existing literature. The developing countries like Pakistan demand more external cultural factors to be addressed while designing and implementing any e-service as heterogeneity in the population deserves more attention and strategic value. For example: the regional language support and the self-assistive nature of e-services can increase the adoption rate of the innovative e-service. It is intensively observed that the government is struggling hard to fill the gaps of infrastructural and capability based lacking, and the energy crisis is also applying negative affect on the output of the innovative e-governance. The adoption of citizen centric interoperate-able service can help to succeed in the current scenario.

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## Appendix A

Table 8. Matrices of Scale for Quantitative Study

| Construct | Definition | Adapted Scale for quantitative survey |
|---|---|---|
| Ease of Use (EASE) | The essences of 'effortlessly' while doing any work/job or activity (Davis, 1989). | • While interaction, I found e-tax filling system by FBR is flexible.<br>• The online system of tax filling is understandable and clear.<br>• Online tax filling system by FBR is easy to use.<br>Adapted by: (Davis, 1989) |
| Usefulness (USE) | The perception of individual to get enhancement in activity / job or duty output (Davis, 1989). | • The pace of my work can be enhanced by adopting e-tax filling system by FBR.<br>• Online tax filling can improve my productivity and efficiency.<br>• My work by adopting online tax filling is much easier.<br>Adapted by: (Davis, 1989) |
| Social Influence (SOCIO) | The individual's perception regarding the opinion of society members who are important for him before making any conclusive behaviour (Fishbein & Ajzen, 1975). | • Friends and family who influence me, have suggested e-tax filling by FBR to be adopted.<br>• My professional social network also emphasizes me to adopt e-tax filling by FBR.<br>Adapted by: (Taylor & Todd, 1995) |
| Trust (TRUST) | The individual's confidence in others while interacting, about the absence of opportunistic behaviour (Gefen, Karahanna, & Straub, 2003). | • Online tax filling is for tax payer's betterment.<br>• Revenue collection department doesn't take it in opportunistic manner.<br>• This online platform by FBR is trustworthy.<br>Adapted by: (Gefen et al., 2003) |
| Intentions (INTENT) | In the case of individual, it is the sole determinant of usage/adoption of any change (Taylor & Todd, 1995). | • I am willing to use e-tax filling by FBR.<br>• I am interested to use e-tax filling by FBR in next few months too.<br>• I will be the frequent user of e-tax filling system by FBR.<br>Adapted by: (Taylor & Todd, 1995) |