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Modeling the stimulators of the behavioral intention to use mobile entertainment: Does gender really matter?

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ABSTRACT

This research aims to empirically examine the stimulators that influence consumers' behavioral intention to use (IU) mobile entertainment (ME) in Malaysia. The proposed stimulators are perceived usefulness (PU), perceived ease of use (PEOU), social influence (SI), perceived self-efficacy (PSE) and perceived enjoyment (PE). PU and PEOU were derived from TAM, SI was taken from the TRA, TPB and DOI model, PE was obtained from the extended-TAM model and PSE was taken from Bandura's theory. This is among the first study that uses a model consisting of integrated constructs from TAM, extended-TAM, TRA, TPB, DOI and Bandura's theory in predicting acceptance of ME. Empirical data were analyzed by employing Structural Equation Modeling (SEM) analysis. Gender moderating effect was examined via multiple group analysis (MGA). The findings revealed that PU, PEOU, SI and PE are positively associated with consumer IU of ME. Surprisingly, there were no significant moderating effects of gender. The control variables (i.e. age, marital status, education level, number of mobile phone and experience) were found to have no confounding effects on the ME adoption. The findings have contributed theoretical and managerial implications to ME providers, mobile phone manufacturers, the music, movie and gaming industry players.

1. Introduction

Since the creation of mobile phones, there has been a dramatic increase in mobile penetration rate (Hew & Leong, 2011; San-Martin & López-Catalán, 2013; San-Martín, López-Catalán, & Ramón-Jerónimo, 2012) while the recent advancement in mobile telecommunication technology has made possible the emergence of pervasive and ubiquitous computing. The consistently upgraded network connectivity and advancement in mobile devices have contributed to the development of various business opportunities such as mobile commerce (Wei, Marthandan, Chong, Ooi, & Arumugam, 2009), Facebook mobile (Leong, Hew, Ooi, & Lin, 2011) and mobile entertainment (ME) or m-entertainment (Leong, Ooi, Chong, & Lin, 2011).

ME consists of a variety of services such as games, ringing tones, gambling and so on but games are expected to displace ringing tones as the major driver of ME (Shchiglik & Scornavacca, 2004). Mobile Entertainment Forum defines ME as an entertainment product that functions on a wireless network, transportable, individual gadgets that incorporate mobile phone games, images, and ring tones that are downloadable. In addition, such devices also has built in MP3 players and radio receivers, not including mobile communication services such as SMS, voicemail, mobile commerce applications such as auctions or ticket purchasing services (Wiener, 2003). Wong and Hiew (2005a) later further expanded the services of ME to include downloading of music, movies, playing games, SMS, logging into location-based entertainment services and browsing through the Internet.

Mobile devices such as mobile phones, PDAs, smart phones and wearable gadgets have created a huge market for ME providers (Schuurman, Curtois, & De Marez, 2011). ME is the fastest growing industry that may generate enormous revenue (Schone, 2004). According to Kelly (2009) of Channelnewsasia.com, the global revenue from ME was expected to reach USD32 billion for the year 2009, a 28% increase from 2008. Actually ME services have generated worldwide revenue of about USD24 billion in 2008 and is estimated to surge to USD47.2 billion by the end of 2013.

Even though there are a lot of potentials for the Malaysian ME businesses, it is still in its embryonic stage when compared to developed nations such as South Korea and Japan (Wong & Hiew, 2005b). Most of the previous studies have been carried out in developed countries such as USA (Dai & Palvia, 2009), UK, Sweden, and France (Moore & Rutter, 2004), New Zealand (Tan & Chou, 2008) and Hong Kong (Lo, 2005). There were limited studies pertaining to ME acceptance in a multi-racial, religious and cultures

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country like Malaysia although initial studies were conducted by Wong and Hiew (2005a, 2005b). These studies have used traditional technology acceptance models such as technology acceptance model (TAM), theory of planned behavior (TPB) and theory of reasoned action (TRA). Specifically from the ME perspective, limited studies (Leong, Ooi, et al., 2011; Tan & Chou, 2008) have engaged Structural Equation Modeling (SEM), hence there has been lack of strong empirical analysis to ascertain determinants of the ME acceptance. The aim of this research is to plug in the hole currently exists by creating a framework to clarify the determinants which affects the acceptance of ME. This paper is organized as follows:

- Presenting a literature review on determinants of ME acceptance.
- Constructing a research model based on literature review.
- Attending to the methodology of the research study.
- Discussing the findings of the present research study.
- Reviewing the feasible and administrative consequences of this research.

2. Literature review

2.1. Overview of m-entertainment (ME)

For most Malaysians, ME is very much a new concept. In general, this refers to mobile communication devices for instance mobile phones, tablet PCs and PDAs being utilized to acquiring entertainment services. With the evolvement of ever-present computing and the mobile technology progression, the application of ME has a substantial profit making ability for the mobile operators, content operators as well as device manufacturers (Rashid, Coulton, & Edwards, 2006).

Earlier studies have suggested many definitions of ME. Hence, Moore and Rutter (2004) pointed out that the key problem for ME users is lack of general insight about its concept. Kalyanaraman (2002) described ME as services which provide the same level of gaming experiences with those in Xbox and Playstation 2. Moore and Rutter (2003) elaborated on ME definition as any free time activity that embarks using a personal device, in which it has the ability to network and facilitate in the transmission of data over a geographical distance, regardless of whether one is on the go or at a discrete place. ME was further described by Wiener (2003) as an entertainment gadget that function on a wireless network, individual and mobiles devices integrated with MP3 players and radio receiver which can be used to download images and ringtones, but not including mobile communication such as person-to-person SMS and voice mail, and mobile commerce applications such as auctions or buy tickets. Shchiglik and Scornavacca (2004) asserted that ME services also includes ring tones, games, gambling, etc.

In this research, ME is defined as any paid or freely charged leisure activities or products and services that are conducted via mobile or wireless technologies and devices. Applications of ME include downloadable mobile phone games, images, ring tones, MP3, logos, cartoons, wallpapers and services such as instant messaging (IM), gambling, live sports and reports, fortune telling, movie trailers, celebrities, location-based entertainment, Internet browsing, e-journals, comedies, sensation and serialized books and newsletters.

2.2. Factors affecting the acceptance of ME

According to Grimsley and Meehan (2007), Petter, DeLone, and McLean (2008) and Teo and Pian (2003), studies have been carried out on the acceptance of information system. These studies were to find out the factors or determinants of technology acceptance based on theories which include TRA (Fishbein & Ajzen, 1975), TPB (Ajzen, 1991) and TAM (Davis, 1989).

TRA was created from social psychology and initiated by Fishbein and Ajzen (1975) with constructs of behavioral intention or intention to use (IU), attitude and subjective norm. Attitude is affected by beliefs and when integrated with subjective norm, this will establish the behavioral intention as stated by Liang and Yeh (2009). Subjective norm can be described as a person's trust on whether it is important for others to think that he or she should participate in an activity (Fusilier & Durlabhji, 2005). TRA's key weakness is the absence of obvious description of what precedents may influence attitudes (Liang & Yeh, 2009, p. 3).

TPB was recommended as an extension of the TRA by adding the variable "perceived of behavior control" (Liu, Liu, Li, Li, & Rau, 2009). According to Ajzen (1991), TPB proposes that attitudes, subjective norm and perceived behavioral control are the main antecedents of behavioral intention.

Liu et al. (2009) pointed out that TAM evolved from TRA and focused on the acceptance of information technology. The main factors which affect consumers' intention to practice technological innovations in the TAM model are perceived usefulness (PU) and perceived ease of use (PEOU). PU is described as the degree where one believes that the application of a specific system would enhance the performance of a job; whereas PEOU is the level of which an individual considers that using a specific system would be effortless (Davis, 1989; Nysveen, Pedersen, & Thorbjornsen, 2005). While Venkatesh (2000) believes that even TAM is useful to describe the behavioral intention, it may be too parsimonious and that, it should be added and expanded by incorporating the subjective norm and image concepts. A further limitation of TAM is the assumption that consumers' attitudes is the only determinant which decides the intention of consumers without taking into account the influences of reference groups and other contextual determinants (Liang & Yeh, 2009).

In analyzing the determinants which affect IU on ME, both Wong and Hiew (2005c) recommended an expanded TAM model by incorporating issues such as perceived benefit, pricing, privacy and security from Consumer Segmentation Model (CSM), product and technological standardization issues from TAM and influences from friends, society and the media, which originates from the TPB model. The findings highlighted that only perceived benefits has produced the most important effect on the acceptance of ME and other determinants did not contribute significantly to forecast the acceptance of ME. Lo (2005) recommended a framework that contains PEOU, PU, PE and IU in her study on Hong Kong's ME acceptance.

Derived from the current researches and frameworks, what can be viewed is that TAM is normally used as the foundation model in which researchers expand this model by incorporating proper variables based on the technology under study. Hence, in our study, we will retain the initial variables of PU and PEOU. Nevertheless, our key concentration of this research is to decide whether the characteristics of Malaysian users who are largely Asians with Malays, Chinese and Indians as the majority, have an effect on the acceptance of ME. De Silva and Ratnadiwakara (2009) mentioned that some users in South East Asia have been pressured by the public or their peers to own a mobile phone. However, Teo, Lim, and Lai (1999) also discovered that for the Internet users in South East Asia country like Singapore, perceived enjoyment (PE) has a positive effect on why they surf the Internet. Since ME attracts users based on the entertainments offered to them, we have the belief that PE will play an essential part among the users in Malaysia. We also believe that to use the ME applications, users are required to have self-efficacy and learn the applications on their own. It would be unusual for users to attend courses in learning ME, and similar to many

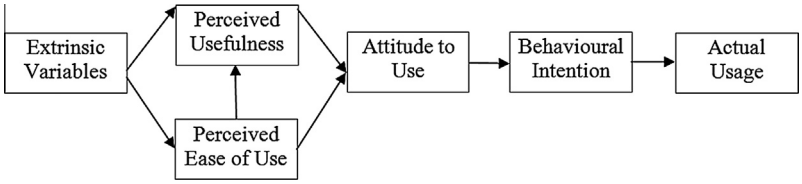

Fig. 1. Original TAM model. *Source*: User acceptance of environment services via mobile phone system in Hong Kong (Lo, 2005)

applications over the Internet or mobile phones; they need to study how to use applications such as Short Messaging Service (SMS), downloading of music, watching online video by themselves. Yet, as Vogler (2006) opined, Asians are sometimes more receptive to learn and tend to wait for advices and directives from others. If this is true, would it affect Malaysians in using ME applications as they find it hard to discover or use the applications on their own?

Based on the discussions above, modifications have been made to the original (Fig. 1) and extended TAM models by introducing new constructs of SI, PSE and PE together with PU, PEOU. PU, PEOU are taken from TAM whereas SI is derived from TPB while PSE and PE are obtained based on the prior studies on ME. IU is used instead of 'actual use' in the TAM model since ME is still at its infancy stage in Malaysia (Wong & Hiew, 2005a). In comparison to the TAM3 by Venkatesh and Bala (2008) which posits that SI directly influence PU while PSE and PE directly influence PEOU, we have instead simplified the model by investigating the direct impacts of SI, PSE and PE towards IU of mobile entertainment.

Hence, this study will use the research model for ME acceptance as shown in Fig. 2 in order to predict IU on ME from the Malaysian perspective.

3. Hypothesis development

3.1. Perceived usefulness (PU)

As defined by Davis (1989), PU is described as the degree to which one believes that the use of a system would enhance his/her job performance. Luarn and Lin (2005) have discovered the effect of PU on IU while Rogers (1995) found that the linkage between perceived usefulness of an innovation to its common adoption is positive. Moreover, both Wong and Hiew (2005b) recommended that the usefulness of mobile services in the likes of ubiquity, localization, stability of personal network and timeliness are the main factors for the use of m-commerce.

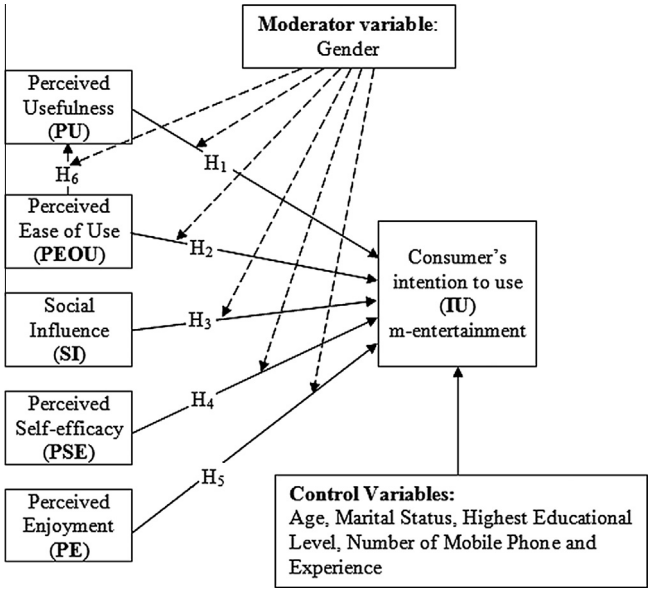

Fig. 2. Research model of mobile entertainment adoption.

Hence, in this study, PU is the extent to which one believes that the usage of ME will improve his/her work or task achievement and daily duties. Both Ho and Kwok (2003) opined that this construct does not only examine the ME's extrinsic characteristics but also demonstrates the ways ME may help consumers to accomplish work or task related goals such as efficiency and effectiveness by reducing their stress levels while rejuvenating their mind and bodies. Theoretically, with less stress and fresher mind, they may give better focus and enhance productivity and effectiveness in their jobs. Consequently, we may conclude that the consumers' justification to use ME is that they believe the systems are useful to their job performance. Based on the extrinsic motivation theory, we expect that consumers will be willing to adopt ME if they find that it is useful to them. Therefore, the first hypothesis is proposed:

H_1. PU has a positive effect on consumers' IU m-entertainment.

3.2. Perceived ease of use (PEOU)

Davis (1989) mentioned that even if users may think that an application is useful; they might find difficulties in using the system. PEOU has been recognized as the key factor in the acceptance of majority of information technologies such as wireless Internet (Lu, Liu, & Yao, 2003) and 3G (Chong, Darmawan, Ooi, & Lin, 2010). It is also an essential forecaster of user satisfaction (Yeh & Li, 2009) as Rogers (1995) mentioned that an information system's complexity will hinder the acceptance of innovation.

By using the definition by Davis (1989), in this research, PEOU refers to the level of which a consumer believes that ME usage would be physically and mentally effortless. Theoretically, when there is low level of difficulties in using a technology, consumers will be more tempted to use it as they do no need a lot of efforts either mentally or physically. Hence, ME has to be easy-to-use or learn and this allows us to propose for next hypothesis:

H_2. PEOU has positive effect on consumers' IU m-entertainment.

3.3. Social influence (SI)

Lu et al. (2003) highlighted that SI is equivalent to subjective norm (SN) and it consists of one's belief that it is important to participate in such activity. Fishbein and Ajzen (1975) asserted that SN refers to the social pressure put on the individual to demonstrate certain behaviors. SN is a vital factor of both TRA and TPB which may describe a technological acceptance. Hung, Ku, and Chang (2003) stated that the importance of SN on the IU of mobile services usage was made known from the research based on the perspective of information system. From the theory of DOI initiated by Rogers (1995), SI can be split into two types which are mass media such as magazines, newspapers, radio, television, academic

journals, and the Internet (Wei et al., 2009) and interpersonal influence that includes friends and families, superiors and colleagues (Christensen & Schiaffino, 2011; Gerrard & Cunningham, 2003). Liu et al. (2009) discovered that SI is the most essential determinant for the rural Chinese people to accept ME. In this research, SI has been defined as the influences to IU on ME resulted from social pressure. Theoretically, we expect that social influence from the important others will affect consumers' decision in determining whether to adopt ME or not. Therefore, the third hypothesis is formulated:

H_3. SI has positive effect on consumers' IU m-entertainment.

3.4. Perceived self-efficacy (PSE)

Liu et al. (2009) defined PSE as a person's self perception of having the ability to use a service or product. While Bandura (1997) stated that PSE is the belief of the public about their capabilities to perform in certain levels which have influence on the events that affect their lives. On the other hand, Compeau and Higgins (1995) described computer self-efficacy (CSE) as a personal's opinion on their abilities to use computers in all conditions. Liu et al. (2009) found that self-efficacy is ranked fifth among the seven determinants in their m-entertainment acceptance (MEA) framework but Wang, Chou, and Chang (2010) found that PSE does not influence IU of blogs. Based on the rationale that ME may require some abilities in operating the mobile devices, we may expect that the higher the level of PSE, the tendency for consumers to adopt it will be greater. In this research, the definition by Bandura (1997) is applied as the reference base to support the next hypothesis:

H_4. PSE has positive effect on consumers' IU m-entertainment.

3.5. Perceived enjoyment (PE)

Igbaria, Parasuraman, and Baroudi (1996) opined that PE has been defined as benefits gained from using the technology or service. Besides, Davis, Bagozzi, and Warshaw (1992) defined it as the degree to which a computer activity is viewed to be entertaining on its own accord despite of any unforeseen consequences. They also discovered that PE is an important factor of behavior intention and IU. Their discoveries received verification from Venkatesh (1999) and Van der Heijden (2004). Through the use of an extended TAM, Moon and Kim (2001) revealed that PE is a vital determinant for tasks that are entertainment-oriented. On the other hand, mobile gaming is an enjoyment-oriented usage of information technology as quoted by Liang and Yeh (2009). Besides, Teo et al. (1999) found that PE has a positive effect on Singaporean Internet users. For this research, PE is defined as the level of which an individual views ME as fun and entertaining. Theoretically, when using a technology is pleasurable and fun, users will attain great pleasure and enjoyment when playing it (Lee, 2009). Hence, it is expected that PE will enhance users' intention towards adopting mobile entertainment. Henceforth, the following hypothesis is proposed:

H_5. PE has positive effect on consumers' IU m-entertainment.

3.6. PEOU and PU

According to Davis (1993), PEOU is hypothesized to have a significant direct impact on PU. "Between two systems that perform the identical set of functions, a user should find the one that is easier to use more useful" (Davis, 1993, p. 3). Many scholars (Chen & Chen, 2011; Davis, 1989; Gefen & Straub, 2004; Hong, Thong, & Tam, 2006; Huang, Lin, & Chuang, 2007; Mouakket, 2009) have concluded either empirically or theoretically, that there is a significant and positive relationship between PEOU and PU. In fact, PEOU is anticipated to have either direct or indirect effect on PU (Agarwal & Prasad, 1999; Davis, Bagozzi, & Warshaw, 1989; Venkatesh, 1999; Venkatesh & Davis, 1996). From the perspective of mobile entertainment, as and when consumers find it easy to interact via mobile entertainment, they will consider it more useful. Hence, based on this rationale, we would suggest the following hypothesis:

H_6. PEOU has positive effect on PU.

3.7. Moderating effect of gender

Ong and Lai (2006) opined that the TAM has been constantly applied as a theoretical foundation in many empirical articles relating to user technology adoption. However, the effects on the role of gender on TAM is not investigated prior to Gefen and Straub (1997), Venkatesh and Morris (2000). Several studies (Koohang, 1989; Ong & Lai, 2006; Shashaani & Khalili, 2001; Venkatesh & Morris, 2000) have shown that the males take into consideration the PU factor to a greater degree as compared to the females. Moon and Kim (2001) as cited by Ong and Lai (2006) found that men rate PEOU higher compared to women. Venkatesh, Morris, and Ackerman (2000) asserted that the males were greatly affected by attitude towards the adoption of a new technology; while the females were more influenced by subjective norm and perceived behavioral control. Besides, Gefen and Straub (1997) found that women perceived higher value for PU over men while the men were more at ease with computers. By examining the moderating effects of gender, practitioners and researchers will be able to have better understanding and insight on how gender influences the adoption level of mobile entertaining among users.

3.8. Control variables

Control variables have the potential to confound the influence of determinants on a technology adoption but they do not drive the grounded theory. In this study, age, marital status, highest educational level, number of hand phones and experience are taken as the control variables. The age and experience related differences have been verified in the UTAUT model (Fig. 3) by Venkatesh, Morris, Davis, and Davis (2003). Currently, studies on the differences related to marital status, educational level and number of hand phones own from the technology adoption perspective are indeed dearth. Thus, the findings from this study will surely contribute to the body of knowledge with regards to their influences on the adoption of mobile entertainment. We hypothesize that the adoption level would be higher for married couples as their financial standings are more established since they have more money to spend on entertainment or leisure activities like mobile entertainment. Besides that, users with high educational level normally will secure better job prospect with better income making mobile entertainment more affordable to them. Lastly, users with more hand phone are expected to have higher tendency to adopt mobile entertainment as they are frequent users of the mobile services including mobile entertainment.

4. Methodology

4.1. Sampling and data collection

A paper-based questionnaire was constructed and used as a survey instrument to examine the above mentioned hypotheses based

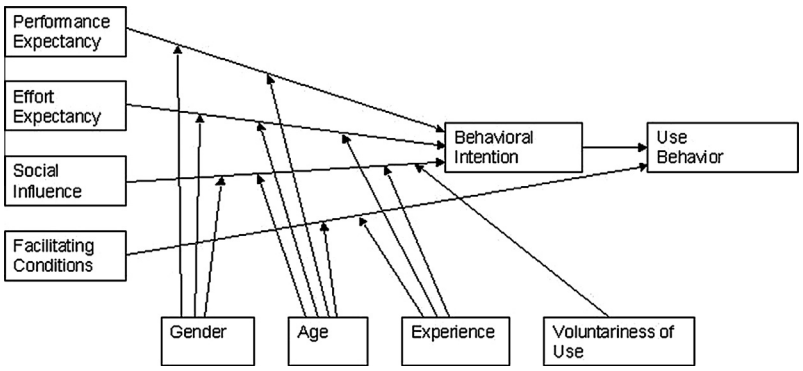

Fig. 3. Unified Theory of Acceptance and Use of Technology (UTAUT).

on a comprehensive literature review. According to Luarn and Lin (2005), it is advisable to mainly adapt the elements for each construct from the past empirical researches to ascertain the validity of the scale used. This questionnaire consists of 31 items; namely 27 items for the five constructs of independent variables and 4 items for one construct of the dependent variable were adapted from the previous empirical studies and built into the ME context. Table 1 shows the sources in which these questions were modified from.

An initial study was held to determine the response rate and to avoid any doubt from the respondents. The first questionnaire was circulated via e-mail to 65 randomly selected students and staff of a private university in which 59 have reacted within the timeframe. Majority of the respondents responded that the questionnaire was well designed, easy to understand and can be completed within 15–20 min. Based on their feedbacks, only minimum changes were made and therefore, all the responses during the initial study were included in the final stage of this research.

The target population of this study is the users of the mobile devices based on the reason that they are more likely to adopt ME than individuals who do not have mobile devices. The questionnaires were administered through face-to-face method to 638 mobile device users in Malaysia using the convenience sampling procedure. The non-probability convenience sampling was chosen since we do not know the actual sampling frame. The sample was drawn from the largest private university in Perak state, Malaysia. As the respondents come from different parts of Malaysia, which comprised of various age brackets, religions, races and different cultural background, it can be concluded that this sample is a good representation of the theoretical population for the present study. Out of these 638 samples, 66 samples were discarded due to partial response and/or missing data, yielding to a usable sample size of 572 with response rate of 89.66%. Due to the diversity of race, culture and religion, a study conducted in Malaysia would enlighten us on what really drive the adoption of mobile entertainment in a multi-racial and religious developing country.

4.2. Variable measurement

4.2.1. Independent variables

The five independent variables selected are obtained from past researches and 27 questions were amended to suit the ME perspective. Every question uses five-point Likert's scale as the measurement. For instance, 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

4.2.2. Dependent variable: consumer IU on ME

The statements for IU were adapted from the original TAM made by Davis (1989). A total of four items of IU were also measured using the five-point Likert scale as mentioned above. The reliability coefficient (Cronbach's alpha) for the scale ranges from 0.744 to 0.903.

4.3. Data analysis

4.3.1. Profile of respondents

Demographic profile of the surveyed respondents is shown in Table 2. The sample consists of 58.2% females and 41.8% males. About 51.9% of the respondents are 21–25 years old, 46.2% below 20 and the rest above 25 years old. There are 37.8% bachelor degree holders, 9.1% diploma holders and 49.5% with pre-university education and the balance of 3.7% of the respondents are postgraduate degree holders.

Table 3 indicates that 71.7% of the respondents have one mobile phone, 26.4% have two, 1.7% has three or more and only 0.2% has no mobile phone. The highest number of mobile devices is mobile phone (72.4%) followed by laptop (19.4%), smart phone (7.2%) and PDA (1.0%). About 72.3% of the respondents opted for the prepaid cellular plan. DiGi is still dominating 62.2% of the mobile service provider followed by Maxis (33.3%) and the rest by Celcom (4.3%). Communication services contributed to 57.9% of the mobile services followed by entertainment (19.8%), information services (13.7%), transaction services (5.2%) and location-based services which is only 3.4%. Finally, 76.4% of the respondents have experience to play ME services.

Table 1
Construct and their sources.

Constructs	Number of items	Sources
Perceived usefulness (PU)	5	Taylor and Todd (1995), Wong and Hiew (2005a) and Wang and Barnes (2007)
Perceived ease of use (PEOU)	4	Luarn and Lin (2005), Wang and Barnes (2007), Tan and Chou (2008) and Wei et al. (2009)
Social influence (SI)	5	Luarn and Lin (2005), Wong and Hiew (2005a) and Wei et al. (2009)
Perceived self-efficacy (PSE)	5	Liu et al. (2009)
Perceived enjoyment (PE)	8	Tan and Chou (2008)
Intention to use (IU)	4	Davis (1989) and Wei et al. (2009)

Table 2
Demographic profile of respondents.

Variables	Frequency	Percentage
Gender		
Female	333	58.2
Male	239	41.8
Age		
<20 years	264	46.2
21–25 years	297	51.9
26–30 years	2	.3
>30 years	9	1.6
Highest level of academic qualification		
Pre-U/foundation studies/matriculation	283	49.5
Diploma/advanced diploma	52	9.1
Bachelor degree/professional qualification	216	37.8
Postgraduate degree	21	3.7

Table 3
Distribution of mobile devices and services.

Variables	Frequency	Percentage
Number of mobile phone owns		
Nil	1	.2
1	410	71.7
2	151	26.4
3	8	1.4
>3	2	.3
Type of mobile devices that you use		
Mobile phone	521	72.4
PDA	7	1.0
Laptop	140	19.4
Smartphone	52	7.2
Cellular plan		
Postpaid	164	27.7
Prepaid	427	72.3
Mobile service provider		
DiGi	401	62.2
Maxis	215	33.3
Celcom	28	4.3
Others	1	.2
Type of mobile services that you use		
Information services	126	13.7
Entertainment	183	19.8
Transaction services	48	5.2
Location-based services	31	3.4
Communication services	534	57.9
Ever played ME services		
Yes	437	76.4
No	135	23.6

4.3.2. Statistical analysis

Since the responses of independent and dependent variables were obtained from self-administered questionnaire, the issue of common method variance (CMV) may arise (Lee, 2009). By performing the Harman's single factor test, a single factor is able to account only 28.081% of the total variance. Through the common latent factor analysis via the Analysis of Moment Structure (AMOS 18), a common latent factor is capable of explaining only 19.184% of the total variance. Therefore, the CMV is a non-issue. According to Bharati and Chaudhury (2004), before any statistical analysis is performed, content validity and criterion validity must be met. Content validity refers to the comprehensiveness and representativeness of the items in the survey. To ensure content validity, all items were adapted from previous studies. Criterion validity, also known for its ability to predict the outcome of independent variable is examined by checking the magnitude and direction or sign of the correlation coefficients. As shown in Table 6, all correlation coefficients of the predictors are consistent with the theoretical outcomes.

The analysis method of Structural Equation Modeling (SEM) using AMOS 18 was applied to test the conceptual model as shown in Fig. 2. A two-phase model-building process was used to conduct SEM as suggested by many researchers and scholars in the past (Hair, Black, Babin, & Anderson, 2010; Kuo & Yen, 2009; Leong, Hew, Ooi, & Lin, 2012; Llorens, Schaufeli, Bakker, & Salanova, 2007; Teo, Cheah, Leong, Hew, & Shum, 2012; Wu, Chen, & Lin, 2007; Yu, Lu, & Liu, 2010). The process started with the confirmatory factor analysis (CFA) test and followed by the structural model test. The four phases as suggested by Fotopoulos and Psomas (2009) were implemented on the sample data to:

1. Test the multivariate analysis assumptions.
2. Confirm the fundamental dimensions of factors by applying the exploratory factor analysis (EFA) with the method of Varimax rotation.
3. Test the models of measurement for each factor by using the CFA to finalize the elements obtained from Step 2 to give a good fit of the data.
4. Create the structural links between the factors and intention to use m-entertainment.

4.3.3. Testing the assumptions of multivariate analysis

According to Hair et al. (2010), Fotopoulos and Psomas (2009), before the data analysis is performed, assumptions should be made in terms of the sample size, the variables' scales, the multivariate normal distribution and outliers and also multicollinearity. In an SEM method, only a sample size of more than 300 observations is deemed satisfactory (Hair et al., 2010). Therefore, the sample size of the existing study (n = 572) has met the criteria to study an SEM. The five-point Likert scale and variables' skewness and kurtosis are also within the acceptable range of ±1 which imply a symmetrical or normal distribution (Byrne, 2001).

Normality of the error term was verified using the histogram and Normal P–P plot of Standardize Residual, whereas the consistency in the variance of error was indicated in the scatter plot. Further verification of normality is shown by the Kolmogorov–Smirnov test. Besides, linearity between the independent and dependent variables has been shown in the Partial Regression plot. Thus, based on the above mentioned basic assumptions, it can be concluded that there are no statistically significant violations being made in this model.

4.3.4. Exploratory factor analysis (EFA)

EFA with Varimax rotation has been conducted separately on the determinants and intention to use ME to extract the dimensions of each construct. The Kaiser–Meyer–Olkin (KMO) measures of sampling adequacy (0.870) and Bartlett's tests of sphericity (0.000) have enabled us to perform further EFA analysis. Six items (SI3, SI4, SI5, PE3, PE4 and PE5) have been removed as these items have poor factor loadings of less than 0.50 on their latent variables respectively (Hoang, Igel, & Laosirihongthong, 2006). Two items (PSE1 and PSE2) were also discarded due to cross factor loadings. Another two items (PE1 and PE2) were dropped as they loaded on the wrong factor. The factor loadings of the EFA analysis for each construct are shown in Table 4. Furthermore, Table 5 which summarizes the results of EFA shows the Cronbach's alpha values ranging from 0.744 to 0.903 are well above the acceptable threshold of 0.70 as asserted by Nunnally and Bernstein (1994). Besides that, their corresponding factor loadings are also statistically significant ($p < 0.001$).

Table 4
EFA and cumulative percentage of variance explained.

	Component					
	1	2	3	4	5	6
Rotated component matrix[a]						
PU1	0.724					
PU2	0.855					
PU3	0.882					
PU4	0.862					
PU5	0.724					
PEOU1		0.803				
PEOU2		0.794				
PEOU3		0.832				
PEOU4		0.579				
SI1						0.868
SI2						0.837
PSE3					0.828	
PSE4					0.843	
PSE5					0.841	
IU1			0.680			
IU2			0.709			
IU3			0.730			
IU4			0.734			
PE6				0.831		
PE7				0.854		
PE8				0.675		
Eigen value	6.640	2.751	1.730	1.362	1.239	1.134
% variance explained	31.619	13.102	8.237	6.487	5.899	5.399
Cumulative % variance explained	31.619	44.721	52.958	59.445	65.343	70.742

Extraction method: Principal component analysis; rotation method: Varimax with Kaiser normalization; item SI3, SI4, SI5, PE3, PE4 and PE5 were deleted due to poor factor loading (i.e. <0.50); item PSE1 and PSE2 were deleted due to cross factor loadings; item PE1 and PE2 were deleted as they loaded on the wrong factor; PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; PE = perceived enjoyment; PSE = perceived self efficacy; IU = intention to use.

[a] Rotation converged in six iterations.

4.3.5. Measurement model – confirmatory factor analysis

In the third step, the measurement model is tested using CFA to determine the construct validity of the determinants. The measurement model in this research consists of 27 items which represent five determinants, namely PU, PEOU, SI, PSE and PE. Fornell and Larcker (1981) acknowledged that a much suitable guide was the composite reliability, by taking into account of the real determinant loadings instead of presuming that each element was reasonably emphasized in the composite load determining (Molina, Montes, & Ruiz-Moreno, 2007). Chau and Hu (2001, p. 709) agreed to this as the construct reliability could be computed by applying the formula of $\frac{(\Sigma\lambda)^2}{(\Sigma\lambda)^2+\Sigma\delta}$ where λ = factor loading and δ = error variance. Molina et al. (2007) have proposed that the lowest suggested value is 0.70. Successive study was conducted to find out the Average Variance Extracted (AVE), in which based on Molina et al. (2007, p. 691), whereby the lowest proposed value should be 0.5. As illustrated in Table 5, the scales for all cases are in the range of the acceptable limits. According to Nunnally (1978), the composite reliability of all the latent constructs exceeds 0.7 that has exceeded the proposed standard, hence this can be summarized that the measurement is fair. Apart from this, the convergent validity and internal reliability for frameworks have also been incorporated in Table 5. Discriminant validity test was conducted next to ensure every pair of independent variables in the correlation does not exceed the 0.9 criterion (Hair et al., 2010). Test result indicates that the PE and PU recorded the highest coefficient value of 0.463, but is still less than 0.90. As summarized in Table 6, all the coefficients met the discriminant validity criterion for every determinant in the model (Hoang et al., 2006). This is further verified based on the Fornell–Larcker ratios which are less than one (Fornell & Larcker, 1981). Table 6 also shows that all square roots of AVEs are greater than their corresponding SEM correlation coefficients, verifying the existence of discriminant validity.

Nine common measures, namely ratio of χ^2 statistics to the degree of freedom (df), comparative fit index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), incremental fit index (IFI), Tucker–Lewis index (TLI), the standardized root mean squared residual (SRMR) and root mean square error of approximation (RMSEA) were subsequently applied to gauge the measurement model's goodness of fit. Table 7 indicated the observed normed χ^2 for this model was 1.130 (p-value = 0.193 > 0.05), which is less than 3 as suggested by Bagozzi and Yi (1988). All other fit indices such as the GFI = 0.981; AGFI = 0.965; CFI = 0.998; NFI = 0.980, IFI = 0.998 and TLI = 0.996 are greater than the suggested cut-off level of 0.9 (Bagozzi & Yi, 1988) whereas the SRMR coefficients (0.0327) are less than 0.1 (Hoang et al., 2006). Moreover, the RMSEA which is 0.015 appears to be below the cut-off level of 0.08 as proposed by Browne and Cudeck (1993).

Therefore, according to the grouping of the above stated test outcomes, it can be summarized that the measurement framework gives us an extremely well corresponded of the data collection.

4.3.6. Structural model

The overall outcomes of the structural framework study that are illustrated in Table 7 displays a good correspond as established by the normed Chi-square index (χ^2 statistics/degree of freedom (df) = 1.021; p-value = 0.434 > 0.05) and other indices (GFI = 0.991; AGFI = 0.979; CFI = 0.999; NFI = 0.966; IFI = 0.999; TLI = 0.998; SRMR = 0.0319; RMSEA = 0.006). According to Bagozzi and Yi (1988), Browne and Cudeck (1993) and Hoang et al. (2006), all the framework-fit indices surpassed their relevant common acceptable levels which indicate that the structural framework represents an acceptably suitable to the data.

4.3.7. Hypothesis testing

Under the testing phase, the legality of the hypothesized paths was confirmed by examining the statistical significance of each structural parameter value. The study outcome showed that four factors, namely PU (standard error = 0.035; critical ratio = 4.421;

Table 5
Instrument reliability and validity.

Latent constructs	Indicator	Standardized loading	Reliability (CR[a]; AVE[b])
Perceived usefulness (PU)	Using m-entertainment would enhance my effectiveness in my daily work (PU1)	0.740	Cronbach's alpha = 0.903 CR = 0.908 AVE = 0.665
	Using m-entertainment would improve the performance of my task (PU2)	0.859	
	Using m-entertainment would increase my task productivity (PU3)	0.882	
	Using m-entertainment would improve my task quality (PU4)	0.855	
	In general, I believe that m-entertainment will useful (PU5)	0.729	
Perceived ease of use (PEOU)	It is/might be easy to learn or use m-entertainment (PEOU1)	0.751	Cronbach's alpha = 0.817 CR = 0.825 AVE = 0.544
	M-entertainment is understandable and clear (PEOU2)	0.755	
	M-entertainment is/might be easy-to-use (PEOU3)	0.829	
	It would be easy for me to become skilful at using m-entertainment (PEOU4)	0.597	
Social influence (SI)	Friends' suggestions and recommendations will affect my decision to use m-entertainment (SI1)	0.703	Cronbach's alpha = 0.756 CR = 0.764 AVE = 0.620
	Family members or relatives have influence on my decision to use m-entertainment (SI2)	0.864	
Perceived self-efficacy (PSE)	I can use m-entertainment without any help (PSE3)	0.706	Cronbach's alpha = 0.816 CR = 0.819 AVE = 0.602
	I don't feel trouble in using m-entertainment (PSE4)	0.827	
	I am capable enough to use m-entertainment (PSE5)	0.789	
Perceived enjoyment (PE)	When interacting with m-entertainment I had fun (PE6)	0.820	Cronbach's alpha = 0.830 CR = 0.835 AVE = 0.632
	Interacting with m-entertainment was enjoyable (PE7)	0.902	
	Overall, I encountered a positive experience from using m-entertainment (PE8)	0.641	
Intention to use (IU)	I intent to use m-entertainment if the cost is reasonable for me (IU2)	0.507	Cronbach's alpha = 0.744 CR = 0.760 AVE = 0.525
	I believe I will use m-entertainment in the future (IU3)	0.879	
	I believe my interest towards m-entertainment will increase in future (IU4)	0.738	

[a] $CR = (\Sigma\lambda_i)2/[(\Sigma\lambda_i)^2 + \Sigma\delta_i)]$, ($\lambda_i$ = standardized factor loadings, i = observed variables, δ_i = error variance).
[b] $AVE = \Sigma_i^2/n$ ($i = 1 \ldots n$, λ = standardized factor loadings, i = observed variables); item IU1 was deleted for poor loading on its latent factor.

Table 6
Latent construct correlation, criterion validity and discriminant validity.

	PU	PEOU	SI	PE	PSE	IU
PU	***0.816***	0.309**	0.380**	0.463**	0.065	0.423**
PEOU	.0309**	***0.738***	0.117**	0.354**	0.325**	0.307**
SI	0.380**	0.117**	***0.787***	0.312**	−0.059	0.273**
PE	0.463**	0.354**	0.312**	***0.795***	0.129**	0.483**
PSE	0.065	0.325**	−0.059	0.129**	***0.776***	0.137**
IU	0.423**	0.307**	0.273**	0.483**	0.137**	***0.725***
Fornell–Larcker ratio[a]	0.322	0.230	0.233	0.339	0.175	

** Correlation is significant at the 0.01 level (2-tailed); major diagonal shows square root of AVE.
[a] Fornell and Larcker (1981); shaded cells indicate criterion validity; PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; PE = perceived enjoyment; PSE = perceived self efficacy; IU = intention to use; $n = 572$.

$p < 0.001$), PEOU (standard error = 0.039; critical ratio = 3.837; $p < 0.001$), SI (standard error = 0.028; critical ratio = 3.258; $p < 0.05$) and PE (standard error = 0.039; critical ratio = 8.041; $p < 0.001$) were discovered to be significantly and positively associated to the intention of using m-entertainment. Hence, hypotheses H_1, H_2, H_3, and H_5 were supported. PSE (standard error = 0.034; critical ratio = 1.621; $p = 0.105 > 0.05$) is insignificant, hence H_4 is rejected. Finally, PEOU (standard error = 0.087; critical ratio = −1.331; $p = 0.183 > 0.05$) was found to have insignificant effect on PU leading to the rejection of H_6. The hypotheses results are as shown in Table 8 depicts the SEM path analysis results.

4.3.8. Moderating effect of gender

To examine the moderating effect (Table 9), multiple group analysis (MGA) with AMOS 18 was performed using the procedure recommended by Jöreskog and Sörbom (1993) as follows:

(a) The data set is split into two gender groups of male and female.
(b) SEM analysis is conducted on the structural model with equality constraints on all paths whereby each of the paths is fixed with equal regression weight across both gender groups.

Table 7
Measures of the model fit.

Goodness of fit measures	χ^2 test statistics/df	*p*-Value	GFI	AGFI	CFI	NFI	IFI	TLI	RMSEA	SRMR
Recommended value	⩽3.00[a]	>0.05[a]	⩾0.90[a]	⩾0.90[a]	⩾0.90[a]	⩾0.90[a]	⩾0.90[a]	⩾0.90[a]	⩽0.08[b]	⩽0.1[c]
CFA model	1.130	0.193	0.981	0.965	0.998	0.980	0.998	0.996	0.015	0.0327
Structural model	1.021	0.434	0.991	0.979	0.999	0.966	0.999	0.998	0.006	0.0319

Sources:
[a] Bagozzi and Yi (1988).
[b] Browne and Cudeck (1993).
[c] Hoang et al. (2006).

Table 8
Hypothesis testing results.

	Path	Estimate	Std. error	Critical ratio	*p*-Value	Remarks
Hypothesis						
H_1	PU → IU	0.154	0.035	4.421	0.000**	Supported
H_2	PEOU → IU	0.149	0.039	3.837	0.000**	Supported
H_3	SI → IU	0.091	0.028	3.258	0.001*	Supported
H_4	PSE → IU	0.055	0.034	1.621	0.105	Not supported
H_5	PE → IU	0.315	0.039	8.041	0.000**	Supported
H_6	PEOU → PU	−0.115	0.087	−1.331	0.183	Not supported
Control variables						
	AG → IU	0.022	0.015	1.452	0.147	Not supported
	MS → IU	0.001	0.003	0.306	0.759	Not supported
	HE → IU	−0.027	0.028	−0.966	0.334	Not supported
	MP → IU	0.000	0.011	−0.021	0.983	Not supported
	EX → IU	0.002	0.009	0.181	0.856	Not supported

Note: PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; PSE = perceived self-efficacy; PE = perceived enjoyment; IU = intention to use; AG = age; MS = marital status; HE = highest level of education; MP = number of mobile phone; EX = experience.
** $p < 0.001$.
* $p < 0.05$.

Table 9
Gender moderating effects: results of multiple group analysis.

	χ^2 (df = 73) = 85.241	Male	Female	Chi-square difference[a]	*p*-Value[b]	Significant
H_1	PU → IU	0.183***	0.127**	0.885	0.3468	No
H_2	PEOU → IU	0.194***	0.113*	1.381	0.2399	No
H_3	SI → IU	0.114**	0.070*	0.718	0.3968	No
H_4	PSE → IU	0.083	0.021	0.895	0.3441	No
H_5	PE → IU	0.325***	0.318***	0.010	0.9203	No
H_6	PEOU → PU	−0.151	−0.051	1.000	0.3173	No

Note: PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; PSE = perceived self-efficacy; PE = perceived enjoyment; IU = intention to use.
[a] Chi-square difference = $\Delta\chi^2_{(\Delta df=1)}$.
[b] Two-tailed.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

(c) A second SEM analysis is conducted without imposing any equality constraints whereby all path coefficients are freely estimated.
(d) The significance of moderating effects is determined based on the chi-square difference test whereby a critical value greater than 3.841 at the 5% level is considered adequate for a significant moderating effect to occur.

Furthermore, we have also conducted the pairwise parameter comparisons using critical ratios for differences between parameters with AMOS 18. Table 10 shows that all parameters between male and female are non-significant as their critical ratios are less than 1.960 at 0.05 or 5% level. It is quite surprising as the findings reveal that there is no significant gender moderating effect on all the paths. Therefore, we conclude that there is no gender difference in the adoption of mobile entertainment. A possible justification would be the government's policy of equal opportunities given to both genders to gain knowledge and expertise and therefore the gender parity has been successfully eradicated.

5. Discussion

In order to validate the proposed research model for ME acceptance, construct reliability test, normality test, EFA, CFA and SEM were carried out. It was found that all factors except for PSE have positive effects on IU of ME.

5.1. Perceived usefulness (PU)

PU has been verified to be vital in influencing the acceptance of ME and this align with those initial findings on ME acceptance (Liu et al., 2009; Lo, 2005; Nysveen et al., 2005; Wong & Hiew, 2005c). When consumers believe that ME is useful to them, this will influence them to accept it. Hence, the mobile and entertainment

Table 10
Critical ratios for differences between parameters.

Path	Parameters for male					
	PU → IU	PEOU → IU	SI → IU	PSE → IU	PE → IU	PEOU → PU
Parameters for female						
PU → IU	−0.635					
PEOU → IU		−0.805				
SI → IU			−0.749			
PSE → IU				−0.718		
PE → IU					0.787	
PEOU → PU						0.988

Note: PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; PSE = perceived self-efficacy; PE = perceived enjoyment; IU = intention to use.

industry players should highly consider this as a significant factor when designing their products and services to provide relevant and useful features to users.

5.2. Perceived ease of use (PEOU)

PEOU has significantly influence the ME acceptance, which is also consistent with the past findings by Liang and Yeh (2009), Liu et al. (2009), Lo (2005), Nysveen et al. (2005) and Wong and Hiew (2005c). Hence, we may conclude that if the products and services of ME are easy to use, its acceptance rate will be higher. Thus, ME players should consider this determinant if they want to propose new features in their products and services. The products or features should be simple to operate as far as possible. On the other hand, Davis (1989) asserted that the main reason that makes users to accept a technology is due to the easiness of its functions and to benefit from those functions. Therefore, products and services which are user-friendly and easy to learn will encourage the likelihood of consumers in accepting ME, for example, the availability of fewer hierarchical menus and quick access buttons, context sensitive helps or tooltips and easy to understand instructions. Davis (1989) also stressed that consumers are more readily to experience the hassles of learning difficult-to-handle functions and yet are considered important to them.

5.3. Social influence (SI)

The result is similar to the finding by Liu et al. (2009) who discovered that in China, SI is one of the most essential determinants in accepting ME. This finding is supported by Nysveen et al. (2005), Wong and Hiew (2005b) but opposed by Liang and Yeh (2009) who discovered that SI is not vital to mobile games acceptance. With the major segmentation of ME users in Malaysia who are relatively young (Wong & Hiew, 2005b), they could be influenced by SI easily (Lu et al., 2003). SI such as peers, friends and family, colleagues, mass media play an essential role in persuading them to use ME. Hence, the industry players should give appropriate consideration to promote their products and services either by the printed media like newspapers and magazines or the electronic media including television advertisements and social networking such as Facebook and Twitter as a way to penetrate the new market and expand their strategies.

5.4. Perceived self-efficacy (PSE)

PSE has insignificant influence toward the acceptance of ME and is in agreement with Wang et al. (2010) but contrary to Liu et al. (2009). It can be concluded that PSE is a non-factor for users to decide whether to accept ME or not. Perhaps this can be justified by the users' higher education level as well as the proliferation of Internet and mobile technologies whereby majority of the new generation are able to master the basic skills of using mobile devices therefore they do not have to consider the level of PSE since they already possessed what are needed in using ME. Since PSE is not a factor in acceptance of ME, providers and mobile manufacturers may focus on other more important factors in their decision making processes.

5.5. Perceived enjoyment (PE)

The most important factor of all that was discovered to have a significant impact on ME acceptance is PE. This finding is consistent with the past studies carried out by Liu et al. (2009), Lo (2005) and Nysveen et al. (2005) but contradicted with the study by Liang and Yeh (2009) that discovered that PE is unimportant for mobile games acceptance. The finding shows that consumers are keen on trying and accepting ME if it is able to bring joyfulness and happiness to them. Henceforth, when consumers are willing to spend money on entertainment, industry players should use this determinant of ME by offering products and services that are more enjoyable and fun to play with.

5.6. PEOU and PU

Surprisingly, the findings reveal that there was no significant influence of PEOU on PU. This is in agreement with Hu, Chau, Sheng, and Tam (1999) and Subramanian (1994). A rationale behind this maybe due to high level of user-friendliness provided by the mobile entertainment providers such that users do not need to consider the level of ease of use in order to determine whether it is useful to them or not. They view PEOU and PU as two separate entities rather than as closely related adoption factors.

5.7. Control variables

Surprisingly, the findings showed that there were no confounding effects of age, marital status, highest educational level, number of mobile phone own and experience on mobile entertainment adoption. Hence, the findings from this study are robust across various users irrespective of the above mentioned control variables. Practitioners and stakeholders need not be influenced by these control variables when applying the determinants identified in this study.

6. Implications

This research has examined five determinants that may influence IU of ME and discovered that SI, PU, PE and PEOU have significant effects towards ME acceptance. It has offered both theoretical and practical contributions in terms of ME acceptance as elaborated in the following section.

6.1. Theoretical implications

This study has assessed the associations between ME acceptance and the six hypotheses of the framework involving PEOU,

PU, SI, PSE and PE. The suggested framework in this research is based on the three models used namely the TAM, TPB and DOI which were derived from the past studies. Hence, by using the EFA, CFA and SEM, the validity of this model is further enhanced and validated and may give a better understanding and insights in the determinants that contribute to the acceptance of ME. With the inclusion of gender moderating effects and control variables of age, marital status, highest educational level, number of mobile phones and experience, the model has contributed significantly in extending the traditional TAM model. It may also present a better depiction because it was implemented in a multi-racial and multi-culture population particularly in an Asian developing country as compared to many other previous studies conducted in uni-racial developed countries such as the US, UK, EU, Japan, Korea, China or New Zealand. These findings may be used as a guideline for other nations that plan to establish their own industry on ME.

6.2. Managerial implications

The findings from this study will be beneficial to the industry players of ME such as mobile device manufacturers, ME providers, mobile games, movie and music industry players. The outcomes will clarify on the factors which affect the acceptance of ME and hence, able to enlighten the industry players. Mobile phone manufacturers may consider these factors especially PE and PU being the two main determinants when designing and upgrading their products and services. These manufacturers will have the ability to market their products and services easily and effectively by having highly entertaining mobile applications complemented by the powerfulness of advertisement and publicity.

On the other hand, ME providers may find that SI is appropriate and should be given proper consideration in developing mobile games and entertainment services such as ring tones, wall papers, fortune telling or interactive games. Promotions and adequate publicities are important to operate the business successfully since majority of the ME users are youngsters who are easily attracted to ME. They can use social networks such as Facebook or via SMS to post information about new products and services and promotional rates to customers who will disseminate the information to friends, family members, colleagues or acquaintances.

Likewise, according to Sweetser and Wyeth (2005), ME players may take into consideration about the PE factor by presenting more elements of enjoyment that include concentration of excitement, challenge, player skills, control, clear goals, feedback, immersion and social interaction. It is also crucial for them to provide services that are user-friendly and easy to operate as illustrated by the importance of PEOU. To further boost the level of PEOU, they may furnish context sensitive menus, short-cuts, hotkeys, helpdesk, hotlines, onsite-training, quick reference cards, graphical illustrated user manual, etc.

The providers of mobile game may also garner the influence of PE on IU of ME by furnishing high level of PE through higher degree of gaming sensational via the 3D effects usage and multimedia elements, superb surround sound systems, fast animation reproduction and also plenty of challenging games. Since SI is one of the main factors, they may also consider games promotion via MMS or SMS and give away discounts or vouchers to consumers who help them introduce the products to friends and families. To boost the PEOU level, the mobile games should have easy access buttons, simple instructions, simple user interface and simple games instructions.

The industry players of movies and music may fully utilize the PE factor by presenting films and songs which may give the users the best entertainment and excitements. For instance, the 3D movies and surround sound system or instant animation reproductions are some of the methods which may raise the degree of excitements among the users. They can also tap in the influences of SI by circulating free movie trailers and sample of songs to the mobile users as a part of their marketing strategies. More users can be enticed for ME acceptance by using MMS and SMS as the mobile marketing strategy. This is because they are intensely affected by the likes of their friends, colleagues and family members.

A surprising finding of the insignificant moderating effect of gender will enable practitioners and stakeholders to have better decision making processes in terms of gender differences. They may apply a universal sales and marketing strategy to cater to the needs of both genders. The insignificant effect of gender may be attributed to the narrowing of gaps between male and female consumers as a result of equal opportunities to attain education, information and skills. Most of the previous studies were done before 2006 which was 7 years ago and due to the betterment in education and life standard, the issue of gender differences has become a non-issue as gender equality has been properly addressed. Besides that based on the fact that there were no confounding effects of the control variables (i.e. age, marital status, educational level, number of mobile phones and experience) on mobile entertainment adoption, they may also use a common strategy across various consumer segmentations. This will save a lot of time, monetary and other resources as a general strategy may be applied. Age and experience were insignificant moderators and this contradicts with Venkatesh et al. (2003). This is probably due to the fact that children and adults are able to use ME as the cost of obtaining a mobile device is quite low in comparison to the last decade. Children are able to possess a mobile device as their parents can afford to do so. Moreover, the high level of user friendliness in ME has led to inexperience users to achieve the same level of usage just as the experience ones. Similarly, due to the low cost of ME, unmarried consumers with lower income are also able to use ME just as the married couples do. The same goes to those with lower education level with lower income. Finally, the number of hand phone owned does not guarantee that they will use more frequently than those with less hand phones and vice versa. A user may have different hand phones for different contacts but the overall intensity of use is still limited to 24 h a day as he cannot use more than one hand phone simultaneously.

Last but not least, all of the above stakeholders should incorporate higher level of PU in their products and services by offering more useful features and functionalities. For instance, more varieties of mobile games, ringtones, MP3 songs, music, movies, etc. may be offered to the consumers. Besides that, they could also provide online or mobile assistances or helps, hotlines, CD tutorials, helpdesks or video demonstration CDs as means of raising the level of PSE among users.

7. Conclusion

The most significant contribution of the research was the identification of the determinants of ME acceptance and the development of the model with integrated constructs (SI, PU, PE, PEOU and PSE) taken from various technology acceptance models. This is indeed helpful for all ME industry players as it would provide the guideline for them in developing and marketing their products and services better.

8. Limitation and future studies

This research consists of a few shortcomings which should be solved in the future study. As the study was carried out in Malaysia, the result does not entire fit with the situations of other geographical areas. Therefore, future studies may need to concentrate on the comparative research across different nations

and areas as this will give a universal opinion in terms of ME acceptance. Since there were a large number of young respondents, future studies may focus on further discoveries on the acceptance of ME across a wider age group.

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