Mobile-social media shopping: a partial least squares-structural equation modelling (PLS-SEM) approach

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Abstract: As mobile technologies continue to advance with social media evolution, a new platform has been made available for consumers to purchase goods or services online. Mobile-social media shopping (m-SMS) is an emerging information technology service, where its critical success factor is greatly dependent on the users. Thus, it is vital to deciphering the users' behavioural intention (BI). The main objective of this research examines the factors that influence consumers' BI in adopting m-SMS. 200 valid data were assessed and analysed using partial least squares-structural equation modelling (PLS-SEM). Findings revealed that perceived playfulness (PP), compatibility (CP) and TS (training and support) have a significant impact on BI. Moreover, CP has also displayed a significant influence on PU and PEOU. However, TS has shown to have a significant impact on PU alone, instead of PEOU. Findings of this study are anticipated to contribute to both theoretical and practical world.

Keywords: m-SMS; mobile-social media shopping; diffusion of innovation; technology acceptance model; PLS-SEM; partial least squares-structural equation modelling.

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1 Introduction

With the advent of the internet, plenty of systems have been made available to the field of business, for instance, virtual communities such as social media (Arnaboldi and Coget,

2016). Technologies and internet have revolutionised communication channel options for both marketers and consumers, and that has unleashed a new world of possibilities and challenges for online businesses. With the rapid hike up of internet users in the society, it is found that individuals are using new technologies, for example, Internet to satisfy their economic and social goals, which that makes virtual communities in a vogue today. Due to the fact mentioned, marketers have unveiled and foreseen the needs and efforts to be made for developing useful mobile applications, programs as well as websites that are ergonomic to the users (Nilashi et al., 2015). In recent years, social media are very much enthralled and ubiquitous for social networking, content sharing and online accessing due to its potent ease of use, speed and reach to the target audience. Social media marketing is a newly emerged business practice that allows the marketers to market goods, services, ideas as well as information through online social media (Dahnil et al., 2014). In social media marketing, social media applications are adopted as an extension to complete the needs of traditional marketing as well as to attain various marketing objectives. Social media platforms for the business transaction are for instance Facebook, Instagram, Pinterest, Snapchat and more (Wertz, 2017). Social media had provided marketers with interactive, two ways communication environment that could possibly help to improve the consumers-marketers relationship (Chung and Austria, 2012) and ultimately, help them to better understand the consumers in an extensive manner. On the other end, m-SMS refers to the consumers' practice of purchasing online through social media platforms via the mobile devices. Malaysia displayed relatively high penetration rate of the internet as it is a developing country with its commerce continuously expanding. Of all social network and messaging applications, Facebook and Whatsapp were shown to be the highest daily reach social media platforms in Malaysia (Statista, 2016). With the high percentage of mobile cellular subscriptions in Malaysia, at approximately 144%, it is found to be ahead of the UK and USA (Data.worldbank.org, 2016). Social media are increasingly accessed despite time and location. As stated in the e-commerce report published by Nielsen, the number of consumers shopping online has increased significantly in the past two years (Nielsen.com, 2014). It is stated that a minimal of 6 out of 10 Malaysians would opt for online purchases for ranges of goods and services, such as purchasing of flight tickets, exhibition, performance and movie ticket, reserving for accommodation as well as tour reservation. Besides, most of the Malaysian populations deem to incline towards social media platforms to express their ideas, thoughts and preferences, causing the marketers to perceive that social media landscape in Malaysia to be vigorous. This concurs with the opinion of Hew et al. (2017), which proclaimed that mobile social media is one of the emerging issues in Asia region that is worth to be further explored. Integrating of technologies into the mobile shopping context do provides the shopper with features of 'portable' and 'always on', which allows them to visit various mobile websites for shopping at anywhere, anytime (Tan et al., 2017; Wong et al., 2015a). Numerous past literatures have shown studies on the role of the mobile internet in predicting consumers' behavioural intention to adopt (Pedersen, 2005; Oh et al., 2014). However, there is very little from the mobile shopping perspectives (Wong et al., 2015a). According to Wong et al. (2012), the acceptance of mobile shopping in emerging and developing markets, such as Malaysia is yet to be further explored as most of the past studies in mobile shopping are confined to developed market perspectives. Recognising that m-SMS to be an extension of mobile shopping, the study on how consumers accept m-SMS is essential.

2 Literature review

2.1 Overview of m-SMS

Fuelled by the increasing technological advancement in mobile devices and development of various telecommunication networks, it had granted opportunities for mobile commerce to grow rapidly. The recent boom in mobile commerce does not only change the conventional business approaches but has also rendered a high degree of convenience to the consumers. Of all mobile commerce services, mobile shopping is one of which that receives a great deal of attention in recent years. According to Wong et al. (2012), mobile shopping is defined as any monetary transactions which are related to the purchases of goods and services via the internet-enabled mobile devices, while m-SMS is by means the above-mentioned activities are conducted through the social media platform. On the other hand, mobile commerce is elucidated as any transaction with a monetary value which is being performed over the wireless telecommunication network, in a direct or indirect manner (Barnes, 2002). In response to the booming mobile commerce trend and increasingly used of social media platforms among the communities, various business owners have involved in the mobile advertisement as to target these groups of users. As stipulated by Chung and Austria (2012), social media can be known as a business strategy as well as an outlet for business owners to conduct broadcasting, whereas social networking is a tool or utility which people used to build connections with one another. To date, social media has been growing phenomenally and it is expected to continue to grow extensively in the near future, in which this had unleashed the opportunity for m-SMS to occur. As stated in the PwC Total Retail 2016 report, practically there are approximately three-quarters of Malaysian respondents claimed that they access various promotional offerings while shopping mainly through social media (Mahalingam, 2016). As a matter of fact, the consumers in South-East Asia had portrayed relatively strong desire to use social media in forming associations with their preferred brands. In addition to that, PwC also revealed that around 70–75% of consumers surveyed in Malaysia, Singapore, and Thailand do report that they often make purchases online through their mobile phones (Mahalingam, 2016). And the rates of mobile phone purchasing usage in all three South-East Asia countries mentioned above have gone beyond the global average rate of 54%. Furthermore, m-SMS service is convinced further as Nielsen Smartphone Insights 2014 reported that Malaysian mobile users usually spend 20% using their smartphones on social media and 9% on shopping.

2.2 Theoretical model

As shown in Figure 1, the proposed research model for this study was developed through the integration of TAM model, as shown in Figure 2, coupled with DOI theory as well as some valuable constructs that are proven to possess meaningful prediction towards behavioural intention in technology acceptance among users, and m-SMS is considered as one of the technology-based innovation. TAM model by Venkatesh and Davis (2000) was seen to have frequent adoption for studies which involve the investigation of technology or innovation acceptance due to its robustness. Both PU and PEOU in TAM have been exploited in our study. Although TAM is a distinguished model, yet it is

insufficient to predict users' intention. Thus, apart from TAM, DOI theory by Rogers that span across variables such as relative advantage, compatibility, complexity, trialability and observability have also shown to be extensively used by various researchers, which intended to measure the users' perceptions of adopting an IT innovation (Moore and Benbasat, 1991). However, only CP and VB were included in our research framework as both of these constructs are found to have better consistency on explaining the consumers' behavioural intention in adopting mobile services or technology. Besides, TS has also been suggested as an influential element that could facilitate new technology acceptance by users. Therefore, TS is being adopted in order to have a rigorous exploration of the current study. Furthermore, Moon and Kim (2001) have also proposed to include PP as one of the intrinsic motives to examine its ability to affect one's acceptance towards the system.

Figure 1 Research model

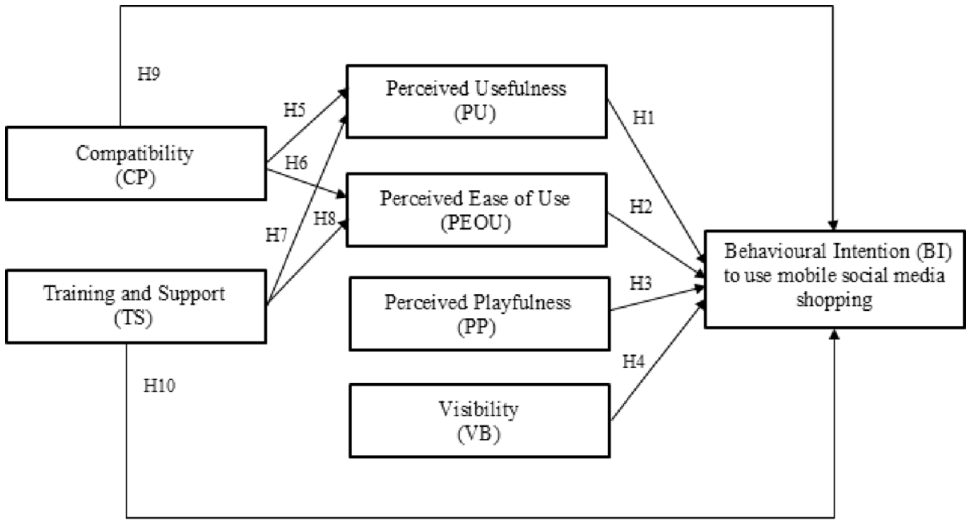
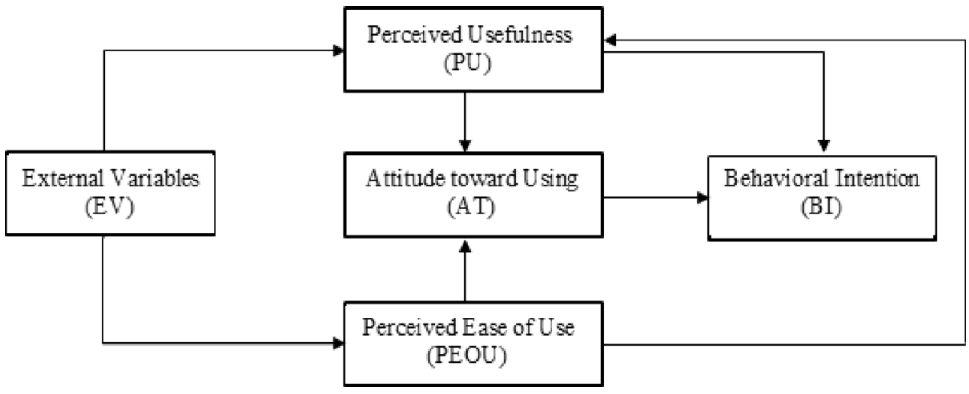


Figure 2 TAM



3 Hypotheses development

3.1 Perceived usefulness

PU refers to the extent that an individual believes in adopting new specific technology will improve one's productivity and performance (Davis et al., 1989; Sim et al., 2012; Leong et al., 2013). According to Venkatesh and Davis (2000), PU of a technology was found to be one of the strong determinants that could drive shoppers' purchase intention. Consumers would be more likely to shop online if they could gain ranges of benefits such as convenience, easy checkout process, easy access to product information and availability, time-saving, customisation of product and more. This is proven in the previous study by Kan, Hung, Yang, Hsieh and Tang in 2010, 500 college students in Taiwan were being selected and studied on their mobile shopping adoption, PU was found to have a significant impact on the consumers' behavioural intention (Wong et al., 2012). Moreover, PU has also been confirmed to be the most important factor in mobile music acceptance (Sim et al., 2014). With the emerged of social media applications available on the mobile devices, social media shopping brings convenience and allows effective communications between the users, and eventually causing the user to have a higher level of attachment and positive intention to adopt m-SMS. As such in the context of Facebook, users (sellers and buyers) are allowed to post status updates, comments, pictures, videos, private messages or even involved in group discussion (Smock et al., 2011). These make users to enjoy a high degree of convenience and in turns causing m-SMS to be more practical, less hassle and effective. Therefore, the following hypothesis is proposed:

H1: PU is positively related to the consumers' behavioural intention to adopt m-SMS.

3.2 Perceived ease of use

According to Teo et al. (2012), PEOU was defined as the extent of one's beliefs that utilisation of a specific technology or system would be effortless, easy to navigate and use. Elements of system quality that includes ease of navigation through online store are the strong determinants in attracting consumers to shop online (Hsieh and Tsao, 2013). If a system or technology which is to be adopted is perceived to be complex and difficult to operate, users are less likely to accept and use the particular system or technology (Tan et al., 2014b), as they find it difficult to learn and manage. Also, Maamar (2003) claimed mobile devices with small display screen could cause the input mechanism to be challenging for the user, and poor image resolution could further induce the feelings of frustration among consumers throughout their browsing and shopping experiences. Besides, mobile devices which have limited hardware support could also make mobile shopping more challenging, as the user might experience problems such as poor lifespan of battery power, easily heat up of the devices, inability to support certain software program and so forth. With all these potential challenges being faced by the user, they would need to contribute a larger amount of effort when adopting m-SMS. Therefore, it is crucial that the mobile devices must possess easy navigation structure, simple and clear interface as well as easy to process (Ranganathan and Grandon, 2002). Besides, Yang also stated that easy navigation of mobile social media enables consumers to perceive that mobile shopping to be user-friendly (Yang, 2010). On the basis of above discussion, therefore it is hypothesised:

H2: PEOU is positively related to the consumers' behavioural intention to adopt m-SMS.

3.3 Perceived playfulness

PP was delineated as the strength of one's belief that interacting with the system will bring the users' intrinsic motives to fruition (Moon and Kim, 2001). In other words, playfulness was also defined as the reason or belief developed by one's experiences with the environment (Jacky, 2006). In the context of m-SMS, it is important that the social media sites must be able to deliver enjoyment, excitement, and pleasure to the users throughout their usage in order to stimulate the users' level of acceptance and intention to shop. Rauniar et al. (2014) have defined PP of social media as the degree of which social media related activities are perceived to be interesting, fun and enjoyable. Social media applications on mobile encourage users to have social interactions and exchange information among one another easily. Share button allows users to share interesting articles, posts, pictures, videos and more to their social circle via the mobile devices with a single click. And all of these activities are believed to be able to bring a substantial amount of pleasures to the users as well as to make them feel more engaged and entertaining. When a social media user enjoys using the system or service, he or she is more likely to perceive the system to be useful and accept it (Rauniar et al., 2014). Past studies have validated that PP has a significant positive impact on the consumers' usage intention in innovative mobile app service (Hur et al., 2017). Furthermore, PP has also displayed to be the significant direct antecedents of the users' intention to adopt mobile services in several e-commerce studies (Ko et al., 2009; Revels et al., 2010). And the following hypothesis is posited:

H3: PP is positively related to the consumers' behavioural intention to adopt m-SMS.

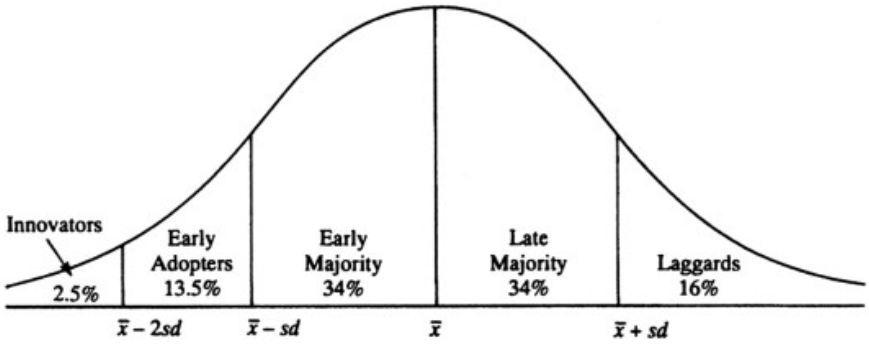
3.4 Visibility

As delineated in the past study, VB refers to the degree to which an innovation is perceived to be readily discernible to others. VB provides a remarkable explanation on one's perception of adopting an information technology (IT) innovation (Moore and Benbasat, 1991). In accordance with that, Xia and Lee (2000) have also taken VB into consideration as one of their variables of interest, under their study of user's perception and acceptance of IT innovation. Some of the researchers have named VB as observability. In the diffusion of innovation theory, as shown in Figure 3, it states that one's rate of adoption towards an innovation is positively influenced by one's perception on the observability of an innovation (Rogers, 1995). Therefore, consumers' behavioural intention to adopt an innovation is more likely to increase when he or she feels effortless and easier to observe the outcomes of an innovation. For instance, Facebook possesses features that allow sellers and buyers to have effective communications prior and throughout the purchasing process, allows the consumers to solve their queries easily, provide feedback and are able to make the transaction effectively. In addition to that, social media networking sites that foster users to have social interaction also permit users to have the opportunity to raise questions, share insights and induce discussion about the innovations among their social circles, which that would influence the users to adopt an innovation when they observed the benefits or realised that their peers are as well utilising the system. As effortless and easier recognition or verbalisation of the functions

or benefits of particular innovation tend to stimulate more rapid diffusion of respective information across the users (Ho and Wu, 2011). Al-Jabri and Sohail (2012) in their study on mobile banking adoption had demonstrated that VB has a relationship with the adoption of mobile banking. As discussed above, it is hypothesised that:

H4: VB is positively related to the consumers' behavioural intention to adopt m-SMS.

Figure 3 Diffusion of innovation curve



3.5 Compatibility

CP reflects the degree to which the users' perception and evaluation of the innovation are compatible with their personal values, beliefs, habits, past experiences and needs (Rogers, 2003). Previous studies have indicated the level of significance of CP in influencing one's intention to adopt a new innovation or technology (Tornatzky and Klein, 1982), and it has shown its extensive presence not only, in general, IT and IS context, but also in the mobile context (Schierz et al., 2010; Mallat and Tuunainen, 2008). As proposed, one is more likely to experience a high level of certainty on accepting as well as adopting an innovation when the innovation product is compatible with one's needs and practices. In the context of m-SMS, if m-SMS fit the consumers' lifestyles, situation, and needs, it would be compatible and hence it would be preferred over other alternative shopping modes. In addition to that, researchers have also mentioned that constructs in TAM alone tend not to have sufficient predictive power for estimating the consumers' behavioural intention, but the integrated model does (Wu and Wang, 2005). PU, when coupled with innovation technology that is compatible with consumers' desires, could positively impact the consumers' behavioural intention to adopt a particular innovation. This is proven by the study of Ooi and Tan (2016), in which these researchers have looked into the adoption of smartphone credit cards and have discovered CP does have a significant influence on PU. Again, this matter of fact has been further laid down by Ozturk et al. (2016), they stated the innovative goods which are compatible with consumers' past consumption habits, and could offer greater value to consumers, tend to drive consumers' willingness to accept and adopt the innovative goods. Besides, CP has also been found to have momentous impact on PEOU, in which an innovation or system which is perceived to be effortless, easy to navigate and provide relatively high degree of convenience to the users, as well as compatible, tend to drive the users' acceptance on m-SMS (Ewe et al., 2015). According to Ooi and Tan (2016), the direct effect of CP on users' PEOU in the context of smartphone credit card

adoption by mobile users has been shown. Not only that, Tornatzky and Klein (1982) have also mentioned, persistent consumers' expectation on the possibility of easier task completion has led CP to be a considerable factor that affects PEOU. Therefore, social media sites, layouts, applications that offer a higher degree of familiarity to the users across devices tend to influence the users' perception and make them perceive it as easy to use, and in turns stimulate their behavioural intention in adopting. Based on above discussion, hypotheses are suggested as follow:

H5: CP is positively related to PU.

H6: CP is positively related to PEOU.

H9: CP is positively related to the consumers' behavioural intention to adopt m-SMS.

3.6 Training and support

Prior research stated theory and evidence assert that one's perceptions in new information technology or system acceptance may increase over a period of time with adequate support (Igbaria et al., 1997). From the perspective of user TS, it is crucial that the users are surrounded with necessary resources and technology to facilitate and assist users in utilising and accepting the new system (Smith and Salvendy, 2001). In order to stimulate and raise consumers' behavioural intention to adopt a new system (m-SMS), it is essential that the consumers must have a better understanding on m-SMS, how to utilise the innovation as well as to have sufficient guidance and support being provided. Tsai and LaRose (2015) have also emphasised that sufficient knowledge and skills must be available to the users in order for them to successfully utilise a new innovation, while in an organisation, users must be given sufficient technical TS. TS is believed to have considerable effects towards PU and PEOU respectively, as a number of past studies have proposed that when sufficient TS is available to the users, it will effectively enhance the users' capabilities as well as their perception towards an innovation or system usefulness and ease of use (Igbaria et al., 1997). An empirical investigation has been conducted on the factors influencing mobile e-learning adoption intention; researchers have further laid down the facts that training students on the system would subsequently enhance the students' awareness of the system's usefulness as well as its ease of use (Khanh and Gim, 2014). When one is equipped with a satisfactory level of TS, it tends to improve the user's self-efficacy, which in turns will ameliorate PU and PEOU (Torkzadeh and Van Dyke, 2002). Similarly, when consumers are furnished with sufficient training program and technical support as needed, consumers are more likely to perceive that m-SMS are useful and less tedious to operate as well as could help them to attain a higher level of achievement. Therefore, the hypotheses are formulated as follow:

H7: TS is positively related to PU.

H8: TS is positively related to PEOU.

H10: TS is positively related to the consumers' behavioural intention to adopt m-SMS.

4 Research methodology

4.1 Sampling and data collection

The befitting target population for this research is the online consumers or shoppers who purchase online through the social media platform as they are the audience who involved in the online shopping process. Social media platforms for business transaction include Facebook, Instagram, Pinterest, Snapchat and more (Wertz, 2017). The number of samples to be drawn for a study is contingent on numerous factors, for instance, the number of variables in the study, the importance of the decision to be made, the nature of research, nature of analysis as well as the limitation on resources (Malhotra et al., 2012). Partial least squares-structural equation modelling (PLS-SEM) approach is adopted in this research study. As suggested by Hair et al. (2013a), the determination of sample size in PLS-SEM can be driven by numerous factors, for instance, the significance level, statistical power, minimum coefficient of determination (R^2 values) used in the model, maximum quantity of arrows pointing at a latent variable. Practically, typical marketing research studies tend to have a 5% of the level of significance, 80% of statistical power, and a minimum of 0.25 R^2 values (Wong, 2013). With these criterions, Marcoulides and Saunders (2006) have proposed that the minimum sample size could be reliant on the maximum quantity of arrows pointing at a latent variable in the model. Apart from that, Hoyle's research has also recommended that a sample size of 100–200 will be sufficient and feasible to carry out path modelling (Hoyle, 1995). And in our research model, there are a total of 10 arrows pointing at the latent variable; hence the sample size for this study would be aimed at 200. This research study was conducted at Perak state, as its percentage of smartphone user rate was ranked as the fourth highest in Peninsular Malaysia (Multimedia Communications and Multimedia Commission, 2015). Particularly, Ipoh city was selected to be the place for collecting responses as abundant of residents that stem from different demographic background could be accessed here (Balachandran and Tan, 2015). Hence, we are able to obtain results that have a fair representation of different race, religion, and culture over Malaysia in order to attain generalisation. Survey questionnaires were distributed across shopping malls in Ipoh as shopping malls are the location where most consumers from various backgrounds could be identified. The sampling period for this research study was carried out from 18th June 2017 to 2nd July 2017, which is the festive season month. The festive season is the peak period where most of the consumers will hit the shopping malls, as there would be a lot of discount, sales, and promotions going on.

4.2 Variable measurement

The predictors and response variables of the study were adopted from numerous mobile scholars such as Tan et al. (2014a, 2014b), Aldás-Manzano et al. (2009), Çelik (2011), Chou (2006), Al-Jabri and Sohail (2012), Elogie et al. (2015), Lu and Su (2009), Wu and Wang (2005), Wu et al. (2007). A seven-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

Perceived Usefulness (PU)		
PU1	Using m-SMS improves my productivity in purchasing	Adapted from Tan et al. (2014a)
PU2	M-SMS services allow me to complete my shopping task with better efficiency	Adapted from Tan et al. (2014a)
PU3	I find m-SMS to be advantageous	Adapted from Tan et al. (2014a)
PU4	Using m-SMS can help me to reduce time spent in shopping	Adapted from Aldás-Manzano et al. (2009)
PU5	M-SMS enables me to make better purchasing decision	Adapted from Aldás-Manzano et al. (2009)
Perceived Ease of Use (PEOU)		
PEOU1	M-SMS services are clear and comprehensible	Adapted from Aldás-Manzano et al. (2009)
PEOU2	M-SMS is easy to use and hassle-free	Adapted from Aldás-Manzano et al. (2009)
PEOU3	I find it easy to perform what I intend to perform with m-SMS services	Adapted from Aldás-Manzano et al. (2009)
PEOU4	Handling m-SMS is easy and without great effort	Adapted from Tan et al. (2014a)
PEOU5	It would be easy for me to become skilful at using m-SMS services	Adapted from Tan et al. (2014a)
Perceived Playfulness (PP)		
PP1	While interacting with m-SMS services, I did not realise time had elapsed	Adapted from Çelik (2011) and Chou (2006)
PP2	I enjoy using m-SMS services	Adapted from Çelik (2011) and Chou (2006)
PP3	Interacting with m-SMS makes me want to explore more.	Adapted from Çelik (2011) and Chou (2006)
PP4	M-SMS is fun and interesting.	Adapted from Chou (2006)
Visibility (VB)		
VB1	I can see the effect of a transaction immediately	Adapted from Al-Jabri and Sohail (2012)
VB2	I will be influenced by others to use m-SMS	Adapted from Elogie et al. (2015)
VB3	I will be influenced to adopt m-SMS by observing its benefits	Adapted from Elogie et al. (2015)
VB4	I am satisfied with the results of using m-SMS services	Adapted from Elogie et al. (2015)
Compatibility (CP)		
CP1	Utilising m-SMS is compatible with most aspects of my life	Adapted from Lu and Su (2009)
CP2	Engaging in m-SMS matches my lifestyle	Adapted from Wu and Wang (2005)
CP3	Using m-SMS fits well with the way I prefer to engage in online transactions	Adapted from Wu and Wang (2005)
CP4	M-SMS services are consistent with the way I like to live and shop	Adapted from Lu and Su (2009)

Table 1 Constructs and sources of questionnaire items (continued)

Training and Support (TS)		
TS1	A specific person or group is available for assistance with m-SMS difficulties	Adapted from Wu et al. (2007)
TS2	Specialised instruction and education concerning about m-SMS service is available to me	Adapted from Wu et al. (2007)
TS3	Specialised programs or consultant about training are available to me	Adapted from Wu et al. (2007)
Behavioural Intention (BI)		
BI1	I intend to increase the use of m-SMS services in the future	Adapted from Wu et al. (2007) and Tan et al. (2014b)
BI2	Whenever possible, I intend to use m-SMS services in future	Adapted from Wu et al. (2007) and Tan et al. (2014a)
BI3	I estimate that the chances of me using m-SMS in my practice are frequent	Adapted from Wu et al. (2007)
BI4	I believe my interest towards m-SMS will be intensified in future	Adapted from Tan et al. (2014b)

5 Data analysis

5.1 Profile of respondents

Table 2 summarised the profile of respondents. Of 200 usable samples collected, female respondents accounted for a larger portion, 64%, while male accounted for the remaining 36%. Majority of the respondents are Chinese (53%), age between 21–30 years old (59%), and are working professionals. A number of them declared that their personal monthly income or allowances lie in the range of RM2001–RM3000. In addition to that, most of the respondents (41%) reported that they own at least one mobile device and have used 1–5 times of m-SMS in the past 12 months.

5.2 Data analysis

In this research study, PLS-SEM was adopted as the main research purpose for this study is about theory development. Not only that, PLS-SEM also provides the researcher with the clues of explained variance in dependent variables based on the characteristics of the measurement model. PLS-SEM is a good alternative to covariance-based SEM (CB-SEM), as PLS can tolerate small sample size and provides greater predictive accuracy, also it is adopted when the applications have little theory available and model specification is ambiguous (Hwang et al., 2010; Wong, 2010). As recommended by Anderson and Gerbing (1988), the two-step approach was strictly followed for the measurement and structural model evaluation. Bootstrapping was used in PLS-SEM as bootstrap sample allows the researcher to validate on the estimated coefficients projected in PLS-SEM as to determine whether they are significant (Henseler et al., 2009).

Table 2 Demographic profile of respondent

		Frequency	*Percent*
Gender	Male	72	36
	Female	128	64
Age	20 years old and below	37	18.5
	21–30 years old	118	59
	31–40 years old	29	14.5
	41–50 years old	10	5
	51–60 years old	4	2
	60 years old and above	2	1
Ethnic group	Malay	55	27.5
	Chinese	106	53
	Indian	39	19.5
Occupation	Unemployed	11	5.5
	Working professional	136	68
	Self-employed	27	13.5
	Student	26	13
Income	Below or equal to RM1000	31	15.5
	RM1001–RM2000	17	8.5
	RM2001–RM3000	61	30.5
	RM3001–RM4000	50	25
	RM4001–RM5000	22	11
	RM5001 and above	17	9.5
Mobile devices owned	Smartphone	44	22
	Smartphone, personal digital assistance device	8	4
	Smartphone, tablets	12	6
	Smartphone, tablets, laptop/notebook	54	27
	Smartphone, laptop/notebook	82	41
Frequency of utilising m-SMS in the past 12 months	Less than one time	29	14.5
	1–5 times	55	27.5
	6–10 times	41	20.5
	11–15 times	34	17
	16–20 times	23	11.5
	21–25 times	5	2.5
	More than 25 times	13	6.5

5.3 Common method bias (CMB) testing

Common method bias (CMB) testing was examined, as all self-reported data poses the potential for common method bias. Numerous methods are available to test common

method bias, for example, Harman's single factor, correlation matrix, common latent factor and marker variable (Podsakoff et al., 2003). Correlation matrix approach was used in this research. As stated by Kim et al. (2013), correlations are higher than 0.90 when CMB exist. The highest correlation is 0.900, which indicates that CMB is unlikely to be a major concern for this study. In view that the concern on CMB, this research has included the procedural remedies proposed by Podsakoff et al. (2003), for instance communicating with the respondents and notifying them that there is no absolute right or wrong answers, providing the respondents with clear instructions and as well promise to secure the respondents' anonymity as to ensure that the possibility and impact on CMB could be kept as low as possible.

5.4 Measurement model evaluation

Validity and reliability should be thoroughly examined for a reflective measurement model (Hair et al., 2013b). In this research study, the reliability of each construct was ascertained by composite reliability (CR) and Cronbach's alpha coefficient, as a measurement of internal consistency reliability. Table 3 shows both Cronbach's α and CR for all constructs exceeds the required thresholds, 0.60 (Bagozzi and Yi, 1988) and 0.70 (Nunnally and Bernstein, 1994) respectively. Thus, all constructs are said to have achieved the internal constructs reliabilities.

To ascertain the validity of the reflective measurement model, it is contingent on the convergent validity and discriminant validity. As stipulated by Carlson and Herdman (2010), convergent validity reveals the extent to which two measures capture a common construct. In order to assess the convergent validity, average variance extracted (AVE) of each latent variable is measured. Table 3 portrays all constructs have their AVE exceeds 0.50, the minimum cut off point (Kline, 2015), thus the convergent validity of the model is attained. On the other hand, factor loading, Fornell-Larcker test and the heterotrait-monotrait ratio of correlations (HTMT) have been assessed to determine discriminant validity. According to Henseler et al. (2014), HTMT is an estimate of the correlation among the constructs, HTMT value that is smaller than one indicates the existence of a true correlation between the two constructs are differ and discriminant validity is achieved. As stated in Fornell and Larcker criterion, the AVE of each construct should be greater than its squared correlation with any other construct (Fornell and Larcker, 1981) in order to establish discriminant validity. As for the HTMT method, according to Hair et al. (2010), discriminant validity ensures that a construct measure is distinctive and unique as well as able to represent the phenomena of interest that are not captured by other construct measures in a particular structural equation model. Table 4 depicts the factor loadings and cross-loadings of each item, all items were shown to exceed 0.70 and were seen to load highly with their corresponding latent constructs, and do not portray stronger connections with other constructs. Table 5 illustrates the results of the Fornell-Larcker test. All constructs have seen to attain discriminant validity and are distinctive, as the AVE of each construct is greater than its squared correlation with any other construct. Table 6 visualises the HTMT results as to assess discriminant validity. As shown, the confidence interval for the HTMT inference test displays that none of the confidence intervals includes a value of 1, and as such, discriminant validity is demonstrated by the HTMT method.

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

Constructs	*No. of items*	*Composite reliability (CR)*	*Cronbach's α*	*Average variance extracted (AVE)*
PU	5	0.973	0.965	0.877
PEOU	5	0.971	0.963	0.871
PP	4	0.961	0.939	0.892
VB	4	0.923	0.888	0.751
CP	4	0.974	0.964	0.902
TS	3	0.938	0.901	0.834
BI	4	0.975	0.966	0.908

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

Table 4 Factor loadings (bold) and cross-loadings

	BI	*CP*	*PEOU*	*PP*	*PU*	*TS*	*VB*
BI1	**0.956**	0.823	0.715	0.800	0.822	0.595	0.810
BI2	**0.961**	0.858	0.805	0.823	0.840	0.553	0.835
BI3	**0.951**	0.871	0.745	0.785	0.833	0.557	0.808
BI4	**0.943**	0.821	0.733	0.820	0.849	0.542	0.822
CP1	0.844	**0.946**	0.829	0.804	0.875	0.636	0.849
CP2	0.860	**0.965**	0.790	0.811	0.873	0.549	0.871
CP3	0.828	**0.935**	0.815	0.798	0.840	0.482	0.842
CP4	0.830	**0.952**	0.774	0.795	0.882	0.543	0.858
PEOU1	0.780	0.841	**0.933**	0.814	0.868	0.499	0.845
PEOU2	0.760	0.799	**0.922**	0.756	0.760	0.412	0.760
PEOU3	0.732	0.792	**0.965**	0.802	0.803	0.441	0.810
PEOU4	0.662	0.742	**0.931**	0.755	0.750	0.410	0.779
PEOU5	0.730	0.762	**0.914**	0.776	0.773	0.439	0.788
PP2	0.822	0.853	0.844	**0.941**	0.873	0.551	0.859
PP3	0.795	0.762	0.733	**0.940**	0.791	0.459	0.847
PP4	0.780	0.775	0.793	**0.952**	0.829	0.467	0.842
PU1	0.864	0.897	0.834	0.832	**0.954**	0.566	0.870
PU2	0.837	0.864	0.831	0.839	**0.947**	0.621	0.848
PU3	0.797	0.830	0.782	0.841	**0.938**	0.527	0.843
PU4	0.781	0.837	0.760	0.798	**0.925**	0.519	0.795
PU5	0.827	0.850	0.765	0.815	**0.919**	0.521	0.820
TS1	0.586	0.589	0.492	0.551	0.608	**0.911**	0.596
TS2	0.543	0.507	0.417	0.457	0.527	**0.939**	0.509
TS3	0.474	0.486	0.373	0.405	0.461	0.888	**0.487**

Table 4 Factor loadings (bold) and cross-loadings (continued)

	BI	*CP*	*PEOU*	*PP*	*PU*	*TS*	*VB*
VS1	0.650	0.673	0.730	0.683	0.690	0.503	**0.811**
VS2	0.641	0.715	0.642	0.695	0.665	0.349	**0.807**
VS3	0.834	0.823	0.731	0.826	0.808	0.608	**0.917**
VS4	0.826	0.888	0.849	0.890	0.904	0.544	**0.924**

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

PP1 was dropped due to its poor loading on perceived playfulness (i.e., less than 0.70).

Table 5 Discriminant validity (Fornell-Larcker test)

	BI	*CP*	*PEOU*	*PP*	*PU*	*TS*	*VB*
BI	**0.953**						
CP	0.885	**0.95**					
PEOU	0.787	0.845	**0.933**				
PP	0.847	0.845	0.837	**0.944**			
PU	0.877	0.914	0.849	0.881	**0.937**		
TS	0.59	0.582	0.473	0.522	0.589	**0.913**	
VB	0.86	0.9	0.854	0.899	0.892	0.586	**0.867**

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

Off-diagonal elements are the inter-construct correlations.

Diagonal elements in bold are the square root of the AVE.

Table 6 HTMT results

	Original sample (O)	*Sample mean (M)*	*Bias*	*2.50%*	*97.50%*
CP → BI	0.917	0.918	0.001	0.867	0.951
PEOU → BI	0.814	0.815	0.001	0.733	0.87
PEOU → CP	0.875	0.875	0	0.812	0.914
PP → BI	0.889	0.89	0.001	0.82	0.932
PP → CP	0.887	0.888	0.002	0.84	0.916
PP → PEOU	0.879	0.879	0.001	0.811	0.917
PU → BI	0.908	0.909	0.001	0.856	0.948
PU → CP	0.947	0.948	0.001	0.921	0.966
PU → PEOU	0.878	0.879	0	0.804	0.918
PU → PP	0.924	0.924	0	0.884	0.952
TS → BI	0.627	0.626	–0.001	0.517	0.731
TS → CP	0.619	0.619	0	0.494	0.714

Table 6 HTMT results (continued)

	Original sample (O)	*Sample mean (M)*	*Bias*	*2.50%*	*97.50%*
TS → PEOU	0.501	0.5	–0.001	0.344	0.619
TS → PP	0.559	0.559	–0.001	0.41	0.671
TS → PU	0.624	0.622	–0.002	0.514	0.718
VB → BI	0.92	0.921	0.001	0.849	0.971
VB → CP	0.968	0.968	0	0.941	0.994
VB → PEOU	0.921	0.921	0	0.865	0.956
VB → PP	0.978	0.979	0.001	0.945	0.997
VB → PU	0.956	0.956	0	0.926	0.981
VB → TS	0.642	0.64	–0.002	0.505	0.744

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

5.5 Structural model evaluation

As shown in Figures 4 and 5, this structural model accounts for 83.1% of variance in users BI to use m-SMS. Table 7 depicts that, of all 10 hypotheses, six were supported and are able to predict the users BI towards m-SMS acceptance. PP ($\beta = 0.238$, $p < 0.0$), CP ($\beta = 0.408$, $p < 0.01$), and TS ($\beta = 0.074$, $p < 0.0$) have significant linkage with consumers' BI to adopt m-SMS. Conversely, results revealed that PU ($\beta = 0.224$, $p > 0.05$), PEOU ($\beta = –0.044$, $p > 0.05$) and VB ($\beta = 0.072$, $p > 0.05$) failed to predict the consumers' BI to adopt m-SMS, hence H1, H2 and H4 are not supported. Furthermore, the path coefficients of CP ($\beta = 0.864$, $p < 0.001$) and TS ($\beta = 0.086$, $p < 0.01$) also show positive and significant impact on PU with the explained variance, R^2 accounts for 84%. Also, the results have indicated that CP ($\beta = 0.862$, $p < 0.001$) was a significant determinant of PEOU, with explained variance, R^2 of 71.4%. However, TS ($\beta = –0.029$, $p > 0.05$) has no effect on predicting PEOU, resulting H8 to be not supported. Hence, H3, H5, H6, H7, H9 and H10 were supported.

Table 7 Results of hypotheses testing

Hypotheses	*Path coefficient*	*T-statistics*	*Result*
H1: PU is positively related to the consumers' behavioural intention to adopt m-SMS	0.224	1.754	Not supported
H2: PEOU is positively related to the consumers' behavioural intention to adopt m-SMS	–0.044	0.684	Not supported
H3: PP is positively related to the consumers' behavioural intention to adopt m-SMS	0.238	2.413*	Supported
H4: VB is positively related to the consumers' behavioural intention to adopt m-SMS	0.072	0.548	Not supported
H5: CP is positively related to PU	0.864	35.469***	Supported
H6: CP is positively related to PEOU	0.862	18.291***	Supported

Table 7 Results of hypotheses testing (continued)

Hypotheses	*Path coefficient*	*T-statistics*	*Result*
H7: TS is positively related to PU	0.086	2.618**	Supported
H8: TS is positively related to PEOU	–0.029	0.497	Not supported
H9: CP is positively related to the consumers' behavioural intention to adopt m-SMS	0.408	2.822**	Supported
H10: TS is positively related to the consumers' behavioural intention to adopt m-SMS	0.074	2.152*	Supported

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

Significant at: ***$p < 0.001$; **$p < 0.01$; *$p < 0.0$.

As shown in Table 8, the standardised root mean square residual (SRMR) for the saturated model and estimated model is 0.047 and 0.062 respectively. As stated by Hair et al. (2017), a value less than 0.08 are considered a good fit.

Table 8 Fit summary

	Saturated model	*Estimated model*
SPMR	0.047	0.062

Figure 4 Result for structural model (original sample) (see online version for colours)

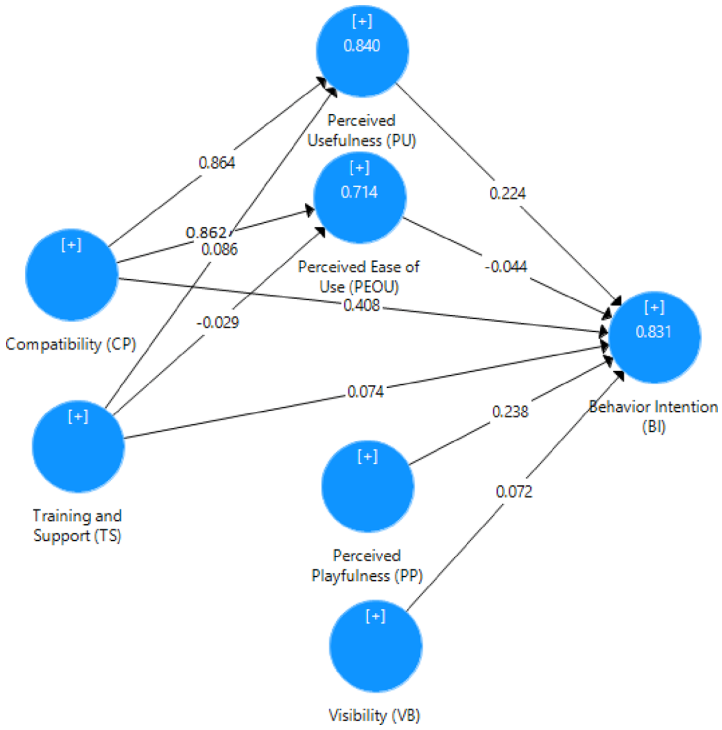
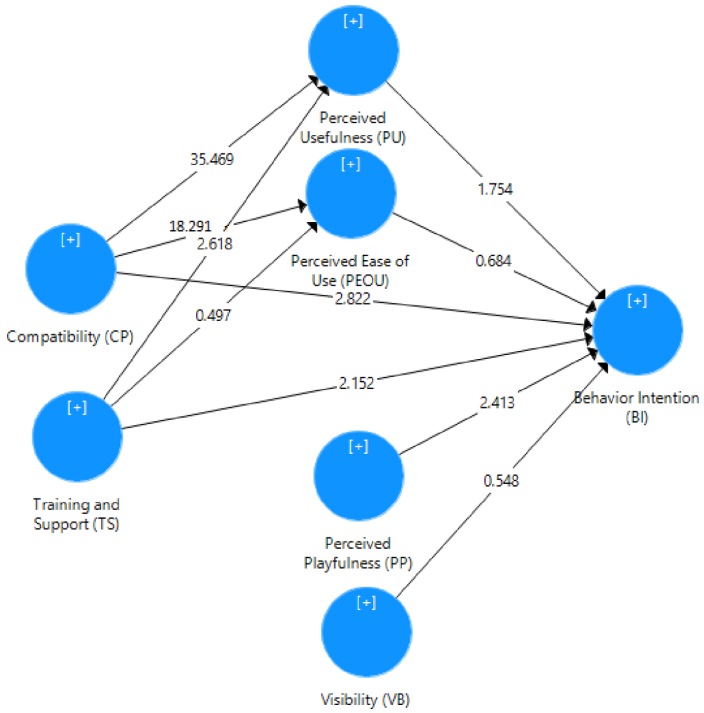


Figure 5 Result for structural model (T-statistics) (see online version for colours)



5.6 *Assessing the predictive power*

Table 9 indicates the Stone-Geisser's, Q^2 value as to assess the predictive relevance of the structural model. As mentioned by Hair et al. (2014), Q^2 value tells of whether the structural model is relevant in explaining its endogenous variables. Q^2 values can be classified into three levels, which represent small (0.02), medium (0.15), and large (0.35) (Cohen, 2013). As shown in the table, Q^2 for BI, PEOU, and PU are more than 0.35, which that signifies that the integrated model is highly relevant in predicting these constructs.

Table 9 Predictive relevance, Q^2

	SSO	*SSE*	*Q^2 (=1 – SSE/SSO)*
BI	800	235.787	0.705
CP	800	800	
PEOU	1000.00	420.983	0.579
PP	600	600	
PU	1000.00	312.394	0.688
TS	600	600	
VB	800	800	

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

Table 10 visualises the results for effect sizes, f^2 for each path coefficient. As mentioned by Hair et al. (2014), when a path has a high value of f^2, it implies that the endogenous variable is strongly explained by the particular exogenous variable. The measurement for effect sizes is similar to the levels of predictive relevance, which 0.02 represents small, while 0.15 indicates medium and 0.35 signifies large effect size (Hair et al., 2014). The results indicate that CP, PP, PU, and TS have small effect on BI, while the effect of CP on PEOU and PU are large. In addition to that, TS has also seen to have small effect on PU.

Table 10 Effect sizes, f^2

Endogenous variables / *Exogenous variables*	*BI*	*CP*	*PEOU*	*PP*	*PU*	*TS*	*VB*
BI							
CP	0.122		1.718		3.079		
PEOU	0.002						
PP	0.051						
PU	0.034						
TS	0.02		0.002		0.03		
VB	0.003						

BI = behavioural intention; CP = compatibility; PEOU = perceived ease of use; PP = perceived playfulness; PU = perceived usefulness; TS = training and support; VB = visibility.

6 Discussion

There is no significant relationship between PU and BI, the result obtained is contradictory with past studies that are related with technology adoption by Wong et al. (2015b, 2015c), Tan et al. (2015) and Sim et al. (2011). However, present findings corroborate with past empirical studies by Sim et al. (2012) on mobile technologies adoption and Aldás-Manzano et al. (2009), where 470 samples in Spain were used and pieces of evidence indicated that consumers would purchase regardless whether the mobile services provides benefits or vice versa. In addition to that, part of the reason that could contribute to this occurrence might be due to the local cultures in Malaysia, consumers require longer time to slowly digest, accept m-SMS and they still prefer to visit the brick and mortar store for shopping as they might perceive the traditional way to be way more productive, and as well they are able to use their shopping time to develop social relationship and enjoy the shopping experience. PEOU showed no significant influence on BI. Above findings conform to the study by Ooi and Tan (2016) and Juniwati (2014). However, the findings contradict with most of the past studies conducted on technology adoption, such as those by Pan et al. (2015) and Teo et al. (2015a). One of the possible explanations is that majority of the target respondents for this research study age from 21–30 years old, which they are the group of millennial, who are all young adults that are more attentive towards the newest technology and innovation

(Teo et al., 2015b). These groups of consumers basically have lesser to no barriers to use or manage an IT innovation due to their inquisitive and explorative personality; hence PEOU is insignificant to predict BI.

Findings revealed that PP is a significant determinant to forecast the consumers' behavioural intention to adopt m-SMS, which it is consistent with previous findings by Cheong and Park (2005) and Tan et al. (2017). This is no surprise as the existence of entertainment elements in social media applications are able to deliver enjoyment, excitement and pleasure experience to the users throughout their usage, which that will encourage the users to adopt m-SMS. Regarding VB, the results findings highlight that this construct is not a significant predictor for BI. Hence, H4 was not supported in this study. Although the findings contradict with a study by Al-Jabri and Sohail (2012) where VB was significant with the intention to adopt mobile banking, however, the finding is in line with past studies by Kapoor et al. (2014) and Arts et al. (2011). The possible reason lies on the fact that consumers nowadays are more independent and are able to make better and reasonable justifications on their own; as such they might not be easily influenced by others to adopt a particular innovation. In addition to that, VB of this innovation might not be apparent enough for the moment.

Based on the results, H5 was supported and directing that CP has a positive significant impact towards PU. Past literature has shown evidence that supports the prediction of PU with CP. The results findings are aligned with past empirical works by Ooi and Tan (2016) on mobile users adoption on smartphone credit card as well as a study by Schierz et al. (2010) on the mobile payment system. The findings explain that when m-SMS fits well with the consumers' lifestyle and habits, they will find that m-SMS to be useful and beneficial. With the predominance of mobile devices as to provide connections for people, various social media applications have been designed in such a way that it is more compatible and applicable on all types of mobile devices and in turns lead to the perception that m-SMS are more efficient. H6 was supported and indicated that CP is positively associated with PEOU. The results findings are consistent with prior findings by Ozturk et al. (2016) and Ooi and Tan (2016), whereby CP was found to have a significant influence on PEOU. This implies that when the consumers believe that using m-SMS is reconcilable with their current habits and past experiences, they will find the innovation to be easy to use and handle. Abide by the prediction, TS was found to be significant to PU. The result is contrary with the findings by Wong et al. (2016) and Wu et al. (2007) but it had been proven in past studies by scholars Yap and Tan (2017). The findings lead us to believe that when there are sufficient training and support provided for the consumers, it will enhance their perceived usefulness and task performance in managing m-SMS. On the contrary, TS was found insignificant towards PEOU. The outcome of this study is inconsistent with past literature by Michaelidou et al. (2011) and Wong et al. (2016), which emphasise that existence of TS with adequate training and support programs, are important in facilitating PEOU. One of the possible causes is that some of the sellers on social media application today have not provided sufficient guidelines to guide the consumers on how to manage m-SMS. As for instance, Facebook is open for anyone to sell anything, with that means there are numerous sellers come with different types of procurement procedures that are not being standardised, which this will result in confusion among the consumers throughout the purchasing experience. Hence, TS is not able to determine PEOU accurately.

The impact of CP on BI to adopt has been confirmed in this study. The same results collaborate findings by Wong et al. (2015a) and Ooi and Tan (2016) in mobile shopping

context and mobile payment method respectively. The findings explain that mobile social media application designers should give attention to improving the degree of compatibility of the innovation as to meet and be consistent with the consumer needs, past experiences, habits, and lifestyle. As consumers would incline to accept and use an innovation when it is reconcilable with their lifestyle and desires. In line with the proposed hypothesis, TS has been proven to influence BI significantly, which the result is congruent with studies by Wong et al. (2016) and Michaelidou et al. (2011). This supports the perception of Igbaria et al. (1997) and Tsai and LaRose (2015), whereby when relevant and sufficient support and training is made available for the consumers, it will increase the consumers' level of acceptance on using m-SMS.

7 Implications

7.1 Theoretical implication

From the theoretical perspective, this research had contributed to the existing literature by providing valuable insights on the consumers' behavioural intention on adopting m-SMS in Malaysia context. In line with many past studies that are related to mobile innovation technology adoption, PU and PEOU were adopted into this study as to investigate BI. In addition to that, this study has successfully extended the existing TAM model by incorporating additional constructs from DOI model (CP and VB) as well as PP and TS. The extended TAM model is believed to be able to provide better insights on the adoption of m-SMS than TAM alone. On top of that, this research model could also be replicated or serves as a backbone for further extension as to cater the needs of different environments or context, in order to better predict the consumers BI towards m-SMS adoption.

7.2 Managerial implication

Present findings have identified several determinants that consumers place greater attention on, namely PP, CP, and TS. CP was also found to have a significant effect on PU and PEOU. On the other hand, TS has confirmed its influence on PU significantly. The findings of this study are able to provide valuable insights to mobile application software developers, mobile marketers, merchants and retailers online, mobile commerce sellers and other related parties. From the managerial perspective, since PU does not have a significant impact on Malaysian consumers' BI to use m-SMS, thus the related parties could avoid placing much concern onto this attribute when providing the services. Apart from that, data analysis results have also reported that PEOU has no significant impact in predicting consumers' BI. Therefore, it is not essential for the parties involved to provide social media application in a way that it is extremely easy to use, as the majority of the consumers are young innovative users, whereby their information-seeking behaviours are able to help them to reduce the barriers in managing new innovation. PP was reported to be significantly associated with BI, hence practitioners should deem to include fun, entertaining and interesting elements such as music, video, graphics interchange format (GIF), pictures into the shopping contents provided on social media platforms when designing the mobile social media applications. In light of the findings on VB, the attention of related parties for the visibility of m-SMS could be diverted away, as

consumers do not emphasise on this attribute. Hence, m-SMS service need not be designed in a way that it is extremely discernible and appealing, as young explorative consumers are able to extract the desirable information on their own.

Moreover, CP has also been proven to be a significant factor in predicting as well as exerted its influence on PU and PEOU. This signifies that when m-SMS is compatible with their daily life, it will lead to a perception that the innovation is easy to navigate, brings an abundance of benefits and that will in turns influence consumers' BI to adopt. As such, related parties should develop, market and advertise social media shopping in a way that it matches the consumers' past experiences, habits, and lifestyles. At the same time, there shall be concerns about the features and advantages of convenience and usefulness. Lastly, with the significant relationship between TS and BI, parties involved are advised to provide sufficient and precise information as well as detailed guidelines to the potential adopters, for instance on how the purchasing on social media operates, the procedures to secure and complete the transaction and so forth. On top of that, technical infrastructure must also be made available to the potential adopters as to stimulate the level of acceptance and BI to adopt. Considering TS has a significant association with PU, it is essential that sufficient training and support are provided to the consumers as to enhance their perception on self-efficacy.

8 Limitations and future directions

Although this research study has employed rigorous statistical procedures and attained the research objectives, however, there are several limitations and weaknesses that future studies should take into consideration. Firstly, the sample of the study is majority younger generations, which they are mainly 21–30 years old (59%). Although prior literatures have revealed that younger innovative adults are more likely to adopt the new innovation. However, we cannot assume that these are the only representatives as potential adopters, we cannot generalise to the elders, or other areas as different age group tends to have different behaviours towards new innovation. Future research may take a look at different age groups to observe if there are any deviations on behaviours exerted towards BI. In addition to that, the sample size of the study contributes are one of the shortcomings as well. The location for data collection was under geographical and time constraint, with that the findings are unable to capture the whole picture and generalisation into other environments or areas remains ambiguous to a certain extent. Therefore, future studies could be improved by using a larger sample size and sampling from different states in the Peninsula Malaysia. Furthermore, the present research study is of cross-sectional study based. In view that m-SMS is still new to the Malaysian, and when technology grows into a more mature stage, findings may vary over time. Thus, future research could employ longitudinal study as to better capture the responses and behaviour. Lastly, there are limitation concerns on the research model as the research model used has restrained to the adoption factors derived from TAM, with VB and CP extracted from DOI model as well as integrated TS and PP. Future studies should consider including additional variables, for instance, perceived risk, perceived trust, perceived cost, perceived value and so forth in order to obtain a more accurate picture on consumers' BI to adopt m-SMS.

9 Conclusion

This research paper focuses on the consumers' behavioural intention to adopt m-SMS in Malaysia. Besides the extension of TAM with additional variables (CP, VB) extracted from DOI model, TS and PP have also been adopted to answer the research objectives. Present findings have revealed the existence of significant association between PP, CP, and TS towards BI respectively. In addition to that, CP has also possessed significant influence on PU and PEOU. However, TS has been proven to have significant impact on PU only, but not PEOU. The findings of this study are anticipated to contribute to both theoretical and practical world, in which the results are in hope to be able to serve as a guideline for future studies that are related to m-SMS adoption.

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