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## Determinants of Mobile Commerce Services Adoption by Malaysian Users

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### Abstract

This study aims to determine the factors that influence mobile commerce (m-commerce) services among Malaysian users. The independent variables of this study are perceived usefulness (PU), perceived ease of use (PEoU), perceived trust (PT), and perceived self-efficacy (PSE) while the dependent variable is the adoption of m-commerce services (A). This study employs a quantitative, cross-sectional methodology for its research design. An online survey questionnaire was employed to collect data and yield 200 responses. The findings discovered that PU, PEoU, and PSE significantly influenced the adoption of m-commerce services. This research can provide essential information to companies involved in m-commerce to continuously focus on improving the usefulness of the system, ease of use (i.e., access and usability), and user self-efficacy to rise the adoption of m-commerce in Malaysia. The findings also contributed in terms of allowing researchers to understand the factors that can contribute to the intention to use m-commerce, particularly in the Malaysian context.

**Keywords:** Perceived Usefulness, Perceived Ease of Use, Perceived Trust, Perceived Self-Efficacy, Mobile Commerce, Malaysia.

### Introduction

With the rapid growth of the internet and technology, m-commerce has become one of the most popular business platforms where individuals can purchase or sell virtually anything using their smartphones, tablets, or other handheld devices. Mobile applications feature limited functionality, entertainment, social interaction, and internet-searchable information (Finkelstein et al., 2017; Hsiao et al., 2016). According to Marcom (2020), more than 26 million people in Malaysia have access to the internet, and 80 percent of those between 16 and 64 are already shopping online. Malaysia's m-commerce is growing faster than e-commerce as a whole, which is expected to grow at a rate of 19.7 percent per year until 2023 (Marcom, 2020). This data shows that Malaysian citizen has quickly adapted to the rapidly developing m-commerce. Online shopping apps such as Lazada and Shopee, as well as the growth of Food Delivery Application (FDA) companies such as Foodpanda, MoreFun, and GrabFood, which rely heavily on m-commerce technology, have contributed to the rise of m-commerce in Malaysia, indicated that m-commerce industry has unlimited growth opportunity. To Shin et al (2018); Chen (2020), various competitive channels (e.g., e-commerce, m-commerce, in-

store, and others) are introduced to attract customers and build customer loyalty. However, although more people are ready to conduct online business, and online purchases, and accept the idea of m-commerce, the understanding of “what are the key determinants that influence the adoption of m-commerce among Malaysian users is still under-researched. Hence, this study attempts to fill the research gap by investigating factors influencing the adoption of m-commerce Services among Malaysian users through the technology acceptance model (TAM). TAM is an information system theory applicable to innovative technology environments to understand the adoption and use of emerging technologies by users (Davis, 1989). This theory is widely adopted and discussed in past studies (Kargeti et al., 2022; Kucukusta et al., 2015; Okafor et al., 2016). In addition, additional constructs of perceived trust and perceived self-efficacy are added to the research framework. These constructs are adapted from (Singh et al., 2018). Previously, Research by Singh et al (2018) strengthened the use of TAM in future marketing research by incorporating the model's critical factors as well as additional factors of perceived self-efficacy and perceived trust. Motivated by this, the current study attempts to investigate direct relationship between perceived usefulness, perceived ease of use, perceived trust, perceived self-efficacy, and the adoption of m-commerce services by Malaysian users.

## **Literature Review and Hypothesis Development**

### **M-commerce Services**

Mobile commerce, also known as m-commerce, is the delivery of e-commerce via smartphone, tablet, or other handheld devices. M-commerce has reached practically all areas, including healthcare, entertainment, marketing, and business. Gull et al (2022) claim that m-commerce provides businesses with low-cost and wide functionalities. It enables individuals and businesses to stay connected around-the-clock (Taneja, 2021). Previously, Davis (1989) defines actual technology usage in terms of the frequency and duration of technological use. Users will be satisfied with the technology if they believe it is simple to use and will boost their productivity, as evidenced by actual usage conditions. Indarsin & Ali (2017) stated that m-commerce offers advantages that have a direct effect on the speed of work, performance enhancement and benefits, productivity, and efficiency, and do not cause problems for users. Consequently, the use of m-commerce can be viewed as a true condition of m-commerce use by e-commerce enterprises and customers.

### **Model Development**

Adoption is the choice of an individual to adopt a product or service. This study aims to identify the factors that influence the adoption of M-commerce Services by Malaysian users. M-Commerce refers to both direct and indirect transactions conducted using mobile devices. According to Dzaka et al (2015), m-commerce is very important because it uses the most modern tools to achieve sales and will become a dominant force in global trade due to the multiple services offered, design, and content features. The primary aim of this study is to identify the determinants of mobile commerce (m-commerce) services among Malaysian users and enables the companies involved in m-commerce to continuously focus on improving the usefulness of the system, ease of use (i.e., access and usability), and user self-efficacy to rise the adoption of m-commerce in Malaysia.

Davis (1989) introduces the technologies acceptance model (TAM) to predict user adoption of technology. TAM is one of the most widespread models in information systems research because of its high validity. Perceived usefulness is described as the ability of the technology

to help users execute and accomplish activities more efficiently and effectively. In contrast, perceived ease of use refers to the ability of the technology to perform tasks for users. Several studies (Kargeti et al., 2022; Kucukusta et al., 2015; Okafor et al., 2016) related to TAM have revealed results that perceived usefulness and perceived ease of use are important in the context of technology adoption, which has influenced the adoption of perceived usefulness and perceived ease of use in this study.

In the context of e-commerce and m-commerce, perceived self-efficacy is another proven construct in addition to TAM (Han et al., 2016; Lu, 2014; Riquelme & Rios, 2010; Singh & Srivastava, 2020; Thakur & Srivastava, 2014). Smartphone-based mobile shopping surpasses the usage of a website or application for non-transactional purposes. The wireless nature of transactions made via intermediaries between a seller and a customer emphasizes the role of perceived trust on mobile platforms. Due to the 'on-the-go' nature of m-commerce transactions, Lu et al (2003) conclude that the role of trust is more important in m-commerce than in e-commerce. Therefore, perceived trust and perceived self-efficacy were also included in this study due to their significance to the medium, as indicated by earlier research.

### *Perceived Usefulness*

According to the original technology acceptance model (TAM), perceived usefulness (PU) is the strongest indicator that has a significant impact on information systems (Davis et al., 1989). Perceived usefulness is the belief that the system or technology can improve the work performance of individuals. Previously, perceived usefulness appeared to be significantly associated with the degree of smart wearable device adoption in the United States (Adapa et al., 2017), internet banking adoption in Ethiopia (Belete & Tsegaye, 2018), social media adoption in Malaysia (Ramachandran et al., 2019), intention to use affiliate marketing (Patrick & Hee, 2021), and m-banking adoption (Ramezaninia et al., 2022). In this context, evidence indicates that whenever a user perceives a technology to be useful, their propensity to adopt it will grow. Hence. The above investigations led to the following proposed hypothesis:

H1: Perceived usefulness has a significant positive relationship with the adoption of m-commerce.

### *Perceived Ease of use*

Numerous studies have identified perceived usefulness and perceived ease of use as two of the most important determinants of technology acceptance since perceived ease-of-use play an important role in the early stages of technology adoption (Venkatesh et al., 2012). Davis (1989) asserts that the usage of technology will be effortless because people will be more willing to learn an easy-to-use system, will be able to comprehend its functions quickly and will want to continue using it. Chille et al (2021); Alfurayji et al (2022) found empirically and consistently that perceived ease of use correlates with technology adoption. According to research conducted by Chille et al (2021), perceived ease of use strongly influenced mobile marketing adoption in Tanzania. Consumer-friendly mobile platforms and applications should be developed by mobile businesses in conjunction with business stakeholders. Similarly, Alfurayji et al (2022) found a favourable association between perceived ease of use and the Saudi customers' adoption of e-banks. Based on their findings, the researchers suggested that Saudi e-banks give clients information on how to use e-banking services in order to increase user adoption. On the basis of the preceding literature study, it is hypothesized:

H2: Perceived ease of use has a significant positive relationship with the adoption of m-commerce.

#### *Perceived Trust*

Trust relates to the expectation of others regarding products or services, which influences customers' decisions regarding product or service selection (Venkatesh et al., 2012). Some researchers discovered a strong and positive correlation between perceived trust and technology adoption (Chille et al., 2021; Coskun et al., 2022). According to Chille et al (2021), perceived trust strongly influenced mobile marketing adoption in Tanzania. The researchers asserted that mobile companies in Tanzania should emphasize trustworthy mobile platforms and applications as a means of encouraging the adoption of mobile marketing. Coskun et al (2022) empirically study online payment system adoption determinants and conclude that perceived trust is one of the most important user adoption factors. The researchers believe that when users have sufficient confidence in transaction security, security, and privacy of their information, their trust level rises and they adopt at a higher rate. Based on prior research, the following hypothesis is proposed

H3: Perceived trust has a significant positive relationship with the adoption of m-commerce.

#### *Perceived Self-Efficacy*

According to Ashraf et al (2014), self-efficacy is a person's belief or perception of their competence to use technology or mobile devices to do specific tasks, resulting in cognitive and behavioural changes. Gitau & Nzuki (2014) noted that self-efficacy enables individuals to be more confident when exploring new technologies and performing expected mobile application tasks. Islam et al (2011) empirically validated the importance of perceived self-efficacy in the context of m-commerce adoption. Singh et al (2018) conducted a study on m-commerce adoption and concluded that perceived self-efficacy positively influenced adoption. Researchers (Alalwan et al., 2016; Zhu et al., 2010) confirmed that self-efficacy influences customers' perceptions and desires to adopt new technologies such as mobile commerce. Similar to the concept of self-efficacy, researchers have utilized personal innovativeness as a major element in mobile adoption studies (Han et al., 2016; Lu, 2014; Singh & Srivastava, 2020; Thakur & Srivastava, 2014). Personal innovativeness has been defined as the customer's desire to try new technology (Agarwal & Prasad, 1998). In context of m-commerce, Riquelme & Rios (2010) asserted that the degree of complexity affected customers' perceptions of mobile device usage. Consistent with previous research, it is hypothesized that:

H4: Perceived self-efficacy has a significant positive relationship with the adoption of m-commerce.



Figure 1 outlines the research framework that guides this study.

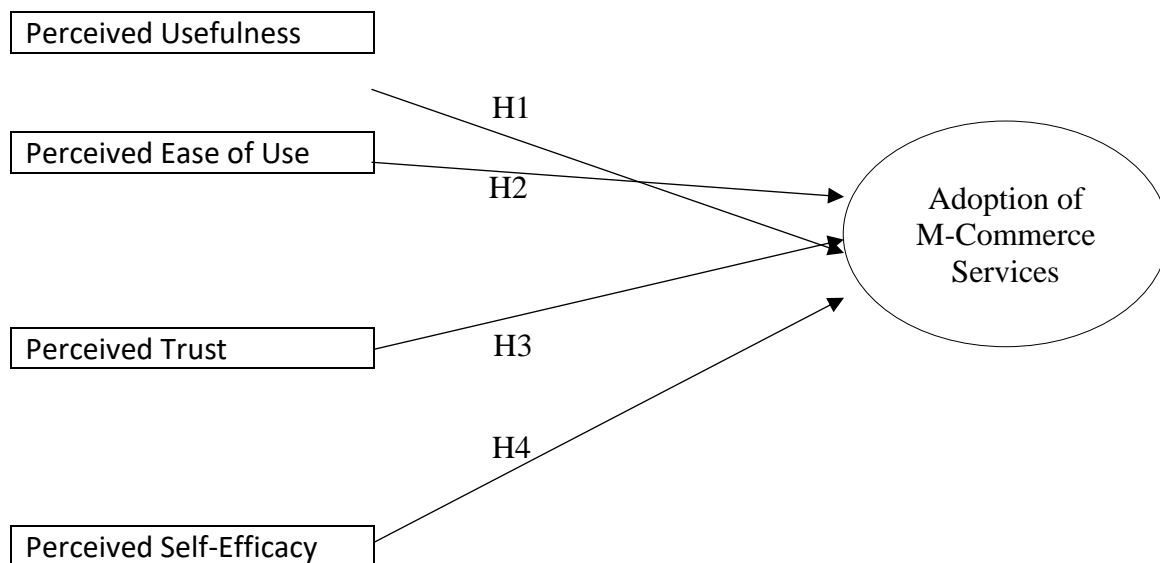


Figure 1. Research Framework

## Methodology

### Population, Sample, and Sampling Procedure

The total population of this study consists of young adults in Malaysia between 18 to 29 years old (Arnett, 2016), who possess mobile devices and use any m-commerce applications or services. This target group is recommended because of their strong adoption rate in smartphone applications, and their highly acknowledged acceptance of new technologies and spending power (Knezevic & Delic, 2017). Due to the huge number of populations, the sampling procedure applied in this research is convenience sampling. Convenience sampling is chosen because it is easy to accomplish by selecting participants because they are generally accessible and easily available (Taherdoost, 2016). An online questionnaire was employed in this study which yield 200 respondents.

### Measures

The measures of the adoption of m-commerce services (5 items) and perceived usefulness (4 items) were adapted from (Singh et al., 2018; Barry and Jan, 2018). The items of perceived ease of use (5 items) and perceived trust (4 items) were adapted from Rahman & Sloan (2017) and Singh et al (2018) while items for perceived self-efficacy (4 items) were adapted from (Singh et al., 2018). A 5-point Likert scale was used to measure the level of agreement for all the study variables.

## Results

### Profile of the Respondents

There were 109 females and 93 males among the 200 responses. The majority of respondents were between the ages of 18 and 21, accounting for 54.5 percent of all respondents. In terms of income, the majority of respondents had incomes of RM1000 or less.

**Measurement Model Assessment**

This study employs a quantitative, cross-sectional methodology for its research design. This study established a measurement model to evaluate the outer loadings, internal consistency, convergent validity, and discriminant validity of the study's constructs. As indicated in Table 1, all outer loadings of the constructs exceeded the value of 0.70 (Chin et al., 2003). Accordingly, all reliability coefficients were found to be greater than the 0.7 threshold value, indicating that the constructs are reliable enough. Next, the convergent validity was evaluated utilizing the average variance extracted (AVE) values; all AVE values obtained were greater than .50, indicating that the constructs were well-established (Hair et al., 2017).

Table 1

*Results of the Measurement Model*

Constructs	Indicators	Loadings	Cronbach's Alpha	Composite Reliability	AVE
Adoption of M-Commerce Services	A1	0.769	0.848	0.891	0.622
	A2	0.797			
	A3	0.806			
	A4	0.783			
	A5	0.789			
Perceived Usefulness	PU1	0.760	0.789	0.863	0.613
	PU2	0.785			
	PU3	0.830			
	PU4	0.757			
Perceived Ease of Use	PEoU1	0.758	0.842	0.888	0.614
	PeoU2	0.798			
	PeoU3	0.779			
	PeoU4	0.841			
	PeoU5	0.738			
Perceived Trust	PT1	0.797	0.828	0.884	0.657
	PT2	0.834			
	PT3	0.771			
	PT4	0.839			
Perceived Self-Efficacy	PSE1	0.840	0.830	0.887	0.613
	PSE2	0.767			
	PSE3	0.786			
	PSE4	0.860			

To assess discriminant validity, cross-loadings was used in this study (Hair et al., 2017). Loadings of the study constructs presented in **Table 2** were well above all of its loadings on other constructs. Hence, discriminant validity has been established.

Table 2

*Cross Loadings*

	Adoption of M-Commerce Services (A)	Perceived Ease of Use (PEoU)	Perceived Self-Efficacy (PSE)	Perceived Trust (PT)	Perceived Usefulness (PU)
A1	0.7691	0.5954	0.5328	0.3417	0.5466
A2	0.797	0.5626	0.6447	0.3428	0.4736
A3	0.806	0.5427	0.5111	0.3447	0.567
A4	0.7827	0.5296	0.4673	0.3875	0.5232
A5	0.7888	0.5248	0.5086	0.3674	0.5393
PEoU1	0.5785	0.7583	0.5869	0.3356	0.6414
PEoU2	0.479	0.7984	0.4748	0.3848	0.508
PEoU3	0.5418	0.7788	0.5169	0.4247	0.6041
PEoU4	0.6073	0.8407	0.5756	0.4152	0.5573
PEoU5	0.5164	0.7376	0.545	0.3216	0.4177
PSE1	0.5676	0.5363	0.8403	0.3795	0.4865
PSE2	0.4781	0.4865	0.7669	0.4759	0.4779
PSE3	0.4829	0.581	0.7857	0.3693	0.4158
PSE5	0.6518	0.6404	0.8601	0.3764	0.5389
PT1	0.2694	0.4239	0.353	0.7966	0.2803
PT2	0.4261	0.4709	0.5092	0.8338	0.4678
PT3	0.3139	0.2936	0.3174	0.7714	0.2063
PT4	0.4133	0.3642	0.3662	0.8394	0.2673
PU1	0.5184	0.4974	0.4441	0.27	0.7598
PU2	0.4601	0.5615	0.3958	0.2757	0.7845
PU3	0.5598	0.5489	0.506	0.3041	0.8302
PU5	0.5536	0.5865	0.4969	0.3599	0.7567

**Structural Model Assessment**

All 200 obtained data were utilized in an evaluation of the structural model. According to Table 3, only three of the four hypotheses are supported by statistically significant relationships. Specifically, it was discovered that perceived usefulness has a significant and positive relationship with the adoption of m-commerce services PUA (=0.288, t=2.935). Similarly, the path of PEoU (=0.262, t=2.194) revealed that perceived ease of use was also significantly and positively related to the adoption of m-commerce services. The path of PSE (=0.291, t=3.160) confirmed the significance of the relationship between perceived self-efficacy and m-commerce service adoption. Therefore, H1, H2, and H4 were confirmed. In contrast, there was no significant relationship between perceived trust (=0.073, t=0.855) and the adoption of m-commerce services. Therefore, this study's H3 was not supported.



Table 3

*Structural Model Assessment and Hypothesis Testing*

Hypothesis	Path	Std. Beta	Std. Error	t-value	Result
H1	PU→A	0.288	0.098	2.935***	Supported
H2	PEoU→A	0.262	0.119	2.194***	Supported
H3	PT→A	0.073	0.085	0.855	Not Supported
H4	PSE→A	0.291	0.092	3.160***	Supported

Note: Significance level; \*\*\*p<0.01

### Discussions and Conclusion

This study posited that factors influencing the adoption of m-commerce services by Malaysian users were perceived usefulness, perceived ease of use, and perceived self-efficacy. On the other hand, perceived trust has been found to be statistically not significant.

Perceived usefulness was significantly and positively related to the adoption of m-commerce services (=0.288, t=2.935). By this, Davis et al (1989) contend that perceived usefulness is the strongest indicator with a significant impact on information systems. Recent research by Ramezaninia et al (2022) provides solid evidence in support of this final result: adoption of technology is strongly influenced by perceived usefulness because it reduces necessary time and enhances work effectiveness. Adapa et al (2017); Ramachandran et al (2019) also denoted that usefulness is the most contributing factor in the adoption. Belete & Tsegaye (2018) claimed that the usefulness and quality of the new technology must be carefully communicated to potential users, as a positive sense of usefulness will encourage the rapid adoption of technology.

Next, the results demonstrated that perceived ease of use is substantially connected to m-commerce services adoption (=0.262, t=2.194). Consistent with previous research by (Chille et al., 2021; Alfurayji et al., 2022). We may conclude that if m-commerce services can be utilized with less effort, then their rate of acceptance will increase. Therefore, they must operate with the least amount of work possible. As suggested by Chille et al (2021), mobile companies should collaborate with business stakeholders to produce consumer-friendly mobile platforms and applications.

In addition, the findings revealed that perceived trust had no substantial impact on the adoption of m-commerce services. This finding is in contradiction with those of Chille et al (2021); Coskun et al (2022) but consistent with those of Wei et al (2009) and Kurnianingsih (2022). Kurnianingsih (2022) stated that consumers will not accept m-payment if they lack trust in companies associated with the m-payment service offerings. This occurs frequently when individuals refuse to provide their personal information to m-payment companies.

In accordance with the findings of Zhu et al (2010); Islam et al (2011); Alalwan et al (2016); Singh et al (2018), the study also demonstrated that perceived self-efficacy (=0.291, t=3.160) was substantially connected with the adoption of m-commerce. A high level of self-efficacy among potential users helps them to adopt mobile commerce constantly. Moreover, Singh et al (2018) found in their study that consumers' confidence influences their acceptance of and the likelihood of successfully adopting mobile commerce.

This study provides a comprehensive understanding of the relationship between perceived usefulness, perceived ease of use, perceived trust, perceived self-efficacy, and adoption of m-commerce services by Malaysian users. It provides a clearer direction for companies involved in m-commerce to continuously improve the system's usefulness, ease of use (i.e. accessibility and usability), and user self-efficacy to increase m-commerce adoption in Malaysia.

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