Mobile social media marketing: a partial least squares structural equation modelling approach

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Abstract: The revolution of mobile technologies has brought various innovations to humankind. Mobile social media marketing (m-SMM) is an emerging innovation in marketing communication channel with benefits for sellers. Therefore, the study determines to recognise the elements contributing to the adoption of m-SMM. The study adapted combined models such as unified theory of acceptance and use of technology (UTAUT), uses and gratification (U&G), diffusion of innovation (DOI) and extended the framework with training and support (TS). The data were derived from 213 Malaysian sellers through self-administered questionnaire and analysed using partial least squares structural equation modelling (PLS-SEM) approach. Results proved to be significant on all constructs tested on behavioural intention (BI) except performance expectancy (PE), effort expectancy (EE) and entertainment (ET). The findings could be useful for scholars, researchers and mobile marketers in the area of m-SMM.

Keywords: diffusion of innovation; mobile social media marketing; partial least squares-structural equation modelling; unified theory of acceptance and use of technology; uses and gratification.

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Later on, the upward trend of mobile devices usage had also transformed the advertising industry.

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1 Introduction

Technological devices develop so rapidly that by the year 2020, humankind will eventually live in technology (Bryant, 2014). As such, many organisations have started to create useful mobile applications and websites that are user friendly for mobile devices (m-devices) (Nilashi et al., 2015). Dahnil et al. (2014) defined social media marketing (SMM) as the adoption of social networking sites (SNS) to accomplish marketing objectives. According to Hudson et al. (2016), consumers can learn, share information and interact with brands and sellers through SMM. Among popular SNS used in SMM includes Facebook, Google+, LinkedIn, Twitter, Instagram and Foursquare (Lin and Lu, 2015; Hudson et al., 2016). Michaelidou, Siamagka and Christodoulides (2011) elaborated that the usage of SMM would not require huge financial commitment for organisations. Furthermore, SMM proved usefulness towards brand loyalty and positive word-of-mouth marketing for many organisations (Erdoğmuş and Çiçek, 2012). In view of this potential, many organisations have also started to utilise mobile social media marketing (m-SMM) for purposes such as sales promotions, communications, relationship expansion and loyalty programs (Kaplan, 2012). According to Smith (2016), 38% of global organisations plan to spend more than 20% of their total advertising budgets on social media channels in 2015. In Malaysia, the population is about 28 million (Tan, Tan and Ooi, 2011). About 66% of the populations are internet users (Mobile Malaysia: Ahead of the Pack, 2014). Furthermore, it was revealed that the m-devices penetration rate in Malaysia stands at 140% (Public Data of Mobile Cellular Subscription, 2014). The high mobile penetration rate provides opportunities for organisations to enter the market through various mobile-based services. The entertainment industry, for example, utilises mobile technology to deliver mobile-based services such as movie subscriptions (Bakar and Bidin, 2014; Wong et al., 2014, 2016) and movie ticketing (Mobile Malaysia: Ahead of the Pack, 2014). In the retailing industry, mobile technology was also used to deliver distinctive mobile-based shopping experiences among shoppers (Wong et al., 2015a). Despite the growing use of mobile technologies in various industries, there is a lack of study on how m-SMM can be adopted by sellers as a new form of marketing communication channel. M-SMM is often time still perceived as a new business practice (Dahnil et al., 2014) especially in Malaysia. In view of the limitations, the study aims to investigate the motivation of sellers to adopt m-SMM. The next section will provide an overview of m-SMM. Subsequently, the study is followed with the description on the research hypothesis and methodological approach. As a final point, the research will discuss on the results,

implications and limitations. In addition, future studies would be deliberated before concluding the paper.

## 2   Literature review

2.1   Overview of m-SMM

The development of network technologies such as Bluetooth, Wi-Fi (wireless fidelity) and 4G mobile broadband has led to the growth of mobile marketing (Kim and Lee, 2015). Worldwide brands are estimated to spend $99.3 billion on mobile marketing by 2017 slowly reducing desktop advertisements (O'Malley, 2016). According to Goh, Chu and Wu (2015), marketing can now be customised, and personalised using m-SMM (Goh, Chu and Wu, 2015). As such, many organisations are encouraged to promote their products and services using mobile SNS. According to Chen et al. (2014), many individual small businesses adopt SNS as their optimal platform for interaction and marketing tool. M-SMM is a way where marketing could be exercised through SNS on m-devices. Some common practices include surprising customers with catchy image or punch line, sharing visual media such as pictures and videos and engaging SNS users through mobile applications (Ha et al., 2015). Facebook has taken the initiative to introduce Facebook for business in 2004. The platform provides the latest news, tips and best practices to help organisation meets business goals. Facebook offers businesses an opportunity to optimise their Facebook presence to meet the organisation's marketing goals (Facebook Business Page Info, 2016). Brick-and-mortar businesses can now drive and measure store visits and sales from their Facebook advertisements (Facebook for Business Home Page, 2016). Additionally, Facebook for Business also allows integration with the use of Instagram.

2.2   Theoretical model

The research model shown in Figure 1 was developed through the integration and adaption from unified theory of acceptance and use of technology (UTAUT), uses and gratification (U&G) and diffusion of innovation (DOI). UTAUT was developed by Venkatesh and Davis (2000). This model is often used to investigate the various acceptance of technology among individuals. Teo et al. (2015b) acknowledged that UTAUT provides a better explanation on Information System adoption system. The UTAUT is made up of four direct factors that include performance expectancy (PE), effort expectancy (EE), Facilitating Conditions and Social Influence. However, in our research framework, only PE and EE are adopted in view of their importance. Social Influence has been removed and replaced with social interactive (SI) from U&G. The rational goes that the SI is more appropriate since the constructs is a combination of Social Influence and Social Interaction. Similarly, Facilitating Conditions was replaced with training and support (TS), whereby the terminology of the construct is more suited in this context of study. Many scholars found that U&G was applicable in many studies related to mobile social media (Xu et al., 2012; Ku, Chu and Tseng, 2013; Ha et al., 2015). The model is an audience-focused approach used to understand mass communication and suggests that users are motivated by needs and goals to use certain

media in relation to the gratification obtained. The study only selected Entertainment (ET), SI and cognitive needs (CN) as part of the research framework. According to Batra and Ahtola (1990), ET and CN are the most fundamental gratifications to determine attitude. Xu et al. (2012) further stated that SI is an emerging core construct related to relationship (Xu et al., 2012). Therefore, only ET, SI and CN were adopted. DOI was developed by Rogers (1995). The model is widely applied in studies related to the adoption intention of new innovation or technology (Balachandran and Tan, 2015). DOI consists of Relative Advantage (RA), Compatibility (CP), Complexity (CX), Triability (TR) and Visibility (VS) (Agag and El-Masry, 2016). Of those few factors, RA and CP have been providing consistent explanations towards intention to adopt new technologies (Rogers, 1995; Liu and Li, 2010; Lu et al., 2011; Agag and El-Masry, 2016). According to Wong et al. (2012), RA is similar with PE; complexity is similar to EE; TR requires experimentation of adoption for a fixed period; VS refers to the awareness of innovation to others and lastly CP is related with adopter's needs and experiences. Moore and Benbasat (1991) stressed that RA, CP and CX would tentatively explain adoption behaviour. Since PE and EE are adopted from UTAUT which symbolises the characteristics of RA and CX; therefore, this study only focused only on examining the influence of CP in m-SMM. In order to have a more concrete explanation, the proposed conceptual framework was extended with TS as an additional direct factor of behavioural intention (BI). TS was introduced following suggestion from Tornatzky and Fleischer (1990) where the construct is important to influence the adoption and implementation of new innovations. Ajzen (1991) defines BI as a behaviour that would be influenced by motivational factors. The construct would indicate the willingness to try, the amount of effort they would utilise to perform such behaviour. Intentions are made up of attitudes towards the outcomes of behaviours. Consumers' attitude is a crucial determinant towards the adoption of mobile-related technologies (Izquierdo-Yusta, Olarte-Pascual and Reinares-Lara, 2015). Agag and El-Masry (2016) further supported that attitude is a vital element of BI. As such, potential and intuitive feeling could be used to describe BI. A high commitment and aim for users are to engage in behaviour that would encourage high level of performance. Therefore, BI would be appropriate to be applied in this study.

Figure 1 Research model
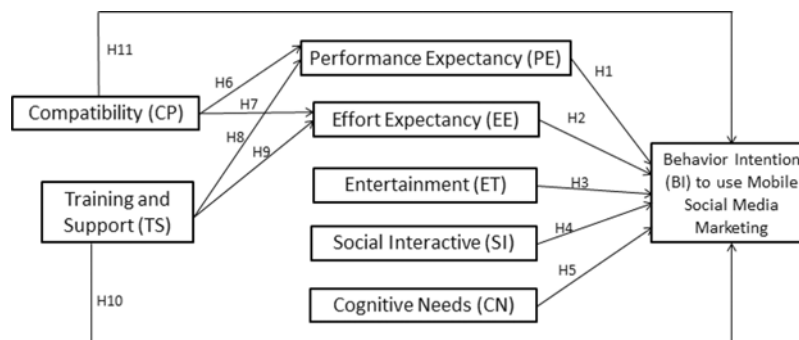
3   Hypotheses development

3.1   Performance expectancy

When an individual practices a system or technology, they believe that it will improve their task performance (Tan et al., 2014a; Tan et al., 2016). As such, PE is explained through the similarity in perceived usefulness from technology acceptance model (TAM) (Venkatesh, Thong and Xu, 2012). PE can also be categorised into three dimensions: job effectiveness, importance of system towards the job and productivity. Mobile-related researches conducted from Sim et al. (2011) on broadband adoption and Park and Ohm (2014) on mobile map services proved PE to be a significant factor on BI. Another study conducted by Wong et al. (2015a) on 271 university students on the adoption of mobile marketing in Malaysia indicated that marketing activities performed using m-devices are useful to enhance users' productivity. The pervasive of m-devices serves as a tool for sellers to access information on-the-spot (Tan et al., 2012a). Teo et al. (2015a) stressed that m-devices allow faster response time. In this case, sellers would be able to manage their transactions instantly (Ding, Iijima and Ho, 2004). Similarly, SNS such as Facebook motivate sellers by allowing specific genres of contents to be created within a single media environment (Smock et al., 2011). When sellers have confidence towards the usefulness of m-SMM, this will lead to higher BI. Therefore, the hypothesis is formulated as follows:

   H1: PE is positively related to seller's BI to use m-SMM.

3.2   Effort expectancy

Effort expectancy refers to the effort required to operate a system that is vital towards acceptance (Tan et al., 2012). Similarly, EE could be explained similarity as perceived ease of use from TAM (Venkatesh, Thong and Xu, 2012). Wong et al. (2015c) considered user friendliness of mobile technologies to be an important factor tied towards users' BI. Tan et al. (2014b) stressed that when the system has easy navigation structure with simple design, this lead to the easiness of learning and encourages adoption. With the emergence of SNS, mobile developers have started to focus on customer-centric. Thus, this helps to reduce system complications and reinforce users' relationship (Moreno-Munoz et al., 2016). Sellers are believed to select only features that best meet their needs. In the context of study, if sellers find easiness in performing SNS tasks such as status updates, comments, wall posts, private messages and group division (Smock et al., 2011), they are more likely to adopt the system. Therefore, it is hypothesised as follows:

   H2: EE is positively related to seller's BI to use m-SMM.

3.3   Entertainment (ET)

According to Nambisan and Baron (2007), ET refers to the aesthetics associated with enjoyment, pleasure, resting and spending time. The construct is similar with hedonic gratification and can be classified into categories such as intrinsic enjoyment, entertainment, escapism and time-passing (Nambisan and Baron, 2007; Smock et al.,

2011; Wu and Holsapple, 2014). Hausman and Siekpe (2009) and Smock et al. (2011) have validated ET and found that the construct has a significant effect on BI in mobile studies. Chen et al. (2014) identified entertainment value on social networks. SNS encourages entertainment among sellers through interactions with their networks and games linked with the media such as social games on Facebook (Ha et al., 2015). As consumers enjoy discovering diverse fictional identities, encountering and solving virtual challenges, sellers offer enjoyable and humorous contents on social media platforms (Erdoğmuş and Çiçek, 2012). Mobile applications are no longer only targeted towards providing positive consumer experience but also positive retailer experience. Mobile commerce serves as a leisure activity embark on personal technology (Lee and Lee, 2007). As ET has a high tendency to develop positive intention to use m-SMM, the following hypothesis is established:

H3: ET is positively related to seller's BI to use m-SMM.

3.4 Social interactive

Social interactive is defined as the level where an individual would feel comfortable and ease to participate in an interpersonal communication through technology-enabled space (Phang, Kankanhalli and Sabherwal, 2009). Sim et al. (2014) mentioned that asocial circle consists of relatives, friends, students, instructors, peers and superiors whereby their opinion is important to influence an individual's BI. According to Kietzmann et al. (2011), SNS encourages social interactions carried out on their internet network and exchanging information with one another which affects their assertiveness towards technology adoption. SI can be categorised into few interpersonal interaction categories including resource exchange and the social and economic outcome that affects satisfaction. Brown, Broderick and Lee (2007) commented that information circulation and social recommendation are perceived as higher reliability especially in the social media environment. Facebook, for example, allows fast, engaging and personalised communications through private messages and social recommendation through the 'share' button (Smock et al., 2011). Phang, Kankanhalli and Sabherwal (2009) proved SI as an important determinant in a study among 404 participants to commit in an online community. Besides, Tan et al. (2015) mentioned that adoption of technology would reflect professionalism and specialty among social influences. Based on the literature, gratification of interaction is expected to have positive attitude towards m-SMM because of the characteristics of the internet. Therefore, the following hypothesis is suggested:

H4: SI is positively related to seller's BI to use m-SMM.

3.5 Cognitive needs

Cognitive need refers to obtaining information related to occurrence, discussion, products, gratification of curiosity, learning and acquiring knowledge (Nambisan and Baron, 2007). CN is adopted to explain the gratification of information acquisition and understanding the surrounding environment (Ha et al., 2015). Social networks bring purposive commercial value from a marketing perspective that involves giving or receiving information (Chen et al., 2014). Organisation employees find it intrinsically rewarding as the level of knowledge towards industries increases (Hansen and Levin, 2016). M-SMM allow sellers to obtain various information everyday through their SNS

on latest trends on the products and services (Humphreys, 2008). Ha et al. (2015) conducted an empirical study on 641 Facebook and Kakao Talk users and results showed that CN has a significant impact on the attitude towards m-SMM. This happened due to psychosocial well-being towards social communication quality and sense of online community. Users from different places meet without boundaries, enjoy companionship, gather information and exchange their knowledge through group communications (Wong et al., 2015b) or comments in Facebook (Smock et al., 2011). As such, it is believed that CN has a significant influence towards BI of m-SMM. Therefore, the following hypothesis is proposed:

   H5: CN is positively related to seller's BI to use m-SMM.

3.6   Compatibility

Compatibility is defined as "the degree to which the innovation is perceived to be consistent with the potential users' existing values, previous experiences and needs" (Sonnenwald, Maglaughlin and Whitton, 2011, p.115). In a situation when the system is compatible, the rate of adoption would increase and the uncertainty level would reduce (Rogers, 1995). Sonnenwald, Maglaughlin and Whitton (2011) considered the following factors in measuring compatibility to successful computer-mediated group work:

1   experiences with communications technology

2   user needs related to system qualities

3   reliability of system

4   response time

5   respect participation in a group.

Wu and Wang (2005) and Sonnenwald, Maglaughlin and Whitton (2011) both have confirmed a positive association between CP and BI. However, the environment must allow the necessary operational skills and m-devices to access wireless internet (Teo et al., 2015a). A simple example is the SNN must be accessible regardless of type of m-devices. When the system is compatible with the seller's values, experiences and needs, this will increase the sellers' PE to use m-SMM. Ding, Iijima and Ho (2004), for example, explained that the chances of sellers to adopt a new innovative system would be reliant on the usefulness of the technology and the usefulness is related to the CP of the sellers' daily activities, practise and preferences. CP is related to complexity that will influence the difficulty and effort required in innovation (Wu and Wang, 2005). This means that when sellers perceived the system to be suited with their experiences and needs, they will find the system to be effortless, user friendly and convenient for usage. SNNs are designed to be compatible and accessible in almost every m-devices from smartphones, tablet to laptop (Kaplan, 2012). As sellers familiarise with the SNS layout and features across devices, they will perceive the system to be easy to use (Sonnenwald, Maglaughlin and Whitton, 2011). Therefore, the hypothesis is developed as follows:

   H6: CP is positively related to PE.

   H7: CP is positively related to EE.

   H11: CP is positively related to seller's BI to use m-SMM.

3.7 Training and support

The mobile connectivity and instantaneous services provide opportunities to offer new ways of teaching and learning that can eventually help to enhance an individual's performance (So, 2016). So (2016) experimented with 31 university students to study on the impact of mobile instant messaging on higher education. In the study, training and learning experience of an individual is significant towards their attitude to adopt the system. As users familiarise with the system such as m-SMM, they will realise on the usefulness and eventually will perform better (Wong et al., 2016). TS is also believed to have a direct effect towards EE when Van Gog, Kester and Paas (2010) mentioned complicated learning tasks will increase cognitive load leading to an outcome of reduced task performance. Reychav and Wu (2016) experimented with 364 participants to test the influence of various complexities of cognitive tasks on user performance and perception differentiating through interaction with mobile training app in both individual and group settings. The findings revealed that at lowest cognitive complexity, user performance and attitude towards mobile training attained a desirable result with mobile app usage. When users are equipped with TS, social network gives utilitarian value resultant of economic concept which is regarded as useful, economically efficient and productive experiences (Chen et al., 2014). This implies that sellers will have a positive attitude in an environment that is friendly and given mobile training. Facilitating environment will possibly trigger the acceptance towards a system (Bedard et al., 2003). Businesses in the SME sector were found to be lacking in experts to operate and manage systems which leads to negative consequence. Therefore, Maduku, Mpinganjira and Duh (2016) expected the availability of skilled staff would encourage BI to use m-SMM. Therefore, following hypotheses are developed:

H8: TS is positively related to PE.

H9: TS is positively related to EE.

H10: TS is positively related to seller's BI to use m-SMM.

4 Research methodology

4.1 Sampling and data collection

This study focuses on sellers who have the knowledge and experiences conducting business transactions through SNS via m-devices. According to the Consumer Protection Electronic Trade Transactions in Consumer Protection Regulations (2012), a seller in an online context refers to online business supplier or online marketplace operator. Online business supplier refers to a person who operates a business through a website, blogs or an online marketplace such as 'Lelong', 'Lazada', 'Shopee', 'Carousell' or SNN to supply goods or services. An online marketplace operator on the other hand is a person who sells in an online marketplace. Therefore, this means that sellers could consist of large corporations or businesses to consumers who sell either brand new or preloved items through SNS or online marketplace. According to Malhotra, Birks and Wills (2012), the sample size of the research is dependent on the nature of the analysis. Marcoulides and Saunders (2006) and Wong (2013) suggested that sample size for PLS-

SEM analysis should be based on the number of arrows directing towards a latent variable. In addition, Hoyle (1995) suggested a sample size of 100 to 200 will be feasible for conducting path modelling. As this study consists of 11 arrows pointing at a latent variable in the model, therefore, the sample size of 220 would be ideally sufficient for the research. The questionnaire link was distributed throughout the period of 2 weeks targeting 220 sellers through self-administered method around Klang Valley that uses SNS such as Facebook, Twitter and Instagram. The data collection process is completed once 220 responses were collected. Klang Valley was chosen as it is ranked top 20 most liveable cities and one of the top in the world for economic growth (The Star, 2013). Seven responses were discarded from further analysis because the responses were conflicting with the response rate yielding at 96.82%.

4.2   Variable measurement

The predictors and response variables of the study were adopted from several mobile-related studies by Venkatesh, Thong and Xu (2012), Nysveen, Pedersen and Thorbjørnsen (2005), Nambisan and Baron (2007), Pai and Arnott (2013), Tan et al. (2012a), Calder, Malthouse and Schaedel (2009), Wu and Wang (2005), Sonnenwald, Maglaughlin and Whitton (2011), Maduku, Mpinganjira and Duh (2016), Mishra, Akman and Mishra (2014). A 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree' was used to measure the survey items. The sources of each of the questionnaires items are shown in Table 1.

Table 1   Constructs and sources of questionnaire items

Constructs	Number of items	Sources
Performance Expectancy (PE)	4	Venkatesh, Thong and Xu (2012)
Effort Expectancy (EE)	4	Venkatesh, Thong and Xu (2012)
Entertainment (ET)	4	Nysveen, Pedersen and Thorbjørnsen (2005), Nambisan and Baron (2007)
Social Interaction (SI)	4	Pai and Arnott (2013), Tan et al. (2012a), Venkatesh, Thong and Xu (2012)
Cognitive Needs (CN)	4	Nambisan and Baron (2007), Calder, Malthouse and Schaedel (2009)
Compatibility (CP)	4	Wu and Wang (2005), Sonnenwald, Maglaughlin and Whitton (2011)
Training and Support (TS)	5	Maduku, Mpinganjira and Duh (2016)
Behavioural Intention (BI)	4	Mishra, Akman and Mishra (2014), Venkatesh, Thong and Xu (2012)

5   Data analysis

5.1   Profile of respondents

Table 2 summarised the profile of respondents. Majority of the respondents are males that comprise of 51.6% of the total respondent group. In addition, 50.7% of respondents belonging to age group of 21 to 30 years old. Every respondent owned at least one type of m-devices. Among 213 respondents, only one reported not to own a smartphone. However, the respondent still access m-SMM through other mobile gadgets such as tablets or laptops. The majority of the respondents would at least own two types of m-devices.

Table 2   Demographic profile of respondents

		Frequency	*Percent*
Gender	Male	110	51.6
	Female	103	48.4
Age	20 years old and below	13	6.1
	21–30 years old	108	50.7
	31–40 years old	79	37.1
	41–50 years old	10	4.7
	51–60 years old	3	1.4
Devices	Smart Phone	212	99.53
	Laptop/Notebook	179	84.03
	Desktop	3	1.4
	Personal Digital Assistant (PDA)	1	0.47
	Smart Watch	1	0.47
	GPS Navigation Device	14	6.57

5.2   Data analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) approach was adopted using SmartPLS version 3.2.4 software (Ringle, Wende and Will, 2005) to analyse the research hypotheses. PLS-SEM is used for several reasons such as to fulfil the objective of this study about theory development, to explain variance in dependent variable based on the measurement model characteristics, enable freedom on data and the capability to work with wider range of sample size and model complication (Hensele, Ringle and Sinkovics, 2009; Pan et al., 2015). Wong (2013) suggested PLS-SEM is a good alternative compared to Covariance Based-SEM (CB-SEM) especially when predictive accuracy is paramount. The two-step analytical procedures suggested by Anderson and Gerbing (1988) were applied on the measurement and structural model evaluation. The PLS algorithm was latter use to appraise the SEM results with 5,000 bootstrap re-sample size.

5.3   *Measurement model evaluation*

First of all, the construct reliability needs to be evaluated through both Composite Reliability (CR) and Cronbach's alpha to estimate the construct's internal consistency. Table 3 shows that the values of CR for all eight constructs were above the satisfactory range of 0.70. The Cronbach's alpha for every variable has also a value of 0.81 and above. According to Bland and Altman (1997) and Tavakol and Dennick (2011), the acceptable values of alpha should range from 0.70 to 0.95.

Table 3   Composite reliability (CR), Cronbach's alpha and average variance extracted

Variables	No. of items	Composite reliability	Cronbach's alpha	Average variance extracted
PE	4	0.94	0.916	0.80
EE	4	0.89	0.842	0.68
ET	4	0.93	0.899	0.77
SI	4	0.94	0.917	0.80
CN	4	0.90	0.849	0.69
CP	4	0.93	0.906	0.78
TS	5	0.93	0.904	0.72
BI	4	0.95	0.927	0.82

Note: BI = Behavioural intention; PE = Performance Expectancy; EE = Effort Expectancy; ET = Entertainment; SI = Social Interactive; CN = Cognitive Needs; CP = Compatibility; TS = Training & Support

Results of convergent validity and discriminant validity are used to determine the validity of the models. Convergent validity is represented by AVE, whereas discriminant validity is performed using Fornell-Larcker test and factor loadings. As suggested by Hair, Ringle and Sarstedt (2011), AVE value should be at least 0.50. Table 3 shows that the AVE of all variables is above 0.60 which fulfilled the cut-off point. As for discriminant validity, the Fornell-Larcker test and factor loadings were evaluated. According to the Fornell-Larcker criterion, the AVE of each latent construct should be higher than the construct's highest squared correlation with any other latent construct (Fornell and Larcker, 1981). Table 4 illustrates that all factor loadings had fulfilled the minimum criteria of acceptable factor loading to be at least 0.70. Table 5 illustrates the discriminant validity. Hence no action is further needed. Result shows that discriminant validity is met as all the correlation values were lower than the square root of the AVE.

Table 4   Factor loadings

	BI	CN	CP	EE	ET	PE	SI	TS
BI1	**0.934**							
BI2	**0.948**							
BI3	**0.929**							
BI4	**0.812**							
CN1		**0.866**						
CN2		**0.816**						

Table 4 Factor loadings (continued)

	BI	*CN*	*CP*	*EE*	*ET*	*PE*	*SI*	*TS*
CN3		**0.817**						
CN4		**0.815**						
CP1			**0.893**					
CP2			**0.854**					
CP3			**0.894**					
CP4			**0.891**					
EE1				**0.844**				
EE2				**0.774**				
EE3				**0.803**				
EE4				**0.868**				
ET1					**0.875**			
ET2					**0.917**			
ET3					**0.851**			
ET4					**0.861**			
PE1						**0.887**		
PE2						**0.858**		
PE3						**0.931**		
PE4						**0.898**		
SI1							**0.906**	
SI2							**0.894**	
SI3							**0.915**	
SI4							**0.862**	
TS1								**0.742**
TS2								**0.837**
TS3								**0.885**
TS4								**0.899**
TS5								**0.881**

Note: The bold numbers are factor loadings; BI = Behavioural intention; PE = Performance Expectancy; EE = Effort Expectancy; ET = Entertainment; SI = Social Interactive; CN = Cognitive Needs; CP = Compatibility; TS = Training & Support

Table 5 Discriminant validity

	BI	**CN**	**CP**	**EE**	**ET**	**PE**	**SI**	**TS**
BI	**0.907**							
CN	0.728	**0.829**						
CP	0.762	0.738	**0.883**					
EE	0.669	0.665	0.748	**0.823**				
ET	0.644	0.641	0.655	0.655	**0.876**			

Table 5   Discriminant validity (continued)

	BI	CN	CP	EE	ET	PE	SI	TS
PE	0.775	0.742	0.795	0.683	0.714	**0.894**		
SI	0.810	0.710	0.748	0.680	0.766	0.815	**0.895**	
TS	0.830	0.741	0.847	0.778	0.718	0.817	0.827	**0.851**

Note: Diagonal elements (bold) are the square root of the AVE for each
construct. Off-diagonal factors demonstrate the inter-correlations

BI = Behavioural intention; PE = Performance Expectancy; EE = Effort
Expectancy; ET = Entertainment; SI = Social Interactive; CN = Cognitive
Needs; CP = Compatibility; TS = Training & Support

5.4   Structural model evaluation

The structural model is responsible for 75.7% of variance in users' BI to adopt m-SMM. Out of the 11 hypotheses, 7 were supported. The results are shown in Table 6 and Figure 2. SI (ß = 0.338, $p < 0.01$), CN (ß = 0.153, $p < 0.05$) and TS (ß = 0.366, $p < 0.01$) are positively related to sellers' BI to adopt m-SMM. Conversely, PE (ß = 0.097, $p > 0.05$), EE (ß = −0.014, $p > 0.05$), ET (ß = −0.085, $p > 0.05$) and CP (ß = 0.076, $p > 0.05$) have no significant relationship with the sellers' BI to adopt m-SMM. Thus, H1, H2, H3 and H11 were not supported. Additionally, the path coefficients of CP (ß = 0.364, $p < 0.001$) and TS (ß = 0.509, $p < 0.001$) showed positive relation on PE with explained variance (R^2) comprises of 70.6%. Besides, the path coefficients of CP (ß = 0.315, $p < 0.001$) and TS (ß = 0.512, $p < 0.001$) also shown positive relation on EE with explained variance (R^2) comprises of 63.4%. Therefore, H4, H5, H6, H7, H8, H9 and H10 were positively supported. In addition, TS was reported to have the strongest influence on PE.

Table 6   Results of hypotheses testing

| *Hypotheses*	*Path coefficient*	*T Statistics*	*Results*
H1: PE is positively related to seller's BI to use m-SMM.	0.097	1.072	Not Supported
H2: EE is positively related to seller's BI to use m-SMM.	−0.014	0.193	Not Supported
H3: ET is positively related to seller's BI to use m-SMM.	−0.085	1.467	Not Supported
H4: SI is positively related to seller's BI to use m-SMM.	0.338	2.619**	Supported
H5: CN is positively related to seller's BI to use m-SMM.	0.153	2.398*	Supported
H6: CP is positively related to PE.	0.364	4.279***	Supported
H7: CP is positively related to EE.	0.315	3.432***	Supported
H8: TS is positively related to PE.	0.509	6.208***	Supported

Table 6 Results of hypotheses testing (continued)

Hypotheses	Path coefficient	T Statistics	Results
H9: TS is positively related to EE.	0.512	5.925***	Supported
H10: TS is positively related to seller's BI to use m-SMM.	0.366	3.022**	Supported
H11: CP is positively related to seller's BI to use m-SMM.	0.076	0.856	Not Supported

$p < 0.05$*; $p < 0.01$**; $p < 0.001$***

BI = Behavioural intention; PE = Performance Expectancy; EE = Effort Expectancy; ET = Entertainment; SI = Social Interactive; CN = Cognitive Needs; CP = Compatibility; TS = Training & Support

Figure 2 Results for structural model (see online eversion for colours)
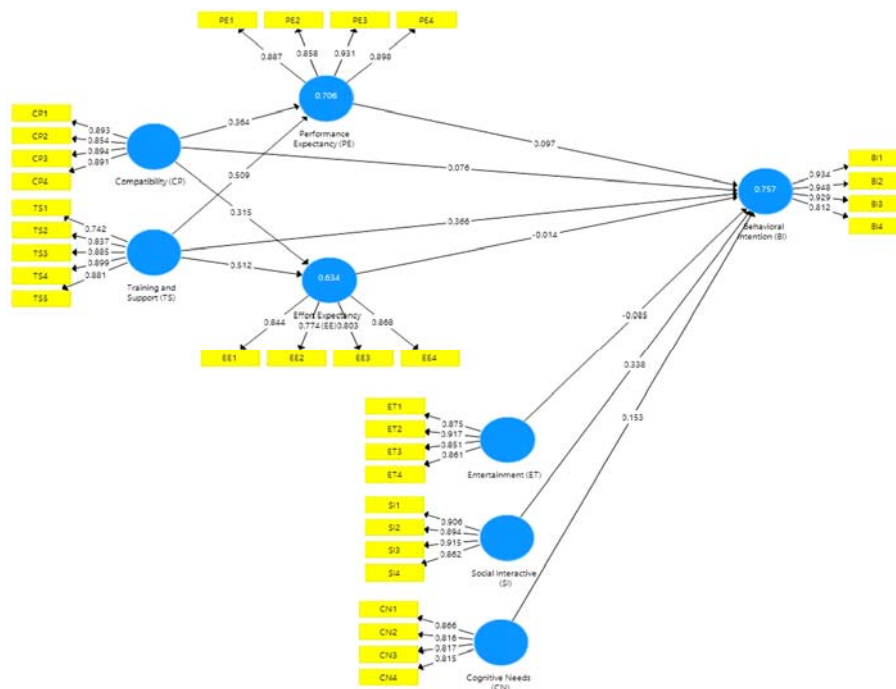
6 Discussion

Based on the results, PE is a non-significant factor towards adopting m-SMM. Hence, H1 is not supported in this study. The result is supported by Wong et al. (2014). The findings of this study suggested that PE does not influence BI of sellers to adopt m-SMM since this is a study from the seller's perspective. Sellers generally focused on financial performance. Hence, PE is regarded as less useful as some sellers would still be dependent on the integration of other online marketing platforms rather than SNS via m-devices alone. H2 is not supported indicating that EE has no significant correlation

with BI. The result is consistent with Sim et al. (2012). This might be because of the age of respondents as majority of the sellers are of the group of 21–30 years old. Tan et al. (2010) mentioned that young adults tend to be more attentive towards latest technologies and innovation making them more inquisitive and explorative to discovery. This also reduces any barriers for them to use or manage m-SMM. Meanwhile, ET is reported to be non-significant towards BI. Thus, H3 is not supported. The finding obtained is inconsistent with studies from Kim, Chan and Gupta (2007) and Wong et al. (2014) proving ET as an important precursor for mobile technology usage. ET would be considered to be a more appealing factor for consumers rather than sellers. Sellers would value functions and features over ET to help them achieve business goals (Ramayah et al., 2016). The result from H4 reported a positive association between SI and BI. Results received indicated that SI is an important factor in the acceptance of m-SMM. The study is consistent with results from Hudson et al. (2016) and Wong et al. (2015c) with validated samples from UK, USA, France and Malaysia. SI has a positive effect towards marketing outcomes regardless through the social media platforms or interpersonal communications. The finding revealed that H5 is supported in which CN is significantly related to BI. The study is again consistent with the findings from Killian and McManus (2015) and Battacherjee and Premkumar (2004). SNN does not only provide platform for communications and interactions to take place, but also a place where information is gathered. SNN accumulates information regarding brand engagement initiatives, product offers, consumer feedback, competitor's activities and market trends. All these information are useful for helping sellers to make selling decisions. H6 is supported based on the positive path coefficient, designating that CP has positive correlation with PE. This is parallel with the prediction from Yadav, Joshi and Rahman (2015). Common mobile applications such as Facebook and Twitter are made to be compatible with all types of m-devices. Thus, this leads to the perception of usefulness among sellers. The impact of CP on EE has proven significant and thus H7 is supported. The result is consistent with past studies from Curtis et al. (2010) and El-Gohary (2012). When m-SMM is compatible with the seller's way of conducting business through other online channels, sellers will find that that system is easy to use. Agreeing to the prediction of H8, TS exhibit a positive relation on PE. The outcome of this study is similar with finding from Wong et al. (2016) in mobile marketing and Eagleman (2013) on the importance of organisational and technical support. From the result, it can be anticipated that the competence of skill in using m-devices especially in SNN will advance the task performance among sellers. Similarly, H9 is supported where TS is positively related with EE. This is proven with literature supports from Michaelidou, Siamagka and Christodoulides (2011). When sellers are equipped with more sustenance on technical skills, it reduces their barriers to use the technology (Aguila-Obra and Padilla-Melendez, 2006). TS enhances their familiarity and skills to support their business and their perceived risk to try. Eventually, this leads to the reduction of complexity that influences their willingness to adopt. Based on what has been hypothesised, the influence of TS on BI is significant; therefore, H10 is supported. This is aligned with the studies from Wong et al. (2014) and Michaelidou, Siamagka and Christodoulides (2011). Findings review that when sellers are equipped with the necessary training skills, the barriers to adopt m-SMM will be reduced. Finally, the study indicated that H11 is not supported as findings reveal that CP is non-significant towards BI. The findings received from this study suggested that sellers actually adopt m-SMM if it is aligned with their values, experiences and needs (Dahnil et al., 2014). However,

there is a contradiction with past studies as the research study again focused from the sellers' perspectives. For sellers, CP needs to be considered with their business practices as they need to emphasise on the return of investment and business cost. Therefore, they would adopt if they perceive the risks to be lower.

7   Implications

As the aim of this study is to understand the seller's motivation to adopt m-SMM, it is important to provide useful functional implications for practitioners (Tan et al., 2012b) such as developers of m-devices software, manufacturers, sellers and other related parties. The result shows that SI is positively related towards the seller's BI to adopt m-SMM. Mobile marketers should emphasise more on the power of social circles on social media sites. Marketing concepts such as word-of-mouth buzz marketing referral and thought leadership can be very powerful to enrich SI. Result also proved CN is positively associated with the sellers' BI to adopt m-SMM. SNS developers could take this opportunity to provide more useful information that might be useful for sellers in their business transaction. For example, the SNS developers could provide useful selling tips, guide to boost sales performance, information on market trends and personalised information on the sellers' business to help them to further understand on their respective social media channels. Likewise, TS also proved to be positively associated with seller's BI to m-SMM. As such, SNS provider could provide training or workshops that encourage hands-on experiences and deep understanding on every available feature. TS could include ways to help enhance their communication with customers, providing adequate support to customers or utilising the SNS platforms to brainstorm useful marketing ideas. In addition, TS and CP proved positively related towards PE and EE. SNS developers should carry out mobile social media campaigns to emphasise on the benefits and the ease of use that the sellers would be likely to receive upon training. Besides, they could demonstrate how adopting m-SMM is compatible with the seller's business transactions and how this could lead to usefulness in their daily life with lesser effort needed. Based on the theoretical perspectives, this study has contributed to the prevailing marketing literatures and journals by providing studies regarding the adoption of m-SMM. The study has also successfully incorporated and adapted three models, such as UTAUT, DOI and U&G, together with TS to influence BI among sellers. The integrated research model helps to provide valuable comprehension for mobile marketers in forming m-SMM strategies.

8   Limitations and future research directions

Although this study has met the research objectives, there are a few limitations that can be improved for future studies. First, this research only gathered data using online survey. It is suggested that future researchers should consider both online and paper survey (Eze, Ten and Poong, 2011). This is because paper survey may help researchers to provide on-the-spot feedback to respondents for ambiguous questions. Furthermore, the research studies only on the BI of users towards m-SMM at one period of time. Due to the rapid innovation in mobile technologies, an individual's acceptance level towards m-SMM may change. Therefore, Sit et al. (2011) suggested longitudinal research to be more

feasible in any mobile-related studies to analyse the data at different points of time. The last limitation would be regarding the research model. Although the study framework adapted various constructs from several models such as UTAUT, DOI and U&G, the integrated framework can only explain 75.7% of variance in BI. There are other constructs that might be essential from the Malaysian context. In future, it is suggested that researcher to consider variables such as perceived mobility, perceived trust, perceived value, etc.

9   Conclusion

The purpose of this study is on the factors that influence BI of sellers to adopt m-SMM. U&G, UTAUT and DOI models were adapted and extended with TS in the research framework to predict BI. Apart from CP, EE, ET and PE, CN, SI and TS are positively related to BI. Additionally, both CP and TS are positively related with PE and EE, respectively. The results would be appropriate to assist future studies relating to m-SMM among emerging and established markets.

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