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Attitude of Citizens Towards e-Government Services in Digital Bangladesh

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Abstract:
Fast-paced development in information technology and related services has significantly raised social standards, particularly in terms of meeting the needs of citizens. By digitizing public service providing process or developing an electronic government system, governments are taking advantage of this inevitable technological development while also ensuring citizen's satisfaction and long-term use by them. Efforts are being made in countries all over the world to ameliorate e-governance and provide public services through online. Despite the importance of investigating the continuous usage behavior of e-services provided by the government, user experiences and satisfaction with government provided e-services from citizens' perspectives are still unaddressed in the current literature. Hence, this study investigates the key predictors of user experiences, citizen satisfaction, continuance usage of government provided e-services, and intention to recommend the technology by integrating two relevant theoretical models: Technology Continuance Theory (TCT) and Information system (IS) success model. Also, this research model is extended to incorporate another two relevant constructs of government provided e-services' continuous usage: privacy risk and user experiences. For collecting data, 459 Bangladeshi citizens were surveyed who have already received government provided e-services, which helped the researchers to test the conceptual model. Collected data was interpreted by using partial least squares Structural Equation Modeling (SME).SEM has become increasingly popular in information systems research, but it has yet to be generally adopted and employed in e-government service research. In this research, it was an aim to shed some insight on the well-known issue of poor utilization of government provided e-services, particularly transactional services, among citizens. Findings of this study confirm the hypothesis that the suggested model had strong predictive ability, since it clarified 58.8% variance in citizen satisfaction and 61.68% variance in ongoing use of government provided e-services.

Key words: *E-government services, User Experiences, Citizen Satisfaction, Continuance Usage, and Bangladesh.*

Introduction:

Advancement in information and communications technology (ICT) and the spread of the internet is leading electronic government (e-government) to be widely adopted around the world as a vital instrument for expanding access to services for citizens(Alkraiji, 2020a).

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E-government features are helping governments throughout the world innovate and improve their public services rapidly with the advent and widespread penetration of information technology(West, 2005, Liu and Yuan, 2015).For individuals, corporations, and other clients of e-government, government provided e-services have been more user-friendly, cost-effective, huge time and money saving in contrast to traditional service delivery and engagement channels and they are being extremely benefited from it(Ma and Zheng, 2019). As a result, it's not surprising that numerous studies show a substantial correlation between e-government service use and user's satisfaction. (Ma and Zheng, 2019). The way citizens and governments communicate has radically changed as a result of advances in ICT. E-government portals are being introduced by a growing number of central governments, states, and local governments around the world in the last decade to empower citizens and enhance public services. In essence, any evaluation of e-government performance hinges on citizen satisfaction, commitment, and dependency on the services delivered. Understanding the connection between government provided e-services and citizen satisfaction is thus critical for improving service quality and increasing citizen involvement and participation(Alkraiji, 2020a).This illustrates that e-government and online public services have made some progress around the world.(Nguyen et al., 2020). When it comes to delivering government provided e-services, they all necessitate a smooth user-friendly interaction between government and citizens (Al-Kaseasbeh et al., 2019).Hence, government provided e-services must therefore emphasize on citizens' demands in order to be successful, which is difficult and perplexing process as the needs of individuals differ from one another and change from time to time (Venkatesh et al., 2012, Glyptis et al., 2020). E-government websites in many nations have made tremendous progress in offering public services, yet even those with the most advanced websites are still lacking on citizen-centric service.This means that a successful e-government initiative requires imaginative policy makers to fulfill people's requirements, as well as valuable scientific contributions that can have a direct impact on public administrations in today's environment (Wirtz and Kurtz, 2016). Consequently, in order for a successful project in the current public administration environment to be e-government, policy makers must constantly develop new e-government strategies to meet citizens' demands (Wirtz and Kurtz, 2016).As an essential first step in information system evaluation, this study contemplate to identify the attributes that lead to user satisfaction with government provided e-services (IS).

2. Theoretical Foundation

2.1 Technology Continuance Theory (TCT)

According to Liao et al. (2009), TCT predicts whether or not users will continue to use at echnology. TCT was described as an effective method for determining an IS's continuance purpose for the complete life cycle of acceptance as an improved model (Liao et al., 2009, Rahietal, 2020). This theory was created by combining three common IS models: technology acceptance model, expectation-confirmation model, and cognitive model to predict long term use behavior of emerging technologies in terms of pertinency and descriptive intensity (Liaoetal., 2009, Rahietal.,

2020). In terms of consistency, this theory makes a major theoretical contribution by integrating behavioral aspects and satisfaction in a single continuance model. Consumer behavior can be affected by emotional meaning in addition to practical factors. According to the TCT, attitude is a variable that reflects individual meaning and captures symptomatic or impulsive significance of consumers. The TCT is an excellent starting point for more research into IT continuity behavior (Khayer, 2019).In this research, TCT was used to explain citizens' intent to continue using e-services provided by the government.

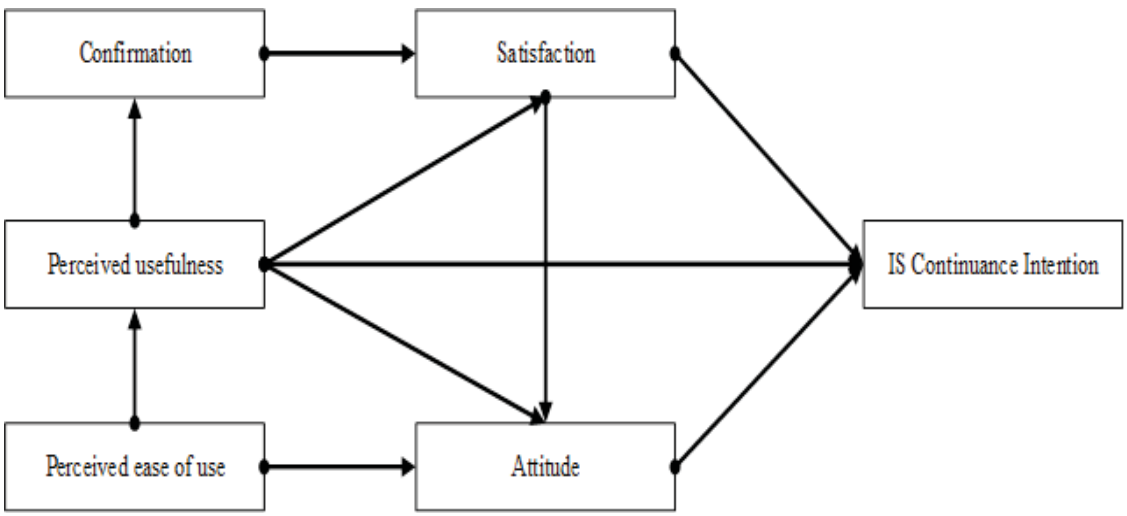

Figure1: Technology Continuance Theory

2.2 Information Systems (IS) Success Model

In the literature, there are many efficacy testing models of information systems which shows how frame works affect their performance. The efficiency mode of information management is the most commonly used of these models. Variables that predict the performance of the information system in various conditions and the irrelationships have been explored in this model. Several important contributions to the understanding of IS performance were made by this model. It presented a basis for classifying the myriad performance indicators of the system and suggested a model of causes and temporal interdependencies between different categories (Seddon 1997, McGill, Hobbsetal. 2003). According to the IS performance model Delone and McLean (2003a), knowledge quality also affects user satisfaction. An IS user's subjective assessment of his or her various interactions with the system is referred to as "user satisfaction." (Seddon 1997).

End user satisfaction can also be used as a metric for measuring the success of a technology. (Bhattacherjee, 2001). To explain the performance measure of the information system (Deloneand McLean, 2003b), the IS success model isused.

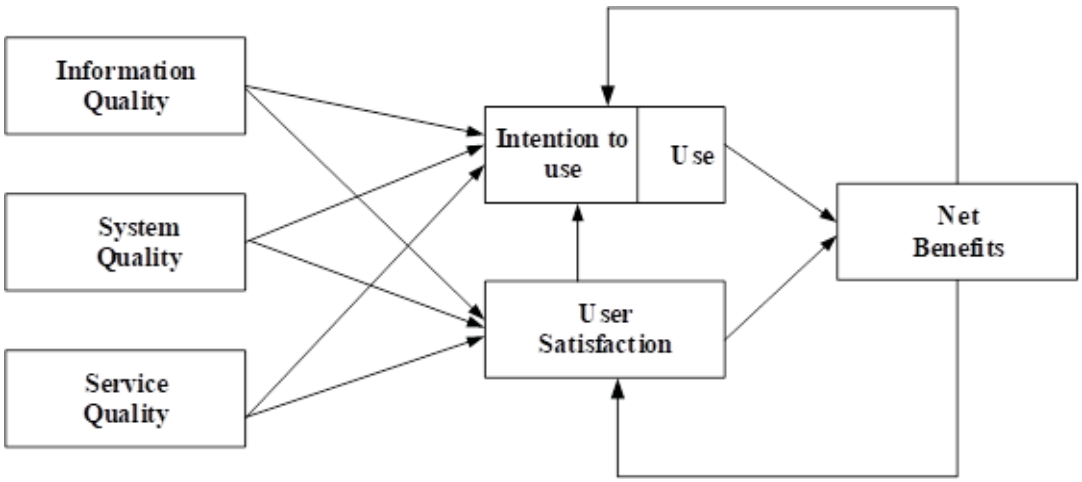

Figure 2: Informationsystemssuccessmodel

3. Hypothesis Development

3.1 Confirmation

The term "confirmation" is the idea that the real use of e-services corresponds to expectations about how that technology will be put to use (Khayer, 2019). Bhattacherjee (2001) states that,the cognitive dissonance happens when pre-expected views do not match the post-purchase experience, and as a result, customers adjust their views to avoid this mismatch. Perceived usefulness and confirmation from previous experience of information system use influence user's satisfaction, while users' confirmation level influences post-acceptance perceived usefulness(Ambalov, 2018, Al-Kaseasbehetal., 2019).A number of studies, for example, have confirmed the link between confirmation and satisfaction (Ayansoetal., 2015, Bae, 2018, Chenetal., 2010). If the initial perception so fusing government provided e-services match the actual experience in this research context, the degree of user satisfaction will be positively influenced (Khayer, 2019).Hence in this research, based on the discussion and empirical support first hypothesis is:

H1. Confirmation of government provided e-services has a positive and significant impact on citizen satisfaction.

3.2 Perceived Usefulness

A user's belief in a system's potential to boost his or her work output is known as its perceived usefulness (Davis, 1989). Perceived ease of use is defined as "the degree to which an individual believes that using a certain system would be devoid of effort" (Davis, 1989). According to the definition of perceived usefulness, whether or not a system is used depends on how individuals believe it will improve their performance (Liaw and Huang, 2013, Yoon and Steege, 2013). Systems

that are considered beneficial by their end-users are considered to be of high quality. Researchers previously have found that perceived utility has a direct impact on behavioral intent to utilize information systems (Terzis et al., 2013). Many advantages exist for those who make use of an IS. Some of these advantages include increased precision, increased output, and increased productivity (Yang et al., 2009). Some research has found a direct association between perceived usefulness and user pleasure and the perceived intention to use usefulness and continuity of usage (Bhattacherjee, 2001).For example, when it comes to government provided e-services in Bangladesh, Liao et al. (2009) found that perceived usefulness was linked to both user happiness and the desire to continue using e-services. According to the findings, when citizens perceive an e-government service to be beneficial, they are more likely to engage with it and enjoy it. Based on the aforementioned discussion and empirical evidence, this study came up with the following hypothesis:

H2. Perceived Usefulness of government provided e-services has a positive and significant impact on citizen satisfaction.

3.3 Information quality

In today's world, it is widely accepted that the availability of high-quality information is crucial to the success of organizations or governments (Hartonoetal., 2010). When it comes to producing useful and accurate data, user's experience is a crucial factor for information quality(McKnightetal., 2002).Information quality is described by Petter and McLean (2009) as the properties of the output of the technology, such as correctness, completeness and relevance of the information, consistency and suitability for use of the information (Fisher and Kingma, 2001). The information's source and content can both be used to evaluate its quality (Bhattacherjee and Sanford, 2006). Studies reveal that users are happier when the quality of the information they receive is higher (Wang and Liao, 2008). User satisfaction is greatly affected by the quality of information available to them, according to a meta-analytic assessment of (DeLone and McLean, 1992) model, which was strongly supported by (Petter and McLean, 2009). Many additional researches have shown similar results (Chiuetal., 2007, Apostolouetal., 2017, Laumeretal., 2017).Considering this, following hypothesis is put forth:

H3: Information quality of government provided e-services has a positive and significant impact on citizen satisfaction.

3.4 System Quality

A system's usability, reliability, functionality and reply time are all referred to as system quality attributes (Petter and McLean, 2009). System quality, DeLone and McLean (1992), is a measure of the actual system that creates the output, not the result itself. Aiming to better understand e-government service quality, this study examines the characteristics and performance conditions of e-government websites. An online system's usability, reliability, adaptability, and response time are all factors that can be used to measure e-government success in the form of system quality (Delone and McLean, 2003b). It signifies the website's technical ability to provide consumers with simple and rapid access to information while ensuring security and reliability (Teo et al., 2008). User satisfaction is determined by aspects such as comfort, accessibility, interactivity,

user-friendliness, stability, and ease of use (Wang et al., 2015). E-government systems' success was measured by the validation of (Delone and McLean, 2003b) model byWangandLiao (2008) who discovered a strong correlation between user satisfaction and system quality. Therefore, the following hypothesis is put out on the basis of this discussion:

H4: System quality of government provided e-services has a positive and significant impact on citizen satisfaction.

3.5 Citizen Satisfaction

Researchers and practitioners have realized in the last decade that importance of citizen satisfaction in e-government and the need for government officials to pay attention to this issue. This is because citizens expect improved service quality through the use of e-government portals, as opposed to the traditional method (Schellong and Mans, 2004). According to a number of studies, citizens' satisfaction with government provided e-services has a positive correlation with their use of these services (Sáetal., 2016, Wirtzand Kurtz, 2016). Post-acceptance expectations were assessed using the citizen satisfaction metric, which was the only one to have a consistent impact on user intention during both the adoption and post-adoption stages. (Anweretal., 2016, Arfatetal., 2018).Citizen satisfaction is a vital and decisive component for e-government service utilization, according to Maliketal. (2016), which can have a significant influence on the success or failure of e-government initiatives. Hence, citizens will be more satisfied with the services they receive through e-government if there have a high level of citizen involvement(Alanezietal., 2010).Because of this, user satisfaction with government provided e-services has a positive impact on regular usage. Thus, the following hypothesis can be considered:

H5. Citizen satisfaction of government provided e-services has a positive and significant impact on citizen Continues to use.

3.6 Privacy Risk

A user's privacy concern is concentrated on their threat of having their personal information leaked. Customers may be concerned about how their personal information is being gathered, stored, and used by service providers. According to Smithetal. (1996)the acquisition, errors, improper access, and illegal secondary use of information are all causes for privacy concern. Privacy is described as the "individual control over the manner and scope in which his or her personal information is disclosed to others"(Hong and Thong, 2013).According to this definition of "privacy," it means "protection of personally identifiable information (PII)," "not disclosing or otherwise making available PPI", "preserving anonymity PPI", and "giving informed consent"(Papadomichelaki and Mentzas, 2012). Privacy could have a significant impact on the use of IT. As a result, citizen satisfaction with government provided e-services may be seen as dependent on their ability to protect their personal information online (Sutantoetal., 2013). If citizens have easy access to government e-application systems, privacy concerns may diminish citizens' desire to use government e-services because of the probable harm caused by online leaks of personal information. Based on the foregoing argument and literature support, another hypothesis could be:

H6: Privacy of government provided e-services has a negative and significant impact on citizen satisfaction.

3.7 User Experience

User experience incorporates a wide range of concepts connected to the human–product interaction, such as functional, emotional, affective, as well as experiential, hedonic, and aesthetic aspects (Lallemandetal., 2015, Lawetal., 2009). The user, the system, and the setting all have a role in the user experience, even if there isn't general agreement on its exact nature and extent. However, IOS (2010)described user experience as "a person's perceptions and responses that emerge from the use or anticipated usage of a product, system, or service."Madariagaetal. (2019) states, the user experience of government papers was evaluated focusing on interaction, information availability, and ease of comfort level of comprehension using an online survey methodology. E-government service users are being more satisfied with their experience than those who do not utilize the services. Thus, we hypothesis as follows:

H7: User experiences of government provided e-services has a positive and significant impact on citizen satisfaction.

3.8 Continuance Usage

Since the cost of retaining current consumers is lower than the cost of attracting new ones, continuance usage has become increasingly important and many academics have devoted much time and attention on it considering many services, including government provided e-services (Yuanetal., 2019, Handarkho, 2020).The continued usage of government provided e-services is a de facto requirement for its growth and development. (Liao et al., 2009), Citizens' self-efficacy, expectancies, and contentment provide governments with possibilities to keep them engaged. Consistent with(Liaoetal., 2009), this study assumes that satisfaction level plays an important role in continuing intention for government services in Continuance usage intentions. The positive experience of utilizing a technology favorably improves users' attitudes for using government provided e-services in the future.

4. Research Methodology

4.1 Measurement instrument development

The research model was tested through a survey instrument. Content validity was ensured by adapting measurement items from the different published and established sources with pertinent context-specific modifications. With a five-point Likert scale (1-strongly disagree to 5 very strongly agree), researcher measured all of the important constructs. The study's control variables were assessed by utilizing established methods from the existing research (Ilmudeen and Bao, 2018). In order to advance lucidity, uniformity, and comprehensibility, the measuring items were pre-tested.

4.2 Data collection

Aconveniencesampleof459Bangladeshicitizenswhohaveexperiencedgovernment provided e-services through government portals was included in a cross-sectional survey. Convenience sampling is a form of unlikely sampling that involves selecting a sample from a population segment that is close to hand (Etikanetal., 2016). Furthermore, it is inexpensive and commonly used in Information Systems (IS) research (Eckmanandde Leeuw, 2017). The information was gathered from January to June2020. Researcher distributed 520 questionnaires, among them 459 were returned and all of them were assembled for further analysis.

4.3 Preliminary analyses

Table1:Respondents' statistics of the sample

Variables	Description	Frequency	Percentage
Gender	Male	261	56.86%
	Female	198	43.14%
Age	Below30	145	31.59 %
	31-39	230	50.11%
	Above40	84	18.30%
Education	Secondaryschool	52	11.33%
	Bachelor	223	48.58%
	Postgraduate	157	34.21%
	Morethan3	27	5.88%
E-government usage	Lessthan2years	142	30.94%
	3-5years	243	52.94%
experience	Above5years	74	16.12%

Source: SPSS, Compile by Author

4.4 Preliminary statistical tests

Prior to analyzing the data, numerous statistical tests must be run to ensure that the dataset meets a number of presuppositions related to multivariate analyses (Ooi et al., 2018, Khayer et al., 2020c). First, the researcher used Pearson's Skewness and Kurtosis parameters to test the normality of the data. These parameters should be in the range of -2.58 to +2.58. All of the variables' values were within an appropriate range, according to the results (see Table 2).

Table 2: For the research constructs, skewness and kurtosis

Statistics	CF	PU	IQ	SYQ	PR	UE	CS	CGES
Skewness	-.532	-.736	-.832	-1.260	-.620	-.715	-.592	-.711
Kurtosis	.141	.310	-.832	3.046	.299	.244	.765	.535

Source: SPSS, Compile by Author

Notes: CS = Citizen Satisfaction, CF= Confirmation, CGS= Continues to use, IQ= Information Quality, PU= Perceived Usefulness, PR= Privacy Risk, SYQ= System Quality, UE= User Experiences

Table 3: Variance Inflation Factor (VIF)

Constructs	Citizen Satisfaction	Continues to use
CS		1.00
CF	3.892	
IQ	3.114	
PU	3.082	
PR	2.936	
SYQ	1.828	
UE	4.772	

Source: Smart PLS, Compile by Author

Table 4: Correlation Matrix and Square root of AVE

	CF	CGS	CS	IQ	PR	PU	SYQ	UE
CF	0.866							
CGS	0.726	0.819						
CS	0.682	0.785	0.781					
IQ	0.726	0.718	0.651	0.813				
PR	0.717	0.654	0.587	0.616	0.833			
PU	0.741	0.666	0.667	0.668	0.747	0.807		
SYQ	0.515	0.605	0.592	0.627	0.554	0.560	0.802	
UE	0.696	0.729	0.687	0.776	0.749	0.750	0.552	0.828

Source: Smart PLS, Compile by Author

4.5 Non-response bias

The researcher used the independent t-test to analyze the discrepancies between all main variables used in the study model, similar to (Ooi et al., 2018, Khayer et al., 2020c), and the result suggested that no substantial differences were found. We used a chi-squared test for independence to confirm our findings, and the results revealed no major differences. As a result, there was no evidence of nonresponse bias in the dataset used in this analysis.

5. Measurement Model

Examining the measurement models is the first step in assessing PLS-SEM performance. Reflective and formative structures have different relevant parameters. Researchers would then evaluate the structural model if the measurement models follow all relevant requirements (Hair et al., 2019). Like most statistical approaches, PLS-SEM has guidelines for evaluating model results (Hair et al., 2019). The research instrument's internal reliability, convergent validity, and discriminant validity were evaluated using the measurement model (Khayer et al., 2020c). Reliability requirements for each construct must have a value of at least 0.70 before they can be considered reliable internally (Henseler et al., 2015, Khayer et al., 2020a); the results in every single example proved this to be true (Table 5).

5.1 Convergent validity and discriminant validity

The reflecting measurement model evaluates the convergent validity of each component calculation at this point. Convergent validity is evaluated by calculating the average extracted variance (AVE) for all items on each of the constructs (Hair et al., 2019). Table 4 shows that the AVE values were over the suggested level of 0.50, as can be seen from the data (Fornell and Larcker, 1981). Although all factor loadings (>0.50) and composite reliability (>0.70) were over 0.70, the constructs were found to be legitimate (Khayer et al., 2020b). Possible overlaying factors' correlation was also studied for discriminant validity. Square root of AVE was greater than the correlation between each variable in this study for all factors (see Table 4).

Table 5: Construct Reliability and Validity

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Confirmation	0.833	0.837	0.900	0.750
Continues to use	0.836	0.838	0.891	0.671
Citizen Satisfaction	0.840	0.841	0.887	0.610
Information Quality	0.744	0.755	0.854	0.662
Perceived Usefulness	0.853	0.857	0.901	0.694
Privacy Risk	0.866	0.867	0.903	0.652
System Quality	0.815	0.818	0.878	0.643
User Experiences	0.886	0.887	0.916	0.686

Source: Compile by Author

5.2 Discriminant validity

Hair et al. (2019) defined discriminant validity as the degree to which a construct is empirically distinct from other structural models' constructs. According to Fornell and Larcker (1981), all reflectively examined constructs, including AVE, should be compared to their squared inter-construct correlation. Both model constructs' mutual variance should not be greater than their AVEs. However, recent literature suggests that this measure is ineffective for assessing discriminant validity. Henseler et al., (2015) demonstrate that the Fornell-Larcker criterion is ineffective. In the Fornell–Larcker criteria, a latent construct shares more variation than any other model indicator with its indicators. This can be seen in Table 4, where the on-diagonal values are higher than the off-diagonal values. These measures have higher loadings on their construct than on other constructs, as shown in Table 4. All constructs rank below the cutoff, indicating that discriminant validity is appropriate.

5.3 Heterotrait-Monotrait Ratio (HTMT)

The heterotrait-monotrait (HTMT) ratio of correlations was expressed by (Henseler et al., 2015) . There are several ways to calculate the HTMT, however Hair et al. (2019) used the mean value of item correlation across constructs divided by the geometric mean of average correlations for items measuring the same construct. In the literature, a maximum threshold of 0.9 is proposed. The HTMT matrix is shown in Table 6, with values lower than 0.9 indicating adequate discriminant validity. All of the constructs have a score below the cutoff, pointing out that discriminant validity is appropriate.

Table 6: Heterotrait-Monotrait Ratio (HTMT)

	CF	CGS	CS	IQ	PR	PU	SYQ	UE
CF								
CGS	0.870							
CS	0.811	0.833						
IQ	0.819	0.810	0.818					
PR	0.849	0.773	0.688	0.769				
PU	0.871	0.782	0.778	0.829	0.868			
SYQ	0.599	0.733	0.714	0.808	0.663	0.662		
UE	0.871	0.862	0.788	0.857	0.866	0.857	0.646	

Source: Compile by Author

Note: CS = Citizen Satisfaction, CF= Confirmation, CGS= Continues to use, IQ= Information Quality, PU= Perceived Usefulness, PR= Privacy Risk, SYQ= System Quality, UE= User Experiences

5.4 Hypotheses testing: results of structural model

If measurement model becomes satisfactory, then the researcher should review PLS-SEM results for analyzing the structural model. Researchers should also use the PLS predict process to evaluate their model's ability to predict outcomes outside of the data set(Shmueli et al., 2016).

The hypothesis and path coefficients were tested using the bootstrapping method with a significance level of 0.05 (p 0.05). Path coefficient (b) and t-statistics over 1.96 at a 5% level of significance were used to examine the association between dependent and independent variables(Hair et al., 2013)Shamim</author><author>Chiong, Raymond</author><author>Dhakal, Sandeep</author><author>Sorwar, Golam</author><author>Bao, Yukun</author></authors></contributors><titles><title>A two-stage structural equation modeling-neural network approach for understanding and predicting the determinants of m-government service adoption</title><secondary-title>Journal of Systems and Information Technology</secondary-title></titles><periodical><full-title>Journal of Systems and Information Technology</full-title></periodical><dates><year>2019</year></dates><isbn>1328-7265</isbn><urls></urls></record></Cite></EndNote>. From the results of this study, the adjusted R^2 value for citizen satisfaction was 0.588, that means, 58.8% of the variance in citizen satisfaction can be interpret by the factors. Again, the adjusted R^2 value for firm continues usages of government provided e-services(CGS) was 0.616, that implies, 61.6% of the variance in intention to continues usage can be illustrated by the citizen experiences and satisfaction in government provided e-services in Bangladesh. Therefore, the proposed model is statistically confirmed.

Path coefficient (β) and t-statistics were used to examine the correlations between endogenous and exogenous factors in this study. Data from the testing of all hypotheses can be found in Table 7.The results shows that hypotheses H1 (CF->CS, β=0.245, t= 4.059), H2 (PU-> CS, β=0.214, t= 2.702), H4 (SYQ-> CS, β=0.237, t= 5.596), H5 (CS ->CGS, β=0.786, t= 41.267) and H7 (UE ->CS, β=0.166, t= 2.555) were statistically significant. The hypotheses H3 (IQ ->CS, β= 0.087, t= 1.357) and H6 (PR ->CS, β= -0.058, t= 1.043) were statistically not significant. Hence, *H1*, *H2*, *H4*, *H5* and *H7*weresupported, and *H3andH6was* not supported. Results imply that the relationships of conformation, perceived usefulness, Information quality, system quality, citizen satisfaction, privacy risk, user experiences and continues to usages with user experiences and satisfaction on government provided e-services are empirically confirmed.

Table 7: Hypothesis Results

Hypotheses	Paths	Coefficients (β)	T-Statistics	P-Value	Comments
H1	CF->CS	0.245	4.059	0.000	Supported
H2	PU-> CS	0.214	2.702	0.007	Supported
H3	IQ ->CS	0.087	1.357	0.175	Not Supported
H4	SYQ-> CS	0.237	5.596	0.000	Supported

H5	CS ->CGS	0.785	41.267	0.000	Supported
H6	PR ->CS	-0.058	1.043	0.297	Not Supported
H7	UE ->CS	0.166	2.55	0.011	Supported

Source: Smart PLS, Compile by Author

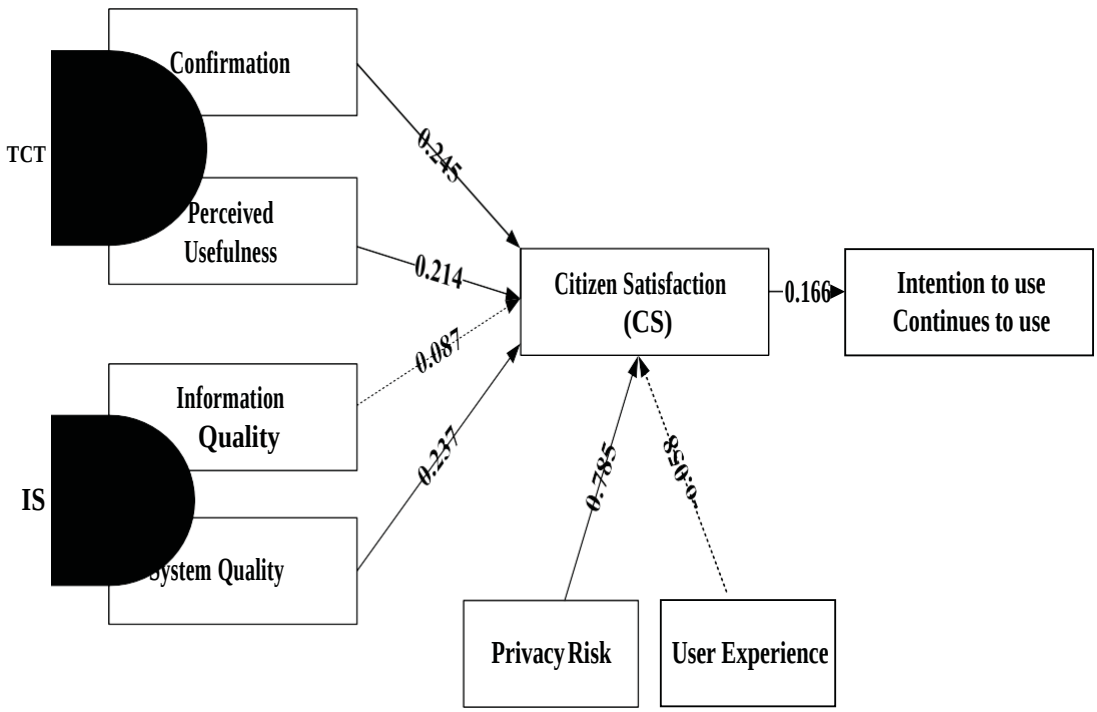

Figure 3: Revised model after tested hypothesis

R^2 is known as in-sample predictive power (Roldán and Sánchez-Franco, 2012). In the 0-to-1 range, a higher R2 number denotes a more powerful explanation. R^2 values of 0.75, 0.50, and 0.25, respectively, can be deemed substantial, moderate, and weak (Hair et al., 2019, Henseler et al., 2009). An R^2 score of 0.10 is deemed appropriate when predicting stock returns in some fields, for example but might vary widely depending on the context (Raithel et al., 2012). It is vital to note that the R^2 is a direct result of how many predictor constructs are included in a study. R^2 should be considered in context of the study and compared to R^2 values from similar studies or models of the same complexity. High R^2 values can also be caused by an overly perfect model fit to the actual data set. R^2 values for citizen satisfaction and utilization of government provided e-services suggest that all endogenous dimensions have strong predictive relevance.

We used Stone-Geisser Q^2 to see how well the endogenous constructs predicted future outcomes. All Q^2 readings are positive and considerably over zero in every case (Table 8). Q^2 values for citizen satisfaction and consistency to use are 0.333 and 0.389, which indicates that all endogenous dimensions have significant predictive significance.

Table 8: Results of R2 and Q2

Endogenous latent variables	R^2	Q^2
Citizen Satisfaction	0.588	0.333
Continues to use	0.616	0.389

Source: SmartPLS, Compile by Author

6. Discussion on the Findings

Multivariate analysis is performed first for benchmarking purposes. The findings of multivariate analysis, which show that citizen satisfaction with e-services of government is greatly influenced by conformation, perceived usefulness, user experiences, information and system quality. Likewise, results also shows that conformation have positive influence on citizen satisfaction towards continuance usage of government provided e-services. A path coefficient of 0.245 (p 0.001) reveals that confirmation has an effect on citizen satisfaction that is positive and substantial. How much citizens are satisfied with their government provided e-services is influenced by confirmation in a positive way. As a result, citizens become satisfied and find the services helpful if their expectations are met. When citizens are happy with the government provided e-services, this encourages them to keep using them.

Perceived usefulness and citizen satisfaction have a direct and positive correlation. According to our findings, there is a connection between the two variables (see Figure 3 above). The association between perceived usefulness and satisfaction was substantial and positive (coefficient of 0.214, p 0.001). The study found that people' participation is affected by perceived usefulness and satisfaction of different services. (Gao et al., 2018).

Hypotheses 3 explored the association between information quality and citizen satisfaction. According to the findings, there is no association between the two variables (= 0.087, $p > 0.05$) which also supports previous study (Teo et al., 2008, Zhou, 2013). Several past research on the success of IS have shown evidence for the concept that a higher quality of information brings greater happiness for users (Floropoulos et al., 2010).

From a technological aspect, this study proved that high-quality information and a well-designed system are two important predictors of the sustained usage of e-government. We posited an association between user satisfaction and system quality. Satisfaction is directly linked to system quality, according to our findings. While the correlation between satisfaction and continued use is 0.785 (p0.001) in Figure 3, this correlation is just 0.237 (p0.001) between service quality and

satisfaction. As a consequence, residents' satisfaction will rise as a result of efforts to strengthen the e-government system. People who use government provided e-services are more loyal to those services if they receive high-quality e-government offerings.

Privacy risk was found to have no effect on customers' satisfaction, according to these findings. This means that hypothesis 5 was rejected ($p > 0.05$) since the data did not support it. Many e-government studies have found similar results, but this one was unexpected (Rahman et al., 2020, Veeramootoo et al., 2018, Bhuasiri et al., 2016, Zhou and Li, 2014, Alawneh et al., 2013).. According to Rahman et al. (2020), citizens' positive opinions about the service provider reduces the impact of privacy risks. Although some academics have found a relation between user's privacy risk and satisfaction, others have found no such correlation.

These research findings suggested that privacy risk did not affect user satisfaction. Therefore, Hypothesis 5 was not supported ($\beta = -0.058$, $p > 0.05$). This result was unanticipated yet it is consistent with some e-government research findings (Rahman et al., 2020, Veeramootoo et al., 2018, Bhuasiri et al., 2016, Zhou and Li, 2014, Alawneh et al., 2013). For instance, in the e-government service context (e.g. e-filling), Rahman et al., (2020) argued that when citizens have a favourable view of the service provider, privacy risks become less relevant. But many researchers find significant relationship between privacy risk and user satisfaction. Several online services similar to e-government describes the association between privacy and satisfaction, for instance virtual gaming (Chang et al., 2011), online shopping and store(Van Slyke et al., 2006, Dharmesti and Nugroho, 2013),software firewalls (Kumar et al., 2008),health dataleak(Bansal and Gefen, 2010), social networks and medias(Xu et al., 2013), Blogs (Chai et al., 2011), and messaging platforms (Lowry et al., 2011) . Result shows that most of the citizen are not concern modern technology in Bangladesh. Citizen who uses Facebook, Uber apps and e-Health service regularly they are feel more satisfaction using government provided e-services.it is evident that the government should pay more focus on arranging different awareness programs and development of e-government service apps.

There was a clear association between citizen satisfaction and the quality of the user experience, as seen through the perspective of the users. This means that user experience measures were found puissant in the level of citizen satisfaction. This means that if citizens are happy with their e-government experience, there is a good chance that government provided e-services will yield efficiency gains. Some similar contexttoe-government shows the association between user experiences and satisfaction, such as sport tourism consumer experiences (Bouchetetal., 2004), gamification improve user experience (Hsuand Chen, 2018), ipd user experience (Hartand Sutcliffe, 2019), user experience from online customer (Yangetal., 2019)and User experience of government documents (Öztürkand Rızvanoğlu, 2011, Chenetal., 2020).

A positive correlation between user satisfaction and continued usage of government provided e-services was found in the results ($\beta= 0.785$, p 0.001) which supports Hypothesis 7. Research shows that government e-services can improve efficiency if citizens are satisfied with their experience with public service providers.

6.1 Theoretical implications

The theoretical contributions of this study to the existing literature on the use of information systems through time are significant. Using the strengths of TCT and IS success models, an integrated model was proposed to better assess citizen happiness and its impact on the implementation of government provided e-services in Bangladesh. As a result of these findings, the TCT model is a useful tool for explaining not just why people eager to use government provided e-services regularly but also why they conform to, value, and are happy with the technology. It is clear that the TCT model is a powerful tool for describing the usage of the information system as well as the application of technology.

Since there is a need of research on the long-term use of emerging technologies like government provided e-services, this study describes an integrated model that combines the strengths of the TCT and the IS success models. Additional context-specific variables such as privacy risk and user experiences are included in the model to better comprehend the research situation. Model/ theory/framework combinations have been suggested by prior researchers as a way to improve the explanatory power of efforts to evaluate new technologies (Khayer et al., 2020a). 58.8% of the variance in citizen satisfaction and 61.6 percent of the variance in citizens' willingness to use electronic government services could be described by the suggested model, according to the study's findings, which suggest that it's a high degree of predictive powered model, which means that TCT's explanatory power has been demonstrated, and its usage in e-government research is quite promising. This study enriches the understanding of government provided e-services by developing a theoretical model for the future references.

6.2 Practical implications

In Bangladesh, e-government planners, strategists, administrators, and policymakers will benefit greatly from this study. This study has some practical implications for the policy makers on what makes citizens happy and keeps them using government provided e-services. As a result of these findings, it appears that government agencies using electronic means should prioritize the satisfaction of their citizens by confirming their initial expectations. In other words, users should get exactly what they expect. People who use government provided e-services need to be given special attention in the search for new ways to increase their level of satisfaction. E-government service providers should improve the overall quality (i.e. conformation, perceived usefulness, information and system quality) as well as background factors (i.e. privacy risk and user experiences) of the service to raise citizen satisfaction, according to this study. Citizens with low technical expertise should be able to readily interact with these services because they should provide high-quality services with user-friendly interfaces. Increased funding for government R&D activities is needed to ensure electronic government services have all the features and functionality citizens expect.

Privacy risk and user experiences were found to have a significant impact on citizens' contentment and willingness to use government provided e-services. Additionally, the administration of

government provided e-services must grasp the nature and associated benefits of user experience when it comes to the usage of IS in order to improve citizen happiness and evaluate the privacy risk of using e-government service. Another way to increase the eagerness of consumers to use the online framework is to educate and reassure them about its usefulness before implementing it. In the end, the study's findings will have an impact on policy. By paying more attention to governance and strategic management of both the e-government's supply and the demand-side, government can increase and sustain citizens' regular use of e-services.

Limitations and future research directions

This study solely looked at e-government from citizens' prespectives, or type G2C one of the four themes that e-government intends to solve. Consequently, there is still a need for study into additional types of components, such as the G2E, G2B, or G2G. Future research should be cautious when generalizing and applying the findings of this study to the three categories listed above.

The conclusions of this study may lead to a continued use of government provided e-services in Bangladesh. The study's findings and implications for specific government provided e-services (such as e-filing, e-tax, e-voting, e-land service, and e-trade license) have yet to be validated. As a result, future studies should put the model to the test in specific e-government service situations in order to verify the findings.

Finally, because this study only looked at information provided by Bangladeshi citizens, the conclusions are country-specific and cannot be extrapolated to other parts of the world. Other countries' data should be collected and compared with the findings of this study in future studies to discover if there are any changes.

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