MOBILE SHOPPING ACCEPTANCE AMONG MILLENNIALS IN MALAYSIA PUBLIC UNIVERSITY

Normalini Md Kassim*
Universiti Sains Malaysia and Visiting Lecturer, Management & Science University
normalini_mk@yahoo.com

Wan Normila Mohamad
Universiti Teknologi MARA, Cawangan Negeri Sembilan, Malaysia
wanno794@uitm.edu.my

Zunirah Mohd Talib
Management & Science University
zunirah@msu.edu.my

Abstract

Mobile shopping has become a trend and popular way for people to make purchases in an easier and more convenient way. The present study rationalized that a facilitating condition construct would be a more critical construct than effort expectancy in mobile shopping. The study investigated factors that influence the mobile shopping acceptance among undergraduate students in public university in Malaysia. The study model consisted of six determinants which are utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, social influence and facilitating conditions towards intention to adopt mobile shopping among millennials. A purposive sampling method were used with a total of 125 respondents of public university collected for data analysis. The findings found that utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, and facilitating condition are positively related to intention to use mobile shopping however negatively supported for social influence. Utilitarian performance expectancy was found as the most significant factor that affect consumers adoption of mobile shopping through improving gains in shopping performance with hedonic performance expectancy as the most salient.

Keywords: Mobile shopping, adoption, smartphones, purchasing, social influence

1.0 Introduction

In recent year, mobile shopping has become increasingly popular along with the development of electronic device and the wide acceptance of table or smartphone in life. (Grandhi, 2016). Shopping services can be accessed through mobile devices which provide wireless functions and ubiquitous occurrences of shopping is allowed, so consumers can shop more conveniently. Consequently, mobile shopping became a mobile technology use behaviour and consumption behaviour (Chen, 2018).

*Corresponding Author: School of Management, Universiti Sains Malaysia and Visiting Lecturer, Management & Science University

In business-to-consumer industries being carried out via mobile devices nowadays with more than a third of all e-commerce transactions, consumers in most countries perform their mobile retail purchases via smartphone (Criteo, 2015). At the same time, smartphones are also the predominant driver of growth of mobile e-commerce transactions (Criteo, 2015). Smartphone-based mobile shopping gives the opportunity to purchase products and services wherever and whenever to fulfil a customer wants (Balasubramanian, Peterson, & Jarvenpaa, 2002). Despite its generally increasing importance, however, mobile shopping does not seem to "take off" equally across diverse goods and services contexts (Criteo, 2015). For example, mobile shopping as a common in-service industry for purchasing ticket like public transportation, while it is less common for services such as financial products (Criteo, 2015). Accordingly, comparing it with traditional web-based interfaces, mobile shopping has a significantly lower conversion rate in terms of customer checkout rates (Bhalla, 2016).

Besides, mobile shopping has gained the user popularity and has deeply penetrated the lives of modern consumers. Mobile devices are being increasingly used for ordering, searching, comparing, and making payments for various goods and services online (Hung, 2018). Mobile shopping can be referred as "any monetary transactions related to purchase of goods or services through internet-enabled mobile phones or over the wireless telecommunication network" (Wong, 2012). It might be considered as a subset of the broad mobile commerce spectrum. Mobile commerce may be defined as "any transaction with a monetary value – either direct or indirect – that is conducted over a wireless telecommunication network" (Barnes, 2002).

Although more Malaysians have started to embrace the culture of online shopping, the acceptability of mobile shopping remains low. Majority of Malaysia shoppers still opt for in-store purchases compared to online purchases. Product quality is the most common problem faced by customers who shop online regularly. The product quality is often not up to the mark with what is shown in the pictures so that the customers choose to purchase in a store as they can feel and touch the products. Besides, lack of security is the other problem when using mobile shopping and has been the major problem to customers using the internet nowadays. Mobile shopping apps record important customer information such as name, phone number, bank detail and address. If these sites do not enforce strict cyber-security measures, customer's data is at risk of falling into wrong hand, which can then embezzle on customers banking account. Most of the big online shopping players certainly have the best-in-class security measures to protect the data of their customers, but the same cannot be said of the countless smaller sites who may not have the resources to do so. Therefore, the research objectives are to examine the factors that influence mobile shopping adoption.

2.0 Literature Review

Online shopping, based on the internet's growth, is emerging in a fast manner. The act of shopping on mobile devices and using smartphones to pay for items in stores is increasingly being common and will likely continue to proliferate over the next few years (Hillman & Neustaedter, 2017). While mobile shopping is rapidly growing and currently representing over one-third of global e-commerce

transactions, several industry reports highlight its contributing importance as an initiation for conversion to other channels (Chopdar, Korfiatis, Sivakumar, & Lytras, 2018). As an evolutional business model, MC is believed to be more effective than traditional EC because consumers can conduct transactions through wireless connections anytime and anywhere (Khoi, Tuu, & Olsen, 2018), with the statistic shown the online shopping locations that shoppers worldwide prefer to shop at for first-time and repeat purchases. During the July 2019 survey, 71 percent of respondents stated that they preferred to make first-time purchases at a physical store, whereas 37 percent of repeat buyers preferred online marketplaces. In total, three quarters of repeat purchases are made online. When the prediction of mobile to overtake fixed Internet, access turned into a known fact, it is now a question of understanding how consumers behave when using mobile shopping and what their preferences are (Lu, Yu, Liu, & Wei, 2017). Mobile consumers refer to individuals that may need or want to wirelessly interact with service providers to procure some specific service for personal purposes (Saprikis, Markos, Zarmpou, & Vlachopoulou, 2018). In this embryonic stage of mobile shopping, contextual factors such as technology characteristics and user characteristics should be examined to determine the likelihood of specific factors in predicting mobile shopping adoption and how the design of the mobile shopping environment meets consumer characteristics (Faqih, 2016). Moreover, in daily life, online shopping plays a significant role and online consumers can access as well as compare product quickly, easily with one click of a mouse (Arora & Aggarwal, 2018). In predicting consumer mobile shopping adoption, consumer characteristics in adopting the technology-mediated shopping environment could be significant determinants in moderating the relationships among predictors of mobile shopping adoption. Since consumer traits differ in technology adoption, they may generate differential effects of evaluative criteria on the technology adoption behavior (Parasuraman, Zeithaml, & Malhotra, 2005). Therefore, identification and analysis of such factors shall be quite helpful for organizations in framing appropriate strategic framework leading to the higher adoption of mobile shopping. Most of the research studies conducted in this area are more focused on the technical perspective of mobile shopping ecosystem. However, very limited studies have examined the behavioural dimensions in adoption and actual usage of mobile shopping (Madan & Yadav, 2018). In this section, we will be focusing on the theories and the expansion of the theories to the present theoretical framework that is used in this research.

2.3 The Unified Theory of User Acceptance and Use of Technology (UTAUT)

The Unified Theory of User Acceptance and Use of Technology (UTAUT) suggests that performance expectancy, effort expectancy, social influences, and facilitating conditions are the critical direct determinants of behavioural intention to use technology (Venkatesh, et al., 2003). The UTAUT aims to explain user intentions to use an information system and subsequent usage behaviour. After the original UTAUT model was proposed, many studies extended and modified the measures of UTAUT across different contexts; however, a systematic investigation and theorizing of the model's salient factors in the context of consumer technology use remains (Venkatesh & Xu, 2012). Using Venkatesh et al.'s suggestion, this present study seeks to develop a more complete picture of consumer technology use by examining the UTAUT measures in the context of mobile shopping. The major differences between the model in this study and the original UTAUT model lie in the adding of two affective measures (i.e., utilitarian performance expectancy and hedonic performance expectancy) and in the positioning of the facilitating conditions as an antecedent driving factor for understanding consumer mobile shopping adoption.

Without the effort expectancy construct in the model, facilitating conditions should become a predictor of intention (Venkatesh, et al. 2012). If having an Internet-enabled mobile device or knowledge of how to use mobile shopping was a precondition to use mobile shopping, then perception of technology ease of use may depend on the capability of the mobile device's functions and features. In addition, with rapidly advancing mobile technology and its adoption, consumers have gained experience using mobile technology, which may increase consumers' perception of ease of use the mobile technology (Yu, 2012). While effort expectancy may be a necessary condition when using a technology, it may not be a significant driver for consumer technology adoption behaviour. Therefore, the functions and features of the mobile device itself would be more critical to a consumer's use of mobile shopping than the consumer's perception of ease of use of the services themselves.

The present study rationalized that a facilitating condition construct (i.e., a device facilitating use of the services) would be a more critical construct than effort expectancy when examined in the context of mobile shopping. Besides, facilitating conditions are proposed to have direct and positive influences on technology usage (Nysveen & Pedersen, 2016). Therefore, it is expected that testing the modified UTAUT model without effort-expectancy may reveal the genuine effect of facilitating conditions on consumer mobile shopping adoption behaviour. This study proposes that facilitating conditions are an antecedent of utilitarian and hedonic performance expectancies and those performance expectancies and social influences affect consumer intention to use mobile shopping while those causal relationships are moderated by technology anxiety about using mobile shopping.

2.4   Hypotheses Development

2.4.1   Intention to Adopt Mobile Shopping

These variables are expected to change because of an experimental manipulation of the independent variable or dependent in independent variables (Wong, 2015). The dependent variable for this research is intention to adopt mobile shopping. Mobile shopping is the buying and selling of goods and services through wireless handheld devices such as smartphones and tablets. As a form of e-commerce, m-commerce enables users to access online shopping platforms without needing to use a desktop computer (Leonard, 2010).

2.4.2   Utilitarian Performance Expectancy

Utilitarian performance expectancy is the degree to which a person assumes the use of technology resources will facilitate the individual in achieving task performance (Khalilzadeh, Ozturk, & Bilgihan, 2017). Utilitarian performance expectancy is the best predictor of the intention to use a technology in Venkatesh, et al (2003) study, which means that providing an effective and usable technology while performing a task determines the intention of the user to use the technology. Convenience is also seen as important variable of online utilitarian shopping value (Childers et al., 2001). Utilitarian consumers tend to perceive it to be much more convenient for them to shop online, as they can locate and compare retailers and determine the price and quality of products or services while at the comfort of their office and home (Overby & Lee, 2006).

In the context of mobile shopping, personalization, ease of usage no matter how the place, time efficiency, and shopping effectiveness reflect utilitarian performance expectancy in mobile shopping (Kleijnen, De Ruyter, & Wetzels, 2007). Personalization of mobile shopping based on individual preferences can help consumers access product information effectively and efficiently, leading to increased utilitarian performance expectancy (Yang & Forney, 2013).

2.4.3   Hedonic Performance Expectancy

Hedonic performance expectancy is the degree to which a person thinks it is fun to use technology-based services (Davis, Bagozzi, & Warshaw, 1992) or defined as "the enjoyment or pleasure of using a technology" (Venkatesh & Xu, 2012). It affects behavioural intention to use mobile shopping (Cheong & Park, 2005). Hedonic performance expectancy can be achieved by perceptions and emotions resulting from the multi-sensory, emotional and entertainment dimensions associated with the use of a service experience (Babin, Darden, & Griffin, 1994). The coexistence of utilitarian and hedonic performance would be more apparent in mobile shopping services since consumers use their mobile phones not only for getting information and solving a problem (utilitarian), but also for fun (hedonic) when using some functions and features of the mobile phone (Sigala, 2017). As a result, the role of hedonic performance expectancy that is oriented toward fun activities will be important in predicting consumer mobile shopping services adoption (Nysveen and Pedersen, 2016).

On the other hand, where a technology offers the user satisfaction and enjoyment while using mobile shopping, users will enjoy it, affecting their behavioural intent to adopt the technology (Lee, 2009). Users who experienced enjoyment from using various mobile applications are more likely to adopt them (Kim, Yoon, & Han, 2014). In a mobile shopping service context in a study by Yang (2015), it was concluded that hedonic factors are crucial determinants of mobile shopping use and that hedonic performance expectancy is achieved by consumers who assume that the fun obtained using different features and functions in mobile shopping technology. The hedonic nature of mobile shopping can be improved by a mobile shopping site that offers a pleasurable shopping experience when browsing for items or displaying product details.

2.4.4   Effort Expectancy

The user-friendliness of mobile apps exerts positive significant influence over the adoption of mobile apps because the lesser effort is required to use the apps (Park, 2014). Prior studies suggested that effort expectancy plays a crucial role in determining behavioural intention to use and actual use of technology. However, claimed that effort expectancy poses a less significant impact on the behavioural intention of

3G mobile telecommunication user in Taiwan, as it is not adequate to attract consumers only with factors of effort expectancy alone (Wu, Tao, & Yang, 2008).

A simplicity-driven system with maximised efficiency is more favoured by consumers compared with technology that is complicated to use (Im, 2010). However, the consumer may perceive differently towards effort expectancy in using social networking apps compared with mobile shopping apps. However, previous researchers argued that effort expectancy is not as critical as performance expectancy in serving as a determinant of behavioural intention, as it has a more significant effect on post-adoption usage (Choi, 2011). Empirical studies have also suggested that consumers intend to use e-learning apps if the application is easy to use (Chiu & Wang, 2008). A researcher conducted a study to investigate young consumers' behavioural intention in acquiring mobile shopping apps based on survey questionnaire collected from university students in the USA. The findings demonstrated that effort expectancy was a positive predictor of the adoption of mobile shopping apps. However, the measuring criteria of effort expectancy in using social networking apps are different which includes the ease of reaching people and interacting with them (Lim, et al., 2011).

2.4.5 Social Influence

The strength of social influence depends on the relation among individuals, network distances, timing, characteristics of networks and individuals (Peng, et al., 2017). Namely, social networks transmit information, opinions, and behaviours (Christakis & Fowler, 2007). Members in complex social networks including colleagues, experienced users, friends, family members, and celebrities are all likely to exert influence on one's behavioural intention. (Rogers, 1995). The effects of social influence on collective decisions vary based on the structure of the interaction network, predicting that, under the right conditions, social learning can lead a group's median judgment to improve (Mossel, Sly, & Tamuz, 2015).When it involves soliciting advice about product/service patronage, family members commonly are among the sources of information and advice (Kerrane, Hogg, & Bettany, 2012). However, information and opinions from certain members may be valued more by the user for various reasons and, therefore, have a stronger impact on her decisions (Venkatesh and Brown, 2001).

2.4.6 Facilitating Condition.

Facilitating conditions refer to the degree to which an individual believes that a technical infrastructure exists to support technology use (Venkatesh, 2003). Evidence indicates that providing facilitating conditions (e.g., technology resources) is critical in helping users overcome barriers and hurdles to technology use, especially during the early technology adoption stage. (Bergeron, 1990). According to Venkatesh, Thong, and Xu (2012) that facilitation conditions significantly influence behavioural intention. Further, since mobile shopping is a voluntary activity for obtaining specific benefits or services, an advanced technology and well-designed interface can play a major role in facilitating mobile shopping. Thus, focusing on the mobile technology environment, the individual's knowledge of using the technology would be relevant in measuring the facilitating conditions construct in the mobile shopping context (Yang, & Forney, 2013). Facilitating conditions of a mobile phone device (e.g., a better interface, speed, and data processing capabilities) and individual knowledge of using mobile shopping functions and features would enable consumers to access mobile shopping services with a

minimal technological infrastructure barrier and could increase consumer performance expectancies using mobile shopping.

3.0 Methodology

This research theoretical framework is developed based on extension of UTAUT model. This research is to investigate the factors that influence the mobile shopping acceptance among undergraduate students in public university in Malaysia. This model consisted of six determinants which are utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, social influence and facilitating conditions towards intention to adopt mobile shopping among millennials. Figure 1 shows the research framework.
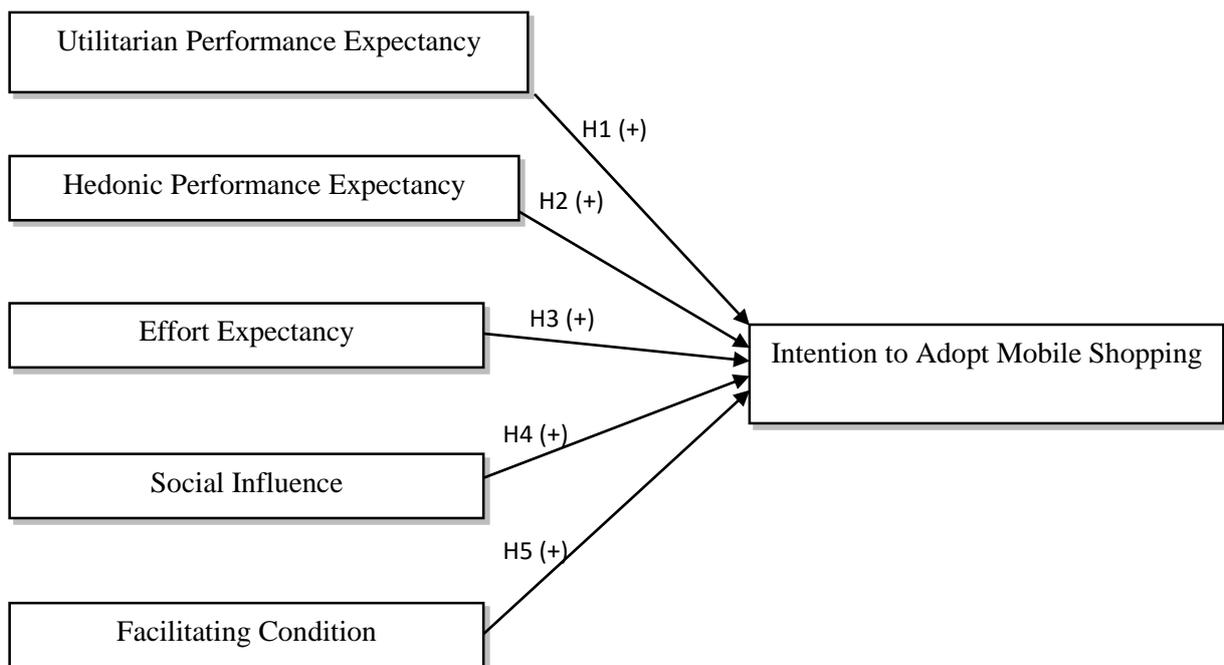
FIGURE 1 RESEARCH MODEL

The following are the testing hypotheses for the above framework:

H1: Utilitarian performance expectancy is positively related to intention to use mobile shopping.

H2: Hedonic performance expectancy is positively related to intention to use mobile shopping.

H3: Effort expectancy is positively related to intention to adopt mobile shopping.

H4: Social Influence is positively related to intention to use mobile shopping.

H5: Facilitating conditions are positively related to intention to adopt mobile shopping.

The study was conducted under non-contrived setting which is natural environment. A total of 125 valid respondents of public university were used in this data analysis. The unit of analysis is the undergraduate students who do mobile shopping from different course who is studying in public university in Malaysia. The sampling technique use for this research is non-probability sampling which is purposive sampling method. This method was suitable due to the target user that studying in public university and they must be the mobile shopping users.

The instrument measurement contained two parts. The first part is about the demographic profile. The second part is the measurement questions adopted and adapted from different sources containing 7 Likert-Scale (see Table 1).

Table 1. Measurement Instrument

Construct	Item	Scale	Source
Intention to adopt mobile shopping	3	7 Point	Tan et al. (2014)
Utilitarian Performance Expectancy	3	7 Point	Yang (2010)
Hedonic Performance Expectancy	3	5 Point	Yang (2010)
Effort Expectancy	4	7 Point	Yang (2010)
Social Influence	3	5 Point	Venkatesh et al. (2012)
Facilitating Conditions	4	7 Point	Venkatesh et al. (2012)

3.1   Data Collection Procedure

Structured questionnaires method is used throughout the data collection. The questionnaires were distributed to undergraduates through Google Form via internet. The respondents that involved are from public university in Malaysia.

4.0   Data Analysis

The data gathered through questionnaire was coded and analysed by using the computerized SPSS (Statistical Software Package for Social Science) software version 24. The results were summarized using appropriate descriptive and inferential statistics.

4.1   Samples and Profiles

Based on the data that has been collected, there were 125 respondents who has participated in this survey. Majority of respondents are females which have 82 respondents (65.6%) and 43 males (34.4%) respondents. These males and females have the range of age from 19 years old to 28 years old. The age of 22-24 years old has the highest number of respondents which is 73 respondents (58.4%), followed by 19-21 years old with 46 respondents (36.8%) and 6 respondents (4.8%) in the range of 25-28 years old (see Table 2)

Among the ethnicity, Chinese has the biggest number of the respondents which are 60 respondents (48.0%), 37 respondents (29.6) were Malays, 26 respondents (20.8%) were Indians whereas other races comprised of 2 respondents (1.6%). Furthermore, all the respondents are Malaysian totalling to 125 respondents (100%).

Based on this survey, most of the respondents are Year 1, Year 2 and Year 3 students which have 38 respondents (30.4%) each. Meanwhile, 11 respondents (8.8%) are Year 4 students.

Table 2. Profile of Respondents

Demographics	Categories	Frequency	Percentage (%)
Age	19-21	46	36.8
	22-24	73	58.4
	25-28	6	4.8
Gender	Male	43	34.4
	Female	82	65.6
Ethnicity	Malay	37	29.6
	Chinese	60	48.0
	Indian	26	20.8
	Other	2	1.6
Nationality	Malaysian	125	100
	Non-Malaysian	0	0
Year of Study	First year	38	30.4
	Second year	38	30.4
	Third year	38	30.4
	Fourth year	11	8.8

4.2 Hypothesis Testing Results

4.2.1 Correlation Analysis

Based on the result, we can conclude that there was only positive linear relationship between the variables which is nearly associated to the significant level of 0.01. In a positive utilitarian performance expectancy toward hedonic performance expectancy increased by 0.662. Among these variables, the positive correlation between intention to adopt mobile shopping and effort expectancy are the strongest whereby 0.801. However, there was a weakest relationship between social influence and effort expectancy which are 0.537.

Table 3. Result of Correlation Analysis

Correlations

		UTI	HED	EFF	SOC	FAC	INT
UTI	Pearson Correlation	1	.662**	.648**	.674**	.706**	.713**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
HED	Pearson Correlation	.662**	1	.663**	.665**	.681**	.744**
	Sig. (2-tailed)	.000		.000	.000	.000	.000

EFF	Pearson Correlation	.648**	.663**	1	.537**	.786**	.801**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
SOC	Pearson Correlation	.674**	.665**	.537**	1	.662**	.574**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
FAC	Pearson Correlation	.706**	.681**	.786**	.662**	1	.785**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
INT	Pearson Correlation	.713**	.744**	.801**	.574**	.785**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=125

4.2.2 Multiple Regression

The multiple regression was used to identify the relationship between utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, social influence, facilitating conditions and facilitating conditions towards the intention to adopt mobile shopping among undergraduates and respondents. Based on the output found in ANOVA table, the variables are tested with the significant level of 95% ($p < 0.05$) and F value is 76.586. According to ANOVA table, we could explain that approximately 76% of the intention to adopt Mobile Shopping could be explained by the utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, social influence, facilitating conditions and facilitating conditions. Besides, the adjusted R square value is 0.753.

From the ANOVA, The Durbin-Watson value for this multi regression is 2.014 within the acceptable range which was 1.5 to 2.5. There is no autocorrelation of error terms. Besides, variance inflation factor (VIF) values of the variable were below 10 and the condition indicates were below the safety limit of 30. Therefore, there is no multicollinearity problem. Besides, it shows a histogram which is bell shape histogram with the mean approximately 0 and standard deviation is 0.980, there do not have outlier since value not $> \pm 3$. Moreover, the normal P-P plot of regression standardized residual shows the points fall close to the reference line, indicates that there is a normal distribution of errors. Likewise, the scatter plot also shows homoscedasticity shows dependent variable intention to adopt Mobile Shopping exhibits constant variance across the range value for utilitarian performance expectancy, hedonic performance expectancy, effort expectancy, social influence, facilitating conditions and facilitating conditions. Based on the partial regression plot, it shows there is no clear relationship to confirm the assumption of linearity.

Furthermore, beta value can be showed in two different ways which are positive and negative value. From the table, it shows 5 variables which include utilitarian performance expectancy ($\beta= 0.187$), hedonic performance expectancy ($\beta = 0.280$), effort expectancy ($\beta= 0.346$), social influence ($\beta= -0.089$) and facilitating conditions ($\beta=0.248$). Utilitarian performance expectancy, hedonic performance expectancy, effort expectancy and facilitating conditions are positively related to the intention to adopt Mobile Shopping because standardized beta values are all positive. However, social influence is negatively related to the intention to adopt Mobile Shopping because standardized beta value is negative.

There are five hypothesis consists of hypothesis 1 (H1), hypothesis 2 (H2), hypothesis 3 (H3), hypothesis 4 (H4) and hypothesis 5 (H5) which include utilitarian performance expectancy (UTI), hedonic performance expectancy (HED), effort expectancy (EFF), social influence (SOC) and facilitating conditions (FAC).T value which are bigger than 1.645, $t>1.645$ will rejected null hypothesis (Ho) and accepted alternative hypothesis (Ha), t-value which are lower than 1.645, $t<1.645$ will accepted null hypothesis and rejected alternative hypothesis, when a=0.05 of one tailed-test. Besides, H1, H2, H3H4 and H5 show 2.627, 3.982, 4.529, -1.301 and 2.943 of T-value. H1, H2, H3 and H5 are supported because $T>1.645$, while H4 is not supported because $T<1.645$.

Besides, the p-value which are bigger than 0.05 ($p>0.05$) is not significant while p-value which are lower than 0.05 ($p<0.05$) is significant. From the table, the p-value for H1 utilitarian performance expectancy (UTI) is 0.005, H2 hedonic performance expectancy (HED) is 0.000, H3 effort expectancy (EFF) is 0.000, H4 social influence (SOC) is 0.098 and H5 facilitating conditions (FAC) is 0.002. We can conclude that H1, H2, H3 and H5 are significant because $p<0.05$whereas H4 is not significant because $p>0.05$. Based on the table, we can conclude that H1, H2, H3 and H5 are supported due to the positive beta value whereasH4 is not supported due to the negative beta value. However, for T value, H1, H2, H3 and H5 are supported because $T>1.645$ whereasH4 are not supported because $T<1.645$. For P value, H3, H4, H5 and H6 are significant because $p<0.05$.

Table 4. Result of Multiple Regression

Hypotheses	Descriptions	β	Standard Error	t-value	p-value	Decision
H1	Utilitarian performance expectancy is the degree to which a person assumes the use of technology resources will facilitate the individual in achieving task performance.	0.150	0.057	2.627	0.005	Supported
H2	Hedonic performance expectancy is the degree to which a person thinks it is fun to use technology-based services.	0.279	0.070	3.982	0.000	Supported

H3	Effort expectancy is the degree of ease associated with the use of the system.	0.351	0.077	4.529	0.000	Supported
H4	Social Influence is the degree to which an individual perceives that important others believe he or she should use the new system.	-0.077	0.059	-1.301	0.098	Not Supported
H5	Facilitating condition, the proxy for actual behavioural control and influence behaviour directly.	0.260	0.088	2.943	0.002	Supported

5.0 Conclusion

The relationship between utilitarian performance expectancy and intention to adopt mobile shopping among undergraduates in public university has been the subject of many questions. When undergraduates perceive that mobile shopping enhances shopping efficiency without time and place constraints, their positive attitude towards mobile shopping may be increased. Therefore, H1 was supported.

Next, H2: Hedonic performance expectancy is positively related to Intention to adopt mobile shopping is supported in our research. Hedonic performance expectancy is the degree to which a person thinks it is fun to use technology-based services (Davis,1992). This indicates that if undergraduate students in public university can enjoy the fun through using mobile shopping then the usage of mobile shopping will increase. In contrast, if the mobile shopping is unable to give the enjoyment to the undergraduate, they will decrease the usage of mobile shopping.

Moreover, H3: Effort expectancy is positively related to Intention to adopt mobile shopping is supported. Effort expectancy refers as the level of ease associated with the use of a technology (Venkatesh & Xu, 2012), and it is repeatedly recognized as a critical predictor of user's behavioural intention (Wong, et al., 2015). If the undergraduates found that it is very convenient and easy to use the frequency of using the mobile shopping will increase. Thus, there is a positive relationship between Effort expectancy and Intention to adopt mobile shopping. In contrast, if the mobile shopping is very ambiguous and difficult to adopt, the undergraduates will not be willing to use.

Besides, in our research H4: Social Influence is positively related to Intention to adopt mobile shopping is not supported. Social Influence refers to the extent to which members of a social network influence one another's behaviour (Rice, et al., 1990). Social influence might be from family, friends, and soul mate and this might not be the factor to influence the Intention to adopt mobile shopping. This is because the undergraduate mostly form Generation Z which since a young age they know well to use the digital technology and are comfortable with Internet and social media. So, they can experience the mobile shopping by themselves and no need to rely on others.

In addition, H5: Facilitating condition is positively related to Intention to adopt mobile shopping is supported based on our research among the undergraduate students in public university. Facilitating conditions refer to the degree to which an individual believes that a technical infrastructure exists to support technology use (Venkatesh, et al., 2003). Facilitating conditions such as better interface, speed and data processing capabilities of a mobile devices and individual knowledge of using mobile shopping functions would enable undergraduates to access mobile shopping service with a minimal technological infrastructure barrier and could increase the intention of undergraduates in using mobile shopping.

6.0 Recommendations and conclusions

The managerial implications from this research are that researcher should pay special attention to Utilitarian Performance Expectancy, Hedonic Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. To increase the acceptance of mobile shopping, researcher should ensure that these conditions are met.

The basic barriers that have stopped consumers from using mobile shopping were:

1) Consumers who faced with a complicated checkout process will frequently give up purchasing.
2) Extra fees and service charges disadvantage consumers and result in losing them without making a sale.
3) Concerns such as identity theft, the security of personal information and the abuse of private consumer data discourage people from doing mobile shopping online.

Such barriers can be solved by ensuring as few steps as possible are in place for the checkout process. To make respondents feel like they are getting a good deal without losing money, the shipping cost must be an important factor in the product price as well as offering free shipping. Besides, it is important to ensure respondents that their information will not be used for other purposes by clarifying their privacy policy, which will alleviate consumer concerns about their identify security.

The findings of this study have indicated Utilitarian Performance Expectancy is the most significant factor in affecting the intention to adopt mobile shopping because the consumers agree that using mobile shopping helps them to improve gains in shopping performance. For instances, saving shopping time, obtaining promotion information, or receiving customized product or service information. The way to increase utilitarian performance expectancy is by sending product availability information and mobile coupons via personalized text messages. Furthermore, transaction focused mobile shopping services are a utilitarian performance of mobile shopping services. For example, purchasing a product or service by using a mobile phone account and sending transaction information to their mobile phone can motivate consumers to use mobile shopping services.

The Hedonic Performance Expectancy of mobile shopping services is the most salient determinant of consumer mobile shopping services adoption in this study. The functions and features of mobile

shopping services need to be designed to enhance hopping enjoyment to create consumers favourable shopping experiences. Therefore, hedonic performance expectancy can increase when consumers participate in mobile community sites to interact with others or when they use animated or multisensory mobile shopping service features. Mobile shopping services would be favourable when the service provides optimized shopping experiences by integrating the retailers' regular website and the services.

Another key construct is effort expectancy, which relates to how easy to use the technology. Access to mobile sites and navigation of site functions and features could be ease-of-use issues within this context. Researchers argue that effort expectancy will be influential during the early stages of adoption but not later. It is also proposed that consumers who find mobile shopping service easy to access and navigate will also increase their expectations of both utilitarian and hedonic performance.

Social influence is often an important determinant of consumer behaviour. Consumers will adopt mobile shopping if others who are important to them believe that he or she should use the new mobile shopping services. Consumers will be influenced by word-of-mouth and important others' opinions in using mobile shopping services. Further, they may use an internet-enabled phone to access social networking sites to get information for popular mobile sites or opinions from others regarding a product. Consumers who are interdependent in making purchasing decisions are more likely to employ social aspects of mobile shopping services such as product reviews, expert opinions for products. Thus, retailers and mobile marketers should make product review sites or expert recommendation features available to consumers in store via mobile shopping services.

In terms of Facilitating Conditions, consumers are more likely to adopt mobile shopping services if the technical infrastructure exists such as internet-enabled mobile phone or user-friendly mobile shopping features to support the use of mobile shopping services. When more consumers have internet-enabled mobile phone with better interfaces to navigate and view product information through mobile shopping services, consumer use of services will accelerate. Therefore, retailers and marketers should design their mobile sites with a user-friendly interface and mobile features. For mobile sites and features without technological system difficulties to be available to consumers, it is crucial to design mobile sites and interfaces for two types of mobile phones: high-end devices (e.g., iPhone, Blackberry Storm) and low-end devices. Direct manipulation user interfaces can be utilized for high-end touchphones and indirect manipulation should be available for low-end devices due to reduced data processing performance.

7.0 Limitations and future research recommendations

The limitation is the sample size of the respondents. The sample size that is valid to use for this research was small and bigger sampling will help the data to be generalized. If this study were to be repeated in the future, there are some suggestions that we would like to give to the future researchers:

1.   The study can be carried out nationwide with more student's involvement national wide in Malaysia for bigger sample size.

2.   Continuously improve our model incorporating dependent and independent variables with the newest findings from the latest literature and journals.

3.   Qualitative techniques such as focus groups, protocol analysis, or structured interview can be done to have a deeper understanding and findings regarding the topic.

4.   Future researcher can test the hypotheses with other private universities in the country to see whether the cultural and environmental difference will produce a different result regarding this research topic.

8.0 Acknowledgement

9.0 References

Arora, N., & Aggarwal, A. (2018). The role of perceived benefits in formation of online shopping attitude among women shoppers in India. *South Asian Journal of Business Studies.*

Babin, B. J., Darden, W. R., & Griffin, M. (1994). "Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value". *Journal of Consumer Research*, 20(4), 644-656.

Balasubramanian, S., Peterson, R. A., & Jarvenpaa, S. L. (2002). Exploring the implications of m-commerce for markets and marketing. *Journal of the Academy of Marketing Science, 30(4)*, 348–361.

Barnes, S. (2002). The mobile commerce value chain: analysis and future developments. *International Journal of Information Management, 22(2),* 91-108.

Bergeron, F. S. (1990). "Investigating the Support Role of the Information Center,". *MIS Quarterly*.

Bhalla, M. (2016, January). *7 reasons why customers are abandoning your mobile shopping*. Retrieved from Ventureburn: http://ventureburn.com/2016/01/7-reasons-why-customers-areabandoning-your-mobile-shopping-cart/

Chen, H. J. (2018). What drives consumers' mobile shopping? 4Ps or shopping preferences? *Asia Pacific Journal of Marketing and Logistics.*

Cheong, J. H. & Park, M. C. (2005). Mobile Internet acceptance in Korea. In *Internet Research: Electronic Networking Applications and Policy*, 15(2), 125-140).

Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of retailing, 77(4)*, 511-535.

Chiu, C.-M., & Wang, E. T. (2008). Understanding web-based learning continuance intention: The role of subjective task value. *Information & Management, 45(3)*, 194-201.

Choi, H. K. (2011). "Driving factors of post adoption behavior in data service". *Journal of Business Research*, 1212-1217.

Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior, 86*, 109-128.

Christakis, N., & Fowler, J. (2007). The spread of obesity in a large social network over 32. *New England Journal of Medicine, 357(4),* 370-379.

Criteo. (2015). *State of mobile commerce 2015*. Retrieved from http://www.criteo.com/de/resources/mobilecommerce-q1-2015/

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22, 1111-1132.

Faqih, K. M. (2016). An empirical analysis of factors predicting the behavioral intention to adopt Internet shopping technology among non-shoppers in a developing country context: Does gender matter? *Journal of Retailing and Consumer Services, 30*, 140-164.

Grandhi, S. (2016). India's jumbo jump from e-commerce to mobile enabled services (MES). *A review, Productivityy,56(4)*, 326-331.

Hillman, S., & Neustaedter, C. (2017). Trust and mobile commerce in North America. *Computers in Human Behavior, 70*, 10-21.

Hung, M. (2018). An examination of the determinants of mobile shopping. *International Journal of Electronic Business Management,10(1),* 29-37.

Im, I. K. (2010). "The effects of perceived risk and technology type on users' acceptance of technologies". *Information and Management*, 1-9.

Kerrane, B., Hogg, M., & Bettany, S. (2012). Children's influence strategies in practice: exploring the co-constructed nature of the child influence process in family consumption . *Journal of Marketing Management, 28(7/8),* 809-835.

Khalilzadeh, J.; Ozturk, A. B.; Bilgihan, A. (2017). Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry. *Computers in Human Behavior, 70,* 460-474.

Khoi, N. H., Tuu, H. H., & Olsen, S. O. (2018). The role of perceived values in explaining Vietnamese consumers' attitude and intention to adopt mobile commerce. *Asia Pacific Journal of Marketing and Logistics*.

Kleijnen, M., De Ruyter, K., & Wetzels, M. (2007). An assessment of value creation in mobile service delivery and the moderating role of time consciousness. *Journal of retailing, 83(1)*, 33-46.

Leonard, L. &. (2010). Consumer-to-consumer e-commerce research in infromation systems journals. *Journal of Internet Commerce.*, 186-207.

Lim, S., Xue, L., Ching, C. Y., Chang, L., Hock, C. C., Bee, C. T., . . . Choolan, M. (2011). A study on Singaporean woemn's acceptance of using mobile phone to seek health information. *International journal of medical informatics,80(12)*, e189-e202.

Lu, J., Yu, C. S., Liu, C., & Wei, J. (2017). Comparison of mobile shopping continuance intention between China and USA from an espoused cultural perspective. *Computers in Human Behavior, 75*, 130-146.

Madan, K., & Yadav, R. (2018). Understanding and predicting antecedents of mobile shopping adoption. *Asia Pacific Journal of Marketing and Logistics*.

Mossel, E., Sly, A., & Tamuz, O. (2015). Strategic learning and the topology of social networks. *Econometrica Journal of The Econometric Society, 83(5)*, 1755-1794.

Nysveen, H., & Pedersen, P. E. (2016). Consumer adoption of RFID-enabled services. Applying an extended UTAUT model. *Information Systems Frontiers, 18(2)*, 293-314.

Overby, J. W., & Lee, E. J. (2006). The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. *Journal of Business research, 59(10-11)*, 1160-1166.

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). ES-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of service research, 7(3)*, 213-233.

Park, E. a. (2014). "Factors influencing users' employement of mobile map services",. *Telematics and Informatics*, 253-265.

Peng, S., Yang, A., Cao, L. Y., & Xie, D. (2017). Social influence modeling using information theory in mobile. *Information Sciences, 379*, 146-159.

Rice, R., Grant, A., Schmitz, J., & Torobin, J. (1990). Individual and network influences on the adoption and perceived outcomes of electronic messaging. *Social Networks*, 27-55.

Rogers, E. (1995). Diffusion of Innovations, 4th ed. *Free Press, New York, NY*.

Saprikis, V., Markos, A., Zarmpou, T., & Vlachopoulou, M. (2018). Mobile shopping consumers' behavior: an exploratory study and review. *Journal of theoretical and applied electronic commerce research, 13(1)*, 71-90.

Sigala, M. (2017). Mass customization implementation models and customer value in mobile phones services. In *Managing Service Quality*, 16(4), 395-420.

Tan, G.W.-H., Ooi, K.-B., Chong, S.-C., & Hew, T.-S. (2014). NFC mobile credit card: the next frontier of mobile payment? *Telematics and Informatics*, *31*(2), 292-307.

Turner, J. (1991). Social influence. *Milton Keynes, UK: Open University Press*.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quartely*, 425-478.

Venkatesh, V., Thong, J.Y.L., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157-178.

Venkatesh, V.; Brown, S.A. (2001). A longitudinal investigation of personal computers in homes: adoption determinants and emerging challenges. *MIS Quarterly, 25(1)*, 71-102.

Wong, C. T. (2015). Mobile Shopping: the next frontier of the shopping industry? An emerging market perspective. *International Journal of Mobile Communications.*, 92-112.

Wong, C., Lee, H., Lim, Y., Chua, B., Chai, B., & Tan, G. (2012). Predicting the consumers' intention to adopt mobile shopping: an emerging market perspective. *International Journal of Network and Mobile Technologies, 3(4)*, 24-39.

Wong, C., Tan, G., Loke, S., & Ooi, K. (2015). Adoption of Mobile Social Networking Sites for Learning. *Online Information Review, 39(6)*, 762-778.

Wu, Y.-L., Tao, Y.-H., & Yang, P.-C. (2008). The use of unified theory of acceptance and use of technology to confer the behavioural model of 3G mobile telecommunication users. *Journal of Statistics and Management Systems 11(5)*, 919-949.

Yang, K. (2010). Determinants of US consumer mobile shopping services adoption. *Journal of Consumer Marketing*, *27*(3), 262-270.

Yang, K. (2015). "Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services". *Journal of Consumer Marketing*, 262-270.

Yang, K., & Forney, J. C. (2013). The moderating role of consumer technology anxiety in mobile shopping adoption: Differential effects of facilitating conditions and social influences. *Journal of Electronic Commerce Research, 14(4)*, 334.

Yu, C.-S. (2012). Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the UTAUT Model. *Journal of Electronic Commerce Research, 13(2)*, 104-121.

For instructions on how to order reprints of this article, please visit our website: https://ejbm.apu.edu.my/