

# **Factors influencing Intention to Use Mobile Information Services among Young Users: A Comparative Cross-country Study**

Qazi Mahdia Ghyas\* and Fumiyo N. Kondo\*\*

*This study aims to understand how young mobile phone users in Japan and Bangladesh access mobile entertainment services (MES). The authors examined a cross-national analysis of behavioural intention (BI) factors using a combined technology acceptance (TAM) model and the theory of planned behaviour (TPB) model by using the factors of perceived value (PV), perceived behavioural control (PBC), subjective norm (SN), and attitude (ATT). The authors analysed two sets of data: (1) Bangladesh, 2014 and (2) Japan, 2009. Results show that consumer's intention to use MES for Bangladesh was the same as those for Japan. PV and ATT were found to have positive significant influence on the intention to use the services.*

**Field of Research:** Marketing (User Behavior)

**Keywords:** MES; Cross-country; TAM-TPB model; PV; PBC; ATT, BI to use; Adoption stage of 3G/4G services.

## **1. Introduction**

Mobile network operators offer a wide range of services from business to entertainment and a mobile phone has become a ubiquitous tool in technologically developed or developing countries around the world. There are nearly seven billion mobile subscriptions worldwide (The International Telecommunication Union).

In this study, the authors consider MES because there are significant business opportunities in relation. The market value of MES is significantly increasing and the number of users is growing. It is important to identify the factors relating to customer adoption or user intention to obtain MES. The sales of MES by Japanese internet companies such as DeNA and GREE are expanding the mobile services market (Kondo and Ishida, 2014). For the first time since the launch of the iPhone in 2007, Japan is the top grossing country for iPhone's most popular content, games. For Bangladesh, general entertainment services (news, games, music, etc.) are the most used services, followed by social media, ringtone and others (recharging services, prepaid, pays for calls/SMS, missed called alerts, etc.) (GSMA Intelligence, 2014). It seems that operators have a large footprint in the MES sector in Japan and Bangladesh. Thus, for current and future service development it is important to identify the factors relating to user intention to obtain MES.

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However, in Bangladesh, the introduction of new services is hampered by the slow uptake of mobile entertainment technology. Enhanced functionality and greater levels of MES require an in-depth understanding of consumer behaviour by focusing on the matured mobile entertainment market, such as the market in Japan. Kondo and Ishida (2014) indicated the need to investigate the relationship between the perceived characteristics of MES. Without understanding the users' perspective, the mobile vendor cannot provide appropriate entertainment services to meet their requirements.

Most previous studies have focused on adoption of task-oriented technology. Adoption of entertainment-oriented technology has hardly been addressed. As indicated in the study by Hsu et al (2004), the factors influencing the adoption of entertainment-oriented technology are different from the factors influencing the adoption of task-oriented technology. This provides a justification for this study. Nysveen et al (2005) developed a technology acceptance and theory of planned behaviour model (TAM-TPB) in order to explain consumers' 'intention to use' four types of mobile services. Even though research on mobile services has used the TAM-TPB model extensively, the literature contains little information regarding its applicability to the MES market. To understand the acceptance and adoption of MES, the TAM-TPB model is suitable as it is suggested by Kondo and Ishida (2014). Thus, the authors base our research framework on the TAM-TPB model of Kondo and Ishida (2014) using PV, PBC, ATT and SN on BI with regards to use of mobile entertainment services by young people. More details of the model will be provided in subsequent sections of the paper.

The rest of the article is organized as follows. Section 1 deals with Introduction. Section 2 focus on Literature Review and section 3 contains Methodology. Section 4 provides the overall result and section 5 indicates the discussion of the findings. Conclusion is in section 6.

## 2. Literature Review

Compared to the rapid development of mobile technology and its growing market, the research on MES and its adoption is still at an early stage. Cross-cultural issues are highly related to the adoption of mobile commerce. However, little research has been conducted on cross-cultural issues in the mobile entertainment market. This may be due to the relative youth of this market and the difficulties in conducting cultural research (Straub et al 2002). Wong and Hiew (2005) studied the factors affecting the diffusion of mobile entertainment in Malaysia. Okazaki et al (2008) examined user 'intention to use' mobile game applications for consumers in the USA, Spain and the Czech Republic by using a TAM model among young users. Kim et al (2014) noted that life-style, social meaning and past experience are important antecedents of mobile technology adoption. Kondo and Ishida (2014) summarized that the TAM-TPB model (figure 1) is an effective predictive model of behavioural change in individuals. Table 1 presents the summary of the reviewed papers.

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**Table 1:** Summary of the reviewed papers in terms of title, research question, hypothesis, strength and weakness

Paper title	Research Question	Hypothesis	Strength	Weakness
Kondo et al (2014), A Cross-National Analysis of Intention to Use Multiple Mobile Entertainment Services.	Differences within the antecedents of "intention to use" Between Japan and USA mobile users.	There are positive influences from PBC to PV, PV to ATT, PBC to ATT, ATT to BI, PV to BI, PBC to BI, and SN to BI in Japan and USA.	a. Only PV to BI as applied to USA data was not supported. B. The antecedents of "intention to use" for the two countries were structurally similar.	Study in different technological infrastructures, regulations, or cultural dimensions are necessary.
Kim et al (2014), The Structure of Compatibility Beliefs in Mobile Entertainment Service Adoption.	Evaluation of the key compatibility beliefs affecting the decision to adopt MES.	Life style, social meaning, and past experience in using electronic devices and innovative services affect the intention to adopt MES.	Individuals formed an overall perception of each compatibility belief on the basis of additive dimensions, rather than on a single dimension.	Other technological characteristics may affect the intention to adopt MES.
Okazaki et al (2008), Capturing Global Youth: Mobile Gaming in the U.S., Spain, and the Czech Republic.	Similarities on the strength of perceptions of the primary constructs across U.S., Spain, and the Czech Republic	There are positive effects from visual appeals and escapism to perceived fun, economic value and perceived novelty to perceived convenience, perceived ease of use to perceived fun and perceived convenience, perceived fun and perceived convenience to attitude, and attitude to intention to play mobile games.	a. It was one of the first attempts to explain mobile gaming adoption in a cross-country context. b. This study serves as one of the pioneering attempts in examining specific mobile service applications.	Although the Asian countries are key players with high penetration of 3G-enabled mobile devices, none is included.
Wong and Hiew (2005), Mobile Entertainment: Review and Redefine.	Factors affecting the diffusion from Malaysian consumers' perspectives and the correlation between these drivers and barriers.	How much adoption of Mobile Entertainment, Pricing issues, Perceived benefit, Influence from peers, community and the media, Products and technological standardization issue, and Privacy and security influence the diffusion of mobile entertainment in Malaysia?	Young Malaysian subscribers place more importance on the quality or perceived benefits of mobile entertainment services compared to other factors in the study.	Further research need to be carried out to compare the variance between the different groups (gender, telco, plan).

The research findings from the study by Kondo and Ishida (2014) utilized the model for MES in the USA and Japan based on a 2009 data set of young users. User's behaviour mechanism is assumed to be homogenous between the countries used in this study. Bangladesh in 2014 is considered to be at the same introduction stage for the adoption of smart phone and 3G services for entertainment as Japan and the USA were in 2009. Table 1 presents a summary of the reviewed papers. None of the previous study focuses on consumer intention to use MES in a cross-cultural study in a developed and a developing country context. Given the aforementioned background, the goal of this research is to address three questions:

- What are the factors affecting the adoption of MES, in a global context?
- What is the relative importance of these factors?

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- Are the impacts of these factors on MES adoption different or similar for Bangladesh and Japan, after adjusting for data from different years?

### 2.1. The TAM-TPB Model (Kondo and Ishida, 2014) for Multiple MES

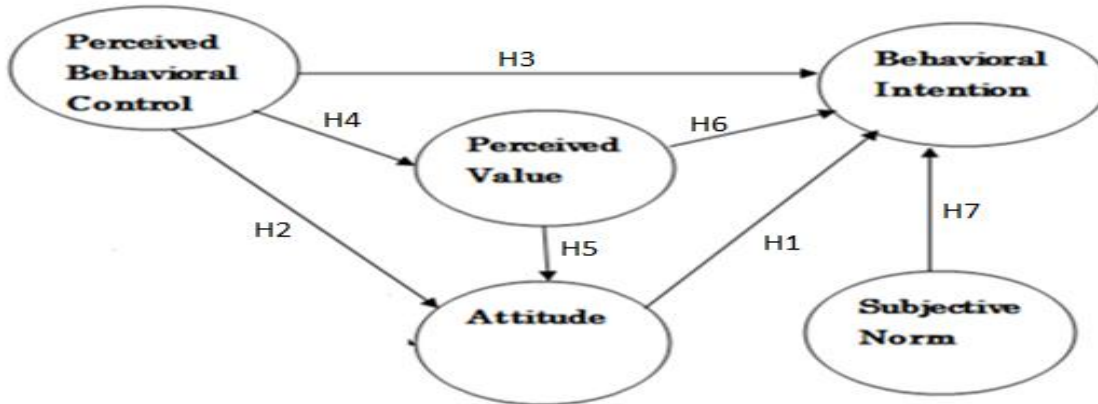
There are very few studies which have used the TAM-TPB model for MES. The TAM-TPB model (Figure 1) is an effective predictive model that leads to a certain degree of behavioural change by individuals and was summarized by Kondo and Ishida (2014). In the aforementioned model, BI is an indication of an individual's readiness to perform a given behaviour. It is based on ATT toward the behavior SN and PBC, with each predictor weighted according to its importance in relation to the behaviour. ATT toward behaviour is an individual's positive or negative evaluation of self-performance of the particular behaviour. SN is an individual's perception of the particular behaviour, which is influenced by the judgment of significant others (e.g., parents, spouse, friends, teachers etc.). PBC is an individual's perceived ease or difficulty of performing the particular behaviour. This study proposes using PV as a key indicator. It can be measured simply by asking respondents to rate the value that they receive when making their purchases. The model used by Kondo and Ishida (2014) is developed by using the effects of motivational influences, attitudinal influences, normative pressure and perceived control on users' intentions to use mobile services.

### 2.2. Hypotheses for the Cross-Country Study

Market expansion mechanisms can be identified by determining the factors involved in the adoption of MES at an early stage. Kondo and Ishida (2014) found close similarities between mobile service usage by young adults in Japan and the USA through their proposed TAM-TPB model. Thus, they assumed that this pattern can be considered as generalities of MES use. They utilized the model for MES in the USA and Japan based on a 2009 data set of young users. Adoption was still in the early stage before the expansion of MES had begun with the introduction of the iPhone 4 in 2010. Bangladesh in 2014 is considered to be at the same introduction stage for the adoption of smartphones and 3G services for entertainment as Japan and the USA were in 2009. User's behaviour mechanism assumed is assumed to be homogenous between the countries used in this study. A comparative study between Japan and Bangladesh was conducted to confirm their reasoning. The study hypotheses are as follows:

- H1. ATT positively influences BI for MES.
- H2. PBC positively influences ATT towards MES.
- H3. PBC positively influences BI towards MES.
- H4. PBC positively influences PV for MES.
- H5. PV positively influences ATT towards MES.
- H6. PV positively influences BI towards MES.
- H7. SN positively influences BI towards MES.

Figure 1: The TAM-TPB model of Kondo and Ishida (2014)



### 3. Methodology

#### 3.1. Data Collection

Two surveys were conducted in Japan of 214 mobile phone users at a university in Ibaraki and 66 users at a university in Tokyo via an online questionnaire. The surveys were conducted in November, 2009. Valid responses were received from 242 respondents.

Five surveys were conducted in the Business Administration faculties of five universities in Dhaka, Bangladesh between June and August 2014. Individual mobile phone users from three different private universities were invited to participate and 135, 40 and 50 responses were obtained, respectively. Surveys were also conducted in two public universities, resulting in 68 and 33 responses from mobile phone users, respectively. In total, 326 subjects received the questionnaires, resulting in 276 completed responses.

The authors used responses from users aged between 18 and 30 for this research as it has been found that young people is the lead segment in adopting mobile entertainment. The authors eliminated 2 responses from the data set, which were from non-user and non-mature (less than 6 months) mobile phone users. Therefore, after elimination there were 251 respondents for Bangladesh and 242 for Japan.

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**Table 2: Demographics of Respondents to Q1: How many years have passed since you started to use your first cell phone?**

Category	Values	Bangladesh 2014		Japan 2009	
		N=251	(%)	N=242	(%)
Age	18-20	35	13.9	40	17
	20-25	203	80.9	160	66
	25-30	13	5.2	12	5
	No answer	N/A	N/A	30	12
Gender	Male	163	65	162	67
	Female	88	35	80	33
Q1	6 months - less than 1 year	1	0.4	1	0
	1 year - less than 2 years	12	4.8	4	2
	2 years - less than 3 years	20	7.9	6	2
	3 years - less than 5 years	48	19.1	57	24
	5 years - less than 10 years	142	56.6	158	65
	10 years or more	28	11.2	16	7

Our initial survey items were adapted from previous studies, Kondo and Ishida (2014). The authors used the following sets of 5 and 10 point likert scales: Strongly disagree/strongly agree; unfair/fair; very low/ very high; definitely won't/ definitely will.

### 3.2. Measurement Scales

In order to assess the reliability and validity of the constructs, the composite reliability (CR), average variance extracted (AVE) and the squared inter-correlations (SIC) are reported for Japan in Table 3 and for Bangladesh in Table 4. The coefficients for each factor are shown in each table and these hold true for all the constructs.

**Table 3: CR, AVE, and SIC for Each Construct for Japan 2009**

Constructs	CR	AVE	Constructs					
			1	2	3	4	5	
			AVE and SIC					
ATT	0.893	0.807	0.807					
BI	0.883	0.716	0.220	0.716				
PBC	0.844	0.652	0.374	0.165	0.652			
PV	0.862	0.757	0.258	0.226	0.216	0.757		
SN	0.902	0.754	0.534	0.216	0.426	0.261	0.754	

Note: The values of AVE are on the diagonal and those of SIC on the off-diagonal.

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**Table 4: CR, AVE, and SIC for Each Construct for Bangladesh 2014**

Constructs	CR	AVE	Constructs				
			1	2	3	4	5
			AVE and SIC				
ATT	0.900	0.818	0.818				
BI	0.889	0.728	0.269	0.728			
PBC	0.865	0.681	0.406	0.102	0.681		
PV	0.862	0.757	0.287	0.232	0.209	0.757	
SN	0.892	0.733	0.528	0.211	0.635	0.215	0.733

Note: The values of AVE are on the diagonal and those of SIC on the off-diagonal.

### 3.3. Analytical Method

The research models were analysed for by structural equation modeling (SEM) using statistical software AMOS, Version 22.0. Multi-group analyses were conducted on the models to determine whether there are statistically significant differences between the parameter estimates for Japan and Bangladesh. Based on fit indices, the best-fit was obtained.

## 4. Results

The authors conducted three TAM-TPB models in order to establish the best-fit index. The TAM-TPB models are as follows: The research model used in Figure 1 was Model 1. Model 2 was created by deleting the non-significant path from SN to BI in Model 1. Model 3 was created by deleting the non-significant path from PBC to BI in Model 2. Table 5 shows the fit measures for the three models for Bangladesh and Japan data. These results indicate that Model 3 has the smallest Akaike information criterion (AIC) value (183.8) and the information criterion. The values for goodness of fit index GFI (0.963) and adjusted goodness of fit index (AGFI) (0.931) exceeded 0.9 and are thus in the acceptable range. The Root Mean Square Error of Approximation (RMSEA) is 0.031, which is less than 0.05. Table 5 shows that the goodness of fit of generated or re-specified models is better compared to the hypothesized model. In Table 6, generated values for model 3 are superior to those for the other models.

**Table 5: Values of Model Selection Criteria on Each Model for Japan 2009 and Bangladesh 2014 (N=214)**

Multi-group analysis	GFI	AGFI	RMSEA	CFI	AIC	BCC
Model 1 (hypothesized model)	0.889	0.825	0.79	0.851	559.6	568.9
Model 2 (excluded SN->BI)	0.963	0.930	0.031	0.981	186.2	191.8
Model 3 (excluded PBC->BI)	0.963	0.931	0.031	0.982	183.8	189.2

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**Table 6: Comparison of Model Fitting on Model 3 between Japan 2009 and Bangladesh 2014**

	GFI	Sample size	AGFI	RMSEA	CFI	AIC	BCC	TLI
Japan 2009	0.961	214	0.928	0.048	0.978	94.4	97.1	0.966
Bangladesh 2014	0.964	214	0.935	0.038	0.985	89.4	92.1	0.978
Multi-group	0.963	214	0.931	0.031	0.982	183.8	189.2	0.972

These results show that the model for the two countries fit well and that they were structurally similar. The coefficients of the measurement variables are all significant at the level of 0.1% or less. Therefore, the measurement variables generally appear to explain the latent variables in Table 7 well. The supported hypotheses are:

- H1: ATT towards MES has a direct positive impact on BI.
- H2: PBC towards MES has a highly positive impact on ATT.
- H4: PBC towards MES has a direct positive impact on PV.
- H5: PV towards MES has a positive impact on ATT.
- H6: PV towards MES has a positive impact on BI.

**Table 7: Standardized Estimates of Model 3 for Japan 2009 and Bangladesh 2014**

Hypotheses	Paths	Japan 2009	Bangladesh 2014	z- value
H1	ATT→BI	0.172**	0.230**	-0.322
H2	PBC→ATT	0.392***	0.439***	-1.100
H4	PBC→PV	0.283**	0.279**	0.541
H5	PV→ATT	0.252**	0.265**	0.150
H6	PV→BI	0.221**	0.220**	0.316

Note: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

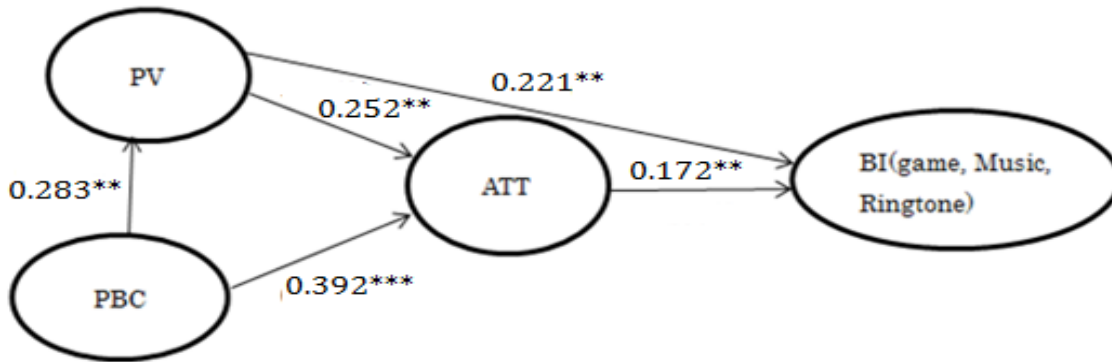
The results of Model 3 are generally compatible with those on MES reported in Kondo and Ishida (2014) as well as those on gaming services reported in Nysveen et al (2005). H7 that SN has an effect on behavioural intention to use MES is not supported. Since SN was rarely found to be significant for MES in past studies, the authors did not expect it to be significant. Since the participants were young people with a good level of education and experience with technology, the effect of social influence may decline.

The sample used 2014 data on Bangladesh and 2009 data on Japan, while Kondo and Ishida (2014) used Japan and USA data from 2009. Despite using data from different years, the results seem similar because Bangladesh in 2014 was at the same stage of 3G mobile service provision as the USA and Japan were in 2009. The results indicate that the TAM–TPB model can be applied in both developed and developing countries after adjustments for technology diffusion timings are made.



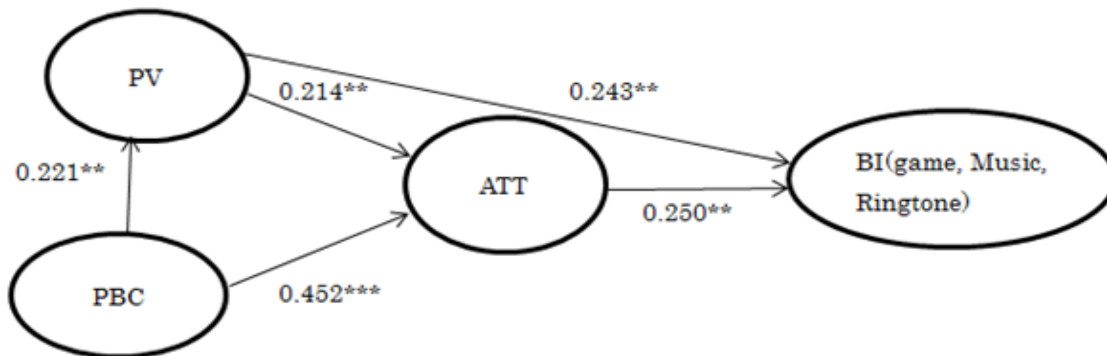
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Figure 2: Path Analysis of Model 5 for Japan 2009 at significance level



Note: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

Figure 3: Path Analysis of Model 5 for Bangladesh 2014 at significance level



Note: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

## 5. Discussion

Based on various theories in information systems, the authors empirically tested TAM-TPB model that explains consumers' intention to use MES in two distinct cultural contexts: Japan 2009 and Bangladesh 2014.

### 5.1 Comparative Examination of Similarities between Japan 2009 and Bangladesh 2014

There are similarities in the path relationship of the constructs in Japan 2009 and Bangladesh 2014. The authors could not detect any statistically significant differences between Japanese and Bangladeshi users with regard to PV, SN, PBC, ATT and BI in the mobile entertainment service environment.

This analysis found strong impact of ATT on BI, PBC on ATT, PBC on PV, PV on ATT and PV on BI for MES in both data sets. Kondo and Ishida (2014) also similarly suggested that users' positive ATT is influenced by the positive value perception and the perception of value is

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affected by the user's positive perception of their ability to use entertainment services. The result shows that the Bangladeshi and Japanese young mobile users have intention to use MES and this intention depends on their ATT. Kim et al (2014) also showed that the path from PBC to behavioural intention was not supportive for Korea on MES. This indicates that at the innovation level of smartphone and 3G services, levels of skillfulness in using mobile services are not related to behavioural intention.

The results showed that the path from PBC to behavioral intention is not supportive both for Japan 2009 and Bangladesh 2014. This is an agreement with Kim et al(2014) for Korea on MES. This indicates that levels of skillfulness in using mobile services are not related to behavioral intention of MES when the both countries were at the innovation level of smartphone and 3G services.

Young user's intention to adopt MES at an earlier stage appears to be determined to a greater extent by PV that they are receiving. Similar result has been found in Constantiou et al (2009) for young mobile users in Denmark and the UK. It means that potential new adopters of MES will only be attracted to mobile entertainment if there is a clear perceived benefit of the services from their perspective.

The Japanese mobile market is years ahead that of Bangladesh and is leading the way with respect to mobile phone culture. In 2008-2009, the smart phone and 3G market in Japan was in the introduction stage, so that only innovators would adopt. Bangladesh showed adoption and use of smartphones and 3G in 2012-2013. The data deals with MES in Japan 2009 and Bangladesh 2014 in order to adjust for the adoption stage of smartphones and 3G. The results seem similar because Bangladesh in 2014 is at the same growth stage of 3G mobile services as Japan was in 2009.

After making a cross-country inference from the convergence of mobile entertainment service adoption, this study summarized that young user's basic perceptions on BI and ATT toward MES will be similar because of the presence of global youth culture. Similarly, Constantiou et al (2009) did not find significant differences in MES between Denmark and the UK. May be at that time, 3G mobile service provision in developed countries was the same as it was in Bangladesh in 2014.

## 6. Conclusion

This study represents an attempt to find out the factors that influence the intention to use of MES among Japan 2009 and Bangladesh 2014. This study makes an important contribution to the consumer behavior literature, because it is one of the first attempts to explain mobile entertainment service adoption by a cross-country context for a developed and developing country.

Concerning the impact of PV, PBC and ATT on BI to use MES in Japan and Bangladesh, the similarities between the adoptions on these emerging mobile markets lead to choices on what factors need to be customized to a given mobile market. MES companies would be well advised to develop their offerings for the consumers who have a strong intention to adopt new entertainment applications and services. Conversely, for those with low intention to use, the

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implication for the business is to determine if alternative pricing strategies or new functions should be used. The study provides MES managers seeking to enter the Japan and Bangladesh marketplace specific information about users' intention to use MES. The authors also noted that having resources and skill to use smart mobile devices and mobile data services could affect the intention to use MES in Japan 2009 and Bangladesh 2014.

The findings of the study fully corroborate the previous studies. At introduction stage of smartphone and 3G services (in 2009), this global adoption patterns for MES seemed accepted by other technologically developed places like Japan USA, Korea, Denmark, UK and etc. So, the globalization has forged a common consumer profile in the MES marketplace on the basis of market growth. This study finding can be used by mobile service developers of Bangladesh to devise appropriate service strategy by following the Japan in 2009.

The results indicate that the TAM–TPB model can be applied in both developed and developing countries after adjustments for technology diffusion timing. Clearly, there are more similarities than differences between the youth 'intention to use' MES in the TAM-TPB framework. The perceptions of young users of MES may be similar due to the presence of global youth culture. After considering economic status of the two countries and the use of data from different years, these patterns can be considered as universalities of MES use.

For academics, this study contributes to the literature on MES adoption by identifying characteristics of MES consumers in Japan and Bangladesh and their intentions to adopt. In addition, the comparison of the Japanese and Bangladeshi marketplaces would be very useful for researchers to localize MES strategy recommendations.

This study has some limitations. All of the respondents are young students from several universities in Japan and Bangladesh who have a good level of education and knowledge of technology. They are also convenience samples. Thus, the results cannot be generalized to the entire population in Japan and Bangladesh. Although the limitations exist, the usage of such samples provides useful insights on describing an emerging market of MES among young adults who are innovative users, which are otherwise not available.

However, the model of intention to use MES may vary across different life cycle stages. Therefore, future studies should attempt to further classify this intention by obtaining better understanding of user's PV, PBC and ATT towards intention to use MES. This should be applied in a developed and developing society in order to highlights the earlier and later moment of mobile information service adoption. Identification of such structural differences may provide an opportunity for expanding similar markets internationally after adjusting for data from different years.

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