# ANTECEDENTS OF TRUST USING EXTENDED TECHNOLOGY ACCEPTANCE MODEL FOR GOVERNMENT SOCIAL MEDIA SERVICES

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# ANTECEDENTS OF TRUST USING EXTENDED TECHNOLOGY ACCEPTANCE MODEL FOR GOVERNMENT SOCIAL MEDIA SERVICES

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## DEDICATION

This thesis is dedicated to my beloved mother, wonderful wife and loving sisters. Thank you for your prayers and understanding

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## ABSTRACT

In recent years, development of e-government services has expanded from static websites to social media. Unlike static e-government websites which are based on one-way interaction, social media is an interactive communication platform that helps to improve government public relationship through interactive participation, engagement and collaboration. However, the potential values of social media-based e-government services cannot be displayed without addressing citizens' trust to participate in these services. Trust has been mentioned as a significant factor in adoption of e-government services. However, there is a limited focus on how to generate citizens' trust in e-government services from multiple dimensions. Furthermore, there is a lack of prior investigation on citizens' trust factors in the context of using social media for e-government services. To address this problem, this study aims to identify the factors that can influence citizens' trust leading towards their intention to participate on social media for e-government services. An integrated model was developed based on multiple dimensions of citizens' trust which are: individual characteristics, government factors, risk factors and social media characteristics. The model reflects antecedents of citizens' trust and its influence towards their intention to participate on social media for e-government services. In this study, the positivist research approach has been used and survey methodology has been adopted to collect responses from citizens in all four provinces of Pakistan. A total of 615 valid responses were obtained and analysed by using Structural Equation Modelling with the Partial Least Squares (PLS-SEM) approach. The findings revealed that disposition to trust, benevolence, perceived privacy, perceived security, information quality, structural assurances and perceived ease of use are the factors that were found to significantly influence trust. Whereas, uncertainty avoidance, ability and integrity were found to be insignificant factors. The identified factors in this study explain 59.5 % of the variance in trust to use social media for e-government services, showing a good explanatory power of the model. Thus, this study provides valuable findings towards the development of a model that has the potential to improve citizens' trust and their willingness to use social media for e-government services in Pakistan.

# ABSTRAK

Beberapa tahun kebelakangan ini, perkhidmatan e-kerajaan telah berkembang daripada laman web statik kepada media sosial. Tidak seperti laman web e-kerajaan yang statik berasaskan komunikasi sehala, media social merupakan sebuah platform komunikasi interaktif yang membantu memperbaiki perhubungan awam kerajaan melalui penyertaan, penglibatan dan kerjasama interaktif. Namun begitu, nilai-nilai potensi perkhidmatan e-kerajaan berasaskan media sosial tidak dapat dipaparkan tanpa memberikan perhatian kepada kepercayaan warga untuk mengambil bahagian dalam perkhidmatan-perkhidmatan ini. Kepercayaan disebut sebagai satu faktor penting dalam penggunaan perkhidmatan e-kerajaan. Walau bagaimanapun, terdapat tumpuan terhad tentang cara menjana kepercayaan warga terhadap perkhidmatan e-kerajaan dari pelbagai dimensi. Tambahan pula, terdapat kekurangan dalam penyelidikan terdahulu ke atas faktor kepercayaan warga dalam konteks penggunaan media sosial bagi perkhidmatan e-kerajaan. Bagi menangani masalah tersebut, kajian ini bermatlamat untuk mengenal pasti faktor-faktor yang boleh mempengaruhi kepercayaan warga ke arah hasrat mereka untuk melibatkan diri dalam media sosial bagi perkhidmatan e-kerajaan. Sebuah model bersepadu telah dibangunkan berdasarkan pelbagai dimensi kepercayaan warga: ciri-ciri individu, faktor-faktor kerajaan, faktor-faktor risiko dan ciri-ciri media sosial. Model ini mencerminkan kepercayaan awal warga sebelum ini dan pengaruhnya ke arah hasrat mereka untuk melibatkan diri dalam media sosial bagi perkhidmatan e-kerajaan. Dalam kajian ini, pendekatan penyelidikan positivis dan kaedah tinjauan telah digunakan untuk mengumpul maklum balas daripada warga di kesemua empat wilayah di Pakistan. Sejumlah 615 maklum balas sah diperoleh dan dianalisis dengan menggunakan pendekatan Pemodelan Persamaan Struktur dengan Kuasa Dua Terkecil Separa *(PLS-SEM).* Dapatan kajian mendapati kecenderungan untuk mempercayai, kebajikan, persepsi privasi, persepsi keselamatan, kualiti maklumat, jaminan struktur dan persepsi kemudahan penggunaan merupakan faktor-faktor signifikan yang sangat mempengaruhi kepercayaan. Sementara itu, pengelakan ketidakpastian, kebolehan dan integriti didapati sebagai faktor-faktor tidak signifikan. Faktor-faktor yang telah dikenalpasti dalam kajian ini menjelaskan bahawa 59.5% varians kepercayaan menggunakan media sosial untuk perkhidmatan e-kerajaan, menunjukkan penjelasan kuasa model yang baik. Hasil kajian ini memberikan dapatan yang bernilai terhadap perkembangan model yang mempunyai potensi untuk memperbaiki kepercayaan warga dan kesediaan mereka untuk menggunakan media sosial bagi perkhidmatan e-kerajaan di Pakistan.

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## LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| ICT | - | Information and Communication Technology |
| UN | - | United Nation |
| EGDI | - | E-government Development Index |
| EPI | - | Electronic Participation Index |
| 3G | - | Third Generation |
| 4G | - | Fourth Generation |
| G2C | - | Government to Citizens |
| G2G | - | Government to Government |
| G2B | - | Government to Business |
| G2E | - | Government to Employee |
| MOITT | - | Ministry of Information Technology and Telecommunication |
| EGD | | Electronic Government Directorate |
| URL | | Uniform Resource Locator |
| PCB | | Pakistan Computer Bureau |
| NITB | | National Information Technology Board |
| UNDESA | | United Nation's Department of Economics and Social Affairs |
| TII | | Telecommunications Infrastructure Index |
| HCI | | Human Capital Index |
| OSI | | Online Service Index |
| IS | | Information Systems |
| TAM | | Technology Acceptance Model |
| TRA | | Theory of Reasoned Action |
| DOI | | Diffusion of Innovation Theory |
| TPB | | Theory of Planned Behaviour |
| UTAUT | | Unified Theory of Acceptance and Use of Technology |
| DTT | | Disposition to Trust |
| ABL | | Ability |
| BEN | | Benevolence |
| ITG | | Integrity |
| PS | | Perceived Security |

| | |
|---|---|
| PP | Perceived Privacy |
| UA | Uncertainty Avoidance |
| PEOU | Perceived Ease of Use |
| PU | Perceived Usefulness |
| SA | Structural Assurances |
| ITP | Intention to Participate |
| TIG | Trust in Government Social Media |
| IQ | Information Quality |
| CVI | Content Validity Index |
| I-CVI | Item Level Content Validity Index |
| S-CVI | Scale Level Content Validity Index |
| CA | Cronbach Alpha |
| SEM | Structured Equation Modeling |
| CB-SEM | Covariance Based Structured Equation Modeling |
| PLS-SEM | Variance-Based Structured Equation Modeling |
| AVE | Average Variance Explained |
| HTMT | Heterotrait-Monotrait ratio |
| CR | Composite Reliability |
| VIF | Variance Inflation Factor |
| GoF | Goodness of Fit |

## LIST OF SYMBOLS

| | | |
|---|---|---|
| $R^2$ | - | Coefficient of Determination |
| $f^2$ | - | Effect size |
| $Q^2$ | - | Predictive Relevance |

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# CHAPTER 1

# INTRODUCTION

## 1.1 Overview

This study provides an understanding about antecedents of citizens' trust from multiple dimensions and examines the influence of citizens' trust towards intention to participate on social media for e-government services in context of Pakistan. This chapter presents the general overview of this study in section 1.1. The background of the study is described in section 1.2 which is followed the presentation of problem statement in section 1.3. The key research questions of the study are outlined in section 1.4 and the objectives are presented in section 1.5. The significance of the study is presented in section 1.6. This chapter further provides the scope of the research in section 1.7, definition of key terms in section 1.8 and finally concludes by providing the structure of the thesis with remaining chapters in section 1.9. The structure of this chapter is illustrated in Figure 1.1.

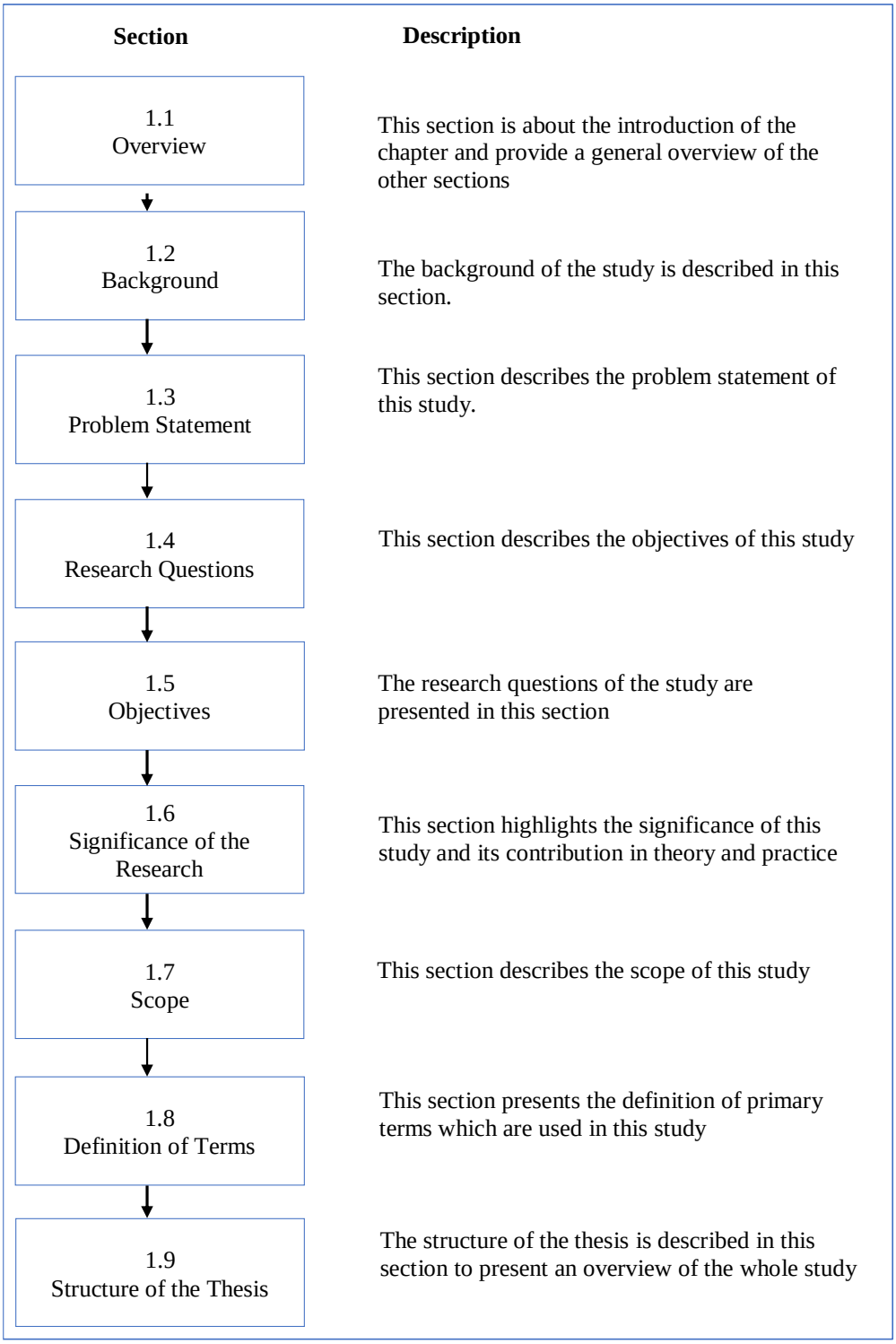


Figure 1.1 Organization of Chapter 1

## 1.2 Background

Most of governments around the globe are developing strategies to foster citizens' participation in government activities and provide them services in a more convenient and effective way (Akram and Malik, 2012). This paves the way to e-government, which is employment of information and communication technologies (ICTs) by government to provide services to citizens, business partners and government offices (Shah and Lim, 2011). The transformation from traditional services to e-government helps governments to improve managerial effectiveness, increase accountability, easy accessibility of information and cost effective service delivery (Kayani *et al*., 2011; Shah and Lim, 2011). However, despite of global growth in its investment, adoptions of e-government have been much slower than governments expectation, particularly in developing countries where more than 85 percent of e-government projects are classified as either partial of total failures (Harfouche and Robbin, 2012; Rehman, Esichaikul, and Kamal, 2012). Apart from several other factors, the lack of citizens' trust is a major barrier towards their adoption of such services (Alsaghier and Hussain, 2012; Harfouche and Robbin, 2012; Rehman *et al*., 2012). Previous studies show that the success of e-government services depend to great extent on how the target users, citizens' in general can make use of these services (Colesca, 2009; Hong, 2013). E-government projects cannot improve public service delivery if they are not used by the public (Isaac Kofi, Mi, and Dilawar Khan, 2017). Trust plays a critical role in citizens' adoption of e-government services. Researchers like (Abu-Shanab, 2014), (Alsaghier and Hussain, 2012) and (Alzahrani, Al-Karaghouli, and Weerakkody, 2017) have stressed that citizens' adoption of e-government services is directly associated with their trust on such services. Therefore, it's important that citizens should have a higher amount of trust on e-government services to adopt them (Shah and Lim, 2011; Susanto and Aljoza, 2015).

In recent years the development of e-government services has expanded from static websites to social media, which is considered as part of Web 2.0 platform (Wirtz and Kurtz, 2016). Contrary to static government websites which are based on one-way interaction, social media serves as a two-way dialogue channel between government and citizens (Hao, Zheng, and Zeng, 2016; Hong, 2013). Social media enables users

to generate their content and share up to date information in a real time environment (Magro, 2012). It provides an easy way for citizens to access information, communicate, interact, participate and engage with government organizations. Social media also helps government organizations and executives to increase participation and engagement which were also the main objectives of developing most e-government projects (Hao *et al*., 2016). Government organizations do not need to wait for citizens' to visit their e-government websites instead social media enables them to reach closer to their citizens (Bonsón *et al*., 2012). Government organizations in different countries have started using social media to build closer ties with citizens' and increase their participation in government services (Park *et al*., 2016). The statistics show that the usage of social media by governments across the world is increasing rapidly with the number more than three times from 2010 to 2012 and with another 50 per cent rise in 2014 (UN, 2014). The statistics from the latest survey of United Nations in 2018, reflect that irrespective of their development or region, 177 countries out of 193 offer social networking features on their national portals (UN, 2018). The government use of social media is supported to strengthen citizens' engagement through interactivity (Warren, Sulaiman, and Jaafar, 2014), increase government transparency (Song and Lee, 2016) and the perception of their trustworthiness (Porumbescu, 2016). However, the efforts of government organizations and the potential value of government social media cannot be displayed without addressing citizens' willingness to participate in these services (Park *et al*., 2016).

Trust is a major concern that develops citizens' willingness to participate with government and use its electronic services (Franks and Driskill, 2014; Mousavi and Pimenidis, 2014). Trust is important to overcome citizens' perception of uncertainty and risks. Contrary to the context of e-commerce, there are not likely to be any competing e-government services, thus making citizens' trust in e-government even more important to prevent them reverting back to traditional offline government services (Janssen *et al*., 2018). Several studies have mentioned that citizens' are reluctant to use e-government services due to their lack of trust in these services (Alsaghier and Hussain, 2012; Alzahrani *et al*., 2017; Belanche, Casaló, and Flavián, 2012; Bélanger and Carter, 2008). According to Al-Khouri (2013) it is essential to develop citizens' trust if their acceptance in e-government services are to be promoted.

Similarly, researchers like Abu-Shanab (2014) and Alzahrani *et al*. (2017) also identified trust as an essential indicator to increase citizens' participation in e-government services. Previous studies have mentioned the importance of citizens' trust in both government and technology as major determinants towards their acceptance of e-government services (Abu-Shanab, 2014; Bélanger and Carter, 2008; Rehman, Kamal, and Esichaikul, 2016). However, there is limited prior focus on how to generate this trust (Alzahrani *et al*., 2017). There is a lack of empirical investigation about the antecedents of citizens' trust from multiple dimensions. In addition, majority of previous studies on the relationship of trust between government and public have been conducted on e-government websites, which are based on using Internet as a technology to provide e-government services. On the contrary, there is lack of investigation in context of using social media as a technology for e-government services especially from citizens' perspective (Alarabiat, 2016; Francesca, 2018; Hao *et al*., 2016; Wirtz and Kurtz, 2016). Previous studies have asserted that the medium/channel used to provide government information and electronic services has a significant impact on the perception of citizens' trust and their attitude in using the particular technology (Beldad *et al*., 2012; Porumbescu, 2016) and therefore must not be ignored. Unlike e-government websites, social media involves more interactive features and involvement between government and public. In addition, trust is believed to be a context specific phenomenon (Söllner and Leimeister, 2013). The high involvement and real time interactive features in context of using social media for e-government makes the need of trust more important as compared to e-government websites where the involvement and interaction between government and citizens' is relatively low (Pennanen, 2009).

The use of social media in government is becoming a new practice and a major trend of e-government research worldwide (Criado, Sandoval-Almazan, and Gil-Garcia, 2013; Hao *et al*., 2016). Many governments across the world have difficulties with the deteriorating public trust in government and its services for last several years (Hong, 2013).However, researchers in recent years have recognized the relatively unnoticed domain of study regarding the use of social media in the public sector and its correlation to citizens' trust (Franks and Driskill, 2014). Trust has been discussed as a major determinant for citizens' participation in such services. For instance, Warren *et al*. (2014) discussed the significant role of social media on promoting online civic

engagement and increasing citizens' trust on government institutions. They stressed that institutions need to take appropriate measures to build citizens' trust to minimize relationship gap between government and public. Similarly, Park *et al*. (2016) emphasized the need for building citizen's trust for an effective communication between government and public through social media. Moreover, Park *et al*. (2015) also mentioned citizens' trust as a significant contributor towards their acceptance of government social media services. Though previous studies have highlighted the importance of trust in using social media for e-government services, but not enough empirical research on this subject is yet available, specifically from citizens' perspective. Despite of its importance, trust is scarcely investigated from citizens' perspective (Francesca, 2018). Majority of previous studies in context of using social media in e-government are theoretical/conceptual in nature (Dwivedi *et al*., 2017). In addition, trust has been mostly discussed as a single construct/component or as a moderator (Park *et al*., 2016) in previous studies without providing any deep understanding about its antecedents (Francesca, 2018). Previous studies have investigated the role of social media to increase interactivity (Hao *et al*., 2016), online engagement (Vicente and Novo, 2014) and to increase citizen's trust on institutions and their services (Hong, 2013; Warren *et al*., 2014). However, the major contributors or factors that can generate citizens' trust to participate in such services are largely unknown.

Like many other developing countries, the concept of e-government in Pakistan is relatively new and the country is facing a lot of challenges to implement e-government projects (Rehman *et al*., 2012). According to the recent e-government survey of United Nations in 2018, Pakistan is placed at 148$^{th}$ rank among 193 UN countries in the E-government development index (EGDI). On Electronic Participation Index (EPI), Pakistan is placed at 115th rank, which is among the lowest levels in South Asian region ahead of only Afghanistan and Maldives (UN, 2018). Figure 1.2 illustrates the low level positioning of Pakistan among South Asian countries in terms of its EPI and EGDI ranking at the scale from 0 to 1. Besides many challenges such as lack of collaboration among government departments, deficiency of skilled workforce, and IT infrastructure (Arfeen and Kamal, 2014), the main concern is the lack of citizens' trust to accept these services (Rehman *et al*., 2016; Tufail *et al*., 2017).

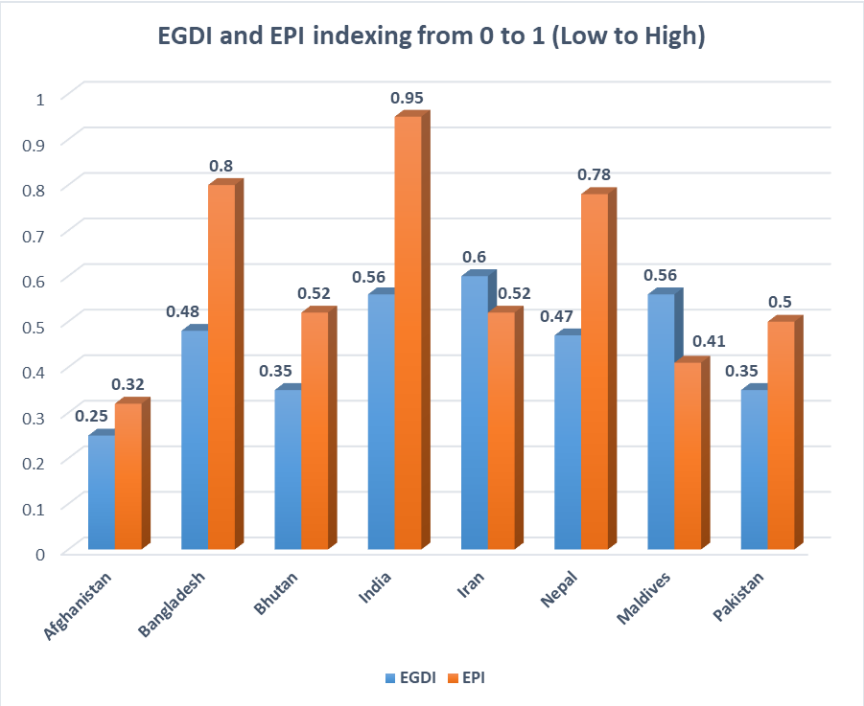


Figure 1.2 EGDI & EPI Ranking of South Asian Countries (UN, 2018)

According to Mahmood and Weerakkody (2014) although the implementation of e-government is in its advanced stages in developed world, citizens' trust to adopt these services is still a key challenge for governments especially in developing countries like Pakistan. Similarly, Susanto and Aljoza (2015) mentioned that citizen's in developing countries who are used to dealing with poor public services need to trust on e-government services before they decide to use such services. Prior research on e-government in Pakistan has mostly focused on supply side or government perspective, the demand side or citizens' perspective has not received much attention in previous studies (Haider, Shuwen, Lalani, *et al*., 2015; Kayani *et al*., 2011; Ovais Ahmad, Markkula, and Oivo, 2013). From Pakistan's perspective due to the newness of its e-government initiatives, trust may have a significant influence on citizens' acceptance of such services. Therefore, there is a need to generate citizens' trust to promote their participation in e-government services.

The use of social media is Pakistan has emerged with very satisfactory results. Since the introduction 3G and 4 G networks in 2014, coupled with the availability of affordable smartphones and low cost internet packages had a significant effect on the use of social media in Pakistan (Yusufzai, 2016). Pakistan is among 10 economies in

Asia, showing an impressive growth in internet usage in the last decade. The statistics by digital marketing agencies Hootsuite and We Are Social from January 2018 indicate that the total number of internet users in Pakistan stands at 44.6 million (M) with the rise of 9.5 million users from the last year (27% annual internet growth), out of which 35 million are active social media users as presented in Table 1.1.

Table 1.1 Digital Statistical Indicators of Pakistan (Kemp, 2018)

| **Population** | **Internet Users** | **Users of social media** | **Mobile subscriptions** | **Mobile social users** |
|---|---|---|---|---|
| 198.9 M | 44.6 M | 35.0 M | 109.5 M | 32.0 M |
| Urbanization: 40 % | Penetration: 22 % | Penetration: 17 % | Vs. Population 55 % | Penetration: 16 % |

The results show that a significant majority of Pakistani's who use the internet are also using social media. Facebook has turned out to be the most popular social media platform with 32 million monthly active users, out of which 91% use Facebook from their mobile phones (Kemp, 2018). Twitter and Instagram are also popular social media platforms in the country. Mobile phone is the primary channel for social media. In January 2018, there were 32 million active mobile social media users, accounting for 91% of total social media users. In addition, 3G and 4G networks coverage of about 85% of the population has significantly contributed in the adoption of social networking services in the country (Stryjak and James, 2016).

Social media is not just a platform to facilitate individuals communication, but it has become a symbol of online presence for businesses, celebrities, institutions and governments. According to the report of e-government Survey by United Nations in 2014, social media has become a powerful tool for government organizations especially in developing countries who do not have dedicated portals for online e-consultation with low e-participation activities (UN, 2014). The utilization of networking potentials of social media channels by government organizations for e-consultation with citizens significantly increases their e-participation activities. The increase of e-participation activities between government and public in the country significantly results in improvement of its ranking in terms of e-participation index

measured in the United Nation's e-government survey (UN, 2016). Given the substantial evidence in the predominance of social media among citizens' in Pakistan, government organizations have also started using social media technology for public services. Government organizations in Pakistan have realized the potential benefits of social media platforms to counter corruption, increase transparency (Hussain, 2014) and to increase citizens' communication and interaction (Haider, Shuwen, Lalani, *et al*., 2015). Recently, a mobile application named "Pakistan citizens portal" was launched by the Prime Minister on October 2018, with an objective to timely address citizens' problem and get their feedback. This mobile application connects about 4000 government offices and allows citizens to register their complaints and provide their feedback on the performance of government officials and ministries (The News, 2018, October, 28). The federal and provincial governments, regulatory authorities, political parties, bureaucracy and military representatives are using social media to disseminate information and to get citizens' feedbacks (Yusufzai, 2016). The official social media presence by government ministries and division is increasing and now most of them have social media links and presence on their official portals. As mentioned by Hussain (2014), e-government services are much likely to be adopted in Pakistan with having social media presence, which promotes participation. However, being a relatively new practice of e-government there is a lack of prior published research in context of using social media for e-government services in Pakistan.

The literature shows that there are relatively more studies on social media in the private sector as compared to public sector. The use of social media has been discussed in e-commerce (Hassan, Iqbal, and Khanum, 2018), education (Arif and Kanwal, 2016), political participation (Javaid, 2017) and marketing (Yaqoob Qazi, Ohtaki, and Munir, 2017), but its usage in public sector has been an under investigated subject in Pakistan. Though, a few studies have discussed government perspective of using social media to enhance transparency and improve governance issues (Haider, Shuwen, Lalani, *et al*., 2015; Hussain, 2014), but citizen's perspective in terms of their trust to use such services was not found in discussion.

Previous studies indicate that citizens' adoption of government online services in Pakistan is at the low level, and citizens' trust is a major determinant towards their

acceptance of these services (Ali *et al*., 2017; Malik, Shuqin, S, *et al*., 2016; Tufail *et al*., 2017). On the other hand, the use of social media in the public sector is relatively new in Pakistan. It is mainly due to the reason that during early 2000s, the rate of Internet penetration in Pakistan was very low and there were very few social media users in the country (Hussain and Qureshi, 2018). However, the internet penetration and the number of social media users have increased in the recent years. According to We are Social and Internet world statistics, there were only 0.13 million internet users in 2001, 20 million in 2014, and now in 2018 it has improved with 44 million internet users in the country. Similarly, the number of social media users in the country have also increased from 8 million in 2014 to more than 3 times with 35 million users in 2018 (Kemp, 2018). The launch of 3G and 4G services in 2014 had a significant affect in the increasing rate of social media users in Pakistan (Yusufzai, 2016). This recent rise in citizens' usage of social media after the launch of 3G and 4G services makes it interesting to examine citizens' trust behaviour in using social media for e-government services. Additionally, the lack of research on citizens' adoption of social media-based e-government services in Pakistan, demands the need for research to investigate citizens' trust perspectives leading towards their willingness to use social media as a technology with government organizations. Therefore, this study aims to identify those factors that can generate citizens' trust to use social media for e-government services in Pakistan. This study contributes to provide a better understanding about the role of trust and its impact on citizens' willingness to use social media for e-government services in Pakistan due to lack of prior published research in this context.

## 1.3 Problem Statement

Based on the discussion in the background section, the problem to be addressed in this study is to identify those factors that can influence citizens' trust and its impact towards their intention to use social media for e-government services. Majority of previous studies on the relationship of trust between government and public are conducted on e-government websites with a limited focus on citizens' trust perspectives. On the contrary, the context of using social media for e-government services has not received adequate attention in previous studies. Despite the

importance of trust in social media-based e-government services, literature has not yet holistically investigated the factors influencing citizens' trust to use social media for e-government services. In addition, due to the novel nature of social media in e-government services, there is lack of prior published research on this subject in developing countries especially in Pakistan. Therefore, the need arises to provide a holistic view of citizens trust in relation to its antecedents and its influence in context of using social media for e-government services. Hence this study intends to fill this gap by developing a model that identifies those factors that can influence citizens' trust and its impact towards their intention to participate on social media for e-government services. The findings of this study can assist government officials and policy makers to better position their strategies to enhance citizens' trust and ultimately increase their participation on social media for e-government services.

## 1.4 Research Questions

Based on the problem, the main question of this study is "what are the important factors that can generate citizens' trust and the influence of trust towards their intention to participate on social media for e-government services?". The main question is further divided in to the following questions.

1. What are the factors that can influence citizens' trust in using government social media services?

2. What is the relationship of each factor on citizens' trust in using government social media services?

3. How to develop and evaluate a model on antecedents of citizens' trust and its influence towards their intention to participate on government social media services?

## 1.5 Objectives

The main objective of this study is to identify those factors that can influence citizens' trust and its impact towards their intention to participate on social media for e-government services. It is further divided in to the following objectives:

1. To identify the factors influencing citizens' trust in using government social media services.
2. To identify the relationship of each factor on citizens' trust in using government social media services?
3. To develop and evaluate a model on antecedents of citizens' trust and its influence towards their intention to participate on government social media services.

## 1.6 Significance of the Research

The results of his study provide many theoretical and practical contributions. As discussed above, a paradigm shift from e-government websites to more interactive social media has been reported by many researchers. However, research on social media-based e-government services in still in its early stages with very limited empirical studies, especially from citizens' trust perspective. Majority of previous studies are conducted on e-government websites with a limited coverage about citizens' trust aspects. This study makes a strong contribution in the body of knowledge by exploring antecedents of citizens' trust in context of using social media for e-government services from multiple dimensions i.e. individual characteristics, government factors, risk factors and social media characteristics. An integrated model is also developed to provide a holistic view of factors influencing citizens' trust and the impact of citizens' trust towards their intention to participate on social media for e-government services.

This study provides some useful insights for the public sector organizations about citizens' trust behaviour and their acceptance to use social media for e-government services. The low level of citizens' participation in Pakistan's e-government services is quite evident by it's ranking at 148th position out of 193 UN countries in the latest survey of United Nations in 2018. In addition, there are hardly any thorough study in Pakistan on citizens' trust factors in e-government, particularly in context of using social media for e-government services. The results of this study may help government organizations in Pakistan to devise their social media strategies by keeping in view the citizens' trust aspects to promote their participation in such services. Furthermore, it is expected that this study would be valuable to the field of knowledge and the upcoming researchers may use it in their future research.

## 1.7 Scope

This study is based on identifying antecedents of citizens' trust and its influence towards their intention to participate on social media for e-government services. The major focus of this study is to determine the factors that are responsible to generate citizens' trust in using government social media services. In addition, this study also examines the influence of citizens' trust towards their intention to participate on such services. Since the use of social media based services of e-government are still at the initial stages of development in most of the developing countries and particularly in Pakistan, therefore this study aims to determine if citizens' trust has any influence on their intention to participate or their willingness to use such services in future. Thus, the focus of this study is limited to capture the influence of trust on citizens' intention to participate (willingness to use such services) in these services and does not focus to measure the levels of their actual participation in government social media services.

The focus of this study is not limited to any specific type of social media platform such as Facebook, Twitter, YouTube or Instagram or any specific government service. In fact, this study investigates citizens trust factors in using any

social media platform with having government presence on the platform to provide general social media based services of e-government.

This study focuses on demand side or citizens' perspective to use social media for e-government services. The study, however, does not cover government organizations, policy makers or public administrator's perspective (supply side perspective) regarding their social media plans, strategies or any other associated challenges in social media implementation or its maintenance issues.

The developed model of this study is evaluated in context of Pakistan using a quantitative approach through online survey. The respondents were selected from all four provinces of Pakistan i.e. Balochistan, Punjab, Sindh and Khyber Pakhtoonkhwa to get responses from a diverse sample who represent all parts of the country. The federal territory (Islamabad) is located in the geographical region of Punjab province and thus the responses from federal were included in the Punjab province. For data analysis, SPSS 24 and Smart PLS 3.0 were utilized to assess the model and analyze the survey results.

## 1.8 Definition of Terms

This section defines the key terms that are used mostly in this study as follows:

| | |
|---|---|
| Disposition to Trust | The general tendency of citizens to trust on new technologies |
| Uncertainty Avoidance | The extent to which citizens' respond to uncertain or risky situations. |
| Ability | The extent to which citizens perceive about the skills and capabilities of government organizations to provide e-government services through social media |

| | |
|---|---|
| Benevolence | The extent to which citizens perceive government organizations to act in citizens' best interests in using social media based e-government services |
| Integrity | The extent to which citizens perceive government organizations to be honest and keep their promises on social media based e-government services |
| Perceived Security | This represents citizens' perception about the protection level of their information against security threats in using social media for e-government services |
| Perceived Privacy | This represents citizens' perception about their ability to monitor and control their information in using social media for e-government services |
| Perceived Ease of Use | The extent to which citizens believe that using social media for e-government services is easy and effortless |
| Perceived Usefulness | The extent to which citizens believe that using social media for e-government services would improve the outcome of public sector services as compared to offline or e-government websites. |
| Information Quality | The extent to which citizens believe that information on social media-based e-government services are relevant, complete, accurate and timely to address citizens needs |
| Structural Assurances | It relates to the contextual structures, guarantees and regulations in the social media to safeguard citizens' interests. |
| Trust | This represents citizens' belief that allows them to become vulnerable to government organizations as the provider of e-government services through social media platforms, after having taken the government's as well as social media characteristics in to consideration. |
| Intention to Participate | This represents citizens' willingness to use social media for e-government services |
| Social media for e-government services | This represents the use of social media as a technology platform in the public sector to provide government social media services. |

## 1.9 Structure of the Thesis

There are six chapters in this thesis. The first chapter starts with the background of the study and proceeds with the problem statement, research questions, objectives, scope and significance in order to give an overview idea of this study.

Chapter 2 presents a review of relevant literature on trust, e-government, and the use of social media in the public sector. This chapter examines previous studies conducted on various dimensions of citizens' trust. The proposed model that represents the factors influencing citizens' trust and its influence towards their intention to participate on social media for e-government services is presented and the development of hypotheses are explained in this chapter.

Chapter 3 provides the research methodology of this study. The operational framework that indicates the activities in this study is presented. The research design, , development of research instrument, population of the study, determination of sample size, data collection techniques and the procedure for data analysis are discussed.

Chapter 4 provides the results and analysis of the data collected from the quantitative survey. This chapter presents the activities conducted in multiple stages procedure of using PLS-SEM approach. The results of the data analysis are reported.

Chapter 5 provides the discussion of the results in this study based on the results of the hypothesis testing. This chapter describes how the obtained results have achieved the objectives of the study and concludes by summarizing the findings.

Chapter 6 presents the conclusion, contributions and recommendations. It consists of the list of theoretical and practical contributions, recommendations and limitations of this study.

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## Appendix A Presence of Social Media on Government Portals in Pakistan

| Name of the Ministry | Web portal | Facebook | Twitter |
|---|---|---|---|
| Official gate way of Pakistan | http://www.pakistan.gov.pk/ | ✓ | ✓ |
| National Assembly of Pakistan | http://na.gov.pk/en/index.php | ✓ | ✓ |
| Senate of Pakistan | http://senate.gov.pk/en/index.php?id=-1&cattitle=Home | ✓ | ✓ |
| Cabinet Secretariat | http://www.cabinet.gov.pk/ | × | × |
| Ministry of Commerce | http://www.commerce.gov.pk/ | ✓ | ✓ |
| Ministry of Communication | http://www.communication.gov.pk/ | × | × |
| Ministry of Education | http://www.moent.gov.pk/ | ✓ | ✓ |
| Ministry of Foreign Affairs | http://www.mofa.gov.pk/ | ✓ | ✓ |
| Ministry of Finance | http://www.finance.gov.pk/ | × | × |
| Ministry of Human Rights | http://www.mohr.gov.pk/ | ✓ | ✓ |
| Ministry of Housing and Works | http://mohw.gov.pk/ | × | × |
| Ministry of Industry and Production | http://www.moip.gov.pk/ | ✓ | ✓ |
| Ministry of Information and Broadcasting | http://www.moib.gov.pk/ | ✓ | ✓ |
| Ministry of Interior | https://www.interior.gov.pk/ | ✓ | ✓ |
| Ministry of Inter Provincial Coordination | http://www.ipc.gov.pk/ | × | × |
| Ministry of Law and Justice | http://www.molaw.gov.pk/ | ✓ | ✓ |
| Ministry of Narcotics Control | http://narcon.gov.pk/ | ✓ | ✓ |
| Ministry of National Food Security | http://www.mnfsr.gov.pk/ | ✓ | ✓ |
| Ministry of National Health Services | http://www.nhsrc.gov.pk/ | ✓ | × |
| Ministry of Overseas Pakistanis | http://www.ophrd.gov.pk/Index.html | ✓ | ✓ |
| Ministry of Parliamentary Affairs | http://www.mopa.gov.pk/ | × | × |

| | | | |
|---|---|---|---|
| Ministry of Planning Development & Reform | https://www.pc.gov.pk/ | ✓ | ✓ |
| Ministry of Maritime Affairs | http://www.mops.gov.pk/ | × | × |
| Ministry of Railways | http://www.railways.gov.pk/ | × | × |
| Ministry of Science & Technology | http://www.most.gov.pk/ | ✓ | ✓ |
| Ministry of State and Frontier Regions | http://www.safron.gov.pk/ | ✓ | ✓ |
| Ministry of Water Resources | http://mowr.gov.pk/ | ✓ | ✓ |
| Ministry of Defence | http://www.mod.gov.pk/ | × | × |
| Ministry of Statistics | http://www.statistics.gov.pk/ | ✓ | ✓ |

## Appendix B Content Validity From Experts

### 1. Content Validity Form

I am in the process of developing an instrument to measure factors influencing citizen's trust to participate in government services provided through social media. Though Governments across the world have acknowledged the influential role of social media in providing government services. However, citizen's lack of trust to participate in these services is considered as a major barrier in its successful implementation. More specifically the adoption rate of government services online or through social media in developing countries is very low. In context of Pakistan the e-participation index and e-government development index is very low, standing below the world average as per United Nations Survey 2016. The lack of citizen's trust on government and its services is a major factor for failure of most electronic government projects. Being a new practice of providing online electronic government services it is essential to generate citizen's trust on government social media services a way before they start using these services. Therefore, it is important to identify those influential factors that can generate citizen's trust to participate in government social media services. This will help government organizations to design their policies keeping in view citizen's interests to increase their participation in government social media services.

A survey needs to be executed to meet the objectives of this study. Therefore, a content validity questionnaire with specific instructions is enclosed for your review. I need your valuable idea and opinion to ensure the appropriateness of the questionnaires. You are hereby urged to evaluate the relevance of each item, and to offer suggestions for how to improve items regarding relevancy of construct items, and simplicity of the sentences. I am also seeking suggestions for items that you feel should be added or deleted, and for your overall assessment of the quality of the overall scale in capturing the construct of interest. I hope you can spare 30-35 minutes of your valuable time rating the questionnaire items.

Sincerely,


**Sohrab Khan,**

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Supervisor:
**Associate Prof. Dr. Nor Zairah Ab. Rahim**
UTM Advanced Informatics School

Co-Supervisor:
**Dr. Nurazean Maarop**
UTM Advanced Informatics School

**Instruction:**

There are multiple antecedents of trust that are selected based on causal relationships of these constructs with trust and empirically validated by studies in different contexts.

Please read each item and score it for its relevance, and simplicity in representing that concept.

The scale for rating the relevancy and simplicity of each item is:

(1. Not relevant, 2. Somewhat relevant, 3. Quite relevant, 4. Highly relevant)

(1. Not simple, 2. Somewhat simple, 3. Quite simple, 4. Very simple)

The scale items shown below have been developed to measure a construct, namely **Disposition to Trust**. Please read each item and score it for its relevance, and simplicity in representing this concept. Disposition to Trust is defined as the tendency of some people to depend/trust on other things/technologies.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - My tendency to trust a person/technology is high | | | | | | | | |
| 2 - I tend to trust a technology, even though I have little knowledge of it. | | | | | | | | |
| 3 - I believe it is generally better to trust than not to trust on technologies. | | | | | | | | |
| 4 - My typical approach is to trust new technologies until they prove I should not trust them. | | | | | | | | |
| 5 – It is easy for me to trust government services on social media even if they are new to me. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Disposition to Trust. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Ability**. Please read each item and score it for its relevance, and simplicity in representing this concept.
Ability is context of this study is defined as citizen's perception towards government's technical and organizational capability to develop and use government social media services.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - Government organizations have sufficient expertise and resources to provide government services through social media. | | | | | | | | |
| 2 - Government organizations are known to be successful at the things they try to do for providing government services. | | | | | | | | |
| 3 - I feel confident about the skills of government organizations to use social media for government services. | | | | | | | | |
| 4 - Government organizations are very capable of performing their job to provide services on social media. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Ability. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Benevolence**. Please read each item and score it for its relevance, and simplicity in representing this concept.
Benevolence represents the belief that government functions and services are in best interest of citizens.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - Government organizations providing services on social media would always act in best interests of citizens. | | | | | | | | |
| 2 - Government organizations providing social media services are interested in citizen's well-being, not just their own. | | | | | | | | |
| 3 - Government organizations providing social media services are concerned with my welfare. | | | | | | | | |
| 4 - Government organizations would not knowingly do anything to hurt me in using their social media services. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Benevolence. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Integrity**. Please read each item and score it for its relevance, and simplicity in representing this concept.
Integrity implies to government's honesty and promise keeping practices towards citizens.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - Government organizations are truthful/honest in dealing with citizens on social media. | | | | | | | | |
| 2 - Government organizations try very hard to be fair in dealing with citizens on social media. | | | | | | | | |
| 3 - Government organizations providing social media services have a strong sense of justice. | | | | | | | | |
| 4 – Sound principles seems to guide government organizations behavior to provide services through social media. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Integrity. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Privacy risk**.
Please read each item and score it for its relevance, and simplicity in representing this concept.
Privacy risk is defined as the loss of control over personal information of citizens.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 – The social media used by government organizations may allow another party to access my personal information without my consent. | | | | | | | | |
| 2 - My personal information may be used for different purposes in using government social media services without my authorization. | | | | | | | | |
| 3 - My personal data will be treated confidentially by government organizations providing services through social media. | | | | | | | | |
| 4 - I think my privacy is protected in using social media for government services. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Privacy risk. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Security risk**. Please read each item and score it for its relevance, and simplicity in representing this concept. Security risk may be defined as unauthorized third-party access to users' personal data.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 – I would feel insecure to send sensitive information to government organizations on social media. | | | | | | | | |
| 2 - I am confident that the private information I share with government organizations on social media is secure. | | | | | | | | |
| 3 - I believe the information I provide on government social media platforms will not be manipulated by inappropriate groups. | | | | | | | | |
| 4 – The social media used by government organizations have appropriate security features to protect citizen's data from unauthorized access by third parties. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Security risk. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Uncertainty avoidance**. Please read each item and score it for its relevance, and simplicity in representing this concept.
Uncertainty avoidance represents the extent to which memebers of a society respond to uncertain situations

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 – It is important to have instructions of using government social media services spelled out in detail so that I always know what I am expected to do. | | | | | | | | |
| 2 – Providing opportunities to be innovative in government services is more important than requiring standardized work procedures. | | | | | | | | |
| 3 – I would use e-government websites or other traditional methods for government services rather than using social media because I am more familiar with website or traditional risks and I have no idea what shall I do when things go wrong in using social media for government services. | | | | | | | | |
| 4 – People should avoid using social media for government services as it is a new practice and things could get worse. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Structural Assurances. Please suggest any additional items you feel would improve its measurement.**

| |
|---|
| |

The scale items shown below have been developed to measure a construct, namely **Structural Assurances**. Please read each item and score it for its relevance, and simplicity in representing this concept.
Structural assurances relate to the contextual structures, guarantees and regulations in the technology to safeguard citizen's interests.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 – I feel assured that legal and technological structures adequately protect me from problems in using social media for government services. | | | | | | | | |
| 2 - Social media have enough safeguards to make me feel comfortable in using it to participate for government services. | | | | | | | | |
| 3 - I feel confident that encryption and other technological advances on internet and particularly on social media make it safe for me to interact with government organizations. | | | | | | | | |
| 4 – In general, social media is now a robust and safe environment to participate with government organizations. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Structural Assurances. Please suggest any additional items you feel would improve its measurement.**

| |
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| |

The scale items shown below have been developed to measure a construct, namely **Information Quality.** Please read each item and score it for its relevance, and simplicity in representing this concept. Information Quality is based upon measures on how accurate, relevant, timely, and complete the information is to address citizen's needs.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - I believe that the Information provided by government organizations through social media is accurate. | | | | | | | | |
| 2 - I believe that the Information provided by government organizations through social media is up to date. | | | | | | | | |
| 3 - I believe that information provided in government social media services will meet my needs. | | | | | | | | |
| 4 – I believe that the information provided by government organizations through social media is relevant. | | | | | | | | |
| 5 - I believe that the information provided by government organizations on social media is easy to read and understand. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Information Quality. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Perceived Ease of Use.** Please read each item and score it for its relevance, and simplicity in representing this concept. Perceived Ease of Use is the degree to which the user believes that using the system is easy and free of hard effort.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - Most of the services provided by government organizations on social media are easy to use. | | | | | | | | |
| 2 - I believe learning to use social media for government services is easy. | | | | | | | | |
| 3 - Using social media to interact with government organizations does not require a lot of mental effort. | | | | | | | | |
| 4 - I find social media as a flexible way of promoting strong relationships between citizen's and government organizations. | | | | | | | | |
| 5 - My interactions with government organizations through social media would be clear and understandable. | | | | | | | | |
| 6 - It would be easy for me to become skillful at using government social media services. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Perceived ease of Use. Please suggest any additional items you feel would improve its measurement.**

| |
|---|
| |

The scale items shown below have been developed to measure a construct, namely **Perceived Usefulness.** Please read each item and score it for its relevance, and simplicity in representing this concept.
Perceived Usefulness is the degree to which the user believes that using the system enhances his or her task performance.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 – Using social media for government services can improve the service quality that I will receive, compared to deal with real people for the same service. | | | | | | | | |
| 2 – Using social media for government services can enhance my effectiveness to participate with government organizations. | | | | | | | | |
| 3 - The government services provided through social media can improve my performance to interact and exchange information with government organizations | | | | | | | | |
| 4 - Using social media makes it easier for citizens to communicate with government organizations. | | | | | | | | |
| 5 - Generally, I believe government social media services are useful to enhance government-public relationships. | | | | | | | | |
| 6 - Overall I find the usage of government social media services useful for me to participate with government organizations. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Perceived Usefulness. Please suggest any additional items you feel would improve its measurement.**

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| |

The scale items shown below have been developed to measure a construct, namely **Trust in government social media.** Please read each item and score it for its relevance, and simplicity in representing this concept.
This construct reflects the trustworthiness of government services through social media.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - I believe that government services through social media are trustworthy. | | | | | | | | |
| 2 - I expect that government organizations in social media will not take advantage of me. | | | | | | | | |
| 3 - I trust government social media services to be reliable. | | | | | | | | |
| 4 – I believe that using government social media services will not act in a way that harms me | | | | | | | | |
| 5 - I trust government social media services. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Trust in Government Social Media. Please suggest any additional items you feel would improve its measurement.**

The scale items shown below have been developed to measure a construct, namely **Intention to Participate.** Please read each item and score it for its relevance, and simplicity in representing this concept.
This concept is related with citizen's intention to participate with government organizations through social media.

| Item | Relevancy Rating | | | | Simplicity Rating | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 - I intend to participate with government organization through social media. | | | | | | | | |
| 2 – To participate with government organizations using social media is something that I would do. | | | | | | | | |
| 3 - I would use social media for government information and services. | | | | | | | | |
| 4 – I predict I will participate with government organizations on social media in future. | | | | | | | | |
| 5 - I would not hesitate to engage with government organizations through social media. | | | | | | | | |

**Please comment on any of these items, including possible revisions or substitutions, or your thoughts about why an item is not relevant to the concept of Intention to Participate. Please suggest any additional items you feel would improve its measurement.**

## 2. Expert's Letter of Participation

**CONFIRMATION OF CONTENT VALIDATION BY EXPERT**

To Whom It May Concern

This is to confirm my participation in the evaluation of the items relevance to the research instrument in the study of **Factors Influencing Citizen's Trust to Participate in Government Social Media Services** by Sohrab Khan (Matric Number: PAN153026) from Advanced Informatics School, Universiti Teknologi Malaysia.

Thank you

Signature: Maslin

Name: DR. MASLIN MASROM

Designation: ASSOC. PROF.

Date: 2/8/2017

**CONFIRMATION OF CONTENT VALIDATION BY EXPERT**

To Whom It May Concern

This is to confirm my participation in the evaluation of the items relevance to the research instrument in the study of **Factors Influencing Citizen's Trust to Participate in Government Social Media Services** by Sohrab Khan (Matric Number: PAN153026) from Advanced Informatics School, Universiti Teknologi Malaysia.

Thank you

Signature:

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Designation:

Date: 15 Sept 2017

**CONFIRMATION OF CONTENT VALIDATION BY EXPERT**

To Whom It May Concern

This is to confirm my participation in the evaluation of the items relevance to the research instrument in the study of **Factors Influencing Citizen's Trust to Participate in Government Social Media Services** by Sohrab Khan (Matric Number: PAN153026) from Advanced Informatics School, Universiti Teknologi Malaysia.

Thank you

Signature:

Name: Dr. Roslina Ibrahim

Designation: Senior Lecturer

Date: 25/7/2017

## 3. Content Validity Results

| Items | Expert 1 | Expert 2 | Expert 3 | No. of agreement | I-CVI |
|---|---|---|---|---|---|
| 1 | 3 | 4 | 4 | 3 | 1 |
| 2 | 3 | 3 | 4 | 3 | 1 |
| 3 | 3 | 4 | 4 | 3 | 1 |
| 4 | 3 | 4 | 4 | 3 | 1 |
| 5 | 3 | 3 | 4 | 3 | 1 |
| 6 | 4 | 3 | 4 | 3 | 1 |
| 7 | 4 | 4 | 4 | 3 | 1 |
| 8 | 4 | 4 | 4 | 3 | 1 |
| 9 | 4 | 4 | 4 | 3 | 1 |
| 10 | 4 | 3 | 4 | 3 | 1 |
| 11 | 4 | 4 | 4 | 3 | 1 |
| 12 | 4 | 3 | 4 | 3 | 1 |
| 13 | 4 | 4 | 4 | 3 | 1 |
| 14 | 4 | 4 | 4 | 3 | 1 |
| 15 | 4 | 4 | 4 | 3 | 1 |
| 16 | 4 | 4 | 4 | 3 | 1 |
| 17 | 4 | 4 | 4 | 3 | 1 |
| 18 | 4 | 4 | 4 | 3 | 1 |
| 19 | 4 | 4 | 4 | 3 | 1 |
| 20 | 4 | 4 | 4 | 3 | 1 |
| 21 | 4 | 4 | 4 | 3 | 1 |
| 22 | 4 | 4 | 4 | 3 | 1 |
| 23 | 4 | 3 | 4 | 3 | 1 |
| 24 | 4 | 3 | 4 | 3 | 1 |
| 25 | 4 | 3 | 4 | 3 | 1 |
| 26 | 4 | 4 | 4 | 3 | 1 |
| 27 | 3 | 4 | 4 | 3 | 1 |
| 28 | 3 | 4 | 4 | 3 | 1 |
| 29 | 3 | 4 | 4 | 3 | 1 |
| 30 | 4 | 4 | 3 | 3 | 1 |
| 31 | 4 | 4 | 3 | 3 | 1 |
| 32 | 4 | 4 | 3 | 3 | 1 |
| 33 | 4 | 4 | 3 | 3 | 1 |
| 34 | 4 | 4 | 4 | 3 | 1 |
| 35 | 4 | 4 | 4 | 3 | 1 |
| 36 | 4 | 4 | 4 | 3 | 1 |
| 37 | 4 | 4 | 4 | 3 | 1 |
| 38 | 4 | 3 | 4 | 3 | 1 |
| 39 | 4 | 3 | 4 | 3 | 1 |
| 40 | 4 | 4 | 4 | 3 | 1 |
| 41 | 4 | 4 | 4 | 3 | 1 |
| 42 | 4 | 3 | 4 | 3 | 1 |
| 43 | 4 | 3 | 4 | 3 | 1 |
| 44 | 4 | 3 | 4 | 3 | 1 |
| 45 | 4 | 4 | 4 | 3 | 1 |
| 46 | 4 | 4 | 4 | 3 | 1 |

## 3. Content Validity Results

| Items | Expert 1 | Expert 2 | Expert 3 | No. of agreement | I-CVI |
|---|---|---|---|---|---|
| 47 | 4 | 4 | 4 | 3 | 1 |
| 48 | 4 | 3 | 4 | 3 | 1 |
| 49 | 4 | 3 | 4 | 3 | 1 |
| 50 | 4 | 4 | 4 | 3 | 1 |
| 51 | 4 | 4 | 4 | 3 | 1 |
| 52 | 4 | 4 | 4 | 3 | 1 |
| 53 | 4 | 4 | 4 | 3 | 1 |
| 54 | 4 | 4 | 4 | 3 | 1 |
| 55 | 4 | 4 | 4 | 3 | 1 |
| 56 | 4 | 4 | 4 | 3 | 1 |
| 57 | 4 | 4 | 4 | 3 | 1 |
| 58 | 4 | 4 | 4 | 3 | 1 |
| 59 | 3 | 4 | 4 | 3 | 1 |
| 60 | 3 | 4 | 4 | 3 | 1 |
| 61 | 4 | 4 | 4 | 3 | 1 |

ICVI- Individual level content validity index= 1 for all items

S-CVI- Scale level content validity index = 1 (All items received relevance rating of 3 0r 4 by all experts)

## 3. The Modified Items Based on Experts' Comments

| Construct | Original items | Revised items |
|---|---|---|
| Uncertainty Avoidance | I would use e-government websites or other traditional methods for government services rather than using social media because I am more familiar with website or traditional risks and I have no idea what shall I do when things go wrong in using social media for government services. | I would use e-government websites because I am more familiar with websites risks rather than using social media for government services. |
| Structural Assurances | I feel confident that encryption and other technological advances on internet and particularly on social media make it safe for me to interact with government organizations. | I feel confident that encoding and other technological advances on social media make it safe for me to use it for government services. |
| | In general, social media is now a robust and safe environment for government services | In general, social media is now a stable and safe environment for government services |
| Information Quality | I believe that the information provided by government organizations on social media is easy to read and understand. | I believe that the information provided by government organizations on social media is easy to understand |
| Perceived Usefulness | The government services provided through social media can improve my performance to interact and exchange information with government organizations. | The government services provided through social media can improve my performance to exchange information with government organizations. |

## Appendix C Survey Questionnaire

### Factors Influencing Citizens' Trust in Using Social Media for E-government Services in Pakistan

Dear Sir/Madam,

**Introduction and Objective:**

I am Sohrab Khan (PhD student) from Universiti Teknologi Malaysia. I am conducting a research to investigate multiple factors influencing citizens' trust in using social media for E-government services in Pakistan. I will be grateful if you could complete this questionnaire as a part of my research work.

**Respondents:**

Pakistani citizens' who are university level students, public/private sector employee, businesspersons, , academic personnels and relevant people using internet and social media with some familiarity about e-government services are requested to participate in this survey.

**Data Confidentiality:**

Your participation in this survey is voluntary and will remain completely anonymous. The information that you provide will be used for academic research purposes only and will be kept strictly confidential.

Thank you for your participation and time in this important study. Should you have any questions about this research, you may contact:

Sohrab Khan
PhD student
Universiti Teknologi Malaysia
Email: meersohrab@gmail.com, skhan2@live.utm.my
Phone: +60124017559

## SECTION 1: DEMOGRAPHICS INFORMATION

Please tick the most appropriate answer

**Age**

☐ Less than 20 years ☐ 21-30 years ☐ 31-40 years ☐ 41-50 years

☐ Above 50 years

**Gender**

☐ Male ☐ Female

**Current Education Level**

☐ Bachelor's ☐ Master's ☐ PhD ☐ Other qualification (Pl. specify) _____

**Province**

☐ Sindh ☐ Punjab ☐ Balochistan ☐ Khyber Pakhtunkhwa ☐ Federal

☐ Other (Pl. Specify) _____

**Which of the following best describes your current occupation?**

☐ Government employee ☐ Private sector employee ☐ Businessperson/Self-employed ☐ Academic personnel/Teaching or Non-Teaching Faculty

☐ Student ☐ Other (Pl. Specify) _____

**Years of Internet Experience**

☐ Less than a year ☐ 1-3 years ☐ 4-6 years ☐ 7-9 years ☐ More than 9 years

**Experience of Using Social Media**

☐ Less than a year ☐ 1-3 years ☐ 4-6 years ☐ More than 6 years

**Do you have some experience of using any e-government service?**

**NOTE:** Some examples of e-government services in Pakistan include: Online Nadra card application, Online Tax filing on eFBR portal, HEC services of digital libraries/degree attestation, Flight reservation and payment on PIA website, Hajj application and tracking system, Tracking passport application, Online vehicle checking system, Using online government portals like www.pakistan.gov.pk or websites of Federal ministries/divisions or Provincial governments to get information, download forms and use different online government services.

☐ Yes ☐ No

## SECTION 2: Factors Influencing Citizens' Trust in Using Social media for E-government Services

Please indicate the degree of agreement on multiple Trust factors by marking most suitable number based on the scale of 1 to 5 for each statement below**.**

**Kindly answer ALL questions**.

**(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)**

| **Disposition to Trust** | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| DT1 | It is easy for me to trust a technology | 1 | 2 | 3 | 4 | 5 |
| DT2 | My tendency to trust a technology is high | 1 | 2 | 3 | 4 | 5 |
| DT3 | I tend to trust a technology, even though I have little knowledge of it. | 1 | 2 | 3 | 4 | 5 |
| DT4 | I believe it is generally better to trust than not to trust on technologies. | 1 | 2 | 3 | 4 | 5 |
| DT5 | I usually trust new technologies until they prove I should not trust them. | 1 | 2 | 3 | 4 | 5 |
| DT6 | I believe technologies are generally reliable | 1 | 2 | 3 | 4 | 5 |
| **Ability** | | | | | | |
| AB1 | Government organizations have sufficient expertise and resources to provide government services through social media | 1 | 2 | 3 | 4 | 5 |
| AB2 | Government organizations are known to be successful for their services they try to provide to citizens | 1 | 2 | 3 | 4 | 5 |
| AB3 | I feel confident about the skills of government organizations to use social media for government services | 1 | 2 | 3 | 4 | 5 |
| AB4 | Government organizations are very capable of performing their job to provide services by using social media | 1 | 2 | 3 | 4 | 5 |
| AB5 | Government organizations have much knowledge to provide services through social media | 1 | 2 | 3 | 4 | 5 |
| **Benevolence** | | | | | | |
| BEN1 | Government organizations would always act in best interests of citizens in using their social media services | 1 | 2 | 3 | 4 | 5 |
| BEN2 | Government organizations are interested in citizen's well-being, not just their own | 1 | 2 | 3 | 4 | 5 |
| BEN3 | Government organizations are concerned with my welfare in using their social media services | 1 | 2 | 3 | 4 | 5 |
| BEN4 | Government organizations would not knowingly do anything to hurt me in using their social media services | 1 | 2 | 3 | 4 | 5 |

**(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)**

| | | | | | | |
|---|---|---|---|---|---|---|
| BEN5 | Government organizations would do their best to help me in using their social media services | 1 | 2 | 3 | 4 | 5 |
| BEN6 | My needs and desires are very important to government organizations on social media | 1 | 2 | 3 | 4 | 5 |
| **Integrity** | | | | | | |
| INT1 | Government organizations are truthful/honest in dealing with citizens on social media | 1 | 2 | 3 | 4 | 5 |
| INT2 | Government organizations try very hard to be fair in dealing with citizens on social media | 1 | 2 | 3 | 4 | 5 |
| INT3 | Government organizations would keep their commitments with citizens on social media | 1 | 2 | 3 | 4 | 5 |
| INT4 | Government organizations have a strong sense of justice to provide services on social media | 1 | 2 | 3 | 4 | 5 |
| INT5 | The behavior of government organizations is based on sound/good principals to provide services through social media | 1 | 2 | 3 | 4 | 5 |
| **Perceived Privacy** | | | | | | |
| PR1 | Government organizations on social media may allow another party to access my personal information without my willingness | 1 | 2 | 3 | 4 | 5 |
| PR2 | My personal information may be used in an un intended way by government organizations on social media | 1 | 2 | 3 | 4 | 5 |
| PR3 | My personal information may be shared with another government organization whom I do not want to provide information | 1 | 2 | 3 | 4 | 5 |
| PR4 | My personal information may be used for other purposes without my authorization on social media | 1 | 2 | 3 | 4 | 5 |
| PR5 | I will lose control of my personal information in using government social media services | 1 | 2 | 3 | 4 | 5 |
| PR6 | I think my privacy is protected in using social media for government services | 1 | 2 | 3 | 4 | 5 |
| **Perceived Security** | | | | | | |
| SR1 | I am confident that the private information I share with government organizations on social media is secure | 1 | 2 | 3 | 4 | 5 |
| SR2 | I believe that the information I provide to government organizations on social media will not be manipulated by inappropriate/irrelevant groups | 1 | 2 | 3 | 4 | 5 |
| SR3 | I believe that the information I provide to government organizations by using social media will not be released without my willingness | 1 | 2 | 3 | 4 | 5 |
| SR4 | The social media used by government organizations have security features to protect citizens' data from unauthorized access by third parties. | 1 | 2 | 3 | 4 | 5 |
| SR5 | The social media has the ability to solve problems from security threats in using it for government services. | 1 | 2 | 3 | 4 | 5 |

**(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)**

| | | | | | | |
|---|---|---|---|---|---|---|
| SR6 | I would feel secure in using social media for government services | 1 | 2 | 3 | 4 | 5 |
| **Uncertainty Avoidance** | | | | | | |
| UA1 | Rules and regulations are important because they inform citizens what government organizations expect from them | 1 | 2 | 3 | 4 | 5 |
| UA2 | Order and structure are important in an online environment for government services | 1 | 2 | 3 | 4 | 5 |
| UA3 | Working in a structured environment is better than working (rules and regulations) in an unstructured environment | 1 | 2 | 3 | 4 | 5 |
| UA4 | It is better to have a bad situation that you know about than to have an uncertain/unsure situation | 1 | 2 | 3 | 4 | 5 |
| **Structural Assurances** | | | | | | |
| SA1 | I feel assured that legal and technological structures protect me from problems in using social media for government services | 1 | 2 | 3 | 4 | 5 |
| SA2 | Social media have enough safeguards/protection to make me feel comfortable in using it for government services | 1 | 2 | 3 | 4 | 5 |
| SA3 | I feel confident that encoding and other technological advances on social media make it safe for me to use it for government services | 1 | 2 | 3 | 4 | 5 |
| SA4 | In general, social media is now a stable and safe environment for government services | 1 | 2 | 3 | 4 | 5 |
| **Information Quality** | | | | | | |
| IQ1 | I believe that the Information provided by government organizations through social media is accurate | 1 | 2 | 3 | 4 | 5 |
| IQ2 | The Information provided by government organizations through social media is up to date | 1 | 2 | 3 | 4 | 5 |
| IQ3 | I believe that the information provided by government organizations on social media will meet my needs | 1 | 2 | 3 | 4 | 5 |
| IQ4 | The information provided by government organizations through social media is relevant | 1 | 2 | 3 | 4 | 5 |
| IQ5 | The information provided by government organizations on social media is easy to understand | 1 | 2 | 3 | 4 | 5 |
| **Perceived Ease of Use** | | | | | | |
| PEOU1 | Most of the services provided by government organizations on social media are easy to use | 1 | 2 | 3 | 4 | 5 |
| PEOU2 | I believe learning to use social media for government services is easy | 1 | 2 | 3 | 4 | 5 |
| PEOU3 | Using social media to interact with government organizations does not require a lot of mental effort | 1 | 2 | 3 | 4 | 5 |

**(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)**

| | | | | | | |
|---|---|---|---|---|---|---|
| PEOU4 | I find social media as a flexible way of promoting strong relationships between citizens' and government organizations | 1 | 2 | 3 | 4 | 5 |
| PEOU5 | My interactions with government organizations through social media would be clear and understandable | 1 | 2 | 3 | 4 | 5 |
| PEOU6 | It would be easy for me to become skillful in using social media for government services | 1 | 2 | 3 | 4 | 5 |
| **Perceived Usefulness** | | | | | | |
| PU1 | Using social media for government services can improve the service quality that I will receive, compared to deal with real people for the same service | 1 | 2 | 3 | 4 | 5 |
| PU2 | Using social media for government services can enhance my effectiveness to participate with government organizations | 1 | 2 | 3 | 4 | 5 |
| PU3 | The use of social media can improve my performance to exchange information with government organizations | 1 | 2 | 3 | 4 | 5 |
| PU4 | Using social media makes it easier for citizens to communicate with government organizations | 1 | 2 | 3 | 4 | 5 |
| PU5 | Generally, I believe that using social media for government services is useful to enhance government-public relationships | 1 | 2 | 3 | 4 | 5 |
| PU6 | Overall, I find it useful to use social media for government services | 1 | 2 | 3 | 4 | 5 |
| **Trust** | | | | | | |
| TIG1 | I believe that government services through social media are trustworthy | 1 | 2 | 3 | 4 | 5 |
| TIG2 | I expect that government organizations on social media will not take advantage of me | 1 | 2 | 3 | 4 | 5 |
| TIG3 | I trust that government services on social media are reliable | 1 | 2 | 3 | 4 | 5 |
| TIG4 | I believe that using government social media services will not act in a way that harms me | 1 | 2 | 3 | 4 | 5 |
| TIG5 | I trust on using social media for government services | 1 | 2 | 3 | 4 | 5 |
| **Intention to Participate** | | | | | | |
| ITP1 | I intend to participate with government organization through social media | 1 | 2 | 3 | 4 | 5 |
| ITP2 | To interact with government organizations on social media is something that I would do | 1 | 2 | 3 | 4 | 5 |
| ITP3 | I would use social media to get government information and services | 1 | 2 | 3 | 4 | 5 |
| ITP4 | I predict I will participate with government organizations on social media in future | 1 | 2 | 3 | 4 | 5 |
| ITP5 | I would not hesitate to engage with government organizations through social media | 1 | 2 | 3 | 4 | 5 |

**-END OF QUESTIONNAIRE-**

## Appendix D Z-Score for Outliers

| Descriptive Statistics | | | |
|---|---|---|---|
| | N | Minimum | Maximum |
| Zscore: [DT1] | 615 | -2.48104 | 1.57166 |
| Zscore: [DT2] | 615 | -2.44002 | 1.65721 |
| Zscore: [DT3] | 615 | -1.90899 | 1.85997 |
| Zscore: [DT4] | 615 | -2.25349 | 1.70339 |
| Zscore: [DT5] | 615 | -2.18485 | 1.58425 |
| Zscore: [DT6] | 615 | -2.69455 | 1.51141 |
| Zscore: [AB1] | 615 | -1.69427 | 1.86804 |
| Zscore: [AB2] | 615 | -1.58199 | 2.09288 |
| Zscore: [AB3] | 615 | -1.66816 | 2.02220 |
| Zscore: [AB4] | 615 | -1.54830 | 2.04831 |
| Zscore: [AB5] | 615 | -1.64376 | 2.07283 |
| Zscore: [BEN1] | 615 | -1.88439 | 2.01107 |
| Zscore: [BEN2] | 615 | -1.65779 | 2.12529 |
| Zscore: [BEN3] | 615 | -1.78678 | 2.24577 |
| Zscore: [BEN4] | 615 | -2.20511 | 1.97406 |
| Zscore: [BEN5] | 615 | -1.93291 | 2.06622 |
| Zscore: [BEN6] | 615 | -1.75274 | 2.03281 |
| Zscore: [INT1] | 615 | -1.69797 | 2.33778 |
| Zscore: [INT2] | 615 | -1.75560 | 2.25441 |
| Zscore: [INT3] | 615 | -1.84767 | 2.23246 |
| Zscore: [INT4] | 615 | -1.67145 | 2.40363 |
| Zscore: [INT5] | 615 | -1.81112 | 2.12819 |
| Zscore: [SR1] | 615 | -1.78903 | 2.19740 |
| Zscore: [SR2] | 615 | -1.88520 | 2.04163 |
| Zscore: [SR3] | 615 | -1.74445 | 2.14264 |
| Zscore: [SR4] | 615 | -1.96305 | 2.05785 |
| Zscore: [SR5] | 615 | -2.03676 | 2.03345 |
| Zscore: [SR6] | 615 | -1.99455 | 2.11827 |
| Zscore: [UA1] | 615 | -2.83934 | 1.35320 |
| Zscore: [UA2] | 615 | -3.08511 | 1.41363 |
| Zscore: [UA3] | 615 | -2.70281 | 1.22913 |
| Zscore: [UA4] | 615 | -2.59175 | 1.53225 |
| Zscore: [SA1] | 615 | -2.30219 | 1.86206 |
| Zscore: [SA2] | 615 | -2.05365 | 2.01724 |
| Zscore: [SA3] | 615 | -2.39678 | 1.98041 |

## Appendix D Z-Score for Outliers

| Descriptive Statistics | | | |
|---|---|---|---|
| Zscore: [SA4] | 615 | -2.29291 | 2.02936 |
| Zscore: [IQ1] | 615 | -2.17882 | 1.94101 |
| Zscore: [IQ2] | 615 | -1.86796 | 2.09341 |
| Zscore: [IQ3] | 615 | -2.14652 | 2.11533 |
| Zscore: [IQ4] | 615 | -2.35213 | 1.93715 |
| Zscore: [IQ5] | 615 | -2.45350 | 1.74373 |
| Zscore: [PEOU1] | 615 | -2.29463 | 1.87743 |
| Zscore: [PEOU2] | 615 | -2.48769 | 1.81894 |
| Zscore: [PEOU3] | 615 | -2.21710 | 1.79619 |
| Zscore: [PEOU4] | 615 | -2.48630 | 1.52176 |
| Zscore: [PEOU5] | 615 | -2.67841 | 1.79470 |
| Zscore: [PEOU6] | 615 | -2.81718 | 1.68007 |
| Zscore: [PU1] | 615 | -2.60397 | 1.63545 |
| Zscore: [PU2] | 615 | -2.78010 | 1.56767 |
| Zscore: [PU3] | 615 | -2.90124 | 1.44532 |
| Zscore: [PU4] | 615 | -2.85117 | 1.37151 |
| Zscore: [PU5] | 615 | -2.74179 | 1.33855 |
| Zscore: [PU6] | 615 | -2.64409 | 1.49361 |
| Zscore: [TIG1] | 615 | -2.18857 | 1.97852 |
| Zscore: [TIG2] | 615 | -2.21936 | 1.94829 |
| Zscore: [TIG3] | 615 | -2.23018 | 1.97383 |
| Zscore: [TIG4] | 615 | -2.33790 | 1.97660 |
| Zscore: [TIG5] | 615 | -2.40628 | 1.88940 |
| Zscore: [ITP1] | 615 | -2.77947 | 1.71002 |
| Zscore: [ITP2] | 615 | -2.87373 | 1.77107 |
| Zscore: [ITP3] | 615 | -2.93620 | 1.60946 |
| Zscore: [ITP4] | 615 | -2.84216 | 1.57180 |
| Zscore: [ITP5] | 615 | -2.71904 | 1.53865 |
| Zscore: [PRI_Rev] | 615 | -1.79048 | 1.52873 |
| Zscore: [PR2_Rev] | 615 | -1.82388 | 1.69238 |
| Zscore: [PR3_Rev] | 615 | -1.64978 | 1.73509 |
| Zscore: [PR4_Rev] | 615 | -1.68319 | 1.63996 |
| Zscore: [PR5_Rev] | 615 | -1.82617 | 1.94260 |
| Valid N (listwise) | 615 | | |

## Appendix E Total Variance Explained

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 21.586 | 31.744 | 31.744 | 20.949 | 30.807 | 30.807 |
| 2 | 5.541 | 8.149 | 39.893 | | | |
| 3 | 3.484 | 5.123 | 45.017 | | | |
| 4 | 2.686 | 3.950 | 48.967 | | | |
| 5 | 2.327 | 3.422 | 52.388 | | | |
| 6 | 1.829 | 2.690 | 55.078 | | | |
| 7 | 1.797 | 2.643 | 57.721 | | | |
| 8 | 1.470 | 2.162 | 59.883 | | | |
| 9 | 1.294 | 1.903 | 61.786 | | | |
| 10 | 1.133 | 1.667 | 63.453 | | | |
| 11 | 1.071 | 1.575 | 65.028 | | | |
| 12 | .975 | 1.434 | 66.461 | | | |
| 13 | .913 | 1.343 | 67.804 | | | |
| 14 | .799 | 1.175 | 68.979 | | | |
| 15 | .786 | 1.157 | 70.136 | | | |
| 16 | .770 | 1.132 | 71.268 | | | |
| 17 | .725 | 1.066 | 72.334 | | | |
| 18 | .695 | 1.023 | 73.357 | | | |
| 19 | .659 | .969 | 74.326 | | | |
| 20 | .637 | .936 | 75.262 | | | |
| 21 | .619 | .910 | 76.172 | | | |
| 22 | .611 | .898 | 77.071 | | | |
| 23 | .591 | .869 | 77.939 | | | |
| 24 | .577 | .849 | 78.788 | | | |
| 25 | .555 | .816 | 79.605 | | | |
| 26 | .546 | .803 | 80.408 | | | |
| 27 | .532 | .782 | 81.190 | | | |
| 28 | .526 | .774 | 81.963 | | | |
| 29 | .500 | .736 | 82.699 | | | |
| 30 | .481 | .707 | 83.406 | | | |
| 31 | .474 | .696 | 84.103 | | | |
| 32 | .468 | .688 | 84.791 | | | |
| 33 | .453 | .666 | 85.456 | | | |
| 34 | .443 | .651 | 86.107 | | | |
| 35 | .434 | .639 | 86.746 | | | |
| 36 | .413 | .608 | 87.354 | | | |
| 37 | .406 | .596 | 87.950 | | | |
| 38 | .394 | .579 | 88.529 | | | |
| 39 | .378 | .555 | 89.084 | | | |
| 40 | .369 | .543 | 89.627 | | | |

## Appendix E Total Variance Explained

| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | .364 | .535 | 90.162 | | | |
| 42 | .353 | .520 | 90.682 | | | |
| 43 | .351 | .516 | 91.198 | | | |
| 44 | .342 | .503 | 91.700 | | | |
| 45 | .339 | .498 | 92.198 | | | |
| 46 | .314 | .461 | 92.660 | | | |
| 47 | .303 | .446 | 93.106 | | | |
| 48 | .300 | .441 | 93.548 | | | |
| 49 | .292 | .430 | 93.977 | | | |
| 50 | .283 | .416 | 94.393 | | | |
| 51 | .276 | .406 | 94.799 | | | |
| 52 | .272 | .400 | 95.199 | | | |
| 53 | .266 | .392 | 95.590 | | | |
| 54 | .258 | .380 | 95.970 | | | |
| 55 | .243 | .357 | 96.327 | | | |
| 56 | .235 | .346 | 96.673 | | | |
| 57 | .229 | .337 | 97.010 | | | |
| 58 | .223 | .328 | 97.338 | | | |
| 59 | .216 | .317 | 97.655 | | | |
| 60 | .210 | .308 | 97.964 | | | |
| 61 | .204 | .301 | 98.264 | | | |
| 62 | .199 | .292 | 98.557 | | | |
| 63 | .186 | .273 | 98.830 | | | |
| 64 | .175 | .257 | 99.087 | | | |
| 65 | .169 | .249 | 99.336 | | | |
| 66 | .162 | .238 | 99.574 | | | |
| 67 | .156 | .230 | 99.804 | | | |
| 68 | .133 | .196 | 100.000 | | | |
| Extraction Method: Principal Axis Factoring. | | | | | | |

## LIST OF PUBLICATIONS

Khan, S.; Ab. Rahim N. Z.; Maarop, N. (2018), A Model on Multiple Perspectives of Citizens' Trust in Using Social Media for E-Government Services. International Journal of Engineering & Technology, vol. 7, issue. 4.31, pages. 95-100. (Scopus Indexed)

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Khan S., Ab. Rahim N.Z., Maarop N. (2019), Towards the Development of a Citizens' Trust Model in Using Social Media for e-Government Services: The Context of Pakistan. In: Saeed F., Gazem N., Mohammed F., Busalim A. (eds) Recent Trends in Data Science and Soft Computing. IRICT 2018. Advances in Intelligent Systems and Computing, vol 843. Springer, Cham. (Scopus Indexed)

Khan, S.; Ab. Rahim N. Z.; Maarop, N. (2019), A Review on Antecedents of Citizens' Trust in Government Social Media Services, Recent Trends in Computer Science and Electronics, 3C Tecnología. (Web of Science Indexed)