

STUDY ON CITIZENS' INTENTION TO ADOPT E-GOVERNMENT: CASE COUNTRY 'BANGLADESH'

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ABSTRACT

In this paper, a model is developed and proposed to evaluate the citizens' intentions to adopt e-Government, their knowledge, experiences, as well as their perceptions on risks, trust, behavioral control, and the usefulness of e-Government. The proposed model (Evaluation model) is based on previous research and theories on technology acceptance and it follows the 7 guidelines of design-science research. A questionnaire was made to measure the variables in the model, including personal knowledge, experiences, trust in government and e-Government. In addition, perceived risk, behavioral control, subjective norms and usefulness of e-Government were also considered. The survey was carried out in a number of big cities in Bangladesh with about 200 people participating in the completion of the questionnaire. The results showed that the relationship between variables in the model is significant. Trust in the government is not a significant indicator of trust in the e-Government, while trust and risks are found to be significantly inter-related. The prerequisites to access to e-Government like computers and the internet were found to be directly related to the citizens' intentions to adopt it. The results also illustrated a surprising high rate of citizens who are willing to adopt the e-Government at the place of interview. This is a desired rate that all the governments want to achieve when deploying e-Government project.

Key Words: Electronic/e-Government, Evaluation model, Internet

1.0 INTRODUCTION

The creation of computers and the Internet were considered as one of the world's greatest inventions in the 20th century. Their applications have also gradually permeated into almost everything we do in our daily lives. The world had witnessed the endless ways in which organizations use the advantages of the information and communication technology (ICT) to rapidly increase revenues, reduce costs, and improve on operational processes etc. Being fully aware on the importance of applying ICT in the mid 1990's, governments of nations around the world have used ICT to fight against problems of corruption, inefficiency and bureaucracy. Hence, the term 'e-Government'- electronic government, was created. Many governments started various e-Government initiatives to lower their operational costs, as well as to increase interactions with their citizens and their

businesses by providing access to public information and services.

Despite the huge advantages and benefits that e-Government may generate, the outcomes are not guaranteed. In developing countries, 35% of e-Government projects are total failures, 50% are partial failures, and only 15% are successes [1]. Therefore, to avoid these failures, it was identified and reviewed the framework of e-Government implementation and highlighted a comprehensive set of critical factors for the successful adoption of e-Government [2]. They have also mentioned about some previous studies that reported the number of implemented, yet failed e-Government initiatives in different countries. Despite the large number of literatures on e-Government, it is surprising that little was studied on what is demanded from e-Government. Rather, the emphasis was placed more on what

e-Government can supply. Majority of the previous researches have also considered success factors, impediments and benefits of e-Government initiatives [2-7], and the framework for the assessment and analysis e-government project [8-12]. Among the previous literatures on demand size, only a minute amount investigated the intentions of the citizens to adopt e-Government. Most of them focused on the satisfaction, needs and experiences of the citizens [13-16].

2.0 PROBLEM DISCUSSION

It was discovered that only a small percentage of e-Government projects in developing countries had succeeded [1]. One of the reasons was that they emphasized too much on the technological factors and ignored the other important factors that are related to the citizens [2].

The e-Government initiatives in Bangladesh is also facing the same problem as most of the emphasis is placed on modernization and the purchase of hardware for government agencies rather than the needs of the users [17]. It is therefore extremely necessary to study the intention of citizens to adopt e-Government. Their knowledge, experiences, perception on risks, trust, behavioral control, and usefulness of e-Government has to be assessed as well.

3.0 PURPOSE OF THE STUDY

The purpose of this research is to develop a model that can assist governments in evaluating their citizens' intentions to adopt e-Government. By using this model, the government will have detailed and concrete information regarding their citizens' status, perception and needs.

4.0 THE GOAL

The first goal of this study is to construct an evaluation model for the citizens' intentions to adopt e-Government which can be used by any government.

Evaluating the Bangladeshi citizen's intentions to adopt e-Government based on this model is

the second and also the most important goal of this study.

This paper also proposes solutions for the improvement and enhancement on the citizens' intentions to adopt e-Government in Bangladesh.

5.0 DELIMITATION

There are several limitations in this research:

- The average response rate might affect the results of our finding.
- The survey was only conducted in the big cities of Bangladesh. Thus, the finding could not reflect entirely on the situation in Bangladesh due to its bias towards urbanization.
- The empirical data showed that the percentage of people working in offices (50%) and having education level higher than high school (80%) were too high comparing with the Bangladesh's occupation rate.
- Another limitation is that, there is not so many concrete studies on this subject, therefore, our current research cannot be compared with any previous results.

6.0 RESEARCH METHODOLOGY

After defining the problems, this theoretical study was carried out.

- The main focus of literature studies was on e-Government in general like concept, benefits, costs and risks.
- Other studies on e-Government were conducted to give readers a better understanding about the current state of e-Government and ICT infrastructure in Bangladesh.
- Eventually, a deeply research on technology and e-Government adoption was carried out.
- A questionnaire was constructed to measure the variables in the conceptual model and was distributed to people (via internet, post-mail & physically) living and working in the big cities in Bangladesh (Dhaka, Chittagong, Khulna, Barisal, Rangpur, Rajshahi & Jessore).

7.0 E-GOVERNMENT IN BANGLADESH

Bangladesh has made significant strides forward in the field of e-Government in the past decade, starting with somewhat scattered projects on infrastructure development and some applications for automation of internal processes, but gradually moving towards e-services delivery and inter-connected governance. From late 1990s till about 2006, the government undertook a number of e-Government projects, many of which were initiated from the Ministry of Planning. After 2006, a more consolidated approach to e-Government was undertaken with increased emphasis on citizen service delivery and transparency. With the advent of Digital Bangladesh as a prime focus of the government that took power in 2009, e-Government got a renewed vigor from the Prime Minister's Office (PMO). Since then, the government, with stewardship from the PMO, has been increasingly moving away from isolated approach towards more integrated, connected and transactional e-services.

Some interesting initiatives have been taken in the areas of education and health - the prime areas of development. Following trends in the private sector, Bangladesh government has introduced remote consultation from doctors and specialists using mobile phones. Both Department of Health and the Department of Family Planning have extensive information systems for strategic decision-making, such as logistics supply, performance analysis of field health staff and personnel management.

However, several major challenges still exist, which the government and the donors should particularly focus on, such as lack of inter-operability between health systems and lack of electronic medical records of patients.

In the area of education, there has been notable progress with respect to education-related citizen services compared to use of ICTs in education. Many initiatives have been undertaken to send computers to schools, but these have not been matched with requisite teacher training or infrastructure development - hence, the computers remain unused in many cases. The government also does not have clear policy guidelines regarding the use of ICTs for education - currently; there is a disproportionate focus on computer literacy and not enough on innovative use of ICTs for general education. Therefore, it is necessary to study about the intention of Bangladeshi to adopt the environment of E-Government.

7.1 E-Government readiness & Digital Bangladesh

E-readiness index comprises five indicators: such as: Network Access, Network Learning, Network Society, Network Economy, and Network Policy. Compare to South Asian Countries [Table 1 and Table 2]. Bangladesh has made a significant development in all indicators. Nonetheless along with other developed countries, Bangladesh has not been able to obtain 50 per cent of e-readiness in terms of capabilities to get benefit from digital medium [Table 1].

Table 1: E-Readiness matrix index South Asian country

Indicators	Bangladesh	India	Nepal	Sri Lanka	USA
Network Access	0.120	0.310	0.147	0.192	1.000
Network Learning	0.231	0.257	0.276	0.227	1.000
Network Society	0.090	0.247	0.090	0.166	1.000
Network Economy	0.040	0.324	0.023	0.161	1.000
Network Policy	0.253	0.506	0.208	0.424	1.000
E-readiness Index	0.147	0.329	0.149	0.234	1.000

Table 2: World e-government rankings South Asian Country

Rank (Top Tiers)	Country	2010	2008	2005	2004	2003
1	Maldives	92	95	77	78	79
6	Myanmar	141	144	129	123	126
9	Nepal	153	150	126	132	130
16	Bhutan	152	134	130	165	161
19	Bangladesh	134	142	162	159	159

7.2 ICT infrastructure

The quality of Information and Communication Technology (ICT) is a critical success factor of e-Government development in the long run. By studying ICT infrastructure, we can see the potential of developing e-Government and the number of people who can make use of it.

7.3 Overview of e-Government websites

Attempts have been made to review the e-government web initiatives in Bangladesh from the perspective of citizens' needs and benefits. To do so, it delineates cross-angle analyses on how governmental existing policies and guidelines are adept to steer public sector's web initiatives in the country, what contents and features are currently available in public websites, and to what extent users find those websites useful for them. However, it does not deal with technological exercise, such as: technological design, coding or preparation of online services. It avoids providing suggestions, as well. Area of the study and size of the respondents do not point towards to be representative.

8.0 CONCEPTUAL MODEL

Many studies in Information System (IS) applied and cited the Technology Acceptance Model (TAM) that was first proposed by Davis [18][Fig 1] and the theory of planned behavior (TPB) by Ajzen, [19] [Fig 2]. TAM and TPB

were often used to investigate the users' adoption and acceptance of IT systems. TAM stated two specific perceptions on the technology which includes "perceived ease of use" and "perceived usefulness". TAM proposed that the actual use a technology and subsequent usage of the technology are dependent on the behavioral intention, which is a result of attitude toward using. The attitude toward using is hypothesized to be dependent on the usefulness and ease of use perceptions.

Moreover, "perceived usefulness/benefits" from the adoption of e-Government services might serve as one of the main explanatory factors for adoption [20]. In addition, the greater the perceived benefits for an organization, the more likely the organization will adopt e-Government services. The usefulness of IT systems is a motivation for accessing them [21].

However, poor usability in e-government prevents universal adoption, which in turn causes social, economic and political effects [4]. It was found out that perceived benefits and customer expectations are two key factors to decide customer satisfaction, which in turn can determine customer loyalty [15].

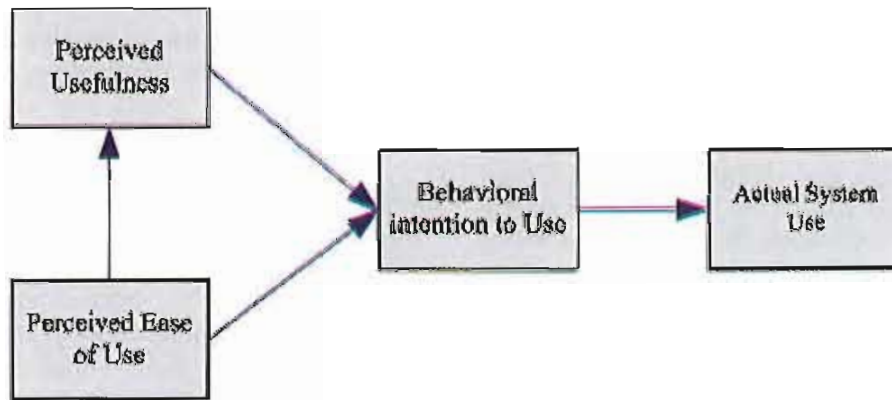


Fig. 1: Technology Acceptance Model (TAM)

The theory of planned behavior (TPB in Fig 2) [19] is another theory that has been used to investigate the acceptance and use of Information System. TPB also proposed that actual behavior is a result of behavioral intention. TPB hypothesized that behavioral intention is dependent on three determinants, "attitude towards behavior", "subjective norm", and "perceived behavioral control". Attitude towards the behavior is defined as the individual's positive or negative feelings about performing a behavior. According to TPB, subjective norm is defined as an individual's perception of whether people important to the individual think the behavior should be performed, while perceived behavioral control refers to the people's perceptions of their ability to perform a given behavior.

The difference between TAM and TPB is that while TPB discussed both positive and negative beliefs, TAM only concentrates on perceived positive beliefs like perceived ease of uses and the benefits. However, the

introduction of a new technology may involve both benefits and risks to the end user [22]. Before deciding to adopt the technology, the individual may want to weigh risks and benefits "Perceived risk" newly defined as a combination of uncertainty plus seriousness of outcomes involved [23].

One of the most important variables that might affect the intention to adopt of citizens is "trust". This trust in the organization using the technology and "trust in government" as responsible for the introduction of electronic services are important determinants of the adoption of the service [24]. According to them, trust is also a crucial enabler affecting purchase intentions, inquiry intentions and sharing personal information. The level of risk perception decreases when the individual trusts others that are involved in the transaction [23]. It is mentionable that the inter-relation between trust and risk perception is very strong; and one must take risk in order to engage in trusting action [25].

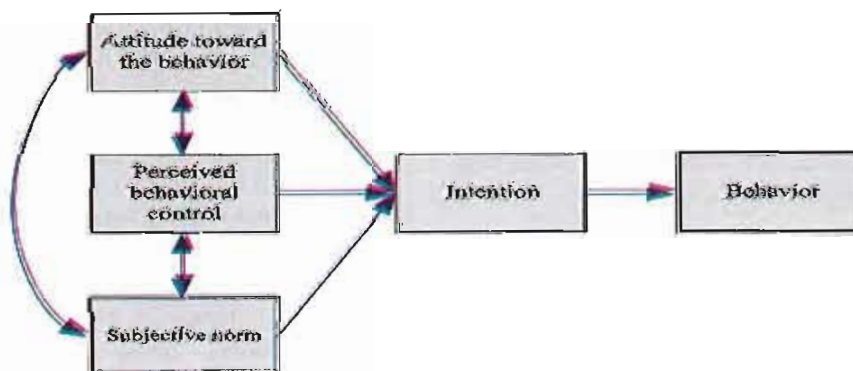


Fig. 2: Theory of planned behavior model (TPB)

Other factor such as, "personal experiences, knowledge and skills" about e-Government and e-Services are related to people intention to adopt them [21, 22]. Therefore citizens need specialized education about the potential uses of e-Government information and services which will increase people's interest and motivation for seeking and using government information and services online [26]. Also, the motivational access of citizens to e-Government is strongly related to their access to Computers and the Internet [21].

9.0 ANALYSIS OF THE RESULTS

The aim of this study is to evaluate the intention to adopt e-Government of citizens with the case study in Bangladesh. The intention to adopt e-Government was higher than my expectation with 69 percent of respondents answered that they planned to adopt. However when being asked which services they intend to use, most of them answered searching information and downloading materials. Only a minority of them (18 percent) intended to use e-Services. The reason was because e-Services in Bangladesh have not developed fully to become sophisticated and useful enough to deliver more benefits to citizens.

The high rate of intention to adopt e-Government consolidated that there was a significant relationship between personal knowledge, experiences and skills and their intention to adopt. Among the respondents, 80 percent of them had an education level higher than high school and around 88 to 90 percent of them could use the computer and the internet. Therefore they had more opportunities come into contact with e-Government after hearing about it from the Media. The "intention to adopt" result cannot be used to represent the intention rate in Bangladesh because the survey was only conducted in the urban area.

In previous study for Bangladesh, the percentages of computer users and internet users were 1.1% and 6.4% respectively while in this current survey they were much higher with 90% and 88% [17]. Most respondents

who had no intention to adopt explained that they do not know how to use the computer or they do not have computers or internet connection at all which are concise with previous finding [21, 22, 26]

This case study will be the best practice for the Bangladesh government when it wants to enhance the citizens' intention to espouse e-Government in other areas. The Bangladesh government should not only focus on advertising and introducing about e-Government but also has to enhance and increase the percentage of people using computers and the Internet. More training should be provided for the citizens to tell them how to use e-Government and how to benefit from it. These training must be free or affordable.

It is mentionable that a case study in India which was very successful in bringing e-Government services to rural India using kiosks. Kiosks were placed in locations convenient to the public, such as shopping malls and major public transportation hubs [27]. This practice can be applied for the situation in Bangladesh where the percentages of computer users and internet users in rural areas was still very low. After all, e-Government was developed to serve citizens. Hence, they must be able to know and use it.

It was come out in the current survey that the relationship between trust in government (2.87 points) and trust in e-Government (3.16 points) is not very significant. There were significant relationships between concern and care (2.93 points) and competence (3.04 points) of the government with measurement items of trust in e-Government: "governmental officials will

answer most of the questions I post on their website" (2.96 points) and "the use of my personal data by governmental agencies is reliable" (3.21 points). The other measured items of trust in government are not closely related with those of trust in e-Government. For example, while respondents rated openness and honesty of government with

only 2.8 points, they rated "the information published on government websites are adequate and appropriate" with the highest rate (3.49 points), the same applies to integrity (2.7 points) versus "governmental agencies will treat my application fairly" (3.01 points). From the results, it is apparent that trust in e-Government (3.16 points), perceived risk (2.70 points) and worry about e-Government (2.69 points) are strongly related. The level of risk perception and worry about e-Government decreases when the level of trust in e-Government increases. Most respondents highly trusted that the information published on government websites are adequate and appropriate (3.49 points) which results in low level of worry about appropriate of information on the websites (2.38 points). Reversely, the level of risk and worry increases when the level of trust decreases. The level of trust was not so high for 2 measured items: "governmental agencies will treat applications fairly" (3.01 points) and "governmental officials will answer most of the questions I post on their website" (2.96 points). Hence, the level of worry increased for unfair treating between online and offline application (3.08 points) and longer approving process (2.79 points). Therefore, the government has to increase the level of trust in e-Government and also in itself in order to increase the citizens' intention to adopt e-Government. The Bangladesh government has to first improve on its integrity, openness and honesty so that the level of trust in e-Government can automatically increase.

Perceived the usefulness of e-Government was high (3.21 points) which also strengthened the direct relation from this variable with "intention to adopt" variable. One interesting finding was that the Bangladeshi people care more about time saving (3.48 points) than money saving when using e-Government (2.91 points). According to the results of perceived usefulness and perceived behavioral control, the availability of useful resources and ability to search of these resources are closely related to the intention of adopting e-Government. Most respondents complained about boring contents, lack of useful resources and lack of interesting

information on e-Government websites. The results of search engine were not good and it is hard to find needed information and resources. Those comments are also the same as findings in previous research in [17]. Therefore, the biggest and most important task right now for the Bangladesh government is to improve and enhance the contents of the websites, continuously update information that would interest and attract citizens, and structured the information and resources in an orderly fashion so that they can be easily found with the support of effective search tools. It also has to consider carefully about the citizens' needs when putting its services online.

There was an interesting finding that respondents were keener to adopt e-Government when they know that others benefited from using e-Government rather than when important people around them encourage them to adopt. Some of them also stated that they would feel more interested and motivated if government officials introduce and recommend them to use it. Overall, the relationships between variables are significant except for the trust between e-Government and the government. The conditions to access to e-Government (computer and internet) seemed to be directly related to the intention to adopt it. The citizens' intention to adopt e-Government at the place of interview was quite high. The levels of risk perception and worry were average while the level of trust was high. Bangladesh government was quite successful in enhancing the intention to adopt e-Government in the urban area and they should continue doing the same things for rural areas where education and perception levels, as well as percentages of computers and internet users are low.

Some limitation to apply the old two models (TAM and TAP) directly in the field of Bangladesh and base on the survey results, a new evaluation model is proposed here. This reconstructed model is shown in Fig 3. This new model is a combination of previous old models i.e., TAM and TAP. Moreover, A new variable, "Access to Computer and

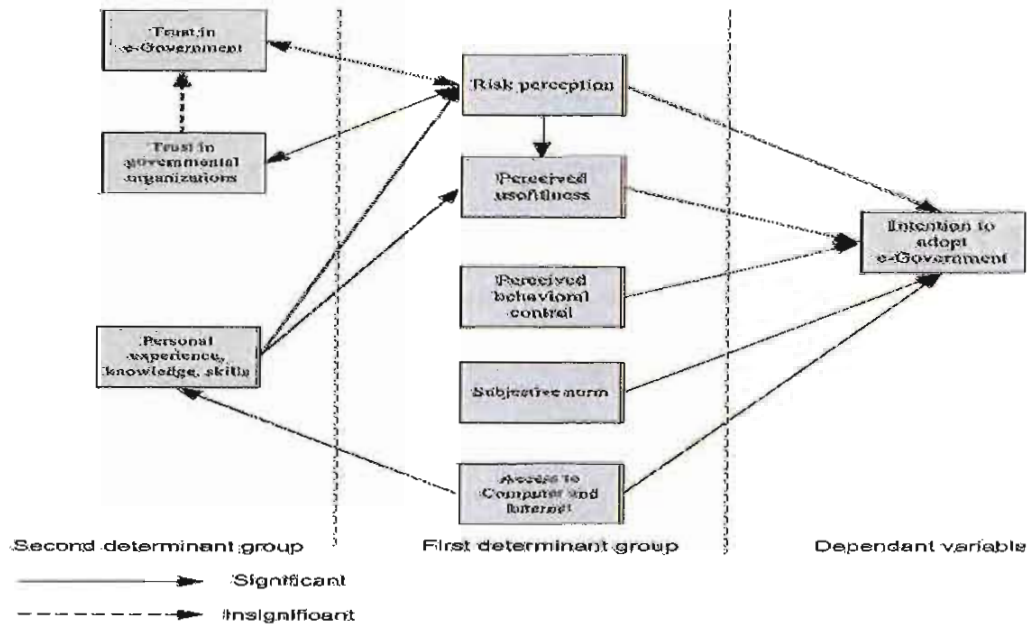


Fig. 3: Intention to Adopt e-Government Improved Model

Internet", is added into the old model. This variable is related to "intention to espouse or adopt e-Government" and "personal experiences, knowledge and skills". The relationship between "trust in e-Government" and "trust in governmental organizations" is represented insignificant.

10.0 CONCLUSIONS

This study was carried out to develop a model that can be used to evaluate citizens' intention to adopt e-Government. The model consists of one dependable variable, intention to adopt; and 8 determinant variables which were divided into 2 groups, TAM and TPB, which were often applied and cited in other studies in Information System. Other variables like trust, risk perception, personal experience, knowledge and skills, were also added to the model with regards to other previous researches on the intention to adopt. A new variable, "Access to Computer and Internet", was added newly after analyzing the results from the survey in Bangladesh. For the restriction paper size of this journal the detail results from data were not shown in current paper. Mathematical and statistical analysis of this study will soon publish somewhere else. In proposed new evaluation model, all variables of the first determinant group

showed that they are related to the dependant variable, intention to adopt. Most of them indicated significant relations while two showed average significant relation. The conditions to access to e-Government seemed to be directly related to the citizens' intention to adopt. The empirical data analysis indicated a very high rate of citizen's intention to adopt e-Government at the place of interview (69%).

11.0 SUGGESTIONS FOR FUTURE RESEARCH

The results of the survey could only be used to validate the model and could not be used to assess the intention of Bangladeshi citizens because it was conducted only in an urban area. In order to increase the accuracy of the assessment, future studies need to investigate the adoption intention in different areas, in different working fields, or with different education levels. People living in different areas, working in different fields or with different education will face different problems and have different needs. These studies would help governments have more efficient approach strategies for different groups of citizens to enhance their citizens' intention to espouse or adopt e-Government.

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