

E-Government Adoption Intention among Bangladeshi Citizens a Conceptual Model

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ABSTRACT

The electronic government service delivery or e-government is included in any government agenda world over. Bangladesh is no different. Under the 'Digital Bangladesh' drive, Bangladesh government has taken huge initiatives to improve the infrastructure supporting e-government services in the country. However, the engagement of the citizens of Bangladesh in e-government services is yet to reach the expected levels. In the United Nations' Electronic Government Development Index (EGDI) Bangladesh has made progress over the year. Nevertheless, in the E-Participation Index EPI, which indicates the citizens' participation in the services, Bangladesh's rank was never steady. This warrants for research to understand the factors affecting the Bangladeshi Citizens' e-government adoption intention.

The current research provides a study framework to investigate the factors influencing the Bangladeshi citizens' e-government adoption intention. Based on the Unified Model of E-Government Adoption (UMEGA), the proposed framework captures the most crucial antecedent variables affecting behavioral intention. Additionally, by including Trust in Government (TIG) as a moderator in the framework, this study expands on the UMEGA framework. Moreover, the TIG moderator gives opportunity to understand the faith and trust of Bangladeshi citizens on their government, especially after the recent turmoil in the country. The proposed research framework would provide the government policy makers to investigate the relevant factors affecting the citizens' perception towards e-government services. The service provider also can use the study findings based on this framework to design e-government services custom made for the behavioral status of Bangladeshi citizens. The proposed framework contributes to the literature by adding to the scholarly gap of e-government adoption intention specific studies. The TIG moderator in Bangladeshi context contributes to the literature to understand the citizens' perspective on the trust they put in their government in developing nations.

Keywords: E-government, Behavioral Intention, Adoption, Attitude, Trust in Government.

INTRODUCTION

Governments worldwide use the electronic government or e-government to deliver high quality service to their citizens. E-government refers to government adoption of suitable Information and Communication Technology (ICT) for fulfilling needs of citizens and businesses (Mensah et al., 2020). It also satisfies the requirements of high-quality public service delivery by the government and its agencies. The benefits of e-government are well established. Operational cost reduction (Dwivedi et al., 2017), reduction of

opportunities for corruption (Verkijika & Wet, 2018) and enhanced government accountability (Kurfalı et al., 2017) are some of the major benefits of e-government. Success of e-government services depends on supply and demand side efficiency (Shareef et al., 2011). Government's initiatives to supply infrastructure for development and implementation of e-government falls under the supply side. On the other hand, individual user's decision to use and engage in e-government services falls under demand side (Mensah, 2019). The efficacy of supply and demand sides is critical to the success of e-government programs. The desire, decision and use of e-government services by the citizens ultimately determine the success of e-government, while supply side efficacy is essential (Shareef et al., 2011). As a result, acceptance of citizen is the driving force behind e-government success (Zhu & Kou, 2019). Bangladesh is one of the emerging economies in South Asia. As part of the 'Digital Bangladesh', the government of Bangladesh has taken significant steps in improving the e-government services.

The improvement is captured in the United Nations Electronic Government Development Index (EGDI). Bangladesh's rank in EGDI moved from 148 in 2014 to 111 in 2024 (UN, 2024). EGDI indicates the countries performance in the e-government in terms of online services, telecommunication infrastructure and adequate human resources. On the other hand, the E-Participation Index (EPI) published by United Nations captures the level of engagement by the people in e-government services provided. In the EPI, Bangladesh has been volatile over the years raising concern of not being able to engage people in the e-government services. In fact, Bangladesh has weaker EPI than the other SAARC (South Asian Association for Regional Cooperation) countries. The EGDI and EPI index of Bangladesh are captured in Tables 1.

Table 1 EGDI and E-Participation Index of Bangladesh (2014-2022)

	2014	2016	2018	2020	2022
E-Government Development Index rank	148	124	115	119	111
E-Participation Index rank	84	84	51	95	75

Source: UN E-Government Knowledgebase (2024)

The problematic EPI begs the questions as to the factors leading to lower participation of the citizens in the massive e-government drive by the government in Bangladesh. The attitude of the Bangladeshi citizen proves to be overall unfavorable towards e-government services and most do not care about it much (Rana and Rahman, 2022). On top of that, not everyone is familiar with the e-government services system (Ahmed, 2023). On the capability aspect, 27% of Bangladeshis are unable to operate a basic mobile phone (Hernandez, 2019). Added to that, the social negative influence against the electronic services as oppose to traditional methods worsens the situation.

Other areas of concerns in Bangladesh are cyber security law and internet fraud (Al Mamun, 2021). Finally, the overall trust and reliability of people on the government officials are often negative (Islam & Mahmud, 2015). To investigate and understand the reluctance by many Bangladeshi citizens to engage in e-government requires a well-drawn study framework that encompasses the most crucial behavioral influencing factors. There are studies done on specific e-government services in Bangladesh (Nisha et al., 2016; Talukder et al., 2019; Khatun, 2022; Islam et al., 2023).

However, studies targeting the overall e-government adoption intention by citizens are very few. There are well-known technology adoption models such as Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Technology Acceptance Model (TAM) (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003). However, the United Model of E-Government Adoption (UMEGA) is the most recent model that provides a standard technique for researching e-government adoption. This model could be the basis for building a study framework for e-government adoption investigation in Bangladesh. Moreover, the issue of trust in government is scarcely looked at in literature in general and extremely rare in Bangladesh context. Considering these issues, it is essential to develop a

working research framework for understanding people's e-government adoption intention. The current study ventures into this task.

LITERATURE REVIEW

Performance Expectancy

Performance expectancy describes user's perception of accomplishment by using any specific technology (Venkatesh et al., 2003). Schworer et al., 2005, provided similar definition of performance expectancy. According to them, effective technical proficiency perceived by user forms the performance efficiency for that particular user. When it comes to e-government services, citizens use these services to achieve better performance than the traditional services. Therefore, the performance expectancy in this context indicates the level of citizens' beliefs in e-government services in achieving higher outcome. Another aspect of performance expectancy alludes to the trust people have in their capacity and proficiency in using online government services (Xin et al., 2022). The level of expected gain influences attitudes of users toward any technology use Gupta et al. (2021). The attitude eventually drives people's intention to behave in certain ways. For e-government services, the attitude will determine the actual intention to use the services by users.

Avazov and Lee (2022) carried out a survey among Uzbek citizen to understand the factors influencing their intention to use a particular e-government platform called Single Portal of Interactive Public Services (SPIPS). The study results revealed that the citizens' performance expectancy significantly influences their attitude. The attitudinal status in turn affects the intention and eventual use of the platform. In a similar study, Xin et al. (2022) investigated Pakistani citizens' motivation towards e-government services. The quantitative survey results of this study resonate with that of Avazov and Lee (2022). Xin et al. (2022) concluded that performance expectancy of the Pakistani citizens is one of the main factors of attitude formation towards e-government services. The attitude, therefore, mediated their behavior to utilize the e-government services.

In addition, Xin et al. (2022) investigated the elements, especially for those residing overseas, that motivate Pakistanis to utilize e-government services. Through social media networking tactics, online surveys (structured questionnaires) were mainly distributed among Pakistani citizens, including those who reside in China and Turkey. 599 participants were surveyed using purposeful convenience sampling, and the data were deemed comprehensive enough for analysis. The results of quantitative research were interpreted using Amos and Structured Equation Modelling (SEM). The results revealed that performance expectancy has a significant effect on behavioral intention via citizens' attitudes. Yet another study by Garcia-Rio et al. (2023) examined the possible factors that could influence people's decision to actually use services provided by e-government platforms. The study was carried out during COVID-19 pandemic. Based on the Unified Model of Electronic Government Adoption (UMEGA), the study analyzed total of 519 survey responses. The analyzed data revealed that performance expectancy on attitude was the second most robust relationship in the context of the study. It was also concluded that attitude affects the behavioral intention to adopt e-government services.

The discussion in the preceding sections confirms the critical influence of performance expectancy in shaping up behavior to use the e-government services. Aligning with the findings of these studies, performance expectancy can effectively be included in any study to understand Bangladeshi citizens' behavioral intention to use e-government services. Of course, the attitudinal component as mediating factor ought to be incorporated. Various studies consistently found a positive relationship between performance expectancy and behavioral intention mediated through attitude (Avazov and Lee, 2022; Xin et al., 2022; Mohammadi, 2022; and Garcia-Rio et al. 2023). To study the e-government adoption by Bangladeshi citizens, the inclusion of performance expectancy would provide a crucial antecedent influence explanation. Moreover, the performance expectancy shaping the attitude will explain the eventual behavioral engagement in e-government services.

Effort Expectancy (EE)

Venkatesh et al. (2003) defined effort expectancy as the convenience level user perceives while using the technology. Effort expectancy is same as 'perceived ease of use' in Devis's (1989) Technology Acceptance Model (TAM). It can be said that people are more likely to use the e-government services if they perceive that the services are easy to use. The following sections discuss relevant prior researches investigating the impact of effort expectancy on behavioral intention to use e-government services.

Meriyanti et al. (2018) investigated the variables influencing behavioral intention to use e-Government services. The study was carried out in Indonesia and was built on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model. Survey on 203 citizens of Jakarta and subsequent data analysis established the link between effort expectancy and behavioral intention to use e-government services. Effort expectancy positively affected the intention to use. In another study on the Indonesian citizens' acceptance of e-government services, Faroqi et al. (2020) attempted to identify influencing factors of e-government use by Indonesian residents. They use UTAUT as their foundational model. The study surveyed 400 people living in Surabaya. The findings of this study confirmed that there is a positive relationship between effort expectancy and citizens' intention to use e-government services.

Sabani (2021) and Kurfali et al. (2017) carried out similar studies in Indonesia and Turkey respectively. Their findings, however, concluded that effort expectancy does not have any significant influence on behavioral intention. Some of the studies discussed here suggest that effort expectancy does play roles in behavioral modification. On the other hand, the opposing results in some other similar studies raises doubts. However, the close review of these studies reveals that cultural dimensions and socio-economic differences can play a unique role in the Bangladeshi context. As a result, investigating the impact of effort expectancy on behavioral intention of Bangladeshi citizen need to be assessed within the local context considering the Bangladeshi cultural and socio-economic dimensions.

Social Influence (SI)

People's behaviors are influenced by society. The same is true when it comes to technology use. People are influenced to adopt technological system by the extent they think important others in the society approves it (Venkatesh et al., 2003). The use of e-government services also is impacted by the agreement of the influential people in the individual's life. Some of the prior research on social influence on e-government adoption is discussed in the following sections. Alharbi et al. (2017) carried out a study in Saudi Arabia. This study pinned the UTAUT2 model and included security, trust, and privacy to examine the role of security in of e-government adoption intention. The results confirmed that social influence significantly influenced the behavioral intention. Saudi citizens' extensive use of social media was given as one possible explanation for this relationship. One possible explanation for this could be the rise in Saudi individuals' recent usage of social media websites and applications. Razak et al. (2017) found similar results in their study. They reached the conclusion that social influence significantly influenced participants' intention to continue using e-government services in Malaysia.

Ahmad and Khalid (2017) have done a study in United Arab Emirates (UAE). Their study attempted to expand the Technology Acceptance Model (TAM) by including trust, cost, social influence and demographic characteristics. The survey carried out among the existing users of UAE and subsequent analysis established links between social influence and e-government services. They found a positive correlation between users' intention to use m-government (e-government services through mobile devices) and social influence. The studies carried out in different countries like Saudi Arabia, Malaysia and UAE could be extended in Bangladesh as well. The similarity of the culture and status of Bangladesh with those countries are reasons enough to include social influence as a predictor for e-government adoption intention in Bangladesh. In Bangladesh, societal norms and community opinions are highly valued. As a result, the influence of the society ought to play a pivotal role in shaping individual's intention to use e-government services.

Facilitating Conditions (FC)

Facilitating conditions refers to people's perception that necessary organizational and technological infrastructure is available for them to engage in new technologies (Venkatesh et al., 2003). (Verkijika & De Wet, 2018) defines facilitating conditions as level of citizens' belief on sufficient resource availability that provides access to e-government services and creates an enabling environment to use the services. Camilleri (2019) in a study investigated assessed the usefulness and usability e-government services. This study also probed the role of social factors and facilitating conditions in people's intention to use the e-government services. The outcomes of the study reveal that peoples' intention to engage in e-government services is the findings imply that the individuals' intention to utilize e-government services was substantially in affected by the supportive enabling conditions. In another study by Jermsittiparser et al. (2022) in Thailand, a similar result was obtained. It was demonstrated that facilitating conditions were one of the significant factors in people behavioral choice of e-government services. Long and Philips (2022) further confirm the role of facilitating conditions in their study in Macao. Their study added a different dimension as well. It was demonstrated that elder people are more dependent and demanding of the suitable facilitating conditions than the younger ones. However, Susanto and Aljoza (2015) found no significant effect of facilitating conditions on e-government adoption. The mixed results with demographic dimensions suggest that facilitating conditions in general is an influencing factor in behavioral intention to adopt e-government. However, specific studies will be contextual to the study scope. Bangladesh being a developing country, the facilitating conditions could play a vital role in influencing the e-government adoption intention.

Perceived Risk (PR)

Using new technology is associated with uncertainty and potential harm. Peoples' perception of the danger and anxiety linked to using new technology is known as perceived risk (Featherman & Pavlou, 2003). In the context of e-government adoption, the perceived risk is the potential unwanted consequences the user fears to encounter while using the services. Rallis et al. (2019) conducted a study in Greece to probe the factors affecting the intention to use e-government services. The results showed that the perceived risk was one of the primary factors influencing non-users' propensity to engage in e-government services. Maharaj and Munyoka (2019), while examining the impacting factors of Southern African Development Community (SADC) citizens use of e-government services, found out the perceived risk was a crucial determinant. Moreover, Li (2021) has a done a similar study among Chinese citizens' acceptance of e-government. Li concluded that perceived risk has a negative correlation with citizens' intention to adopt e-government. These study findings point that perceived risk is a significant predictor of behavioral intention to use e-government services. These finding also justify inclusion of perceived risk in understanding the behavioral intentions of citizens in Bangladesh.

Attitude (ATT)

Technology adoption models such as Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and Technology Acceptance Model (TAM) (Davis, 1989) established the importance of individual's attitude in the adoption of new technologies. A user's attitude toward the adoption of technology refers to the positive or negative evaluation towards using or interacting with these technologies, including e-government services (Mensah et al., 2020). Citizens with favorable attitude are more likely to intend to use the system (Verkijika and De Wet, 2018). A negative attitude will deter them from engaging in the services, citizens who have a favorable attitude or evaluation of e-government services are more likely to intend to use the system. Qasem and Zolait (2016) in their study in Kingdom of Bahrain reached the conclusion that Bahrainis' behavioral intention to use e-government services are significantly influenced by their attitude and level of satisfaction with government services. Burhanudddin and Yapid (2019) in their study tried to ascertain the intention of the public regarding online e-government services. One of the conclusions of the study was that attitude strongly predicts intention. The influence of attitude on behavioral intentions was further established in studies by Sarasati and Madyatmadja (2020) and Eid et al. (2021). The findings of these studies provide enough justification for using attitude as a predictor in understanding Bangladeshi citizens' behavioral

intention towards e-government services. Investigating attitude as a predictor in Bangladeshi studies could provide valuable insights citizens' behavioral intention within the unique cultural and socio-economic setting of Bangladesh.

Attitude as a Possible Mediator

According to the Unified Model of E-Government Adoption Attitude (Dwivedi et al., 2017) attitude can play the mediating role between performance expectancy, effort expectancy, social influence, and the intention to use e-government (Dwivedi et al., 2017). Performance expectancy shows significant impact on e-government adoption (Lallmahomed et al., 2017, Weerakkody et al., 2013). Krishnaraju et al. (2016), however, did not find any relevant link between performance expectancy and e-government adoption in India. Similarly, several studies proved the impact of social influence (Oliveira et al., 2016, Sumak & Sorgo, 2016, Weerakkody et al., 2013) and effort expectancy (Venkatesh et al., 2012, Weerakkody et al., 2013) on technology adoption. However, other authors Lallmahomed et al. (2017) were unable to obtain proof supporting the significant influence of either factor on the behavioral intention to adopt e-government systems in Mauritius. Scholars (Alshare and Lane, 2011, Lin et al., 2011, Sumak & Sorgo, 2016) tried to explain these variations in results by a theoretical perspective that suggests that the behavioral intention is linked to performance expectancy, effort expectancy and social influence through a mediating role of individual's attitude towards particular technology. Considering this mediating role of attitude, the UMEGA put forth the idea that social influence, performance expectancy, and effort expectancy have favorable effects on attitudes toward using a certain e-government system, which in turn influences the behavioral intention to adopt the services (Dwivedi et al., 2017).

Trust in Government (TIG) as a Possible Moderator

Trust in government is defined as citizens' perception about the capability, integrity and ability of the government and its agencies to deliver high quality government services through electronic platform (e-government). Trust in government is one of the key elements influencing the citizens' engagement in e-government services (Bélanger & Carter, 2008; Gefen et al., 2005). Citizens trust in government stems from their belief that government agencies possess the necessary acumen and technical knowledge to successfully implement the e-government programs (Bélanger and Carter, 2008). Public confidence in e-government is essential because it gives decision-makers and authorities a clear understanding of the level of public engagement and helps them to take effective steps to increase trust in e-government (United Nations, 2018).

Many e-government adoption studies such as Mensah et al., (2021) and Hammouri et al. (2021) used Trust in Government (TIG) as the predictor. Similarly, other studies have used TIG in an e-government context (Al-Swidi & Enazi, 2021; Munyoka, 2020). Several studies have used TIG as a moderating variable as well (Sulistyono & Mappanyukki, 2023; Xu, 2021). Several researchers have used TIG in the e-government services context. Trust in government can be used as a moderator in the UMEGA model. The framework can be used for Bangladeshi context to understand the nuances of e-government service adoption. For instance, if the TIG is high, citizens' may feel more secure reducing their perceived risk of e-government adoption. Similarly, if the trust is low, it will negatively affect their attitude regardless the potential benefits. Trust influences the relationship between citizens' perceptions of e-government services and their adoption intentions. For instance, in environments where trust in government is high, citizens may be more likely to perceive e-government services as beneficial and reliable, thus enhancing their adoption intentions. Therefore, including TIG as a moderator gives the opportunity to understand the intricate correlations among different variables that influence the e-government adoption intention.

Underpinning Theory

Towards the end, this study presents a conceptual framework to investigate Bangladeshi citizens' behavioral intention to use e-government services. The main theory used in developing the conceptual framework is the Unified Model of Electronic Government Adoption (UMEGA). Next section discusses the UMEGA model.

Unified Model of Electronic Government Adoption (UMEGA)

Dwivedi et al. (2017) examined nine established IT adoption models. These models included the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), the Technology Acceptance Model (TAM) (Davis, 1989), Social Cognitive Theory (SCT) (Compeau et al., 1999), Innovation Diffusion Theory (IDT) (Rogers, 2003), Decomposed Theory of Planned Behavior (DTPB) (Taylor & Todd, 1995), Theory of Planned Behavior (TPB) (Ajzen, 1985), and Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003). These models work well for overall technology adoption. However, they do not excel in the context of e-government specific dimensions. To fill the research gap of single model capturing e-government dimensions, Dwivedi et al. (2017) developed and validated the unified electronic government adoption (UMEGA) model, which is based on the central hypothesis of the UTAUT model.

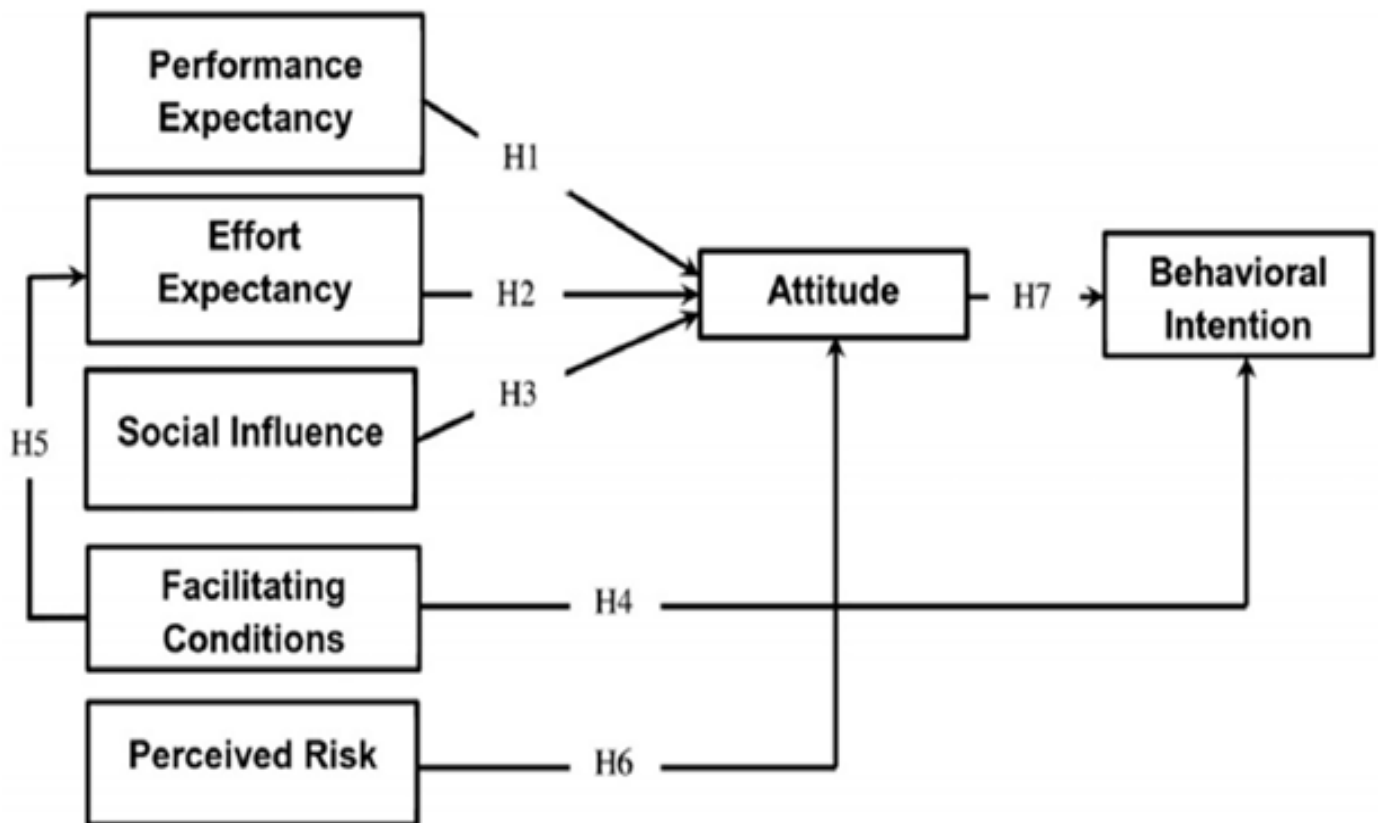


Figure 1 UMEGA Model by Dwivedi et al. (2017)

According to the UMEGA, perceived risk, performance expectancy, effort expectancy, and social influence have a direct impact on attitudes toward e-government adoption. Attitude in turn affects behavioral intention. The model also anticipates that facilitating conditions will directly influence behavioral intention and effort expectancy. UMEGA outperformed the other models in its validation to describe behavioral intention to use e-government services (Dwivedi et al., 2017).

CONCEPTUAL FRAMEWORK

Based on the literature review of the earlier sections and the underpinning theory of Unified Model of E-Government Adoption, this study proposes the following conceptual framework to investigate the behavioral intention of Bangladeshi citizens to adopt e-government services. The proposed framework incorporates the antecedent variables of performance expectancy, effort expectancy, social influence, facilitating conditions and perceived risks. The attitude component is included as a mediator. Finally, the inclusion of the trust in government provides an extension of the basic UMEGA model.

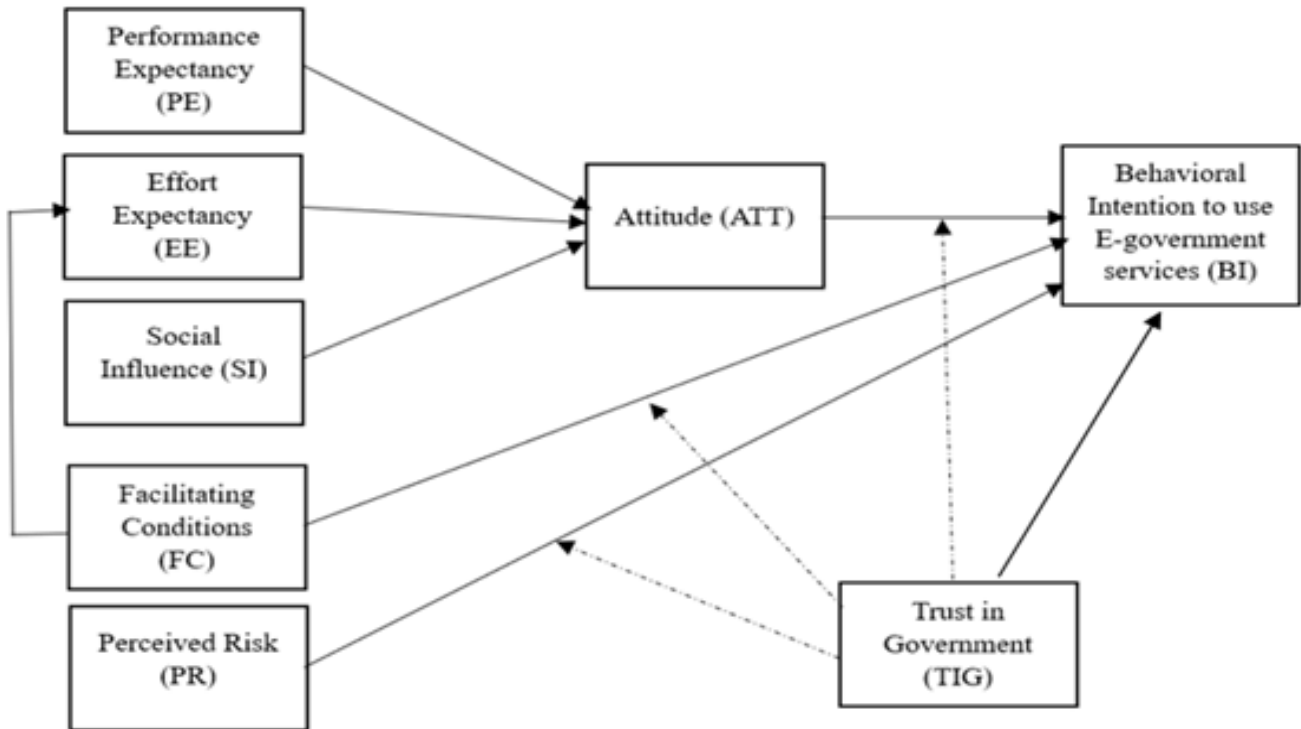


Figure 2 Proposed Conceptual Framework

CONCLUSION

The proposed conceptual framework of this study is an extension of the UMEGA model. Many studies have looked into the technology adoption aspects. Many studies have been done on the e-government service development and implementation aspect. However, studies to look into the citizens' behavioral influencing factors towards e-government services are not many. The UMEGA is the best among all models of e-government adoption. Nevertheless, no study based on UMEGA exists that provides an investigation framework to understand the e-government adoption intention of Bangladeshi citizen. The current study contributes to this gap in research framework. The inclusion of Trust in Government (TIG) in the proposed framework expands the basic UMEGA model. This gives opportunity to study the e-government adoption behavior from the perspective of citizens' trust in their government. Recent political turmoil in Bangladesh revealed that Bangladeshi citizens' confidence on their government reached the rock bottom (Curtis, 2024). This mistrust in government hinders the successful inclusion of the public in e-government initiatives. The proposed framework by including the TIG as moderator addressed issues like these. Moreover, TIG is used as moderator in other studies very scarcely. TIG is definitely not used as moderator in any studies related to e-government adoption of Bangladeshi citizens. The current study makes a significant contribution in the literature in this aspect. Using the proposed framework, the government agencies can understand the factors shaping the Bangladeshi citizens behavior to adopt e-government services. The finding will help them strategize the e-government programs addressing issues such as facilitating conditions, security and trust. Additionally, they can make targeted campaign to build awareness on e-government services' benefits. Moreover, the service developers could benefit by customizing the service deliveries according to the status of the citizens perceptions, attitude and intention levels.

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