

Article

Determinants of Intention to Adopt E-Government Services in Pakistan: An Imperative for Sustainable Development

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Abstract: For the attainment of sustainable development, the e-government phenomenon has become more imperative with its incremental implementations worldwide. In government organizations, e-government services are considered a valuable tool for the delivery of substantial and timely services to the public. Furthermore, the user's intention plays a pivotal role in the success of e-government services. The existing research aims to examine the antecedents of the intention to use e-government among the employees of the public universities in Pakistan. The decompose theory of planned behavior (DTPB) model was enriched with the extension of the factor trust and its decomposition by relational bonds. Trust with the support of relational bonds is an effective instrument to build long term relationships, limit the anxiety of the users, and increase behavioral intention. A total of 396 valid responses were collected using the simple random sampling technique from the employees of public universities and responses were evaluated with the SEM. The results indicated that trust and its antecedents (economic bonds, social bonds, and structural bonds), attitude and its antecedents (performance expectancy, effort expectancy), subjective norms and their antecedents (mass media influence, family influence), perceived behavioral control and its antecedents (self-efficacy) have significant and positive effect on intention. However, perceived risk and facilitating condition have insignificant influence on attitude and perceived behavioral control, respectively.

Keywords: relational bonds; e-government; trust; decompose theory of planned behavior (DTPB)

1. Introduction

Sustainable development, also called global goals, is the development that satisfies “the needs of the present without compromising the ability of future generations to meet their own needs” [1]. As per the findings of United Nations Report (2016) [2], e-government is an effective and powerful tool to attain sustainable development. It is clearly noted by Larsson and Grönlund [3] that little is known about the impact of e-government on sustainable development. Hence, to overcome sustainability issues and attain sustainable development goals through e-government is a matter of concern for both academicians and practitioners. Even after more than two decades of exhaustive work on government services, information and communication technologies (ICTs) are still the vital platform for the modernization of the internal and external processes for the delivery of government services. ICTs can provide the up gradation and easy access of these online services to the general public [4–7]. In 1993, e-government was established in USA and its main aim was the deployment of various opportunities of modern ICTs [8]. E-government is about streamlining the interaction between the government and the general public [9,10]. E-government suits both the government and citizens, having easy access to required information, nurtured transparency with improved service quality, and participation of the citizens for the usage of government services [7,11,12]. The proliferation of

these e-services around the globe and among various governments seeks the attention of academic researchers to investigate the different factors influencing the intention [13–16]. The United Nations have published several reports to evaluate the e-government performance of various countries around the globe over the last two decades. According to the latest United Nations E-government Survey Report (2018), Pakistan's ranking is 148 out of 193 countries in the world, and is the lowest in the south Asian region other than Afghanistan [17]. The objective of the study is to investigate the determinants of the intention to use e-government services among the employees of the public universities of Punjab, Pakistan. Definitely the trust factor plays a significant role towards the intention to use e-government services [18–21]. Numerous studies [22–25] have reported that to avail the advantages of information and communication technology (ICT)-related government services, the citizens hesitate to use online e-government services. They prefer to use traditional ways rather than using web-based accessed services due to a lack of trust in online services [26]. The successful adoption of e-government is based on the citizens' trust in these services [19,22,27–30]. Additionally, very few studies in the current literature have investigated the multidimensionality of trust [26]. In the existing study, trust has been investigated multidimensionality through its antecedents (economic bonds, social bonds, and structural bonds). As per the finding of Lin and Weng [31], these relationship bonds (financial bonds, social bonds, and structural bonds) have a significant and positive impact on trust and also help to build long-term relationships among the citizens. For the last two decades, the investigation of e-government adoption via different technology adoption models has been of great interest for researchers. Numerous studies have been conducted on e-government around the globe, like the Netherlands [32]; Romania [22]; Kuwait [33]; Cambodia [34]; Zambia [35]; Malaysia [36]; Tanzania [37]; Qatar [38]; Indonesia [39]; Kingdom of Saudi Arabia [40]; Greece [41]. In spite of the enormous amount of prior literature, there is a need for the development of more acceptable models in e-government settings, especially in developing countries [42]. The main aim of this study is to extend the existing literature and to investigate the numerous factors effecting e-government adoption in developing countries, especially in South Asian countries like Pakistan. To date, as per the best of the researchers' knowledge, few studies have investigated the intention to use e-government services [43]. The decompose theory of planned behavior (DTPB) was used in this current study. The DTPB was extended by the new factor 'trust' and it was decomposed by relational bonds. Antecedents of attitude, subjective norms, perceived behavioral control, trust, and their influence on intention have not been investigated in a Pakistani context as per the knowledge of the researchers.

2. Literature Review

2.1. Overview of the Proposed Model

To elucidate the acceptance of technologies in e-government settings, numerous theories have been developed by different researchers, including the theory of reasoned action (TRA), introduced by [44]; the innovation diffusion theory (IDT), developed by [45,46]; the technology acceptance model (TAM), with its extension [47]; the unified theory of acceptance and use of technology (UTAUT) [48]; and theory planned behavior (TPB) [49]. Prior researchers have conducted research on technology adoption in general and the e-government setting in particular, by incorporating various theories. For instance, TRA was used in Saudi Arabia to investigate the moderating effect of Wastta towards the e-government adoption. Likewise, to determine the behavioral intention towards the PAN card in an Indian context and the incorporation of TAM as a predictor of e-government services in China, mentioned in below Table 1. Very few studies have used DTPB in an e-government setting, according to the knowledge of these researchers. [19,30,32,36,43,50–52]. Taylor and Todd [53] addressed certain advantages of the decompose theory of planned behavior over other abovementioned technology models. Firstly, DTPB established a purer relationship between the antecedents. Secondly, it has more predictive power or explanatory power than TPB and its decomposition of variables is more valuable than generalized concepts. According to the findings of Pi-Jung Hsieh, very few studies

have investigated the antecedent's factor of behavioral intention. Therefore, in this study, DTPB was incorporated. Additionally, few studies used DTPB to investigate the intention to use e-government services [54–56]. Likewise, none of the studies in the past literature had explored the existing conceptual model to determine the intention. In investigating the numerous factors of DTPB on intention, Rana and Dwivedi [50], and Rana and Dwivedi [57] have conducted research in e-government settings and also recommended that more research be conducted in other under-developed countries, particularly South Asian countries. Therefore, the researchers in the present study investigated various factors that enable intention among the citizens (employees of the public universities) of the Pakistan. The research model of the current study is given below, in Figure 1. The research model was based on theoretical foundation of extended DTPB. To modify the TPB model and extension by including additional critical constructs can enhance the theoretical mechanism and prediction power for individuals' intentions in this specific context, as a stable set of beliefs can provide the comprehensive and complete understanding of IT usage [50]. So, given the lack of empirical research on the intention to use e-government services in general and an absence of the current conceptual framework in Pakistan, this existing research used the extended DTPB with relational bonds (financial bonds, social bonds, and structural bonds) and trust as additional constructs to improve the aptitude for predicting the behavioral intention towards e-government services.

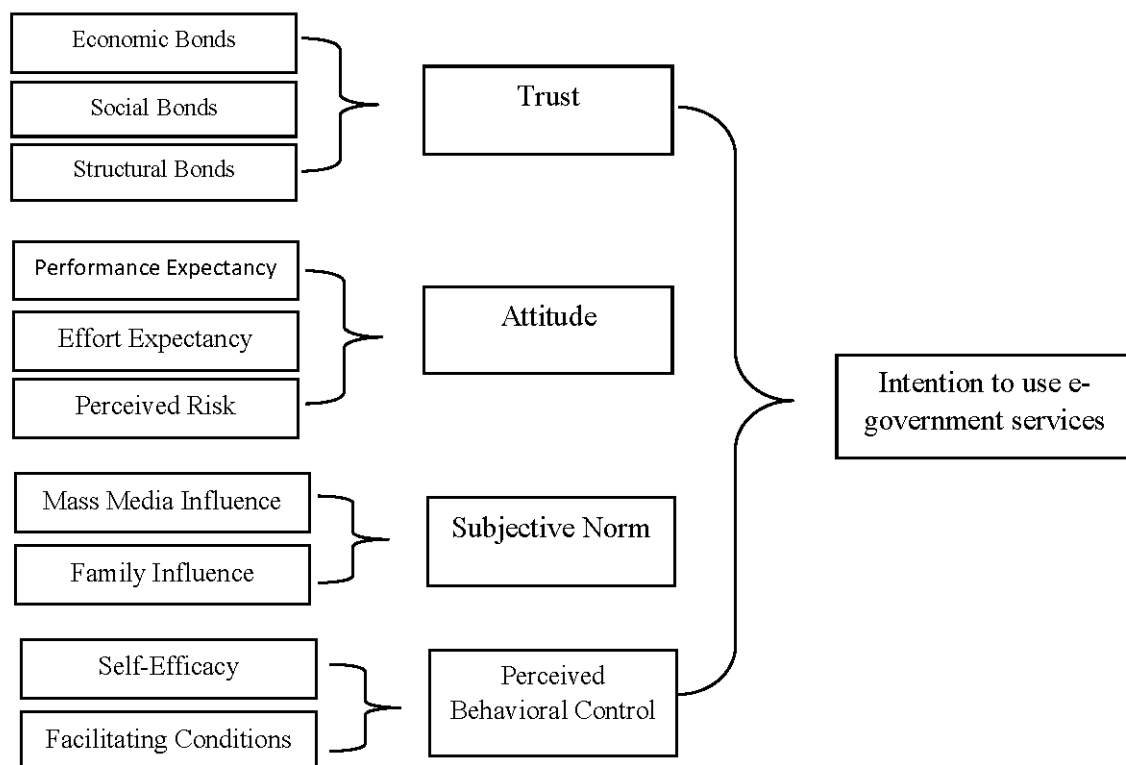


Figure 1. Conceptual framework.

Table 1. Several technology adoption theories in e-government settings.

Year	Author	Country	Theory	Constructs
2018	(Almukhlifi, Deng, and Kam [58])	KSA	TAM	Adoption, perceived ease of use, perceived usefulness, computer self-efficacy, Wastta
2017	(Dwivedi et al. [59])	India	UTAUT	Behavior, intention, attitude performance expectancy, effort expectancy, facilitating conditions, social influence
2017	(Xie, Song, Peng, and Shabbir [60])	China	TPB	Intention, attitude subjective norm, perceived behavioral control, perceived ease of use, perceived risk, trust, perceived usefulness
2018	(Chatfield and Reddick [61])	Australia	IDT	Adoption, policy innovation diffusion, efficacy.
2015	(Rana and Dwivedi [57])	India	SCT	Behavioral intention, affect, self-efficacy, outcome expectation, social influence, anxiety

Notes: TAM (Technology acceptance model), UTAUT (Unified theory of acceptance and use of technology), TPB (Theory of planned behavior), IDT (Innovation diffusion theory), SCT (Social cognitive theory).

2.2. Support for Including Additional Constructs in the Context of Intention to Use e-Government

Trust is a comparatively new research area in e-government settings [50]. Numerous studies have proven the effect of trust on the adoption of technology [19,41,50,62–65]. Several prior researchers defined the relationship between marketing and improving customer relationships [66], to attract, maintain, and enhance the relationship with end users [67], and the successful, relational exchange with buyers and integral partners [68]. According to Berry and Parasuraman [69], three bonds (economic bonds, social bonds, and structural bonds) define the relationship between marketing building a long-term relationship. Prior researchers had investigated these relationship–marketing bonds, e.g., Hsieh and Shannon [70] investigated the loyalty of online shoppers, Leuthesser and Kohli [71] studied the suppliers and buyers relationship. These relational bonds have a huge impact on the perception of customers trust [72]. According to the finding of Lin and Weng [31], relational bonds have a significant and positive impact on trust. In this conceptual model, DTPB is employed as the underpinning theory in this study. DTPB better explains the variables, as they are decomposed in the form of determinants or antecedents. This overcomes the operationalization of some conventional models of behavioral intention. Additionally, decomposition can offer an absolute understanding of IT usage and the behavioral intention to use IT-related studies. Hence, the incorporation of the DTPB model becomes more managerially relevant, as well as influencing the behavioral intention. The trust was incorporated as new constructs and multi-dimensionally investigated with the relational bonds. For the usage of online e-government services, trust is the most important factor. The relational bonds economic bonds, social bonds, and structural bonds can increase the trust level of the end users, which leads to the intention to use online e-government services over conventional or traditional e-government services, especially in developing countries like Pakistan.

3. Hypothesis Development

3.1. Attitude

Human intention first initiates from attitude, with two projections (positive or negative feelings). Consequently, the attitude is favorable or unfavorable is upon the projection. Ajzen [49] defines the attitude as “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question”. Attitude is fabricated from definite beliefs and these are the antecedents of

attitude [49]. Personal beliefs of the individual develop the individual behavior [49]. Attitude has been used for several theories—TRA by Ajzen [49], TAM by [73], and TPB by [49]—to determine its influence on behavioral intention. Various researchers in past literature supported the view that attitude has a significant effect on intention towards new technology systems [73–75]. In public management settings, several studies found a significant relationship between attitude and intention [76,77]. Realizing the importance of new technologies, with regards to intention to use e-government services, the resulting hypothesis was formulated:

Hypothesis 1 (H1): *Attitude has a significant and positive influence on intention to use e-government services.*

3.1.1. Performance Expectancy

Performance expectancy is defined as “the individual believes that the particular system will assist him/her to improve in his/her job performance” [48]. Perceived usefulness is a similar construct to performance expectancy [48]. In the literature, resemblances have been established between various constructs like usefulness and extrinsic motivation [47], usefulness and job fit [78], relative advantage [47], usefulness, and outcome expectations [47,79], and job fit and outcome expectancy [48,79]. Likewise, relative advantage is considered the core construct of performance expectancy. In the e-government system, performance expectancy has been found to be positively significant for behavioral attitude [76,77,80–82]. By bearing in mind the above literature, the following hypothesis was formulated:

Hypothesis 1a (H1a): *Performance expectancy significantly and positively affects attitude.*

3.1.2. Effort Expectancy

Effort expectancy is defined as “the magnitude of ease linked to a system’s usage and particularly the perceived ease of use and complexity”, correlated with government services [48]. Effort expectancy was seized as a concept from three constructs from the prior models reported in literature. Perceived ease of use, complexity, and ease of use are similar constructs from previous works [47,78]. Additionally, as per the findings of [48], complexity in DOI, perceived ease of use in TAM and TAM2, and ease of use for IDT sum up the concept of effort expectancy. Numerous studies [38,48,76,77,80–85] have shown significant and positive effects of perceived ease of use on attitude. Therefore, effort expectancy was hypothesized as follow:

Hypothesis 1b (H1b): *Effort expectancy significantly and positively affects attitude.*

3.1.3. Perceived Risk

“In the pursuit of the desired outcome, an individual subjectively suffered from loss is considered as perceived risk” [86,87]. Empirically, it has been proven that a decrease in perceived risk can significantly affect intention [56,81]. A study conducted in Malaysia [88] investigated how the user attitude negatively and significantly affects the attitude of the users. Other studies [89,90] also found that perceived risk and attitude have a negative and significant relationship. In the current study, risk will be involved while using the e-government services. Risk is associated with negative feelings about system usage. Therefore, perceived risk is hypothesized as follows:

Hypothesis 1c (H1c): *Perceived risk significantly and negatively influences attitude.*

3.2. Subjective Norm

Subjective norm is defined as “the perceived social pressure to perform or not to perform the behavior” [49]. One study [91] defined subjective norm as “the inner view about key characters in the decision maker’s life, making the decision maker to aspire to perform (or not act) in a certain way”.

According to the findings of Ali Saleh [92], prior researchers were not able to deny the influence of an individual's relative group on the behavioral intention to accept the new technology. Several studies indicated the important role of subjective norm on an individual's intention to use technologies like mobile payment, m-learning, e-file, internet stock trading, mobile virtual network operators (MVNO), e-learning, e-auction and e-commerce [93–96], and m-learning [36,52,97–100]. In a previous study [60], the researcher found that subjective norms significantly and positively affect the intention to use e-government services. Numerous other researchers [38,81] found a significant relationship between subjective norms and intention. Therefore, in the current study, the subjective norm was hypothesized as follows:

Hypothesis 2 (H2): *Subjective norm significantly and positively affects the intention to use e-government services.*

3.2.1. Mass Media

Ng and Rahim [101] defined mass media as “the influence or pressure from the mass media to perform the behavior”. In other words, mass media is defined as the perception of how the mass media will affect any individual's use of a particular e-government system [50]. According to the findings of [102], mass media is considered the antecedent of subjective norms. Mass media influences the IT usage of the end-users. According to Chan, mass media plays a vital role in determining the individual's behavior in a positive and negative manner. Numerous studies have concluded that mass media influence has positively and significantly affected subjective norms [101,103–107]. In any society, the individual always influences other members to use e-government services and also augment the acceptance [108]. Hence, the next hypothesis was formulated to bridge this gap.

Hypothesis 2a (H2a): *Mass media influence significantly and positively affects the subjective norm.*

3.2.2. Family Influence

In terms of citizen-oriented services, the nearby consumer-related groups, such as friends, peers, and family, may influence the individual's intention. The impression of the family, friends, peers, and colleagues will affect the individual's use of a specific e-government system [50]. Ng and Rahim [101] define family influence as “the influence or pressure from sources known (family) to perform the behavior”. In a study conducted in Hong Kong [54], there was found to be a significant influence on an individual by their family members regarding the use of e-government services. According to [50], a significant relationship was found between the family/superior/peers/friends and the subjective norms. According to the Hung et al., the family, friends, peers, colleagues, and the media have a significant effect on subjective norms. Taylor and Todd found that family, superiors, peers, and friends have a direct impact on the subjective norm. Likewise, subjective norm is influenced by the referents (experts, superiors, seniors, or elders). So, in the present study, the family influence was hypothesized as follows:

Hypothesis 2b (H2b): *Family influence significantly and positively affects the subjective norm.*

3.3. Perceived Behavioral Control

According to the definition of [49], perceived behavioral control is “the perceived ease or difficulty of performing the behavior or people's perceptions of their ability to perform a given behavior”. When individuals have confidence and believe, then they will be able to perform certain behaviors. An individual's belief in those factors (internal and external) that facilitate performing a certain behavior is called control beliefs. TPB suggests that intention is affected by perceived behavioral control (PBC) [49]. In addition, various authors [50,57,109] have suggested the significant effect of PBC on intention. Numerous studies have reported the significant and positive influence of PBC and intention

in e-government settings [97,98,110–116]. For developing nations like Pakistan, intention to adopt technologies and e-government services is less, as it is a new concept for the people. Therefore, the following hypothesis was proposed:

Hypothesis 3 (H3): *Perceived behavioral control positively and significantly affects the intention of the e-government services.*

3.3.1. Facilitating Conditions

Facilitating conditions are defined as the individual's belief that they have essential knowledge and technical expertise that will support them while using the e-government system [48]. Perceived behavioral control (extracted from Theory of planned behavior (TPB)), compatibility (from innovation diffusion theory (IDT)), and facilitating conditions (taken from Unified theory of acceptance and use of technology (UTAUT)) are three similar constructs. The conceptualization of these constructs includes the consideration of technology to avert the barriers to the systems' usage. According to the findings of Taylor and Todd [53], "the theoretical overlap by sculpting facilitating conditions is an essential component of perceived behavioral control". Quite a few researchers have found a significant relationship between the facilitating conditions and the PBC [50]. In the existing study, the facilitating condition was hypothesized as follows:

Hypothesis 3a (H3a): *Facilitating conditions significantly and positively affect the perceived behavioral control.*

3.3.2. Self-Efficacy

According to [117], self-efficacy can be defined as, "the confidence one feels about performing a particular behavior, including confidence in overcoming the barriers to achieving that behavior". Several researchers in the past literature [118–121] found that self-efficacy has a significant effect on the behavioral intention through the PBC. Additionally, Tsai et al. [122] indicated that self-efficacy did not affect the intention through perceived behavioral control. Additionally, there were limited studies in the e-government settings regarding self-efficacy and the perceived behavioral control. To resolve this research gap and the inconsistency, the following hypothesis was developed:

Hypothesis 3b (H3b): *Self-Efficacy positively and significantly affects perceived behavioral control.*

3.4. Trust

Trust is an essential part of relationships between humans. [68] defined trust as reliability, honesty, and confidence. Trust is considered a cognitive expectation and also an emotional viewpoint [123]. In organizational settings, trust is defined as, "the dependency of the customers on the service/product quality and reliability" [72]. According to [124], the mutual trust between stakeholders plays a key role. Trust comes before and after transactions [125]. Several researchers have proven the positive significant effect of trust on e-government intention [19,32,41,62,64,65]. In the past literature, researchers empirically supported the disposition of trust on the trust construct [86,126,127]. Numerous researchers also recommended that trust should be considered a multi-dimensional construct [86,128]. Empirically, the researchers multi-dimensionally measured the trust validation. The researchers studied the trust in e-commerce [129,130] and decomposed trust as the typology of trust [130]. Therefore, trust was hypothesized as follows:

Hypothesis 4 (H4): *Trust positively and significantly affects the intention of the e-government services.*

Relational Bonds

In relationship-related literature, relational bonds are a very important component. These bonds are considered as the focal point of components [131–133]. The main objective of these relational bonds

is to establish, properly maintain, and equally enhance the relationship with the end users [131,134,135]. According to one study's [136] view of relational bonds, "one strategy that has gained considerable attention is the strategy of relationship marketing in which companies invest in developing long-term bonds with individual customers". They further recommended that it will provide sustainable competitive advantages to the organizations, not just retain the existing customers.

The term "bonds" is used in the daily routine, which gives the meaning of association and relationship, such as the relationship between mother and son [131]. The customer relationships among the organizations are built on these several kinds of relational bonds [82]). For the attainment of a long-term relationship between the customers and the organizations, certain types of the bonds are used [137]. A variety of bonds are required to develop, maintain, and enhance these relationships (customers and service providers). This approach was adapted by many researchers and [138] suggested three types of bonds for the customer loyalty, customer retention, and long-term relationship between them.

The first type is the economic bond, also known as financial bonds. It includes all the price incentives to encourage the customers to avail more services or buy more products. This type of bond is the first step of the relational bonds and also creates a relationship between the end users and the organizations. These bonds include discounts, price incentives, gifting, and lucky draws to attract the new customers and retain the existing customers. According to [138], these are considered the lowest level. The limitation is that the competitors can easily replicate or duplicate these offers and also give more attractive offers to the end users. Empirically, many researchers [131,134,135] recommended that providing economic rewards to end users is a very effective tool for long-term relationships.

The second type of bond is the social bonds, which engage the end users (customers) emotionally with various emotional activities. The company adopts a friendship with their customer for the long-term relationship with the end users. It is also known as the personalization of relationships between them (service providers and customers). These social bonds consist of daily interactions with the customers via emails, text messages, and other electronic mediums. The customers are also updated with the latest incentives and other customer-oriented offers that help the organizations to stay in touch with the customers. These bonds are not easily duplicated, as they need infrastructure to offer social bonds-relevant activities. Many researchers in past studies [137,139–141] recommended the use of social bonds while developing the relationship between the organizations and the end users.

The third type is structural bonds, which emphasize the value-added services to the end users, providing the information to the users and connecting with the customer's operation system. These structural bonds can provide competitive advantages to the organizations and are very difficult to duplicate. Some studies [131,134,135] have suggested that structural bonds can decrease the risk factors and increase the relationship between the organizations and the end users (customers). Consequently, in the current study, relational bonds (economic bonds, social bonds, and structural bonds) were the important components while investigating how the relationship between relational bonds and trust leads to the intention to use e-government services. Many researchers [72,132,135,142] provided empirical evidence for the positive support of relational bonds. Therefore, from the above-mentioned discussion, all three relational bonds must be investigated together to investigate intention. Financial bonds (giving discounts, points on usage of e-government services), social bonds (bi-directional communication, socially interaction to the end-users), and structural bonds (value added in e-government services) can help the government to enhance the e-services usage intention.

Hypothesis 4a (H4a): *Economic bonds positively and significantly affect trust.*

Hypothesis 4b (H4b): *Social bonds positively and significantly affect trust.*

Hypothesis 4c (H4c): *Structural bonds positively and significantly affect trust.*

4. Methodology

A mono quantitative approach was used to investigate the antecedents of intention. The self-administrative questionnaires were distributed among the employees of public universities of Punjab, Pakistan. The academic employees of public universities of Punjab were the respondents of this study because of the following reasons. University academic employees are given the facilities of internet and IT equipment like laptops or desktop PCs by the university administration. WIFI is also always available in the universities. Additionally, the income level of academic employees gives the opportunity for academic university employees to buy personal laptops and the latest mobiles fully equipped with internet related activities. They can easily pay the charges for the daily, weekly, and monthly use of internet. The questionnaire consisted of two parts. The first part (Section A) represented the demographic of respondents and the second part (Section B) consisted of 58 questions to measure the variables of the study. Eight demographic variables were measured, namely age, gender, education, job title, and marital status, including three control questions (in Table 2). Five items for intentions were adapted from [53], four items both for attitude and subjective norms were adapted from [120], four items for perceived behavioral control were adapted from [121], four items adapted for all the following three constructs, performance expectancy, effort expectancy, and perceived risk, were adapted from Dwivedi and Rana [59]. The four items for family influence and four for mass media influence were adapted from [143]. The five items for self-efficacy and three for facilitating conditions were adapted from [144] and [33], respectively. The five items for trust were adapted from Nor and Pearson [120]. The three items for all the constructs (economic bonds, social bonds, and structural bonds) were adapted from Liang and Chen [145]. In this study, out of 58 items, nine items were deleted and the percentage of deletion was 12%. The list of items or questions are mentioned below (see Appendix A). Each item was measured on a seven-point (7) likert scale, ranging from 1 (strongly agree) to 7 (strongly disagree). Pre-testing and post-testing were conducted to ensure the reliability and validity. One of the probability sampling techniques, i.e., simple random sampling, was used. It was not possible to collect data from all the departments of all universities at the same time. Therefore, the data was collected from the management sciences departments of all the public universities of Punjab, Pakistan. Owing to the internal policies of the universities, all the universities requested their names not be mentioned. Hence, all universities were assigned a code—university1–27. The province of Punjab has the largest number of public universities and is one of the largest provinces of Pakistan, population wise. Therefore, among the 39 public universities in Punjab, 27 universities have management sciences departments and the total population was 1046. According to Sekaran [146], for a population of 1000, a sample size of 278 is appropriate. Hence, for the population of 1039 of employees, a sample size of 322 was needed on a 5% margin rate [146,147]. A total of 644 questionnaires were distributed, of which 419 questionnaire were returned. After primary screening, 396 questionnaires were found to be usable for this present study.

Table 2. Demographic distribution of respondents.

Demographic Category	Results	Frequency	Percentage
Gender	Male	274	69.2%
	Female	122	30.8%
Age	up to 25	12	3%
	26–35	48	12%
	36–45	147	37%
	46–55	131	33%
	56–60	58	15%
	61+	0	0%
Education level	MA/MSC/MBA	119	30%
	MS/M.Phil.	194	49%

Table 2. Cont.

Demographic Category	Results	Frequency	Percentage
Job Title	PhD	83	21%
	Lecturer	170	43%
	Assistant Professor	119	30%
	Associate Professor	67	17%
	Professor	40	10%
Marital Status	Married	269	68%
	Single	127	32%
Frequency of internet usage	Daily basis	328	83%
	Weekly basis	44	11%
	Monthly basis	20	5%
	Only once needed	4	1%
Have you ever used e-government Services?	Yes	297	75%
	No	99	25%
Which e-government service do you use?	e-ID card	57	23%
	e-Passport	18	7%
	e-Ticketing	125	42%
	e-Fard	96	28%

5. Results

5.1. Data Analysis

Data were collected and the demographic analysis was conducted as shown in Table 1. Structural equation modeling (SEM) is considered a more influential second generation multivariate statistical technique as compared to the first generation (factor analysis and regression). SEM is usually used when the data is not normal. SEM is more convenient over traditional multivariate statistical techniques. In SEM, two techniques are used and well known to researchers, covariance-based SEM (CB-SEM) and variance-based SEM [148]. In the current study, partial least square (PLS) also known as VB-SEM, was applied to overcome the problem of normality. In the present study, PLS-SEM was applied to investigate the theoretical model by using smart PLS 3.0. The results were determined in two phases. First was the measurement model, in which the reliability and validity were measured. Secondly, the structural model, in which the hypothesis was tested by following two-stage analytical procedures. Furthermore, the method of bootstrap resampling of 5000 subsamples was used for the assessment of path coefficients and the loadings.

5.2. Measurement Model Evaluation

In the measurement model, convergent validity and discriminant validity were investigated. In convergent validity, the outer loadings, average variance extracted (AVE), and composite reliability were evaluated shown in Table 3 and Figure 2. Constructs are said to be convergent if the outer loadings have loadings above 0.55 [148]. In addition, average variance extracted (AVE) must be >0.5 and composite reliability >0.7 [149]. According to the findings of [42] “achieving convergent validity ensures that the constructs which should be related are in fact related”.

According to Hair et al., “discriminant validity is said to be achieved once the square roots of AVE are greater than the inter-factor correlations between constructs, which are under the diagonal cells”. The discriminant validity was calculated by using the heterotrait–monotrait (HTMT) ratio. Instead of other traditional methods, like Fornell–Larcker, HTMT has superior criterion. The criterion of HTMT should be below 0.85 or 0.90. Hence, it indicates that once the HTMT ratio is achieved, it ensures that the mechanism of one construct is not related with components of other constructs. In this study, the Table 4 presents the results and statistically fulfilled HTMT ratio discriminant validity criteria of all the values below 0.90 [150].

Table 3. Measurement model results.

Construct	Items	Loadings	CR	AVE
Intention (INT)	INT1	0.810	0.884	0.610
	INT2	0.550		
	INT3	0.841		
	INT4	0.880		
	INT5	0.789		
Attitude (ATT)	ATT1	0.855	0.766	0.675
	ATT2	0.820		
	ATT3	0.789		
Subjective Norm (SN)	SN1	0.606	0.837	0.566
	SN2	0.814		
	SN3	0.819		
	SN4	0.750		
Perceived Behavioral Control (PBC)	PBC1	0.877	0.889	0.728
	PBC2	0.862		
	PBC3	0.820		
Trust (TR)	TR1	0.741	0.811	0.518
	TR2	0.645		
	TR3	0.781		
	TR4	0.706		
Performance Expectancy (PE)	PE1	0.691	0.820	0.533
	PE2	0.692		
	PE3	0.735		
	PE4	0.798		
Effort Expectancy (EE)	EE1	0.710	0.828	0.546
	EE2	0.807		
	EE3	0.677		
	EE4	0.756		
Perceived Risk (PR)	PR1	0.877	0.844	0.579
	PR2	0.778		
	PR3	0.730		
	PR4	0.638		
Mass media influence (MI)	MI1	0.833	0.876	0.780
	MI2	0.931		
Family Influence (FI)	FI1	0.810	0.876	0.780
	FI2	0.758		
	FI3	0.757		
Self-Efficacy (SE)	SE1	0.697	0.840	0.638
	SE2	0.856		
	SE3	0.833		
Facilitating Condition (FC)	FC1	0.552	0.804	0.587
	FC2	0.788		
	FC3	0.914		
Economic Bonds (EB)	EB1	0.866	0.788	0.560
	EB2	0.781		
	EB3	0.565		
Structural Bonds (STB)	STB1	0.720	0.827	0.615
	STB2	0.854		
	STB3	0.773		
Social Bonds (SB)	SB1	0.694	0.804	0.579
	SB2	0.749		
	SB3	0.833		

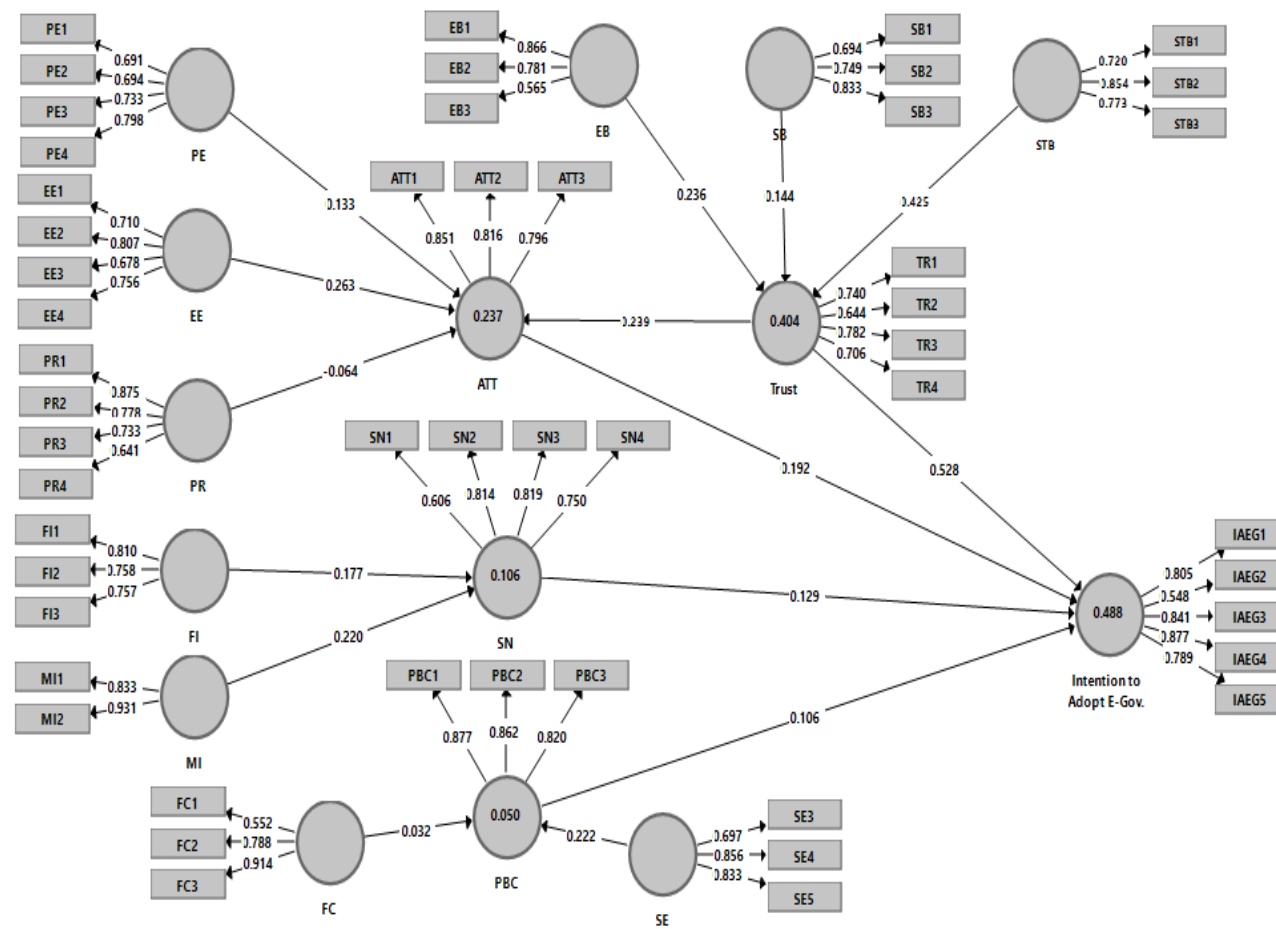


Figure 2. Direct path coefficient of the structural model (PLS algorithm).

Table 4. Discriminant validity (heterotrait–monotrait ratio, HTMT).

	ATT	EB	EE	FC	FI	MMI	PBC	PE	PI	PR	SB	SE	SN	STB	TR
ATT															
EB	0.567														
EE	0.520	0.732													
FC	0.084	0.096	0.109												
FI	0.500	0.513	0.517	0.046											
MMI	0.574	0.348	0.373	0.067	0.466										
PBC	0.061	0.262	0.074	0.051	0.123	0.218									
PE	0.384	0.356	0.402	0.121	0.366	0.382	0.291								
PI	0.537	0.608	0.378	0.080	0.341	0.518	0.334	0.530							
PR	0.098	0.116	0.119	0.102	0.125	0.059	0.063	0.111	0.083						
SB	0.213	0.363	0.308	0.166	0.132	0.243	0.284	0.783	0.412	0.079					
SE	0.100	0.213	0.135	0.067	0.110	0.091	0.258	0.107	0.127	0.080	0.162				
SN	0.447	0.506	0.397	0.068	0.346	0.364	0.094	0.292	0.426	0.070	0.250	0.151			
STB	0.514	0.692	0.446	0.084	0.316	0.497	0.151	0.469	0.850	0.071	0.442	0.058	0.379		
TR	0.493	0.668	0.455	0.078	0.357	0.566	0.237	0.526	0.845	0.088	0.482	0.268	0.350	0.805	

5.3. Structural Model Evaluation

Once the measurement model was established as reliable and valid, the next step was the valuation of the structure model. The assessment of the structural model included the significance of the path coefficient, R^2 values explaining the variance of each endogenous latent variable, (f^2) effect size, and the predictive relevance (Q^2). To investigate the significance of the path coefficient, the bootstrapping procedure (5000 samples) was performed. The hypothesized relationships, such as H1 (H1a, H1b), H2 (H2a, H2b), H3 (H3a), and H4 (H4a, H4b, H4c), were proved significant while H1c and H3b were not supported. The below table shows the results of hypothesis testing, along with the structural relationships. The structural results suggested that the conceptual model of the current study explained 48% of the variance to predict the intention to use e-government services. The R^2 value is higher than the 0.35 (sustainable) value suggested by Cohen [151]. On the other hand, the value of Q^2 is greater than 0, which shows the prevalence relevance. As per the recommendation of Hair Jr et al., the estimation of f^2 was also considered. According to Cohen [151], “the effect size values 0.35, 0.15, and 0.02 demonstrating large, medium, and small effects, respectively, were considered to evaluate the effect size”, as shown in Table 5.

Table 5. Structural model results (result of Structural equation modelling (SEM) and hypothesis testing).

Hypothesis	Relationship	Path Coefficient	Std. Error	t Value	p-Value	Supported	R^2	Q^2	f^2
H1	ATT → INT	0.191	0.045	4.308	0.000	Yes	0.483	0.274	0.057
H2	SN → INT	0.129	0.040	3.212	0.001	Yes			0.028
H3	PBC → INT	0.106	0.041	2.584	0.005	Yes			0.021
H4	TR → INT	0.528	0.040	13.080	0.000	Yes			0.444
H1a	PE → ATT	0.133	0.047	2.845	0.002	Yes	0.237	0.145	0.019
H1b	EE → ATT	0.263	0.044	5.951	0.000	Yes			0.077
H1c	PR → ATT	−0.064	0.062	1.036	0.150	No			0.005
H2a	MMI → SN	0.220	0.049	4.527	0.000	Yes	0.106	0.052	0.048
H2b	FI → SN	0.177	0.056	3.147	0.000	Yes			0.031
H3a	SE → PBC	0.222	0.048	4.593	0.000	Yes	0.050	0.030	0.052
H3b	FC → PBC	0.032	0.078	0.412	0.340	No			0.001
H4a	EB → TR	0.236	0.045	5.283	0.000	Yes	0.40	0.191	0.073
H4b	SB → TR	0.144	0.045	3.201	0.001	Yes			0.031
H4c	STB → TR	0.425	0.047	9.089	0.000	Yes			0.225

6. Discussion

The results of the formulated hypothesis revealed that 12 out of 14 hypotheses were fully supported, and 2 were rejected. The findings of H1 anticipated a positive association between the attitude and

intention with the empirical support of ($\beta = 0.191, p < 0.05$). Various prior studies also supported the findings of the existing study [76,77]. According to the findings of Ajzen [49], individual attitude has a significant relationship with and is a robust interpreter of intention to use. The existing study indicated that intention to use online e-government services can be extremely beneficial for the customers. These have immense advantages over the traditional ways. These online services can save time, increase efficiency, are available 24/7, and are easy to assess. Thus, all the above-mentioned advantages could give Pakistani citizens a positive attitude towards intention. The findings also suggest that the three antecedents of attitude H1a and H1b (performance expectancy $\beta = 0.205, p < 0.05$, effort expectancy $\beta = 0.321, p < 0.05$) have a positively significant effect, and H1c (perceived risk $\beta = -0.060, p < 0.05$) has an insignificant effect towards attitude. Preceding research findings revealed that performance expectancy and effort expectancy have a huge impact on attitude [53,54,100,103,110,152–155]. As per the findings of Hung et al., [156], the users of new e-government noticed that effort expectancy as well as performance expectancy have a colossal impact on attitude towards the usage. The research findings also established the insignificant influence of perceived risk on attitude. The lower the perceived risk the higher the attitude. The past studies supported that perceived risk is insignificant towards attitude [56,110,157,158].

One captivating finding of the current study is that subjective norm H2 is an influencing factor and has a positive and significant affect towards intention. The subjective norm is the individual's determinant factor of behavioral intention [49]. Simulating the findings of the study, subjective norm effects the individual's intention. H2 suggested a positive and significant effect of subjective norm on behavioral intention. The results of the study ($\beta = 0.130, p < 0.05$) also supported the proposed hypothesis. The current study's findings are congruent with previous researchers' conclusions that the subjective norm is the positive and significant determinant of intention [103,159–161]. The society of Pakistan is collective, according to the dimensions of [162]. In the Pakistani context, the user can be easily influenced by other individuals' opinions. The individual gives importance to other opinions to make a decision and avoid conflicts. Numerous other factors (mass media, family influence) can influence the individual's behavioral intention. The findings ($\beta = 0.194, p < 0.05$) of the current study indicate that family influence positively and significantly affects subjective norm [101,120,121,143]. Taylor and Todd [53] concluded that family has a huge and direct influence on subjective norm. Similarly, subjective norm is inclined by the various expectations of an individual's significant referents (supervisors, friends, experts, elders, and seniors). Earlier studies proved that family influence has a positive and significant effect on subjective norm in e-government settings [43,50]. As hypothesized, mass media ($\beta = 0.223, p < 0.05$) was found to be positive and significant towards the subjective norm. In accordance with earlier studies [122,163,164], the findings confirmed that mass media influence has a significant direct positive effect on the subjective norm. The government should take affirmative actions by encouraging the top management people to convince others, share their experiences with others and discuss the advantages to use online services rather than traditional style to use. The alignment of internet and computer savvy people through different mediums can also help the government to increase the usage of these services. The mass media is considered as the most important source of information. From a practical perspective, the researcher has faith in different types of persuasive advertisements, such as pathos (an appeal to emotion), logos (an appeal to logic or reason), and ethos (an appeal to celebrity or character), which can affect the citizens' behavior towards the intention of e-government services. Additionally, marketing strategies can help to increase intention by proper advertisement of the offered user-friendly e-government services and 24/7 availability. The decision makers can also provide training to the end users to sharpen their ICT skills and build confidence among them to use online e-government services. Thus, Pakistani consumers' subjective norms will be influenced.

PBC reflects individuals' belief in the internal factor (self-efficacy) and external factors (facilitating conditions) to predict a particular behavior. As expected, the findings of the current study ($\beta = 0.106, p < 0.05$) revealed that PBC has a significant and positive effect on behavioral intention. This is

consistent with a number of prior researchers [119,165–168], who found that perceived behavioral control has significant and positive effect on behavioral intention. Moreover, from a managerial point of view, the significant result showed that end users not only need time and information, but also need a level of confidence to avail these services. The government authorities should emphasize the various strategies and policies to enhance the citizens' perceived behavioral control on intention. Self-efficacy (internal constraints) [169] and facilitating conditions (external constraints) [170] are two basic components of the above concept. In this existing study, self-efficacy ($\beta = 0.222, p < 0.05$) had a positive and significant effect on perceived behavioral control. The significant results of this study are consistent with the results from previous studies [120,121]. The findings of the study concluded that the government can enhance individual self-efficacy by focusing on marketing strategies. The higher the self-efficacy, the higher the intention. Therefore, self-efficacy plays a vital role for influencing individual control towards the behavioral intention. On the other hand, facilitating conditions ($\beta = 0.032, p < 0.05$) have an insignificant effect on perceived behavioral control. The results indicate that the Pakistani government does not take steps to encourage citizens to use these services. The actions and decision-making of the Pakistani government do not support the behavioral intention to use e-government services. The government authorities should take affirmative actions for increasing the usage of e-government services as well as behavioral intention. The marketing department and planning departments of the government should focus on developing strategies to attract the citizens to avail e-government services online, rather than traditional means.

The service and service provider mutually influence each other with regard to trust through feelings, image, reputation, and psychological identifications [171]. The results of the study ($\beta = 0.529, p < 0.05$) determined that trust positively and significantly affects intention. Numerous researchers have proven the positive significant effect of trust on intention [19,32,41,64,65,172]. From a practical perspective, the government should take steps to build trust among the citizens to use online e-government services. Trust can play a foremost role in building long-term relationships with the end users and enhance usage and behavioral intention. Additionally, relationship marketing can help to reinforce customer trust and also tools to build long-term relationships. According to the findings of the study, the relational bonds (economic bonds ($\beta = 0.234, p < 0.05$), social bonds ($\beta = 0.139, p < 0.05$), and structural bonds ($\beta = 0.420, p < 0.05$)) have positive and significant effects on trust. Prior literature also supported these findings that relational bonds significantly and positively affect trust [31,70,173]. According to Lin et al. [82] the relationship between the supplier and end users through financial, social, and structural bonds have a positive influence on trust. From a practical point of view, trust can help to build overall relationships between both parties (government and citizens) long-term. Trust can boost customer service provider relationships to use these online e-services instead of traditional methods.

7. Conclusions and Future Recommendations

The present study investigated the antecedents of intention in e-government settings of Pakistan. According to the little knowledge of researcher, this is the first study in Pakistan on the relationship marketing context. In the conceptual model, trust was incorporated, with its antecedents (economic bonds, social bonds, and structural bonds) as new constructs. Moreover, trust was also the antecedent of intention. The findings of the study indicate that trust, subjective norm, and perceived behavioral control are antecedents of intention to use e-government services. Performance expectancy, effort expectancy, perceived risk, family influence, mass media influence, self-efficacy, and facilitating conditions are the antecedents of attitude, subjective norms, and perceived behavioral control, respectively. For the pursuit of decision makers in government, the results of this study can help the government authorities to reach more citizens for the usage of e-government services. The findings of this study can help citizens to convince more citizens to utilize the benefits of e-government. The relational bonds (economic bonds, social bonds, and structural bonds) can help to build awareness among the users, and facilitate these citizens 24/7 via websites. Most importantly, these results can help to build citizens' trust in government authorities. The government can promote and encourage a long-term relationship

with the citizens by building trust with stakeholders. Trust can also positively affect the behavioral intention towards the use of e-government services. Lastly, the behavioral intentions are likely to increase once the government authorities win the trust of citizens. To offer monetary benefits (like discounts, point systems, and free services), socially engage with the citizens (like sending emails, text messages, and conducting seminars), and proposed customized services can help the government in building trust with the citizens. The higher the trust of individuals, the higher will be the behavioral intention to use these e-government services. The e-government services can help the government authorities to increase the level of transparency, reduce corruption, improve the efficiency of the system, improve the trust level of users, strengthen the relationship, and continuous improvement adapted from the feedback of the users leads towards sustainable development. E-government services benefit the government in attaining the maximum number of sustainable goals (like decent work and economic goals and peace, justice, and strong institutions), leading to the sustainable development of trust. Transparency and habit should be investigated as moderators in future studies. The current study was cross sectional and it should be investigated as causal research in the future to increase understanding among the constructs. Attitude and trust should be investigated as mediators in future studies. Government support and any other variables must be used as moderators to check the external factors affecting the intention to use e-government services. The proposed conceptual model of online e-government services will further be used in the public sector, as well as in the private sector. In the public sector, various other e-government services, like e-tax filing, online learning, online classes, online health, and online education, should be considered. On the other hand, the existing proposed model will also be investigated in the private sector like online banking, online purchases, online mobile learning, and online shopping. Probability sampling techniques, like systematic sampling and cluster sampling, should also be used in future studies once the complete list of the respondents is available. Data were collected only from Pakistan and future studies should be conducted in other developing countries. Academic staff of the universities will also be used as respondents in the future studies.

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Appendix A

Behavioral intention (BI)

BI1—I intent to use e-government services in the future.

BI2—I will use e-government services in the future.

BI3—Given the chance, I predict I will use e-government services in the future

BI4—It is likely that I will use e-government services in the future.

BI5—I expect to use e-government services in the future.

Attitude (AT)

AT1—Using e-government services would be a good idea.

AT2—Using e-government services would be a wise idea.

AT3—I like the idea of using e-government services.

AT4—Using e-government services would be pleasant.

Effort expectancy (EE)

EE1—Learning to operate the e-government services would be easy for me.

EE2—I would find it easy to get the e-government services to do what I want it to do

EE3—My interaction with the e-government services would be clear and understandable

EE4—I would find the e-government services easy to use.

Performance expectancy (PE)

PE1—Using the e-government services would enable me to accomplish tasks quicker.

PE2—Using the e-government services would improve my overall performance.

PE3—Using the e-government services would increase my productivity.

PE4—Using the e-government services would enhance my effectiveness.

Perceived risk (PR)

PR1—Use of online e-government services may cause my personal information to be stolen

PR2—I would feel uneasy psychologically if I used the online e-government services.

PR3—I think that it is unsafe to use the online e-government services because of the privacy and security concerns

PR4—I believe that there could be negative consequences by using the e-government services

Trust (T)

T1—I trust e-government services.

T2—I can always rely on e-government services for Government related activities.

T3—E-government services are trustworthy.

T4—When I need to conduct Government related activities, I would feel comfortable depending on e-government for the services.

Financial bond (FB)

FB1—This online e-government services organizations should offer free services for regular transactions

FB2—This online e-government services organizations should offer additional rebates if I trade beyond a certain amount.

FB3—This online e-government services organizations should save me a lot of transaction cost.

Social bond (SB)

SB1—This online e-government services organizations should keep in touch with me.

SB2—This online e-government services organizations should concerned with my needs

SB3—This online e-government services organizations should help me resolve problems regarding my account.

Structural bond (STB)

STB1—This online e-government services organizations should offer me a variety of ways to get information more efficiently.

STB2—This online e-government services organizations should provide me with news, study reports or transactions information that I need.

STB3—This online e-government services organizations should provide product or services from other source to resolve my problem.

Subjective norm (SN)

SN1—People who influence my behavior think that I should use e-government services.

SN2—People who are important to me think I should use e-government services.

SN3—People whose opinion I value think I should use e-government services.

SN4—People who influence my decision think that I should use e-government services.

Perceived behavioral control (PBC)

PBC1—I would be able to use e-government services.

PBC2—I have the resources to use the e-government services.

PBC3—I have the knowledge to use the e-government services.

PBC4—I have the ability to use the e-government services.

Family influence (FI)

FI1—My family thinks that I should use e-government services

FI2—I will have to use e-government services if my family has already use it.

FI3—I have to use e-government services because my family thinks I should use it.

FI4—Generally, I want to do what my family thinks I should do

Mass media influence (MMI)

MMI1—The mass media suggest that I should use e-government services.

MMI2—The mass media urge me to use e-government services.

MMI3—Mass media is full of reports, articles, TV, radio, newspapers and internet suggest that I should use e-government services.

MMI4—Mass media and advertising consistently recommend that I should use e-government services.

Self-efficacy (SE)

SE1—Whether or not I use e-government services is entirely up to me.

SE2—I am confident that I can use e-government services regularly.

SE3—I am very sure that I would be able to use e-government services next week.

SE4—I am certain that I will be able to refrain myself from use e-government services that are not used.

SE5—If I wanted to, it would be very easy for me to use e-government services regularly

Facilitating condition (FC)

FC1—I have the necessary resources to use e-government services facilities.

FC2—I have the necessary knowledge to use e-government services facilities

FC3—I have enough Internet experience to use e-government services.

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