

The Acceptance of Mobile Applications for Government Services (MG- App): A Study From Users' Perspective

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ABSTRACT

Purpose: The objective of this study is to identify and analyze various factors that influence users' acceptance of mobile government applications (mG-Apps).

Methodology: This study has constructed a research model grounded on the Unified Theory of Acceptance and Use of Technology (UTAUT). Further, information quality and trust, two vital constructs, have been added to the UTAUT to enhance the predictability of the model. Data collected from a sample size of 212 from Bangladesh has been used to test the model.

Findings: We have employed the popular structural equation modeling (SEM) to assess the data. Our results suggest that the significant elements impacting users' acceptance of mG-Apps are performance expectancy, effort expectancy, facilitating conditions, information quality and trust. In contrast, social influence is identified as an insignificant predictor.

Practical Implications: This research will assist different government agencies, policymakers, and practitioners in the creation of timely and effective policies to develop and promote myriad mG-Apps to render services to the citizens.

Originality/Value: This research has offered an innovative framework to assess the acceptance of mG-apps by the citizens. This unique model has been constructed by expanding UTAUT with two key contextual constructs such as information quality and trust. We believe, this study will contribute to the extant body of theory surrounding the use of mobile government, e-government, and mobile applications development.

Limitations: This study only looks at the opinions of people in Bangladesh, hence the researchers recommend that the proposed study model should be validated by using data collected from other similar countries.

1. Introduction

Major developments in technology in recent years have significantly improved a number of mobile device features. Besides, most technology advancements in the telecommunications industry have made it possible to provide services to citizens more quickly (Biel, Grill, & Gruhn, 2010). Innovative hardware and software capabilities allow governmental and commercial organizations to provide mobile consumers a wide variety of services (Payne, 2013). Both private and public institutions have a significant chance to minimize the digital divide that exists between the general population and the government because of the proliferation of modern mobile devices such as smartphones, iPads, and

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other tablets that can run applications. For instance, after mobile applications for online payments were introduced, mobile device usage in African nations significantly increased from 50% to 58.4% (Al-Azizi, Al-Badi, & Al-Zrafi, 2018). These data signify the need to use mobile apps to improve public services.

Many government organizations in Bangladesh have begun to invest in and devote funds to projects that would leverage mobile applications to put their resources into action. Mobile applications provide a variety of internet-based services and are viewed as promising new markets for Bangladeshi government stakeholders to interact and communicate with one another. The mobile services are widely available and practical. People have the option to use mobile apps to conduct many types of transactions, such as financial or instructive ones. Apps for mobile devices allow users to pay bills, report violations, and communicate with authorities (Naqvi & Al-Shihi, 2014). However, research has shown that past government-run online programs have been either ineffective or had significant delays in being adopted, and the objectives of mGov adoption have not been met thus far (Gao, Krogstie, & Siau, 2014). For instance, in the context of underdeveloped countries, 35% of eGov programs were determined to be unsuccessful, only 15% of projects were successful, and 50% were only partially completed (Napitupulu & Sensuse, 2014).

There has been a rise in the quantity of government-related mobile apps recently since mobile communication technologies have developed. "Electronic government" (hereinafter referred to as "eGov") is defined as "the use of ICTs and their application by government to offer information and public services to the populace". Governments are increasingly employing contemporary methods to reconsider their services and offer online services to the public (Veeramootoo, Nunkoo, & Dwivedi, 2018). On the other hand, the public tends to view the use of mobile apps for government services with doubt and distrust (Dwivedi et al., 2017). However, among the most crucial resources for mobile governance (mGov) is thought to be smartphone apps (Abdelghaffar & Magdy, 2012). Due to the portability of mobile devices and their ability to enable 24/7 Internet access, mobile applications are currently employed extensively across practically all corporate and government sectors (Al-Masaeed & Love, 2015). As a way to provide citizens with more convenient and timely services, mobile applications are increasingly being used by the government. Currently, many governments are developing mobile apps to provide vital services to their citizens, thus it's important to assess their acceptance (Rana & Dwivedi, 2015). The term "Mg-App" is used frequently in this study to refer to apps for government services on mobile devices.

The prior research relating to mobile use for government services in Bangladesh is at nascent stage. Thus, this study aims to provide insights about various determinants of using mobile apps for government services and to propose strategies to enhance accessibility and convenience for users. Specifically, the goals of this research are to (i) determine the predictors and (ii) analyze those predictors of mG-Apps adoption in Bangladesh. We use structural Equation Modeling (SEM) approach to accomplish our research goals. The first objective is achieved by investigating the literature. The second objective is achieved by testing hypotheses.

In the first part of this report, the introduction is written where the whole summary of this report is included. The remaining portions of this article are constructed as follows: literature review is presented in Chapter 2 which includes both table of important literature and description of other literature. In chapter 3, theoretical framework of this report is written which includes description of theory, model of this research and construct and hypothesis of that model. Analyzing the data and drawing conclusions is covered in the fifth chapter. Chapter six covers the discussion of the analysis. Research implications are narrated in Chapter 7. Finally, chapter 8 presents the final thoughts, caveats, and directions for future study.

2. Literature Review

2.1 An Overview of Government Services Available Online in Bangladesh

The notion of mobile government is taken from Electronic government. E-government is a system that enables cooperation between the government, its citizens, and its several departments. The primary goal of E-Gov is to provide government stakeholders with efficient and cost-effective services (Al-Azizi et al., 2018). The concept of e-Bangladesh was formed in 2002 to administer e-Gov infrastructure and technology projects for residents, according to Sadik Hasan (2003). Bangladesh's ranking for technological usage has improved since 2002, according to a 2014 UN study (United Nations, 2014). Bangladesh is ready for e-Gov, according to this ranking. However, many in Bangladesh are unwilling to adopt new technologies. This stops the public from collecting government benefits. The Bangladeshi government wants to provide efficient and engaging services. Bangladesh's imperative for enhanced telecommunications infrastructure is a primary concern. Government bodies have recently created improvement in mobile services.

2.2 Adoption of mobile government

In recent years, several studies have looked into how m-Gov is being used (e.g., Liu et al., 2014; Ahmad & Khalid, 2017). A research project carried out by Shareef et al. (2012) wanted to understand citizens' willingness to use m-Gov services. Their research technique for mobile government acceptance varies from the government website. Liang et al. (2017) employed the basement theory framework to evaluate the adoption of e-Gov cloud technology in China they found organizational, technological, and cloud trust factors drove e-Gov cloud service uptake. Liu et al. (2014) researched m-Gov adoption in the countryside of China and found TAM components and honesty determined m-Gov acceptability. Ahmad and Khalid (2017) performed study in the UAE and found that, in addition to TAM components, cost, trust, social impact, service variety, and demographic characteristics influenced consumers' behavior toward mobile government services. Table 1 shows review of some relevant literature.

Table 1.
Literature Review

Author name and year	Objective of the paper	Methodology	Theory/ Model	Findings
(Sharma,Al-Badi, Rana and Al-Azizi, 2018)	Analyzing the plans to use mobile apps for government services (mG- App) in Oman	This research broadened the scope of the UTAUT model by incorporating two new concepts: trust and information quality. Five hundred and thirteen users of a smartphone app in Oman provided data for this research.	- Structural equation model. - Neural network model	The findings revealed that people's faith in mG-App and their expectations for its performance are the two most influential elements in their propensity to utilize it.
(Hajiheydari and Ashkani, 2018)	The goal of this study is to find out what factors directly or indirectly affect how people in Iran use mobile applications. In other words, this study looks at how users make decisions,	In this study, 39 hypotheses were made and put into nine groups based on where they came from, such as TAM and TPB. Structure equation modeling was used to analyze the data and evaluate the model and hypothesis with a sample of 1348 possible users of mobile applications in Iran.	- Structural Equation Model	Even though several internal and external variables were looked into, this paper suggests that you focus on how satisfaction affects your intentions. The report's findings revealed that trust had a more pronounced impact on

	taking into account things like subjective norms, attitude, perception, and quality.			subjective norms, while perceived usefulness and simplicity of use had a bigger influence on behavioral control.
(Ahmad and Khalid, 2017)	The objective of this research is to find out what makes people in a developing country more likely to use mobile government (m-government) services.	The study is grounded on a self-administered questionnaire survey of 120 participants in the United Arab Emirates (UAE). The study used sophisticated statistical techniques to examine an expanded version of the Technology Acceptance Model (TAM) that incorporates the variables of social influence, trust, number of services, perceived usefulness of information technology, cost, and demographic profiles.	- Technology Acceptance Model (TAM)	The findings of this study indicate that individuals in the UAE are more inclined to utilize m-government services if they have confidence in and can be convinced by the opinions of others.
(Almarash deh, 2018)	Researchers looked into the elements that affect individuals' willingness to use mobile government services.	- Online survey of 536 respondents. - Quantitative research - Hypothesis testing	- Structural Equation Model	Provides evidence that mobile government facilitate and helps citizens to access government service in a better way than before.
(Zhu and Hou, 2021)	In pursuit of the objective, the study seeks to assess the user experience of mobile applications utilized for government services, as perceived by users, and provide recommendations for enhancement.	Analyzed in three stage. - User experience evaluation index using literature - Survey through questionnaire - Empirical research using data of four provinces of China	- Emotional design theory, as proposed by Donald Norman. Entropy methods - Grey correlation analysis method	Some problems have been found with the way mobile apps for government services are being built in China, such as the same design for all interfaces, complicated ways to join in, no interactive features, and no way to understand government information.
(Al-Hubaishi, Ahmad and Hussain, 2017)	To figure out the different parts of service quality and how they affect mobile government services.	From the literature on m-development government's and change from e-government to service models, quality dimensions for m-government services were taken. This helps us figure out what aspects of service quality are needed to make m-government more efficient, reliable, and responsible. The dimensions are shown in the context of m-government service quality as a whole.	- Donald Norman's theory.	Using a taxonomy of six categories, this research has identified 20 characteristics of mobile government sub-quality.

(Chen, Vogel and Wang, 2016)	Studying how different aspects of mobile and wireless technology (MWT) affect m-Government users' experiences is important. With this in mind, this study aims to (1) identify seven mobile web and texting (MWT) capabilities of m-Government and (2) investigate the mechanism by which these functions influence end-user satisfaction.	This study develops a research paradigm by integrating the perspectives of task-technology fit and theory of procedural fairness. This is a study that utilizes quantitative research methods. A survey was conducted in China, where 449 individuals with extensive expertise were requested to complete a questionnaire.	- TIFmodel - Structural Equation Model	Users' satisfaction with government services is higher when they are provided with the three essential procedural elements, namely transparency, information accuracy, and voice.
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Source: Authors Compilation

2.3 Mobile Government Applications

Most people will use mobile apps for government services if they trust them and think they will work well (Sharma, et al., 2018). In their study they used a structural equation model and a neural network model. Besides in the UTAUT model, two additional constructs were included in their research. Information and trust are these two concepts. According to a survey of UAE nationals, social influence and trust are not negatively correlated with end users' willingness to utilize apps for government services on mobile devices (Sharma, et al., 2018). Researchers have shown that mobile government makes it simpler for people to access government services (Almarashdeh, 2018). Researchers employ the structural equation modeling technique to demonstrate this. To verify this theory, many hypotheses are developed and investigated.

From what we've talked about so far, I think there is a gap in the literature about how mobile applications are used in government services. I can't find any direct report regarding this issue. In some literature, some parts of this topic are discussed only. Like in the literature, there is a discussion about the adoption of mobile applications for other countries but there is no article indicating that mobile applications have been adopted in Bangladesh for the provision of government services. Consequently, a study is currently being conducted to identify the elements that impact individuals' choices to utilize mobile applications for accessing government services. A model was created as part of this study to elucidate the factors driving the utilization of mobile government services in Bangladesh.

3.Theory, Model and Hypotheses

3.1 Theory and Proposed Model

We have used the popular UTAUT model which is widely used to assess any emerging technology adoption from users' perspective. Information systems(IS) research uses UTAUT, a model based on eight technology adoption models and the model analyzes human behavior and technology intent (Venkatesh, Morris, Davis, & Davis, 2003). By contrasting eight widely accepted frameworks for identifying how individuals respond to new technologies, Venkatesh et al. (2003) developed an extensive model that integrates the insights of all of them. The UTAUT concept was developed for the express purpose of new technology adoption. Numerous studies suggested that UTAUT could be used to study IS acceptance and success in emerging nations (Gupta, Dasgupta, & Gupta, 2008). Our research is based on this model since it is unified and best represents other technology acceptance

models. Performance expectancy, effort expectancy, social influence, and facilitating factors make up the UTAUT model.

In addition, we have incorporated two relevant contextual constructs such as trust and information quality with the existing UTAUT, which has enhanced the predictive capacity of the model. Government mobile applications are not fully captured by the UTAUT's constructs only. Government IS services require trust (Hung, Chang, & Kuo, 2013). For this we include trust in our research. In order for eGov services, such as mGov, to be successful, government agencies must effectively share pertinent information with commercial, public, and municipal organizations, as well as the general public (Dwivedi et al., 2017). Numerous studies have investigated the trust and risk involved in online (e.g. Luo, Li, Zhang, & Shim, 2010; Alalwan, Dwivedi, Rana, & Simintiras, 2016). We have no knowledge of any research that particularly examine the impact of trust and perceived threat on the acceptance of government-issued mobile apps. Trust has been recognized as a significant exogenous variable in this study on mGov. Besides to spread mobile government, information quality plays an important role. For this we include information quality as one of the constructs.

Figure 1 represents the research model that is founded on what we've talked about so far. It is thought that UTAUT constructs, as well as trust and the quality of information, are what make people use mobile apps for government services.

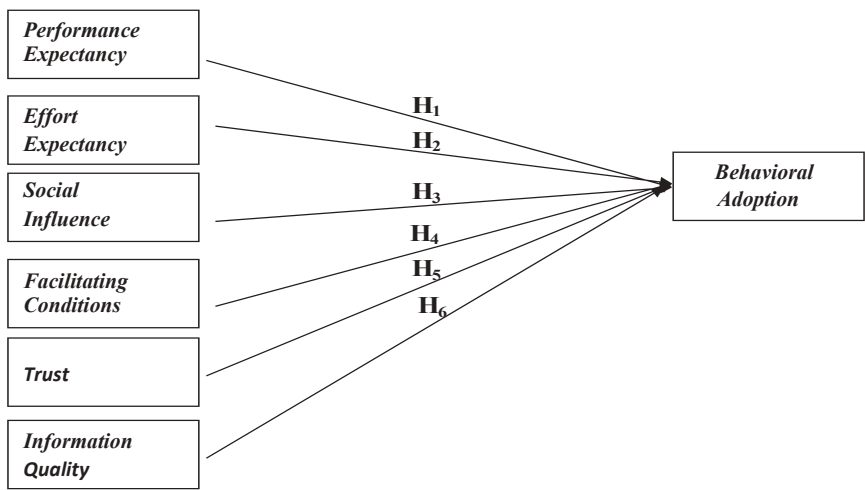


Figure 1.
Proposed Research Model.
Source: Authors Developed.

3.2 Constructs and Hypothesis
3.2.1 Performance Expectancy

Performance expectancy is approximately how much does a person expects new technology to improve their work performance (Venkatesh et al., 2003). As predicted by the UTAUT model, research, performance expectancy predicts behavioral intention in order to use cutting-edge technical knowledge (Alalwan, Dwivedi, & Rana, 2017). We hypothesize that performance expectancy affects mG-App users' behavior intentions. If they want government services on demand, the citizens of Bangladesh must use smartphone apps. Alalwan et al. (2017) validated that expectancy of performance affect Middle Eastern mobile technology adoption. Thus, we hypothesize:

H1. Performance expectancy and intention to use mGApp are positively related.

3.2.2 Effort Expectancy

Effort expectancy" is a person's estimate of the mental and physical effort required to use a system or technology (Venkatesh et al., 2003). Time and effort spent learning a new information system affecting usage intentions is suggested by the UTAUT model. Technology adoption studies (e.g. Alalwan et al., 2017; Hanafizadeh et al., 2014) show that effort expectancy strongly influences behavior. Al-Busaidi (2012) noted that users are less likely to use complex information systems. The widely used TAM (Davis, 1989) acceptance model states that consumers will adopt modern technology when this is easy to use and doesn't require more work. mG-Apps, which require expertise and effort, may affect behavioral adoption to use mobile apps. Thus, this study hypothesizes:

H2. Effort expectancy and intention to use mG-App are positively related.

3.2.3 Social Influence

When consumers are unfamiliar with new services, reference groups may influence their adoption (e.g. Ahmad & Khalid, 2017; Venkatesh et al., 2012). Social effect refers to the degree to which individuals think that their relatives, friends, coworkers, and other close acquaintances anticipate them to utilize a certain technology (Venkatesh et al., 2012). Social influence determines mobile commerce adoption, according to Chong (2013). According to Leong and et al., (2013), in Oman, social influence may affect mGApp use. According to prior research, social influence may alter behavioral adoption (Alalwan et al., 2017). Thus, our hypothesis:

H3. Social influence is positively related to the acceptance of mG-App.

3.2.4 Facilitating Conditions

The term "facilitating condition" refers to the extent how an individual views the presence of an administrative and technological infrastructure that enables the effective utilization of government services (Venkatesh et al., 2003). Users of the MG-App express concerns regarding the ability to access links and the speed at which data may be uploaded and downloaded. According to Lewis, Fretwell, Ryan, and Parham (2013), people who use new technologies require assistance. Consumers are reluctant to adopt new technologies when support structures are weak (Hew, Lee, Ooi, & Wei, 2015). In his study of consumer behavior in mobile commerce, Chong (2013) demonstrated the impact of favorable conditions. Indicators, such as the ones mentioned above, highlight the significance of favorable conditions for the adoption of mG-App. Multiple recent IS studies (Ahmad & Khalid, 2017; Alalwan et al., 2015) find that enabling factors are the primary influence on behavioral intention. Thus, our theories are:

H4. Facilitating conditions and intention to accept mG-App are positively connected.

3.2.5 Trust

Research on the diffusion of technical breakthroughs suggests that people's seeming lack of confidence in it can lead to their reluctance to adopt and utilize it. Evaluating the viewpoints of each individual on new technology; the way people behave and the degree of trust they have in you can significantly impact their willingness to employ advanced technology (Venkatesh, Thong, Chan, Hu, & Brown, 2011). Trust was found as a significant predictor of information system adoption in multiple research investigations. Bangladesh recently adopted mGApps, where individuals prefer to physically access services provided by the government. They would rather communicate face-to-face encounters and continue manually after service or information requests. If service requests are unclear or unreliable, mobile apps may be avoided. Thus, to provide information, consumers must have the trust to use mobile apps to transact (Montazemi & Saremi, 2013). This study examines whether respondents are

willing to trust mG-Apps. If respondents trust mG-Apps, their behavior will improve. For this we suggest the following theory:

H5. Trust has a positive effect on individual's behavioral adoption to use mG-App.

3.2.6 Information quality

The concept of information quality is established and described by Delone and McLean (1992, 2003) as a system's completeness, timeliness, correctness, and relevance. Inaccurate and irrelevant government service information will harm users' behavior. Researchers (Al-Busaidi & Al-Shihi, 2012; Sharma, Gaur, Saddikuti, & Rastogi, 2017) have found that the acceptability of recent advancements in informational technology is influenced by the presence of high-quality content. According to Tam and Oliveira (2016), information quality affects mobile technology use. We hypothesize that information quality influences Bangladeshi acceptance of mG-App:

H6. Information quality and intention to accept mG-App are positively related.

4. Methodology

4.1 Variables and Measurement

Based on extant literature, a survey instrument was created. This questionnaire has 23 questions. The questionnaire has two parts. Name, age, and other demographic questions are asked initially. 23 close-ended questions measure this model's 7 constructs in the second section. Items measuring the constructs were derived from the literature and adapted to the context of the study. Except for the controls, a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to assess all other critical constructs. The methods used to measure the control variables were based on the previous research (Ilmudeen and Bao, 2018). Pre-testing improved measuring item clarity, uniformity, and comprehensibility. 30 volunteers participated in a pilot test. Following the pilot test, we made adjustments to the research questions. Table 2 shows constructs, measurement items and sources.

Table 2.
Constructs with Corresponding Items

Construct	Measurement Items	Relevant Literature
Performance expectancy	●MG-Apps help me save time and effort ●MG-Apps are helpful, in my opinion ●It's more easier and quicker for me to request services using mG-App. ●The use of mG-App leads to greater output in terms of actual work done.	Alalwan, Dwivedi & Rana, (2017)
Effort expectancy	●MG-Apps is easy to use and makes sense to me. ●It wouldn't be hard for me to learn how to use mG-App. ●I find it easy to operate mG-App. ●I find it simple to learn how to use the mG-App.	Alalwan et al., (2017), Zhou (2012)
Social influence	●The people who have the most say in my actions advise me to try out mG-App. ●People that are significant to me believe that I should use mG-App. ●The management of government agencies has been helpful in using mG-App.	Ahmad & Khalid, (2017)

Facilitating Conditions	●I have the tools I need to use mG-App. ●I know enough about mG-App to be able to use it. ●If I am having trouble with the mG-App, a certain person or people are here to help me.	Ahmad & Khalid, (2017)
Trust	●MG-Apps ensures secure transactions. ●The privacy of mG-App users is highly safeguarded. ●All mobile transactions can be trusted in mG-App.	Venkatesh, Thong, Chan, Hu, & Brown, (2011)
Information Quality	●Information obtained from mG-App is current. ●The data presented by mG-App is accurate. ●Information obtained from mG-App is relevant.	Al-Busaidi & Al-Shihi, (2012)
Behavioral Intention	●I'm going to continue using mG-App over the upcoming few months. ●I intend to use the mG- App in the next months. ●I plan to use the mG-App within the next month.	Ahmad & Khalid, (2017)

4.2 Data Collection Procedure and Sample

212 adult mobile government service users provided data. The authors aimed to get different mobile app users to answer the questionnaire. Electronic and hard-copy surveys were distributed. Convenience sampling was used to obtain data as it is very easy and less costly for the authors. The Structure Equation Model requires 200 responders, according to the literature. For collecting data, we developed an online questionnaire using google form and shared indifferent online platforms such as Facebook, WhatsApp, and LinkedIn. We also distributed printed version of questionnaire to different citizens who showed willingness to provide answers. This procedure yielded 250 data. After data cleansing, 212 surveys were analyzed.

4.3 Non-Response Bias

The independent t-test was used to compare all of the constructs. From the results of the test, we found no statistically significant differences. The chi-squared test for independence was used to double-check these findings, and it revealed no statistically significant deviations. This study's data set, thus, was deemed to be free of non-response bias.

4.4. Data Analysis

At first stage, we perform some basic analysis. The constructs' validity and reliability, the model's predictive value, and the total variance explained were then evaluated using SEM. The SEM approach was chosen because it allows researchers to examine the relationships between all of the constructs simultaneously. Because of its emphasis on theory construction and discovery rather than model verification, SEM is also a more appropriate method for this study. SEM cannot, however, explore the non-linear interactions between the components, which could lead to a simplified analysis of the complicated decision-making process itself. We have generated six hypotheses for employing SEM, and by applying the findings from these hypotheses, we may achieve our research goals. The SEM result satisfies both objectives 1 and 2. SEM is therefore the ideal method for our study.

5. Analysis

5.1 Demographics Description

There were a total of 212 participants in this study, with females accounting for 51% (or 108 participants) and males for 49% (or 104 participants). Ninety percent of the respondents in this study are under the age of thirty, making up 191 of the total sample size. The majority of those in the sample (67%) have at least a bachelor's degree, with another 19% holding a master's or doctorate, and the remaining 14% holding only a secondary school diploma. The study sample is also representative of Internet users with regard to their past week's usage frequency. It shows how long people spend online. About 38% (or 81 respondents) spent 0-1 hours online, about 24% (or 51 respondents) spent 6-10 hours, and about 37% (or 80 respondents) spent > 11 hours online. Furthermore, the sample also reveals the user's past behavior on the Internet. It reveals that 71 percent of participants (or 151 participants) have been Internet users for more than eight years. About 10% of the sample, or 21 people, had used the Internet for fewer than one year, while about 19%, or 40 people, had been doing so for five or more years. Results show that the majority of the sample group regularly uses the Internet. Table 3 shows summary of the demographics of the respondents.

Table 3.
Demographics of the Respondents

Demographics	Category	Frequency	Percentage
Sex	Female	108	51%
	Male	104	49%
Education	Secondary	30	14%
	Undergraduate	141	67%
	Master	41	19%
Age	20-29 years	191	90%
	30-39 years	21	10%
Frequency Internet usage per day	1 to 5 h	81	38%
	6 to 10 h	51	24%
Internet history usage	11h or more	80	37%
	1-4 years	21	10%
	5-7 years	40	19%
	8 years and above	151	71%

Source: Authors Compilation

5.2 Common Method Bias and Multicollinearity Test

A behavioral study using cross-sectional survey data is prone to common method bias (CMB). Since there was no external verification of the data, we focused on CMB which might compromise the study's findings. We evaluated CMB using SPSS 23.0 and Harman's single-factor test. Principal axis factor (PAF) analysis was performed to determine the number of variables necessary to explain variance. The results of our test indicate that a single construct accounted for only 34.87 percent of the variance, which is much lower than the minimum value of 50 percent. The evaluation of CMB was conducted utilizing the variance inflation factor (VIF) data obtained from the comprehensive collinearity test (Table 4). The lower VIF values (< 3.3) indicated that this study is free from CMB risk. Also, VIF scores below 10 indicate that this study does not have multicollinearity.

Table 4.
VIF Values

Independent Variables	Behavioral Intention
EE	2.458
FC	2.258
IQ	1.955
PE	2.512
SI	2.070
TR	1.419

Source: Authors developed

5.3 Measurement Model

Construct reliability measurements include Cronbach's alpha, Dijkstra-rho Henseler's (A), and composite reliability. The results showed that each construct had reliability criterion values of 0.70 or above, proving internal reliability (Henseler et al., 2014; Henseler et al., 2009) (Table 5). Their loadings determined indicators reliability. Item loadings greater than 0.70 suggested a higher correlation between an item and its construct (Hair et al., 2012). Thus, loading should exceed 0.70. Table 5 shows reasonable loading values. The indication is reliable.

The average variance extracted (AVE) values were used to determine convergent validity. If the AVE values for all variables are more than 0.5, a data set demonstrates convergent validity (Fornell and Larcker, 1981). Table 5 demonstrates that the AVE values for all variables fall within an acceptable range. Convergent validity is therefore verified.

The heterotrait-monotrait ratio assessed discriminant validity. HTMT measures average indicator correlations across constructs. Henseler et al. (2014) recommended discriminant validity below 0.90. Table 6 shows heterotrait-monotrait ratios for all variables are below 0.90. This supports constructs' discriminant validity according to Henseler et al., (2014). Tables 5 and 6 show that variables are within the literature's range. We found convergent validity and good internal reliability.

Table 5.
Measurement Model

Constructs	Items	Loadings	Cronbach's alpha	rho-A	CR	AVE
Behavioral Intention	BI1	0.904	0.853	0.855	0.911	0.773
	BI2	0.874				
	BI3	0.858				
Effort Expectancy	EE1	0.818	0.860	0.864	0.905	0.705
	EE2	0.875				
	EE3	0.849				
	EE4	0.814				
Facilitating Conditions	FC1	0.861	0.830	0.858	0.897	0.744
	FC2	0.840				
	FC3	0.885				
Information Quality	IQ1	0.840	0.743	0.752	0.854	0.661
	IQ2	0.849				
	IQ3	0.747				
Performance Expectancy	PE1	0.860	0.869	0.870	0.910	0.717
	PE2	0.825				

Social Influence	PE3	0.847	0.790	0.798	0.876	0.702
	PE4	0.854				
	SI1	0.849				
	SI2	0.835				
Trust	SI3	0.830	0.857	0.856	0.913	0.778
	TR1	0.858				
	TR2	0.923				
	TR3	0.863				

Source: Authors Calculation

In this table, the values of loading, Cronbach's alpha, rho-A, composite reliability and average variable extracted are mentioned which are calculated by using SmartPLS software.

Table 6.
HTMT Ratio

	BI	EE	FC	IQ	PE	SI	TR
BI							
EE	0.809						
FC	0.761	0.607					
IQ	0.826	0.691	0.727				
PE	0.802	0.842	0.627	0.667			
SI	0.690	0.554	0.823	0.639	0.668		
TR	0.628	0.518	0.417	0.621	0.423	0.417	

Source: Authors Calculation

In the above table HTMT ratio is shown which confirms the discriminant validity of this research. As all the values given in table 6 are less than 0.90 we can say that this research has discriminant validity.

Table 7.
Fornell-Larckar Criterion

	BI	EE	FC	IQ	PE	SI	TR
BI	0.879						
EE	0.695	0.840					
FC	0.653	0.522	0.862				
IQ	0.660	0.555	0.583	0.813			
PE	0.693	0.730	0.537	0.537	0.847		
SI	0.573	0.462	0.677	0.493	0.556	0.838	
TR	0.540	0.446	0.359	0.498	0.368	0.350	0.882

Source: Authors Calculation

By using the Fornell Larckar approach this report measure the convergent validity of the data. All AVE square roots are greater than their corresponding correlation coefficients, as seen in Table 7. The condition for Fornell Larckar approach is established in the table 7. So convergent validity is prevailed here.

5.4 Structural Model

After verifying the measuring model's psychometrics, this research studies the structural model. SEM determines path strength, importance, and insignificance. Structural evaluation follows measuring test rules. R-square assessed structural model fit. Path coefficients (Beta) and t-statistics were utilized to evaluate the study hypotheses individually. Bootstrapping with 5,000 re-samples determined path significance. The model explained 69.2% of behavioral adoption variance, according to R-square. Path coefficients need to be statistically significant at a p-value of at least 0.05 in order to confirm the relationships (Byrne, 2016). Table 8 displays structural model path, coefficients, t-statistics, p-value, and decision.

Table 8.

Structural Model

Hypotheses	Path	Coefficient	t-statistics	p-values	Decision
Hypothesis 1	PE -> BI	0.236	4.506	0.000	Supported
Hypothesis 2	EE -> BI	0.210	3.451	0.001	Supported
Hypothesis 3	SI -> BI	0.048	0.698	0.485	Not Supported
Hypothesis 4	FC -> BI	0.217	3.706	0.005	Supported
Hypothesis 5	TR -> BI	0.177	3.524	0.000	Supported
Hypothesis 6	IQ -> BI	0.178	3.085	0.002	Supported

Source: Authors Calculation

Table 8 shows that, at the 5% level of confidence, the results for H1 ($p < 0.05$), H2 ($p < 0.05$), H4 ($p < 0.05$), H5 ($p < 0.05$), and H6 ($p < 0.05$) are all significant. At the 5% level of significance, however, the path for H3 ($p > 0.05$) lacks statistical significance. This suggests that trust, information quality, facilitating conditions, performance expectancy, and effort expectancy all have a big impact on how mobile government is adopted behaviorally. Social influence, however, has no effect on the adoption of mobile governance.

6. Discussion

Government agencies use mobile phones and other digital means to reach people and citizens to increase participation, knowledge, trust, and engagement. Government decision-makers have struggled to reach remote citizens with updated information. Sparse locations hinder socioeconomic progress in emerging countries. Mobile apps may help society's socioeconomic growth and government service delivery. The study shows that citizens across the nation are eager to utilize mobile apps for services offered by the government. In this paper, the researchers examined six parameters affecting mG-App use by the citizens. Five of six criteria influenced citizens' use of mobile government app. Trust, information quality, performance expectancy, facilitating conditions and effort expectancy affect mG-App adoption in developing countries like Bangladesh. Reasons for the six conceptions' importance and non-significance are discussed in the following section.

The mG-confidence app is the best way to figure out how people will use new technology. Thus, consumers must enter personal and credit card information to use mG-Apps for private transactions. The mG-Apps are more likely to be trusted when they have up-to-date information and are easy to use. Implementing encryption measures to comply with stricter privacy regulations can increase trust in mG-Apps. The privacy policies and information of the mG-new App aim to promote user engagement. This proves that a lack of trust is one of the biggest reasons why people don't use new systems or technologies (Alalwan et al., 2017).

Consequently, performance expectancy is the second most important constructs in selecting mG-App. Citizens evaluate mG-App based on its functional utilities (performance expectancy).

Demonstrating and publicizing significant features helps improve government online services. Furthermore, by introducing new and varied technical channels, the usefulness of government institutions can be expanded (Ghalandari, 2012). A study determined that people's openness to trying out new technologies is significantly influenced by their expectations of how well they will work (Alalwan et al., 2017).

Consequently, effort expectancy is a significant anticipator of users' desire to utilize mG-App. This research reveals that inhabitants of Bangladesh, even expats, prefer to execute financial activities and acquire information about government services via mobile applications that involve less effort and time than other traditional means. The majority of research using the UTAUT has discovered a statistically significant correlation between effort expectancy and behavioral adoption (Alalwan et al., 2017). In contrast to earlier studies (Ahmad & Khalid, 2017), our study reveals that the correlation between social impact and behavioral adoption is minimal, suggesting that residents in Bangladesh are unlikely to advocate the usage of mG-Apps to their loved ones. In a study done in the Sultanate of Oman, Riffai, Grant, and Edgar (2012) found that social impact did not significantly predict behavioral adoption in the mobile banking environment. Furthermore, this conclusion aligns with earlier research conducted in several sectors of information systems (Alalwan et al., 2017).

The results also show that supportive settings make it easier for people to change their behavior to use the mG-App. Citizens emphasize available funds, specific skill sets, and amenities such as increased Internet access, secured mobile apps, and phones to access and employ mG-App for utilizing and accessing govt. services through mobile applications. Multiple further empirical research in the field of information systems provide evidence to support this idea (Ahmad & Khalid, 2017).

The results conclusively demonstrated a robust and favorable relation between the quality of information and the intention to utilize the mG-App. This demonstrates the significance of factors such as relevant content, frequent updates, and comparable features in driving mG-app adoption. Individuals are more inclined to utilize mobile applications if they offer superior information. The findings align with previous research indicating the significance of information quality in influencing a user's adoption of new technology (Sharma et al., 2017).

7. Implications

7.1 Implications for Theory

Researchers and academics will find the result of this study useful. The model has extended the UTAUT framework by include information quality and trust in its explanation of users' acceptance of mG-Apps in an Asian environment. The UTAUT model is a well-known framework for analyzing how people respond to and adopt new technologies. These two new components can be used by other researchers when they work with the UTAUT theory. The statistical findings demonstrate that this study's research model can predict behavioral adoption toward mG-App. All measurement indices and structural models were within their allowed range. The UTAUT's R-square initially stood at 53% as anticipated, but rose to 69.2% upon the inclusion of more data. Therefore, the inclusion of additional components enhances the predictive capacity of the study model. This research is a valuable addition to the growing database of theory that pertains to the utilization of mobile government, e-government, and mobile application development. Second, the study's results supplement the literature about the usage of mobile devices for government functions. Furthermore, this research's results can be applied to advancing technological advancements in studies of adoption. This study looks at how popular government service apps are for mobile devices in a South Asian country like Bangladesh. It adds important results to the literature.

7.2 Implications for Practices

This study shows that information quality, effort expectancy, facilitating conditions, trust, performance expectancy are significantly related in the context of mG-Apps adoption. Thus, respected authorities should consider those concepts while developing citizen-centric mobile apps. Government agencies would utilize these findings to develop and implement similar projects in several areas. The results of this study are going to support Bangladeshi government agencies in the development of policies that effectively encourage the use of mG-Apps. The acceptability of mG-Apps is influenced by both performance expectancy and trust, and decision-makers can improve the quality of these apps by providing reliable and expedient services. Performance and effort expectancy also affect behavior. In other words, residents favor low-effort government service mobile apps. Therefore, it is advisable for government mobile app developers to minimize the complexity of app usage and exploration. Experienced users can also assist creating mobile apps. Surokkha, a nationwide platform, allows residents to register for Coronavirus immunizations, receive certificates, and store data. Government officials may add a mG-Apps feedback signal to Surokkha to include user input. The Bangladeshi government may also organize a PPP to encourage smart mobile app use. Facilitating factors also affect behavioral adoption. This suggests residents' value government-provided mobile access to government services. It is advisable for the government to periodically provide concise training programs on facility usage in public and commercial organizations across the country. The organization indicated above would provide information to potential and prospective clients regarding government services accessible on mobile devices, as well as update them on new and upcoming services.

The strong link between trust and how people plan to use mG-Apps shows that security and privacy are important to people when they use state services on smartphones and other tools. Programmers and system analysts should enhance the security of apps by implementing an additional safety mechanism to safeguard against mG-Apps. The Bangladeshi government's "Mobile Applications Secure Development Guidelines" ensures security and robustness. The quality of information that citizens receive has an impact on their behavioral intentions. This suggests that the government is expected to provide citizens with information on government services that is precise, accurate, meaningful, pertinent, complete, and timely. When information is linked to mobile transactions, timeliness and trust are even higher. Mobile app developers should adopt the One Web Approach to display the same content on all mobile devices. These mobile apps should have automated notifications for the latest modifications. Public and corporate institutions should ensure user data relevancy and timeliness.

8. Conclusion, limitations and Future Research Directions

8.1 Conclusion

Within this work, we tried to identify the crucial elements impacting the behavioral adoption of Bangladeshi citizens to utilize the mG-App. In conclusion, the study gave a good understanding of the most important things. The findings indicated that positive behavioral intentions were influenced by factors including information quality, effort expectancy, facilitating factor, trust, and performance expectancy. When considering whether or not to use mG-App, these factors are crucial. There was no empirical support indicating that social influence had an impact on the intention to take action, implying that individuals in Bangladesh are resistant to the influence of recommendations when it comes to their utilization of the mG-App. Therefore, mG-App are strongly recommended for use by the people of Bangladesh. As another bonus, it has been found that user-friendly technology increases users' behavioral intentions. Government entities will benefit from the results of this investigation since they will provide appropriate tactics to encourage more people to get government services through mobile apps.

8.2 Limitations and Future Research Directions

Even though this study has made important contributions, it also has some problems. Firstly, this study only looks at the opinions of people in Bangladesh, hence the researcher recommended that the proposed study model should be implemented with caution in other Asian nations. Future research can be conducted to other country context to validate this model. Secondly, the data acquired for this study is limited to Dhaka city as the author is a student; financing to collect data across the country is a challenge. Future studies can be done by obtaining data from all over the country. Thirdly, because the bulk of the respondents were between the ages of 20 and 40, it was suggested that the proposed study model be tested with more balanced age group information. Fourthly, this study did not evaluate the influence of demographic variables as moderators. If that effect can be seen, the outcome could be more interesting. Finally, this study focuses on the initial adoption mG-App, future studies can assess the continuous usage intention of mG-app.

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