Citizens' Adoption Behaviour of Mobile-Government (mGov): A Cross-Cultural Study

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Abstract

This study aims to address the paradigms of consumers' adoption behaviour for Mobile Government (mGov), posits the factors which pursue citizens' intention to adopt mGov services, and reveals the impact of cultural dimensions in perceiving driving factors of mGov adoption. The mGov adoption model was developed and tested among users of three different countries, namely Bangladesh, Canada, and Germany. The finding suggests the rationale that cross-cultural differences impact on consumers' perception of mGov adoption behaviour.

Keywords: Mobile Government (mGov), Cross-Cultural, Consumer Behaviour, Adoption, Attitude

Introduction

Due to non-compliance with the technology-driven Electronic Government (or eGov) service system in terms of economic pattern and tangible economic outcomes, behavioural attitudes, social and cultural norms, and technological availability and ability, the majority of citizens do not find motivation and are unable to adopt eGov services (Ben-Ziona et al., 2014; Trimi and Sheng, 2008). This has resulted in offering dynamic methods for citizens to access certain government services using mobile devises. These government services are defined as mobile government (mGov). It is viewed as the extension of the eGov service system to alleviate definite limitations of this service such as scope of availability, efficiency, mobility, participation and to facilitate widely available technological usages such as mobile phones to support instantaneous information delivery to handset or two-way communication through short messaging service (SMS) (Misuraca, 2009).

At present, different governments are offering certain government services through mGov. However, the environmental circumstances are different. For example, in Bangladesh, diffusion of mobile versus line Internet ratio is 23:1. It means that the mobile diffusion rate is twenty-three times that of the Internet diffusion rate in Bangladesh. In Canada, the situation is completely different (0.91:1). Even in the USA, it is 1.33:1. In Germany, the ratio for mobile phone versus line Internet is around 1.63:1 (Internet World Stats, 2011). Economic trends, infrastructure, social development parameters, per capita income, government policy, cultural traits, consumer online behaviour, and consumer preference are significantly different in Asian, European, and North American countries (Dussauge et al., 2000; Kettinger et al., 1995; Mattila,1999). Hence, these circumstances indicate that the adoption and diffusion of mGov might be affected by cross-cultural characteristics. Gil- Garcia et al. (2007) analyzed six public sector information sharing projects and revealed that

consumer behaviour in perceiving benefits from projects driven by information and communication technology (ICT) (like mGov) is substantially different based on cultural impediments. In analyzing eGov, Irani et al. (2007) highlighted this speculation and anticipated that future eGov or mGov adoption behaviour should be analyzed focusing on cultural differences. Scholarly articles dealing with technology adoption behaviour asserted that culture plays a vital role in articulating driving or inhibiting factors of adoption (Romano Jr. et al. 2003). Pavlou and Chai (2002) revealed that as cultural settings reflected in consumers' behaviour are significantly different, developing general and parsimonious adoption model of consumers without incorporating cultural differences of nations cannot represent holistic realization of adoption factors. Thus, culture, which is typically conceived as being overall closely connected behavioural and social characteristics, patterns, and dimensions common in a group of people which makes them unique and separable from other groups of people, will be analyzed within this approach in order to answer the following research question:

How would citizens in various countries in the East and West adopt mGov differently because of their cross-cultural differences?

The reminder of the article is as follows: First, we describe the cross-cultural ICT artifact mobile government in more detail and propose hypotheses regarding cross-cultural differences. Then, we develop a research model that is used to analyze mGov adoption in three different countries. The survey instrument used is introduced and the results are presented afterwards. In the final section, our results indicating cross-cultural differences for the three countries are discussed.

Cross-Cultural Differences of mGov Adoption

We consider mGov as the Type III innovations based on the classification by Swanson (1994) where mobile technology is embedded in the core of the public administration service model to uphold mGov. This technological innovation used in the core of public administration reformations and

offered through mGov reflects behavioural changes of the users while adopting the system (Scholl, 2005).

In mGov, citizens can use any handheld devices including cellular telephones, personal digital assistants (PDAs), smart phones, and laptops. From the point of seeking service though ICT, invariably mGov is much more versatile, dynamic and flexible (Trimi and Sheng, 2008). The proposed prime notion of eGov to receive government service from anywhere and at any time is exhaustively reflected through, and resembles, the pattern of service delivery of mGov. However, the successful development of transformational government through mGov does not indicate differences from eGov based on only technological perspectives; it also signifies different organizational reformation, as its service pattern is fundamentally associated with true two-way communication through SMS (Carroll, 2005). Different governments reform public administration to leverage government services for citizens through the launching of mGov where information has primarily real-time value, such as terrorism alerts, traffic information and road conditions, severe weather forecasts, police investigations, disaster management, land inspection and the like (Blackman, 2006).

Cross-Cultural Differences

Posey et al. (2010) recognized cultural difference in predicting consumers' behaviour from an empirical study among British and French online users. They argued that any complex technology-related behaviour where social and behavioural norms can conceive and reflect differences in perception, deep-rooted beliefs of attitudinal intention surrogated by cultural specification should be extracted.

Shedding light on the social identity theory (Tajfel, 1972), we find logical underpinning to integrate cultural differences in the adoption model of mGov. Transformational government offered through mGov signifies certain dynamic values for any society, and consumers will find emotional and

rational attachment with this new advent when it provides economic and behavioural adjustment (Zhu et al., 2003). This argument pursues inclusion of cultural determinants as the control variables to represent a holistic view of ICT-related adoption behaviour. They surveyed electronic-business adoption behaviour from eight European countries and finally concluded that the overarching effect of cultural differences on consumer behaviour cannot be overlooked. Application of cultural characteristics as the control of consumer perceptional attitude is inter-connected with adoption behaviour (Bresnahan et al., 2002).

Following the theory of planned behaviour (TPB) (Ajzen, 1991), beliefs of attitude, subject norms and perceived behavioural control can be articulated referring the restructured format of transformational government initiated through mGov, which denotes certain potential characteristics like the impersonal nature of the online environment, implicit uncertainty, perceived lack of control, and mobility, dynamic and apparently freaky unattested interactions (Ba and Pavlou, 2002). This argument suggests that we should consider consumers' technological, behavioural and social issues while modelling the adoption model of mGov, and that a deeper insight into adoption behaviour can be achieved if we analyze it looking through the lens of cultural differences.

Referring the study of Goodman and Green (1992) which investigated ICT adoption behaviour for Middle Eastern countries, Ein-Dor et al. (1993) asserted that cultural factors have significant impact in articulating consumer behaviour for ICT. Roth (1995) analyzed cultural characteristics and their impact on developing market strategy, exploring samples extracted from ten countries and they revealed strong evidence of cultural impact on consumers' preference.

Espinoza (1999) while revealing service quality illustrated significant differences in consumers' behaviour between North America and Latin America. Thus the author suggested that determination of consumer perception, which is constituted by certain beliefs, is inevitably culture-bound. Kettinger

et al. (1995) and Winsted (1997) examined cross-cultural differences of consumers between the USA and some Asian countries in perceiving ICT services and delineated significant differences.

Observing the lack of analytical view from a cultural parameter adjustment while modelling service quality of ICT, Donthu and Yoo (1998) emphasized to consider cultural differences in an effort to identify consumers' perception for ICT-related behavioural intention. Without shedding comprehensive light on cultural differences in modelling consumers' perceptual view in directing behavioural intention to adopt mGov, any effort of developing such concept can neither be holistic nor be analyzed and supported with proper rationalization. Therefore, we must deliberate over technological, behavioural and social issues with the moderating effect of culture which is adjoined with the mGov structure and service delivery pattern to provide new insight in this still fragmented theory and understandings. The precise objective that led to launch this explorative study is to address and identify ontological paradigms of consumers' behaviour for mGov and to encapsulate critical factors of mGov adoption by incorporating cross-cultural differences.

After deliberation over literature and cross-cultural theories, as described in this section, we synthesized that the paradigm of modelling standardized mGov adoption lies on the fact that it should be focused on cross-cultural characteristics and should be analyzed considering the differences among nations. mGov adoption behaviour for citizens of either western or eastern countries might be different, as described above, to the extent that we assume the following proposition:

The adoption behaviour of mGov differs between citizens in countries in the East and West as a result of their cross-cultural differences.

Considering this fundamental epistemological paradigm, we will test our proposition through the collaborations of three different nations from three continents having significant cultural differences which can justify that consumers' behavioural characteristics are rooted on cross- cultural variations.

Since the diffusion of mobile in the East and West is potentially different (as we stated in the introduction section), based on the diffusion of innovation theory (DOI) (Rogers, 1995), we can claim that behavioural perception arising from social and cultural phenomena, required for diffusion, is potentially different in different countries. We used a research model for mGov adoption and tested it in i) Bangladesh, ii) Canada, and iii) Germany. Since different scholarly articles exploring cross-cultural differences in adopting ICT revealed that the following three cultural dimensions of Hofstede (1980) could provide deep insight and logical underpinnings to explain differences in consumer behaviour of different nations, we selected our empirical venues which can ensure potential variations in our collected sample on those cultural traits. Although Hofstede identified another cultural dimension — masculinity — cross-cultural researchers did not identify theoretical relevance of this dimension to consumers' perception (Donthu and Yoo, 1998) and thus were not interested in justifying any perceptual differences based on this cultural trait (Espinoza, 1999; Pavlou and Chai, 2002). Following their argument, we did not focus on this dimension. The following Table 1 shows the three cultural dimensions and their scores to justify our claim. Hofstede (1980) defined the three concepts as follows:

- Power distance (PD): The extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.

- Individualism: The degree of interdependence a society maintains among its members.

- Uncertainty avoidance (UA): The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these.

Table 1: Cultural Dimension from Hofstede (1980)

Country	Cultural Dimension		
	Uncertainty avoidance (UA)	Individualism	Power distance (PD)
Bangladesh	60	20	80
Canada	48	80	39
Germany	65	67	35

Research Model and Hypothesis

Shedding light on different antecedents of mGov adoption, we focus theories on ICT and behavioural and psychological aspects in this section. As a primary basis of our research model, we chose the technology acceptance model (TAM) (Davis, 1989) as its robustness for technology adoption studies has been shown in several studies (Schepers and Wetzels, 2007; Williams et al., 2009) and it is appropriate for cross- cultural studies (Straub et al., 1997). Lucas and Spitler (1999) delineated that adoption of a technology-imbedded system should be analyzed considering the extended view of TAM. Based on TAM, we encapsulated that technological, behavioural, social and cultural phenomena should be analyzed to conceptualize consumer adoption factors for mGov based on cross-cultural samples. From theoretical perspectives and literature review, we delineated six independent constructs of mGov adoption which are described in the successive paragraphs.

Perceived Usefulness (PU)

Researchers of eGov and mGov (Shareef et al., 2014) deemed that since reengineered public administration is a complex structure and that it reflects attitudinal changes from both the technological and behavioural perspectives, in developing the adoption model for transformational government operated through mGov, perceived usefulness (PU), which denotes the overall functional usefulness of the system, should be included as a driving force of adoption. As discussed earlier, mGov has prompted certain absolute benefits not only in comparison to brick and mortar government service system but also in comparison to eGov, for instance, transmitting real-time information, two-

way communication during travel and performing functions from on-spot (Shareef et al., 2012). Therefore, grafting PU as the driving force of mGov adoption is supported and conceives the broad nature of mGov (Lallana, 2008; Jiang, 2009). Hence, the hypothesis is:

H1: Perceived usefulness (PU) of the mGov system leads to its adoption.

Perceived Ease of Use (PEOU)

From self-determination theory (Deci and Ryan, 1985), we find support for our rationales that consumers have natural constructive sense to adopt any system which provides them with the benefits of effortless interaction and functional usefulness. Adoption of mGov is intertwined with perceived enjoyment (Romano Jr. et al., 2010) and perceived enjoyment pursues intrinsic motivation to adopt mGov, which is a determinant of perceived ease of use (PEOU). PEOU encompasses the proximity of mobile devices in seeking government service, users' effortless ability to perform their job through mGov and efficacy and control over the system of mGov in interacting with transformational government through mobile devices like mobile phones. PEOU has a positive impact on PU (Hwang, 2005; Venkatesh, 2000). The ICT-embedded mGov system can reduce time and cost and enhance service speed (Romano Jr. et al., 2010). Transaction cost analysis (TCA) (Williamson, 1981) attests that time and cost benefits positively affect usefulness perception on the system which pursues behavioural intention to adopt the system. Self-efficacy theory (Bandura, 1986) affirms that self-efficacy enhances individuals' confidence regarding the ability to conduct any task which leads to positive attitude (Pavlou and Chai, 2002). This argument is compatible with mGov system to include the construct PU as the driving force for adoption. Thus, we propose:

H2: Perceived ease of use (PEOU) of the mGov system leads to its adoption.

H3: Perceived ease of use (PEOU) leads to perceived usefulness (PU) of the mGov system.

Perceived Compatibility (PCOMP)

Some citizens are interested in using the mGov service through mobile devices because of its congruence with their lifestyle and behavioural norms (Trimi and Sheng, 2008). From TPB, we find that behavioural, social, technological and cultural beliefs, congruent with the mobile nature of mGov, pursue a positive attitude toward the adoption of mGov. When consumers psychologically perceive their lifestyle, profession, habits, expectations, and emotional beliefs (which we define as perceived compatibility (PCOMP)) as being congruent with special characteristics and the service delivery pattern of mGov, they find logical support to adopt mGov. This PCOMP is a construct of diffusion of innovation theory (DOI) (Rogers, 1995), which recommends that individuals tend to accept diffusion of any technology when it synchronizes with individuals' behavioural, social, cultural and psychological beliefs. In this respect, we get deep insight from the social identity theory (Tajfel, 1972). From this theory, when individuals gather knowledge that their emotional values arising from behavioural, social and cultural beliefs have attachment with a certain similar group, they pursue membership with that group. Agarwal and Prasad (1997) also suggest that innovations will be adopted when individuals find their identity and beliefs matched with the characteristics of that innovation. Therefore, PCOMP reflects citizens' beliefs of using mGov. Based on the above arguments, we propose:

H4: Perceived compatibility (PCOMP) with the mGov system leads to its adoption.

Perceived Empathy (PEMP)

Parasuraman et al. (1985) revealed that empathy affects consumers' perception of service quality. While mGov service delivery ensures higher efficiency, user-friendliness, and flexibility and promotes higher acceptance from consumers of unprivileged groups of a society, impersonating and virtual service pattern also inhibits its proliferation and diffusion (Scholl, 2005). In this regard,

perceived empathy (PEMP) can positively influence behavioural attitude to adopt mGov. PEMP can be conceptualized as the service providers' willingness and passion to promptly respond to citizens by feedback, approved testimonials and SMS to assure that, even though the mGov service pattern is virtual, there are customer services sitting behind the screen to fulfill consumers' needs. Sincere, caring, efficient and effective interactions of customer service operators and their willingness to satisfy customers' special needs are evaluated and recognized highly by consumers (Bogomolova et al., 2009). This argument is supported by the sense of the social penetration theory (Altman and Taylor, 1987). Thus, we propose:

H5: Perceived empathy (PEMP) of the mGov system leads to its adoption.

Perceived Security (PSY)

Perceived security (PSY) is the perception of consumers that disclosed information in the mGov channel would not be shared with any non-authorized departments, and the system has sufficient technological and social protection that no unwanted person can intercept their information from the open network — leading to potential financial, informational, and criminal abuse. While adopting mGov, citizens generally seek those government services which are sensitive and have real time value like, paying utility bills, parking fees, and other government fees, booking and buying tickets of events, collecting physicians' and agricultural advice, and getting SMS for weather alerts, road conditions and terrorism (Kumar and Sinha, 2007). These types of services have substantial values for both the consumers and service providers, and consumers find potential implications of the outcomes of these functions. Nevertheless, special technological features of mGov like, virtual medium, self-service, open network etc. and social features like transparency, rules and regulations, public-private partnership between government and private mobile phone operators etc. may create security threat. As a result, security perception is assumed a driving force in creating beliefs among consumers which encourage adoption (Scholl, 2005).

H6: Perceived security (PSY) of the mGov system leads to its adoption.

Perceived Reliability (PREL)

Perceived reliability (PREL) is the perception by consumers of mGov that services provided by this medium are trustworthy and that its overall function is accurate and guaranteed as promised by service providers (Shareef et al., 2011). Irani et al. (2007) suggest that adoption of the government service through virtual medium depends on a sense of personal confidence in the system. Since consumers do not find full control in the virtual medium due to invisible interaction, authenticity of transmitted information in either direction largely depends on perception of trust on this system (Pavlou, 2003). Perception of reliability is the dominating belief to adopt any technology-related system which ultimately influences consumers' attitude toward adoption (Pavlou and Chai, 2002; Baškaradaa and Koronios, 2014). Parasuraman et al. (1985) asserts that system reliability pursues perception of service quality and trustworthiness, which in turn influences the belief in mGov. This trustworthiness and confidence can be derived based on the perception of reliability in the mGov system. Perception of security also inflicts perception of reliability on the system. Warkentine and Willison (2009) worked on trust-related behaviour for ICT and their findings implied that perception of higher security in an ICT-mediated system like mGov can enhance reliability perception and leads to adoption behaviour. Drawing conclusion from the above-mentioned arguments, we propose:

H7: Perceived reliability (PREL) of the mGov system leads to its adoption.

H8: Perceived security (PSY) leads to perceived reliability (PREL) of the mGov system.

Based on the above hypotheses, we set out the model below in Figure 1.

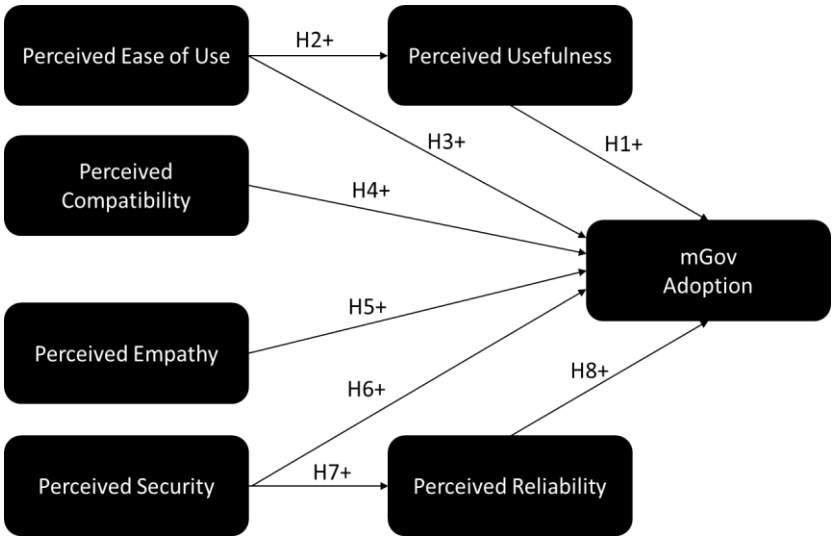

Figure 1: Adoption Behaviour for mGov

Research Methodology

This study explored consumers' adoption behaviour for the three countries with a similar type of questionnaire. We organized a focus group to revise, modify and reword the scale items. The focus group was made up of three university professors from a Canadian university, three members from a Bangladeshi university and two members from a Germany university who have expertise in defining ICT-based adoption behaviour. We also launched a pilot study among ten students of a Canadian university from school of business who have practical experience in using mGov. From recommendations of both the focus group and respondents of the pilot studies, we edited the measuring items.

These three countries were chosen to confirm sufficient cultural variations which can justify cross-cultural differences in consumers' adoption behaviour of mGov; however, there are certain limitations in launching the same questionnaire for the same type of tasks offered by mGov in these three countries. The necessity of mGov, adoption frequency, service delivery pattern, availability,

maturity depth and breadth, demand, technological orientation, economic conditions, job descriptions and social parameters are different in these three countries. Since we outlined different tasks for the three countries based on service availability and popularity through mGov in that country, measuring items of the driving forces, i.e., independent variables, were slightly modified. Scale items of the independent variables were measured by a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Survey Instrument

Measuring scales of the independent variables are extracted from literature review (Bélanger and Carter, 2005; Carroll, 2005; Collier and Bienstock, 2006; Meso et al., 2005; Parasuraman et al., 2005; Scholl, 2005; Shareef et al., 2011; Zhang et al., 2002; Zhu et al., 2002) and are modified according to the service delivery pattern of mGov. The questionnaire is shown in Appendix A. Consumers were asked to respond in the questionnaire based on their recent experiences of seeking the afore-mentioned government service through mGov, i.e., based on perception. These tasks are:

1. Payment of utility bills (Bangladesh): Citizens can pay hydro bills through mobile phones and this service is very popular among all citizens.

2. Weather alert (Canada): This popular service can be accessed through smart phones directly or through mobile phones from the mobile-enabled portal.

3. Payment of parking fees (Germany): This service is an example of one of the few mGov services which are being implemented in Germany and accepted by many classes of citizens.

Study Procedure

Data in all the three countries were collected almost at the same period from January to March 2012.

For Bangladesh, the survey was conducted among citizen in Dhaka city and adjacent suburban/rural

areas. We personally distributed 300 questionnaires with returned postage and got the return of 243 fully completed questionnaires. The response rate was 81 percent.

In Canada, we distributed 283 questionnaires with return postage in Ottawa city and its adjacent suburban areas. We only handed out the questionnaire if they had experience of seeking that service in the last six months and were willing to respond. A total of 162 fully completed questionnaires were received, which represents a 57 percent response rate.

In Germany, we conducted the survey online based on our previously stored data base of general consumers' emails. We requested the general citizens to respond if they had experience of using the afore-mentioned mGov service. We sent our online survey request to a total of 230 consumers and received 172 fully completed questionnaires, which represent a 75 percent response rate.

For required statistical power, although we found hardly any consensus for sample size of structural equation modeling (SEM) (Sivo et al, 2006), the generally recommended value is at least 10 samples to estimate each free parameter (Hoe, 2008). By using different sample size, Iacobucci (2010) tried to estimate the effect of sample size on different model fit parameters and finally suggested that any sample size of 50 is appropriate for SEM depending on the number of latent variables. Since we have 8 cause-effect relations to measure in our path analysis, a sample size of approximately 100 is good enough for the measurement method.

Data Analysis

We first conducted demographic analysis for the samples collected from the three countries. We revealed that average age of the respondents in Bangladesh was 39 but for Canada this figure was 29 and for Germany 30. The result is clearly explainable. For Bangladesh, we the mGov task was paying bills, and since this is done mainly by family heads and since this service option is not too complex for an older person who does not have good skills in modern ICT, the average age is higher. For

Canada and Germany, these services are very new and primarily available through smart phones, which are basically used by the younger generation. Obviously, the average lower age groups are more interested in exploring this popular service using their smart phones. Age has an impact on perceptions across culture (Nelson and Clark, Jr., 1994), but since our respondents' average age is consistent with mGov adoption, we explained the differences in mGov adoption behaviour based on the differences in culture among the three countries. In our collected samples from Bangladesh, Canada, and Germany, male versus female odds ratios were 1:72, 1:81 and 1:77. Even though in these three countries the response rate for males is higher with respect to gender distribution in those countries, if we consider the related behaviour for our mentioned mGov tasks for males and females alike, the mobile phone usage ratio in Bangladesh (1:69) (Bangladesh Statistics Bureau, 2011), smart phone usage in Canada (1:79) (Stanley, 2011) and car driving in Germany (1:77) (Reiß and Krüger, 2012), we find that our sample is quite representative of demography of gender of those three countries. Moreover, although gender has a potential impact on consumers' behaviour, since in our samples of the three countries gender ratio is not potentially different, we did not find any justification to explain any shouted difference in consumers' behaviour based on the impact of the gender of the respondents.

We conducted exploratory factor analysis (EFA) on the preliminary 27 scale items. We removed those items which loaded less than .40 (Stevens, 1996, pp. 389–390) or cross-loaded more than one factor. EFA analysis retained the same six factors we developed from our theoretical arguments. However, among the six measuring items of PEMP in the Canadian sample, one item (PEMP6) was removed due to a loading factor of less than 0.40). Finally, we found that six constructs with 27 measuring items could be retained for Bangladesh and Germany, and 26 items for Canada.

For the independent and dependent variables, we examined confirmation of EFA through confirmatory factor analysis (CFA). Among 4 measuring items of mGov adoption, one item

(ADOP4) from all three countries' samples was removed as it was loaded with a loading factor of less than 0.50 (Kline, 2005). Since in CFA, we only retain the scale items for each construct if the average variances extracted (AVE) for each factor and its measuring items have a loading factor of at least 0.50; thus, convergent validity is proved (Fornell and Larcker, 1981). Discrimination among the six constructs is also achieved as the largest shared variance between these factors that is lower than the least AVE value for each factor and its measures (Espinoza, 1999).

We examined the reliability of the constructs by the three samples in the light of Cronbach's alpha. Since the coefficient alpha for all the six indicators of mGov adoption and the mGov adoption itself scored from 0.724 to 0.923, we are assured that the constructs are reliable (Nunnally and Bernstein, 1994).

Statistical Verification of Causal Relationship by Path Analysis

We have used LISREL for SEM deploying path analysis to verify the cause-effect relationships of the indicators with mGov adoption.

Path Model: Bangladesh

Our primary model fitness values for Chi-Square, degree of freedom (df), probability (p), and root mean square error of approximation (RMSEA) are 34.21, df 7, p-value 0.00000, and 1.11 respectively, which indicate poor representation of the mGov adoption model in terms of fitness. To improve model fitness as per recommendation of the statistical analysis, we added error covariance terms between PEOU and PEMP, between PEOU and PSY, and between PEMP and PSY, resulting in a better model. We verified the significance of the relationships between the six constructs and mGov adoption by 't' values. It revealed that PEOU, PU, PEMP, PREL and PSY are significant on mGov adoption at the 0.05 level. We also hypothesized that security perception (PSY) enhances reliability perception (PREL) and perception of ease of use (PEOU) affects perception of usefulness

(PU) of the mGov system among the users of mGov. These relationships are also significant at the 0.05 level. However, the causal relationship of PCOMP with ADOP is not significant, even at the 0.10 level. Therefore, we removed PCOMP from the model. In addition to the direct relation of empathy perception (PEMP) with mGov adoption, LISREL analysis suggested a relation between PEMP and PREL. It means empathy perception (PEMP) derived from the customer caring of the Bangladeshi mGov system can enhance perception of reliability (PREL) on the system. So, we added this relation and ran the model again. The final mGov adoption model is shown in Figure 2A. The verified model fitness indices are reasonably acceptable, as listed in Table 2 with the recommended values. RMEEA value (.058) is almost equal to the upper limit of the typical recommendation (the recommended value is 0.06); however, any value of RMSEA less than 0.10 is quite acceptable (Kline, 2005, pp. 139).

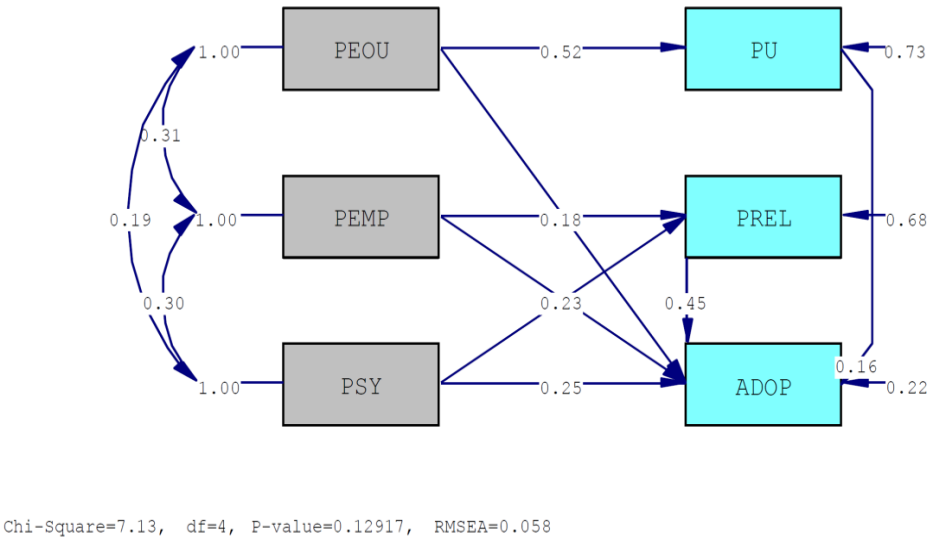

Figure 2: mGov Adoption Model for Bangladesh

Path Model: Canada and Germany

Following the same procedure, the final mGov adoption model for Canadian and German samples are

shown in Figure 3 and 4 respectively.

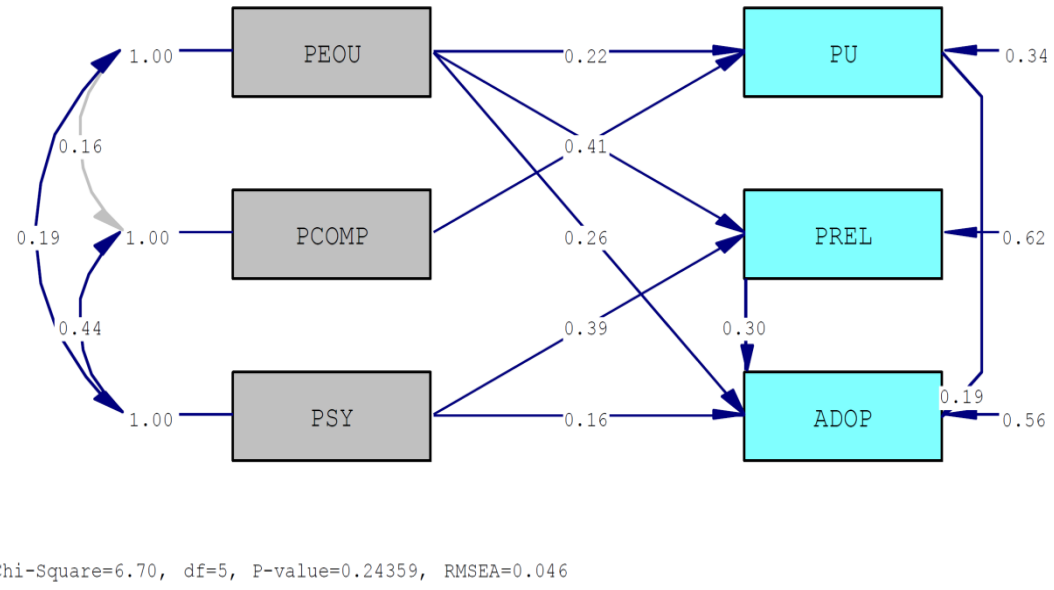

Figure 3: mGov Adoption Model for Canada

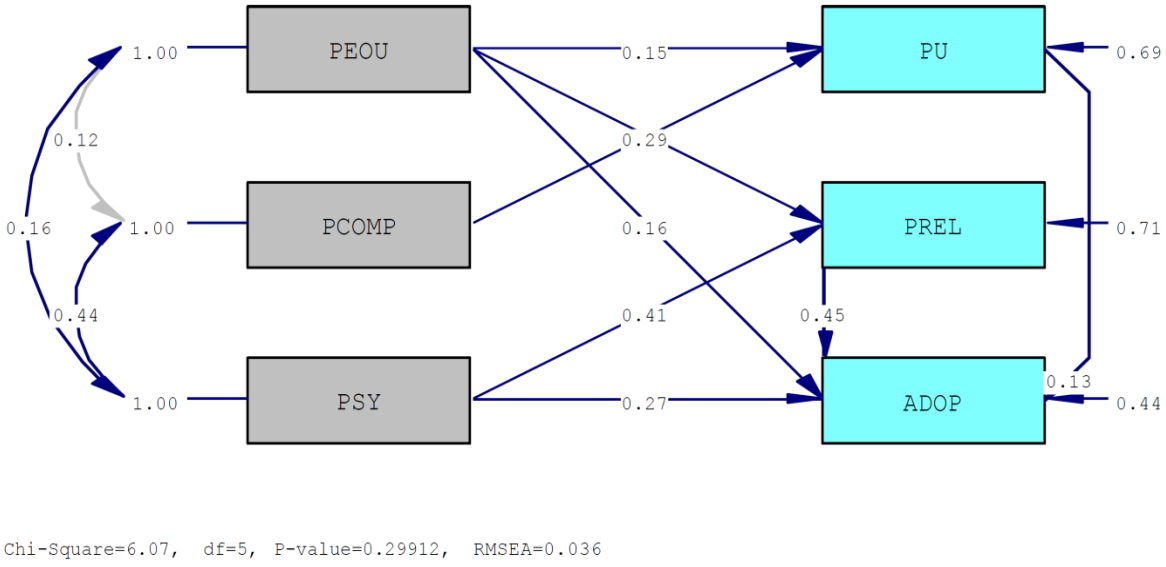

Figure 4: mGov Adoption Model for Germany

Table 2: mGov Adoption Model Fitness Values

Fit Measures	Recommended Values	Adoption Model		
		Bangladesh	Canada	Germany
Chi-square ($\chi 2$)	$p \geq 0.05$	7.13 (0.12917)	6.70 (0.24359)	6.07 (0.29912)
Degrees of Freedom		4	5	5
$\chi 2$/Degree of freedom (DF)	≤ 3.0	1.7825	1.34	1.214
Comparative Fit Index (CFI)	$\geq .90$	0.99	1.00	0.99
Goodness of Fit Index (GFI)	$\geq .90$	0.99	0.99	0.99
RMSEA	<0.06	0.058	0.046	0.036
Normed Fit Index (NFI)	≥ 0.90	0.99	0.99	0.98

Results

For the Canadian and German samples, we revealed potentially different results from the Bangladeshi sample, even though the former two countries also potentially or marginally differ in terms of magnitude of effects of certain constructs on pursuing adoption behaviour for mGov. These potential and marginal differences observed among the three countries claim explanation and

justification from cross-cultural implications. These observed results are depicted in Table 3 below.

Table 3: Summary of Results

Proposed and New Hypothesis	Country Status		
	Bangladesh	Canada	Germany
H_1: Perceived usefulness (PU) of the mGov system leads to its adoption.	Accepted	Accepted	Accepted
H_2: Perceived ease of use (PEOU) of the mGov system leads to its adoption.	Accepted	Accepted	Accepted
H_3: Perceived ease of use (PEOU) leads to perceived usefulness (PU) of the mGov system.	Accepted	Accepted	Accepted
H_4: Perceived compatibility (PCOMP) with the mGov system leads to its adoption.	Rejected	Rejected	Rejected
H_5: Perceived empathy (PEMP) of the mGov system leads to its adoption.	Accepted	Rejected	Rejected
H_6: Perceived reliability (PREL) of the mGov system leads to its adoption.	Accepted	Accepted	Accepted
H_7: Perceived security (PSY) of the mGov system leads to its adoption.	Accepted	Accepted	Accepted
H_8: Perceived security (PSY) leads to perceived reliability (PREL) of the mGov system.	Accepted	Accepted	Accepted
New Hypothesis: Perceived empathy (PEMP) leads to perceived reliability (PREL) of the mGov system.	Accepted	Rejected	Rejected
New Hypothesis: Perceived compatibility (PCOMP) leads to perceived usefulness (PU) of the mGov system.	Rejected	Accepted	Accepted

Discussion

From Figures 2, 3, and 4, we find regression coefficients for all the relations. From 2, a unit positive change on PEOU causes .18 unit positive change on adoption of mGov when PU, PEMP, PREL, PU and PSY are constant. A unit positive change on PU causes .16 unit positive change on the adoption of mGov when all other factors remain constant. Similarly, we can explain all other relations depicted in Figures 2, 3 and 4.

Technology belief is an important factor for mGov adoption behavior

Technological belief is an important influencing factor for predicting mGov adoption behaviour ; however, behavioural, social and cultural beliefs play significant roles in this type of new virtual medium where the specialty can be described as an impersonated service operated through mobile and wireless interaction delivering real-time information (Romano Jr. et al., 2010). This view is also supported by researchers who are engaged in predicting individual behavior of ICT in organizational context through organizational theory like, technology-organization-environment (TOE) framework (Chatterjee et al., 2002; Kauffman & Walden, 2001). Focusing on this underlying view, we strongly supported during our hypothesis development process that PEOU, PU, PREL and PSY are beliefs that impart driving influence to adopt mGov, and from our statistical analysis, we could not deny our hypotheses. Citizens of Bangladesh, Canada and Germany acknowledged that public services accessed through mobile devices are easy for them to interact with and due to this and other reasons such as availability from anywhere and at any time, flexibility, mobility and receiving information in real time, they also deem this service as useful. These perceptions develop positive beliefs to adopt the mGov service. We also argued that PREL and PSY enhance consumers' belief that the mGov system can be adopted. Researchers argued that the mGov service system provides an instant interaction facility by providing an impersonating environment which may have a sensitive and vulnerable impact on consumers' perception of risk (Warkentin and Willison, 2009). Security is a vulnerable issue for consumers to access government service systems through mobile devices (Zhang et al., 2002). We find the statistical base in favour of our theoretical arguments. Up to this point, we can claim standardized adoption behaviour of consumers irrespective of cultural differences.

Perceived empathy is important for Bangladeshi consumers and perceived compatibility for German and Canadian ones

We now find that empathy belief (PEMP) pursues consumers' adoption intention directly and enhances the perception of reliability for Bangladeshi consumers. Canadian and German consumers differ on this issue from Bangladeshi consumers. We observed PCOMP does not have any significant impact on Bangladeshi consumers to adopt mGov. However, for Canadian and German citizens, when they find that accessing and availing the government service system through a mobile device is congruent to their daily life style, profession and mentality, it upholds their perception about the usefulness of the system, which in turn leads to their acceptance.

Excluding the aforementioned differences, for all the direct and indirect relations between mGov adoption and independent constructs, there are some observable differences among Bangladeshi, Canadian and German samples, which are manifested in certain relations. For example, the effects of perceived reliability (PREL) and perceived security (PSY) to adopt mGov are potentially higher for German citizens than Canadian citizens. For German citizens, a unit positive change on PREL contributes .45 unit positive change and a unit positive change on PSY contributes .27 unit positive change to adopt mGov system when all other factors for mGov adoption remain constant, whereas for Canadian sample, the same effects of PREL and PSY on mGov adoption are only .30 and .16 respectively. On the other hand, for Canadian sample, the effect of PCOMP (loading factor is .41) to enhance their experiences regarding the usefulness of the system (PU) has a much higher thrust than for the same which German citizens perceive (loading factor is .29). Positive effect of PEOU to adopt the mGov system for Canadian citizens (loading factor is .26) is also potentially higher than the same for German citizens (loading factor is .16).

Since transformational government offered through mGov is a new public administration service system adopted across the countries in the world, this study has an exploratory nature; however,

strong evidences from scholarly studies and cross-cultural theories regarding cross-cultural implications for ICT adoption pursue researchers' intention to reveal cultural impact on the adoption model of mGov (Bart et al., 2005; Brengman et al., 2005; Ha et al., 2010). Derived from phenomenal cross-cultural studies on different rhetoric attributes of human beings, researchers revealed that any attempt to formulate a standardize ICT-related consumer behaviour model is impractical, and argued to interconnect cultural parameters in deciding consumer behaviour (Hovava and D'Arcyb, 2012; Levinson and Malone, 1980; Pavlou and Chai, 2002).

Mattila (1999) studied Western and Asian consumers' behaviour and observed that Western consumers rely more on tangible cues than their Asian counterparts. Unlike the eGov service, for the services of mGov enlisted in the questionnaire, customer service empathy is not a visible and direct issue unless any trouble occurs. As a result, this intangible belief of empathy (PEMP) inflicts only emotional attachment on consumers' minds, which is a driving force for Bangladeshi consumers but not for Canadian and German users. Espinoza's (1999) exploration of Latin American and North American consumers for service quality perception strongly supports our findings. If we now look at Table 1 of Hofsted's (1980) individualism and power distance dimensions, we can find explicit justification of these cross-cultural differences. For a collectivist society like Bangladesh, consumers' family bonding and group behaviour has substantial influence on emotional attachment. Rather than inspired from reality, which is a dominating motive for individualistic societies like Canada and Germany, consumers of a collectivist society find more intimacy from emotional and non-tangible affection (Espinoza, 1999; Lane and DiStefano, 1988). Researchers from cross-cultural investigations (Benjamin et al, 2011; Torkil, 2012; Young et al., 2012) clearly demonstrated that this perceptual difference between the consumers of Western countries (like the USA, the UK and Australia) and Asian countries (like India, Malaysia and China) is an outcome of cultural differences and this phenomenon can be explained based on

individualism and power distance. Getting insight from these studies, we understand that Canada, as a North American country, and Germany, as a Western European country, have a difference in empathy perception from an Asian country like Bangladesh due to the difference in behavioural attitude inflicted from potential differences in cultural traits on individualism and power distance. As a high power distance country, Russia exhibits a similar trend like Bangladesh (Wua et al., 2012). Even in France, where power distance (68) is very high in comparison to Germany and Canada, consumers' trust in e- commerce adoption is much less than German consumers, which indicates the need of empathy (Tao, 2011). This behaviour is pertinent to mGov adoption initiated by the perception of empathy. In countries where power distance is high, consumers typically treat public service providers as highly powerful (Emerson, 1962). Donthu and Yoo (1998) affirmed, "Customers of high power distance culture would respect the service providers and think the providers' work is beyond their grasp". Consequently, the perception of customer caring from the public administration of high power distance countries is reasonably a strong motivator for consumers to adopt the system.

From the socio-technical theories, attitudes of consumers to adopt a new technology system are manifested by social and cultural aspects (Chen and Thurmaier, 2005). Individualistic societies are more focused on self-doctrine and controlled by individual traits (Park and Jun, 2003). This phenomenon inhibits them from any situation where behavioural similarities are absent (Donthu and Yoo, 1998). From a study among Chinese and American customers, Pavlou and Chai (2002) asserted this phenomenon. For collectivist societies like Asian countries, consumers are not aware of their style congruency with systems' characteristics, which is supported by the findings of Hwang (2005). Therefore, either they are not aware of their personal interest, behavioural pattern and professional life which comprise compatibility belief, or due to the acceptance of power of public administrators they do not search for congruency with the system as the pursuing belief to

adopt the system (Pavlou and Chai, 2002). As a result, in an Asian country like Bangladesh, where power distance is very high and which is a collectivist society, PCOM is not a potential indicator to adopt mGov, whereas for Germany and Canada, this factor is significant. Exploring consumers' online purchase behaviour between Korea and UK, Ha et al. (2010) identified that consumers of these two countries differ based on their urge of mental congruency. The same underlying concept justifies the differences in terms of magnitude of the effect of compatibility belief between Canadian and German consumers. Canadian citizens bestow higher value to compatibility perception as the belief to develop positive attitude to adopt mGov. North American consumers, like Canadian consumers, have a more individualistic view than German consumers (Ein-Dor et al., 1993; Espinoza, 1999). Researchers exploring cross-cultural differences asserted in the light of individualist score and empirical findings that North American consumers have higher behavioural intention for that system which assimilates their daily norms, behavioural pattern and self-interest (Benjamin et al, 2011; Ein-Dor et al., 1993; Torkil, 2012). Since the availability of the government service through mobile devices in Canada is relatively new, their behavioural attitude to adopt the system significantly depends on the system's user-friendly accessibility. Members of highly individualistic societies like Canada are not interested in any system based on group attachment and emotional bonding. Rather, they are interested in that system which provides time and efficiency advantages (Espinoza, 1999; Hovava and D'Arcyb, 2012). Consequently, the effects of PEOU and PU are higher for Canadian consumers than for German or Bangladeshi consumers.

Another important difference is revealed on the magnitude of the effects of PREL and PSY. Institutional-based trust is a strong influencer for consumers to interact with an ICT-based system (Parent et al., 2005; Warkentin et al., 2002). Institutional-based trustworthiness belief imparts security and reliability perception among consumers. Consumers of a high uncertainty avoidance society like German and Bangladesh (see Table 1) feel discomfort when they do not perceive

enough trust, i.e., a lack of reliability and security of the system deters German and Bangladeshi consumers from creating a positive belief for mGov service. As Tao (2011) revealed, "consumers of the same age groups tend to have higher confidence in conducting e- commerce in West Germany than in France". Hofstede pointed that in the trait of uncertainty avoidance, France scored (86), much higher than Germany. Therefore, our argument is strongly supported from the finding of this study. Reliability expectation is higher among Australian drivers than Chinese drivers (its uncertainty avoidance score is much higher than China) (Young et al., 2012). Several studies in the UK, Korea, Russia and Taiwan reflect this base concept (Ha et al., 2010; Wua et al, 2012). Donthu and Yoo (1998) observed evidence from four countries' data that consumers with high uncertainty avoidance always have a trend to embrace controlled, disciplined and trustworthy situations. This revelation clearly justifies the higher impacting values of reliability and security perception on the development of trustworthy belief and creating behavioural attitude to adopt the mGov system for German and Bangladeshi consumers. Using results from Chinese and USA samples, Pavlou and Chai (2002) derived the same indication that a high uncertainty avoidance society has a higher belief in reliability and security. From a similar study among USA and Korean consumers, Park and Jun (2003) observed an identical result, which tempted them to explain this behaviour under the uncertainty avoidance construct of cultural trait. Obviously, German and Bangladeshi consumers showed a higher degree of affluence to perception of reliability (PREL) and security (PSY) to adopt a virtual, flexible and newly innovative system like mGov which is operated through an open network.

From the above discussion, it is clearly noticeable that this study has potential contribution in the existing knowledge of developing mGov. The study has revealed citizens' adoption behavior for mGov of three different countries having different cultural traits. This research has also established that cultural differences have significant effect on adoption behavior. So, while developing mGov

for any country, policy makers should consider cultural traits of users to incorporate different facilitating features.

Theoretical and Practical Contribution

The findings of this study have potential contribution in cross-cultural theory development for predicting online behavior and service development process through mGov. We explicitly revealed and conceptualized that while developing mGov service, practitioners should consider that irrespective of cultural differences, consumers adopted or will adopt any online service offered through mobile phone if we can ensure that this service is easy to interact, available from any where, anytime, and reliable and secured. These requirements of consumers are global while seeking service through mGov. So, while developing mGov service in any countries, policy makers can import these concepts from any countries where consumers have spontaneously adopted government service available through mobile interaction.

However, this is not an exhaustive picture. Consumers' adoption behavior, requirements, and preferences are not completely global; it significantly varies depending on differences in national cultural traits. For instance, the perception of customer caring while interacting with government service system through mobile phone is a strong motivator for consumers of high power distance countries. In this aspect, presence of well motivated and appropriate customer service is essential and relevant for success of mGov service in most of the developing countries where presumably power distance is high (See Table 1). Research findings asserted that perception of compatibility adds potential values in growing interest to accept mGov service for countries where effect of individualism is observable, like Canada, Germany, and in any developed countries in general. Customers from individualistic societies like North America are primarily driven by their own interest and style and show conformity to that service system which is consistent with their behavioural pattern. In countries where power distance is prominent, customers do not potentially

abide by their own style and pattern; instead, they permit powerful control of the public administration system over them.

Policy makers should be careful in developing online government service for any countries where consumers are very prone to avoid uncertain situation. For these countries where uncertainty avoidance behavior is high (as per Hofstede, 2001), policy makers should provide much priority on implementing security related features, because consumers of these countries need much higher level of security perception which finally develops reliability perception among them in comparison to consumers of countries having low level of risk aversion behaviour.

In conclusion, we can state that, for high power distance and collectivist countries, consumers develop their positive beliefs to adopt the mGov system if they find the service offered through mGov is easy to manage, useful in comparison to brick and mortar government service system, sufficiently reliable and secure, and if customer service takes care of any problems arising from the system. For low power distance and individualistic societies, empathy does not have an impact on their behaviour to adopt mGov. Instead, if government services delivered through mobile phones have congruencies with their mentality, lifestyle, and professional behaviour, it will enhance their perception of usefulness of mGov, which ultimately influences the adoption of the system. Extreme individualistic societies like Canada perceive this behaviour more prominently than high individualistic societies like Germany. On the other hand, consumers who possess an uncertainty avoidance trait like Germany are more likely to depend on reliability and security beliefs than Canadians to form a positive attitude to adopt mGov.

Therefore, while developing government web portals for citizens to interact through mobile phone, policy makers of any countries should be careful and conscious of the respected countries' citizens' national cultural traits. Blind copying of overall model of mGov service system from any

successful country can ultimately create the fundamental reason of failure of the system in another country.

Limitation and Future Research Direction

We investigated only one country — Bangladesh — which has high power distance and collectivism traits. Revealing the impact of empathy on adoption behaviour could be generalized if future researchers extend this study among other countries which have similar cultural traits. The tasks accomplished through mGov in our questionnaire were similar for Germany and Bangladesh; however, it was potentially different for Canada. This dissimilarity can provoke perceptual differences among consumers. We agree on this noteworthy drawback. However, due to the absence of any financial transaction service in Canada through mGov (they will launch very soon), we failed to conceive consumers' real experiences with financial transaction. Service types chosen for the three countries are also different. Future researchers may compare citizens' adoption behavior of mGov of different countries choosing similar service for all the countries. It would be interesting to expand this research in some other countries where Hofstede's cultural dimensions as depicted in Table 1 are significantly different. The same study could be replicated in future considering the moderating effects of demographic variables such as education, gender and age, to evaluate whether these variables have some impact on adoption behaviour.

Conclusion

To meet our first objective, from all the three countries' samples, we revealed that PEOU, PU, PREL and PSY positively affect citizens' attitude to adopt mGov. We also identified that PEOU affects PU, and that PSY influences PREL. In addition, we concluded that for Bangladeshi citizens PEMP positively affects the adoption of mGov and supports the perception of reliability of the mGov service system. However, both the afore-mentioned relations were not accepted for Canadian

and German consumers. On the other hand, PCOMP enhances Canadian and German consumers' perception of usefulness of the mGov service; although this is not true for the consumers of Bangladesh.

In our second objective, we attempted to reveal cross-cultural implications for the consumers' adoption behaviour of the mGov system. Shedding light on Hofstede's (1980) cultural dimensions shown in Table 1 and the deeply shouted claims of cross-cultural studies (Donthu and Yoo, 1998; Espinoza, 1999; Irani et al., 2007; Pavlou and Chai, 2002), we investigated the differences of consumers' beliefs and perceptions to adopt the mGov service. We revealed significant differences among the consumers of Bangladesh, Canada and Germany. We found strong support to explain those differences in the light of cross-cultural theories and scholarly articles outlined in the previous paragraph. Unlike Canadian and German consumers, the perception of caring (PEMP) positively drives Bangladeshi consumers to adopt mGov. On the other hand, unlike Bangladeshi consumers, compatibility perception has an effect on perceiving usefulness of the mGov service. Although Canadian and German consumers showed similar behaviour in several aspects of developing beliefs for mGov adoption, the magnitude of the effect of the beliefs of compatibility, reliability, security and ease of use is significantly different in these two nations. We explained these differences based on Hofstede's (1980) cultural dimensions of power distance, individualism and uncertainty avoidance shown in Table 1.

Reference

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50(2), 179-221.

Altman, I. & Taylor D (1973). *Social penetration: The development of interpersonal relationships*. New York: Holt.

Anttiroiko, A-V. (2005). Towards ubiquitous government: The case of Finland. *E-Service Journal,* 4(1), 65-99.

Archer, N. (2007). Mobile eHealth: Making the Case. In Kushchu (Ed.), *Mobile Government: AN Emerging Direction in E-government*, Hershey, PA: IGI Publishing, 155-170.

Ba, S. & Pavlou, P. A. (2002). Evidence of the effect of trust building technology in electronic markets: price premiums and buyer behavior. *MIS Quarterly* 26(3), 243-268.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.

Bangladesh Statistics Bureau. (2011). Mobile phone penetration in Bangladesh: a social aspect. Bangladesh Statistics Bureau, Government of Bangladesh, www.bangladesh.gov.bd.

Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *Journal of Marketing* 69(4), 133-152.

Baškaradaa, S. & Koronios, A. (2014). A Critical Success Factor Framework for Information Quality Management. *Information Systems Management*, 31(4), 276-295.

Bélanger, F. & Carter, L. (2005). Trust and risk in e-government adoption. In Proceedings of the *11th Americans Conference on Information Systems*, Omaha, NE, USA.

Ben-Ziona, R. Pliskina, N. & Fink, L. (2014). Critical Success Factors for Adoption of Electronic Health Record Systems: Literature Review and Prescriptive Analysis. *Information Systems Management*, 31(4), 296-312.

Lowry, P. B., Cao, J. & Everard, A. (2011). Privacy concerns versus desire for interpersonal awareness in driving the use of self-disclosure technologies: the case of instant messaging in two cultures. *Journal of Management Information Systems*, 27(4), 163-200.

Blackman, M. (2006). Municipalities move to mobile government. *Government Procurement*, 14, 54-55, (Web Address: www.govpro.com).

Brengman, M., Geuens, M., Weijters, B., Smith, S. M. & Swinyard, W. R. (2005). Segmenting Internet shoppers based on their web-usage-related lifestyle: a cross-cultural validation. *Journal of Business Research*, 58(1), 79-88.

Carroll, J. (2005). Risky Business: Will Citizens Accept M-Government in the Long Term?. In Proceedings of the 1st European Mobile Government Conference (Euro mGov 2005) (Ibrahim Kushchu and M. Halid Kuscu Eds.), Brighton, UK, 10-12 July, Mobile Government Consortium International Pub, UK.

Carter, L. & Bélanger, F. (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5-25.

Chatterjee, D., Grewal, R. & Sambamurthy, V. (2002). Shaping up for ecommerce: institutional enablers of the organizational assimilation of Web technologies. *MIS Quarterly* 26(2), 65–89.

Collier, J. E. & Bienstock, C. C. (2006). Measuring service quality in e-retailing. *Journal of Service Research*, 8(3), 260-275.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Deci, E. L. & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press, New York.

Donthu, N. & Yoo, B. (1998). Cultural influences on service quality expectations. *Journal of Service Research*, 1(2), 178-186.

Dussauge, P., Garrette, B. & Mitchell, W. (2000). Learning from competing partners: Outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal*, 21(2), 99–126.

Ein-Dor, P., Segev, E. & Orgad, M. (1993). The effect of national culture on is: implications for international information systems. *Journal of Global Information Management* 1(1), 33-44.

Emerson, R.M. (1962). Power-dependence relations. *American Sociological Review*, 27(February), 31-41.

Espinoza, M. M. (1999). Assessing the cross-cultural applicability of a service quality measure, A comparative study between Quebec and Peru. *International Journal of Service Industry Management,* 10(5), 449-468.

Donthu, N. & Yoo, B. (1994). Cross-cultural laws and differences in market response. *Management Science* 40(1), 111-122.

Gauld, R., Gray, A. & McComb, S. (2009). How responsive is e-government? Evidence from Australia and New Zealand. *Government Information Quarterly,* 26(1), 69-74.

Geyer, J. A. & Ragland, D. R. (2012). Accident risk modified by passengers. Center for Traffic Sciences, University of Wuerzburg, Röntgenring, Germany. [Accessed in 2012]

Gil-Garcia, J. R., Chengalur-Smith, I. & Duchessi, P. (2007). Collaborative e-Government: impediments and benefits of information-sharing projects in the public sector. *European Journal of Information Systems* 16(2), 121–133.

Global Dialogue (2007). Mobile Innovations for social and economic transformation. *eGovWorld*.

Goodman, S.E. & Green, J.D. (1992). Computing in the Middle East. *Communications of the ACM*, 35(8), 21-25.

Ha, H. Y., Muthaly, S. K. & Akamavi, R. K. (2010). Alternative explanations of online repurchasing behavioral intentions: A comparison study of Korean and UK young customers. *European Journal of Marketing* 44(6), 874 – 904.

Heeks, R.B. (2002). Information systems and developing countries: failure, success, and local improvisations. *The Information Society: An International Journal,* 18(2), 101–112.

Hoe, S.L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of Applied Quantitative Methods,* 3(1), 76-83.

Hofstede, G.H. (1980). *Culture's consequences, international differences in work-related values*. Sage Publications, Beverly Hills, CA.

Hovav, A. & D'Arcy, J. (2012). Applying an extended model of deterrence across cultures: An investigation of information systems misuse in the U.S. and South Korea. *Information & Management,* 49(2), 99-110 .

Hwang, Y. (2005). Investigating enterprise systems adoption: uncertainty avoidance, intrinsic motivation, and the technology acceptance model. *European Journal of Information Systems,* 14(2), 150–161.

I4D (2007). From e-Government to m-Government. ICTD Project Newsletter, 33-36.

Iacobucci, D. (2010). Structural equations modeling: Fit Indices, sample size, and advanced topics. *Journal of Consumer Psychology,* 20(1), 90–98.

Igbaria, M. & Tan, M. (1997). The consequences of information technology acceptance on

subsequent individual performance. *Information & Management,* 32(3), 113–121.

Internet World Stats (2011). http://www.allaboutmarketresearch.com/internet.htm.

Irani, Z., Love, P.E.D. & Montazemi, A. (2007). e-Government: past, present and future. *European Journal of Information Systems*, 16(2), 103–105.

I-Ways. (2009). E-government for development information exchange. *Journal of E-Government Policy and Regulation*, 32, 20-22.

Jeong, K. & Kim, H. (2003). After the introduction of the government portal services: evolution into the m-government initiatives. Proceedings of the ICA 37th Conference.

Jiang, P. (2009). Consumer adoption of mobile internet services: an exploratory study. *Journal of Promotion Management* 15(3), 418–454.

Kauffman, R. J. & Walden, E. A. (2001). Economics and electronic commerce: survey and directions for research. *International Journal of Electronic Commerce,* 5(4), 5–116.

Rao Kowtha, N. & Whai Ip Choon, T. (2001). Determinants of website development: A study of electronic commerce in Singapore. *Information & Management,* 39(3), 227–242.

Kettinger, W. J., Lee, C. C. & Lee, S. (1995). Global measures of information service quality: a cross-national study. *Decision Sciences* 26(5), 569-588.

Kim, S. S. & Malhotra, N.K. (2005). Predicting system usage from intention and past use: scale issues in the predictors. *Decision Sciences,* 36(1), 187-196.

Kim S, Kim, H.J. & Lee, H. (2009). An Institutional analysis of an e-government system for anti-corruption: the case of OPEN. *Government Information Quarterly,* 26(1), 42-50.

Kline, R. B. (2005). Principles and practice of structural equation modeling. *The Guilford Press*, NY.

Kumar, M. & Sinha, O.P. (2007). M-government – mobile technology for e-Government. *Computer Society of India*, 294-301.

Kushchu, I. & Kuscu, H. (2003). From e-government to m-government: facing the inevitable. 3rd European Conference on E-Government (ECEG03) July 1–2 at Trinity College, Dublin.

Levinson, D., Malone, M. J., Brown, C. H. & Witkowski, S. R. (1980). Toward explaining human culture: A critical review of the findings of worldwide cross-cultural research. New Haven, Connecticut: HRAF Press.

Lucas, H. C. & Spitler, V. K. (1999). Technology use and performance: a field study of broker workstations. *Decision Sciences*, 30(2), 291–312.

Mattila, A.S. (1999). The role of culture in the service evaluation process. *Journal of Service Research,* 1(3), 250-61.

Meso, P., Musa, P., & Mbarika, V. (2005). Towards a model of consumer use of mobile information and communication technology in LDCs: the case of sub-Saharan Africa. *Information Systems Journal* 15(2), 119–146.

Misuraca, G.C. (2009). E-Government 2015: exploring m-government cenarios, between ICT-driven experiments and citizen-centric implications. *Technology Analysis & Strategic Management,* 21(3), 407-424.

Moon, M.J. & Norris, D.F. (2005). Does managerial orientation matter? The adoption of

reinventing government and e-government at the municipal level. *Information Systems Journal,* 15(1), 43–60.

Nelson, K. G. and Clark Jr, T. D. (1994). Cross-Cultural Issues in Information Systems Research: A Research Program. *Journal of Global Information Management*, 2(4), 19-29.

Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing,* 49, 41-50.

Parasuraman, A., Zeithaml, V. A. & Malhotra, A. (2005). E-S-QUAL A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research,* 7(3) 213-233.

Parent, M., Vandebeek, C. A. & Gemino, A. C. (2005). Building citizen trust through e-government. *Government Information Quarterly*, 22, 720–736.

Park, C. & Jun, J. K. (2003). A cross-cultural comparison of Internet buying behavior: Effects of Internet usage, perceived risks, and innovativeness. *International Marketing Review,* 20(5), 534-553.

Pavlou, P. A. & Chai, L. (2002). What drives electronic commerce across cultures? a cross- cultural empirical investigation of the theory of planned behavior. *Journal of Electronic Commerce Research*, 3(4), 240-253.

Pavlou, P.A. (2003). Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce,* 7(3), 101-131.

Posey, C., Lowry, P. B., Roberts, T. L. & Ellis, T. S. (2010). Proposing the online community self-disclosure model: the case of working professionals in France and the U.K. who use online communities. *European Journal of Information Systems*, 19, 181–195.

Rogers, E.M. (1995). *Diffusion of innovations*. The Free Press, New York, USA.

Roloff, M.E. (1981). *Interpersonal communication: The social exchange approach*. Beverly Hills, CA, Sage.

Romano, N. C., Pick, J. B. & Roztocki, N. (2010). A motivational model for technology- supported cross-organizational and cross-border collaboration. *European Journal of Information Systems*, 19(2), 117–133.

Roth, M.S. (1995). The effects of culture and socioeconomics on the performance of global image strategies. *Journal of Marketing Research*, 32(2), 163-175.

Schaupp, L. C. & Bélanger, F. (2005) A conjoint analysis of online consumer satisfaction. *Journal of Electronic Commerce Research*, 6(2), 95-111.

Scholl, H.J. (2005). The mobility paradigm in government theory and practice: a strategic framework. Ibrahim Kushchu and M. Halid Kuscu (Eds.), Proceedings of the 1st European Mobile Government Conference (Euro mGov 2005), Brighton, UK, 10-12 July, Mobile Government Consortium International Pub, UK.

Schepers, J. & Wetzels, M. (2007). A Meta-Analysis of the Technology Acceptance Model: Investigating Subjective Norm and Moderation Effects. *Information & Management*, 44(1), 90-103.

Segars, A. H. & Grover, V. (1993). Re-examining perceived ease of use and usefulness: a confirmatory factor analysis. *MIS Quarterly,* 17(4), 517-527.

Shareef, M. A., Kumar, V., Kumar, U. & Dwivedi, Y. K. (2011). E-government Adoption Model (GAM): Differing Service Maturity Levels. *Government Information Quarterly,* 28(1), 17-35.

Shareef, M.A., Archer, N. & Dwivedi, Y.K. (2012). Examining Adoption Behaviour of Mobile Government, *Journal of Computer Information Systems*, 53(2), 39-49.

Shareef, M. A., Dwivedi, Y. K., Stamati, T., & Williams, M. D. (2014). SQ mGov: A Comprehensive Service Quality Paradigm for Mobile Government (mGov). *Information Systems Management*, 31(2), 126-142.

Sivo, S. A., Fan, X., Witta, E. L. & Willse, J. T. (2006). The search for 'optimal' cutoff properties: fit index criteria in structural equation modeling. *The Journal of Experimental Education,* 74(3), 267-289.

Stanley, M. (2011). Tablet demand and disruption mobile users come of age. Global Technology, Media and Telecommunications Equipment Team, USA.

Stevens, J. (1996). *Applied multivariate statistics for the social sciences*. Mahwah, NJ: Lawrence Erlbaum.

Straub, D., Keil, M. & Brenner, W. (1997). Testing the technology acceptance model across cultures: A three country study. *Information & Management,* 33(1), 1-11.

Swanson, E.B. (1994). Information systems innovation among organizations. *Management Science* 40(9), 1069–1092.

Tajfel, H. (1972). Social categorization (English Translation of 'La Categorisation Sociale'). In Introduction a La Psychologie Sociale, 1 (Moscovici S, Ed), 272–302, Larousse, Paris.

Tao, S. (2011). The roles of trust and experience in consumer confidence in conducting e-commerce: a cross-cultural comparison between France and Germany. *International Journal of Consumer Studies*, 35(3), 330-337.

Torkil, C. (2012). Usability problem identification in culturally diverse settings. *Information Systems Journal* ,22(2), 151-175.

Tornatsky, L. & Fleischer, M. (1990). *The Process of technology innovation*. Lexington Books, Lexington, MA.

Trimi, S. & Sheng, H. (2008). Emerging trends in m-government. *Communications of the ACM,* 51(5), 53-58.

Warkentin, M., Gefen, D., Pavlou, P. A. & Rose, G. M. (2002). Encouraging citizen adoption of e-government by building trust. *Electronic Markets,* 12(3), 157-162.

Warkentin, M. & Willison, R. (2009). Behavioral and policy issues in information systems security: the insider threat. *European Journal of Information Systems,* 18(2), 101–105.

Warkentin, M., Johnston, A. C. & Shropshire, J. (2011). The influence of the informal social learning environment on information privacy policy compliance efficacy and intention. *European Journal of Information Systems*, 20(3), 267–284.

Wasserman, S. & Katherine, F. (1994). *Social network analysis in the social and behavioral sciences, social network analysis: methods and applications*. Cambridge University Press, 1-27.

Williamson, O. E. (1981). The Economics of Organization: The transaction cost approach. *The*

American Journal of Sociology, 87(3), 548-577.

Winsted, K. F. (1997). The service experience in two cultures: a behavioral perspective. *Journal of Retailing*, 73(3), 337-60.

Wu, K. W., Huang, S. Y., Yen, D. C. & Popova, I. (2012). The effect of online privacy policy on consumer privacy concern and trust. *Computers in Human Behavior*, 28(3), 889-897.

Young, K. L., Rudin-Brown, C. M., Lenne, M. G., & Williamson, A. R. (2012). The implications of cross-regional differences for the design of In-vehicle Information Systems: A comparison of Australian and Chinese drivers. *Applied Ergonomics*, 43(3), 564-573.

Zhang, J. J., Yuan, Y., & Archer, N. (2002). Driving forces for m-commerce success. *Journal of Internet Commerce*, 1(3), 81-105.

Zhu, F. X., Wymer, W. & Chen, I. (2002). IT-based services and service quality in consumer banking. *International Journal of Service Industry Management*, 13(1), 69 – 90.

Zhu, K., Kraemer, K. & Xu, S. (2003). Electronic business adoption by European firms: a cross-country assessment of the facilitators and inhibitors. *European Journal of Information Systems*, 12(4), 251–268.

APPENDIX A

Measurement Items

(Note: for PREL and PEMP constructs, we have slightly modified the items for the three countries concerning the service pattern. We mentioned this in the second column)

Item	**Country**
Perceived Usefulness (PU)	Bangladesh, Germany, Canada
I think the website I used enabled me to complete transactions/interactions without harassment.	
I think the website I used provided a valuable service for me.	
I found the website I used interacted through mobile device is useful.	
Using the website through mobile device is less costly in terms of service it provides.	
Using the website through mobile device helps me accomplish tasks more quickly.	
Perceived Ease of use (PEOU)	
It would be easy for me to become skillful at using the website through mobile device.	
It is easy for me to navigate the website through mobile device.	
I believe that it is easy to do what 1 want to do while using the website through mobile device.	
I can easily download the website through mobile device.	
Perceived Compatibility (CT)	
I think using the website through mobile device would fit well with the way that I like to gather information.	
Using the website through mobile device would fit into my lifestyle.	
Interacting with the website through a mobile device enhances a person's social status.	
Perceived Reliability (PREL)	
I believe service provided through mobile portal is accurate	Bangladesh
I believe the SMS service provides organized information.	
I believe that the service provider keeps promises of doing something by a certain time.	
I believe that it provides the service at the time it promises to do so.	
I believe my financial transaction with government mobile portal is reliable.	
I believe information provided through mobile portal is accurate	Canada
I believe the mobile portal provides organized information.	
I believe that the service provider keeps promises of doing something by a certain time.	
I believe that it provides the service at the time it promises to do so.	
I believe my interaction with government mobile portal is reliable.	

I believe that the service provider keeps promises of doing something by a certain time.	Germany
I believe that it provides the service at the time it promises to do so.	
I believe my interaction with government mobile portal is reliable.	
I can perform the service right the first time.	
I will continue using the service	
Keep using the service after first usage (no switching to other services)	
Perceived Empathy (EMP)	
Mobile portal takes prompt action in case of problems.	Bangladesh, Canada
Mobile portal takes care of problems as I expect.	
Their customer service is available.	
Customer service response is very quick.	
Customer service promptly notifies me important information	
Customer service team at the online addresses any concerns that I have.	
Mobile portal takes prompt action in case of problems.	Germany
Their customer service is available.	
I believe that customer service is important for using the service.	
The website takes care of problems as I expect.	
Their customer service is very quick.	
Perceived Security (PSY)	
I believe the website is safe to interact for any/financial purposes.	Bangladesh, Germany, Canada
I think the owner of the website will take full responsibility for any type of insecurity during interaction/transaction.	
I would not hesitate to provide information to the website.	
The website does not share my personal information with other sites.	
Adoption (ADOP)	
I will continue to use the website through mobile device.	
I am able to use the website.	
I encourage everyone to use the website.	
If the website is available to do my tasks, I do not go to physical government offices.	