Malaysian Consumer's Attitude Towards Mobile Payment in Supermarket

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ABSTRACT

This study explores the core drivers of using mobile payment in the supermarket from the consumer's perspective. Hence, perceived usefulness (PU), perceived ease of use (PEU), perceived security (PS), social influence (SI) and personal innovativeness (PI) were examined to identify the relationships with the consumers' intention to use (ITU) mobile payment service. The Extended Technology Acceptance Model (TAM) was used to construct the research framework of this study. A total of 220 respondents were recruited mainly from Klang Valley and Selangor as the survey covered the general population in Malaysia to complete the questionnaire. In this study, the data was interpreted using statistical software. Findings concluded that all factors have significant impact in influencing the consumers' intention to use mobile payment in supermarket in Malaysia. The result of the study contributes exceptional judgment to the mobile service providers, supermarket marketers and software developers to identify the needs of the consumers as well as to create and improve their competitive strategies that target potential mobile payment users in an effective way.

Keywords: Mobile payment, Intention to use, Technology Acceptance

INTRODUCTION

Technology is transforming people's daily lives, allowing them to benefit increasingly from its advancement [1]. Mobile technology, in particular, plays a significant role in this transformation. Initially, mobile phones were limited to making and receiving calls, but they have since evolved into smartphones that support not only phone calls but also email access, internet browsing, file downloads, and a wide range of applications [2]-[3].

In the 21st century, the rapid development and widespread adoption of mobile devices and mobile communication technology have created significant opportunities for the growth of mobile commerce [4]. Mobile payments, as a new payment method, offer exciting business opportunities for many organizations. These services enable consumers to make point-of-sale payments using mobile devices such as smartphones and personal digital assistants (PDAs) [5]. The increasing use of mobile devices provides a solid platform for the implementation and expansion of mobile payment services. Furthermore, some financial institutions are already using mobile technology to transmit financial information, allowing them to meet customer needs in a mobile and flexible manner, regardless of location.

Convenience is the primary advantage, along with mobility, cost-effectiveness, and location-free services [6]–[7]. However, mobile payments are still not widely adopted globally due to several challenges, including security issues, privacy concerns, lack of standardization, and suitability of use. Additionally, intense competition exists within the mobile payments market, as different industry sectors such as mobile network operators and financial institutions compete to dominate this space.

Although mobile technologies are increasingly adopted, mobile payment services have not gained significant traction in Malaysia [8]. Despite their potential to become an important form of financial transaction, mobile payment systems in Malaysia are still in their early stages and lack widespread recognition and acceptance among consumers. Growth in this sector can only be driven if consumers and long-term businesses, such as retailers, recognize the benefits for the payment industry. A key factor in the market breakthrough of the

Malaysian mobile payment industry is consumer attitudes toward mobile payment services. Therefore, it is essential to study the factors that influence consumers' intentions to use mobile payment services in Malaysia, in order to encourage the adoption of mobile payments as an innovative and viable alternative payment method

LITERATURE REVIEW

Mobile technology has become an integral part of life [9]–[10]. Mobile payment technology further enhances opportunities for customers by combining existing payment methods with mobile technology, thereby increasing the effectiveness of transactions and reducing costs compared to traditional methods. To make a mobile payment, consumers need only a mobile device with internet access. The primary distinction between mobile payments and other payment forms is that mobile payments use mobile devices as a core component of the process [11]– [12].

The first key term to clarify is "mobile payment." There is no universal definition of mobile payment, but it is generally understood as a way to electronically process payments using a mobile device [10]– [11], [13]. This mobile device acts as the differentiating characteristic of mobile payments compared to other types of transactions. Mobile payments represent the next stage in the evolution of electronic payment methods and can be used for various types of payments, including commuter train tickets, flight bookings, groceries, and restaurant bills [14]– [15]. Reference [16] expand this definition to include the use of wireless and other communication technologies, while [17] define mobile payments as any payment initiated, activated, or confirmed using a mobile device.

This study defines mobile payments as a type of payment transaction conducted through an electronic process, where consumers use mobile communication technologies along with mobile devices for initiation, authorization, or completion of the payment [18]. Specifically, this study focuses on proximity payments made via mobile devices at the point-of-sale (POS).

As this study examines mobile payment adoption from a consumer perspective, mobile payments can be categorized based on the consumer experience. The first type of mobile payment involves transferring money between individuals using mobile devices. The second type is paying for goods and services purchased online using a mobile device. The third type is paying for products or services at a POS using a mobile device.

Proximity mobile payments are typically used at POS terminals and vending machines, employing RFID (Radio Frequency Identification) or NFC (Near Field Communication) technology. In these cases, consumers use their mobile devices to make a payment without needing cash or a physical credit or debit card. Instead, they use proximity technology, such as NFC, which allows a contactless exchange of financial information through a secure mobile platform. From the consumer's perspective, it resembles a contactless card transaction, without the need to physically hand over the card. The entire payment process takes place in front of the customer and the payment device remains in the customer's possession, enhancing security and convenience [19].

NFC technology, a type of short-range wireless technology that works within a range of about three inches, is optimized for intuitive, secure, and easy communication between devices without requiring user configuration [17]. A significant advantage of NFC technology is that it aligns with existing contactless payment standards, which are based on EMV global financial standards, ensuring a higher level of security. NFC-enabled mobile phones can serve as electronic wallets, eliminating the need to carry physical credit or debit cards [20]. Proximity payments can be especially beneficial in situations where time is limited or where using physical cards presents risks or difficulties [21]. This research focuses on proximity mobile payments using NFC-enabled devices and contactless payment infrastructure, which is particularly suitable for the supermarket industry [22].

Mobile payments can be performed by using either a mobile device or scanning a barcode within a few inches of a contactless POS terminal. In NFC-based transactions, a consumer simply taps the mobile phone on a contactless-enabled POS terminal to complete the payment. The application and payment account information are securely encrypted and loaded into a dedicated area on the phone. The built-in NFC technology in the

mobile phone communicates with the merchant's POS system, similar to existing contactless payment devices. In the case of barcode-based payments, additional steps are involved: first, the consumer downloads the merchant's mobile application, registers as a user, and logs in to their account. The application then displays a barcode representing the customer's prepaid account information, which can be scanned at a POS terminal for payment. After scanning, the app updates the account information and balance [23]. An example of a barcode payment is the mobile payment option available at Starbucks, where customers use the app to scan and pay. Notably, barcode payments are not directly linked to a bank account.

THEORETICAL FRAMEWORK

This study develops its hypotheses based on the Technology Acceptance Model (TAM), which incorporates perceived usefulness and perceived ease of use as key factors influencing customers' intention to adopt mobile payment technology. Additionally, the study integrates a social construct adapted from the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB). Alongside technology-related factors, individual user characteristics are also considered. Therefore, this study includes additional factors such as security, social influence, and personal innovativeness.

METHODOLOGY

This study employed a quantitative research method, utilizing surveys for data collection due to the nature of the research and constraints related to time and funding. According to Reference [24], the survey method is the most widely used and fundamental strategy in business and management research.

For this method, a set of questionnaires was prepared, and responses were collected through two approaches: physical distribution of questionnaires and quota sampling via Google Forms. These methods were chosen as they are economical and allow for easy comparison of data [25]. The purpose of this study is to identify the potential factors influencing consumer attitudes towards mobile payment in Malaysia. Data collection primarily took place in the Klang Valley and Selangor, targeting the general population of Malaysia. Respondents were individuals who owned a smart mobile device and had shopped in a supermarket at least once.

During the data collection process, the researcher personally distributed hard copies of the questionnaires to respondents. Additionally, soft copies of the questionnaire were distributed via Google Forms through phone and email. The researcher also sought assistance from family, friends, colleagues, and classmates to share the questionnaire, aiming to gather opinions from a diverse range of individuals. A total of 250 questionnaires were disseminated, of which 220 were completed.

The questionnaire, designed to measure consumer attitudes towards mobile payments in supermarkets, was adapted from previous studies. Respondents rated their perceptions on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Questions on perceived usefulness were adopted from [26], while questions measuring ease of use were adopted and adapted from [26] and [27], respectively. Questions on perceived security and social influence were adapted from [27], and questions measuring intention were adapted from [28]. Quantitative data analysis methods were employed to analyze the data and test the hypotheses. Data were coded and analysed using IBM Statistical Package for Social Sciences (SPSS). Several statistical techniques were applied to assess the reliability of the research instrument and to test the hypotheses.

RESULT

Multiple regression analysis was used to examine the relationship between the independent variables perceived usefulness (PU), perceived ease of use (PEU), perceived security (PS), social influence (SI), and personal innovativeness (PI) and the dependent variable, intention to use (ITU). A stepwise multiple regression analysis was conducted to test hypotheses H1 through H5. Table 1 presents the regression statistics for the relationship between the independent variables and intention to use. The R-squared value indicates that 70.4% of the variation in intention to use is explained by this set of variables. Additionally, the results highlight the relative importance of the independent variables in the overall model. The values for PU, PEU, PS, SI, and PI are

positive, indicating a positive relationship between each predictor and the outcome. The B values indicate the extent to which each predictor affects the outcome, assuming the effects of all other predictors remain constant.

Table 1 Regression statistics for Independent Variables to ITU[a]

Independent Variable	Expected Sign	Standardized Coefficient Beta	Sig. (p-value)
(Constant)			0.28
PU	+	0.287	0
PEU	+	0.174	0.003
PS	+	0.258	0
SI	+	0.17	0
PI	+	0.175	0
Statistic	**Value**		
R-Square	0.704		
Adjusted R-Square	0.697		
F	101.95		
Sig. of F	0		

a. Dependent Variable: Intention to Use

Perceived security (PS), with a t-value of 5.253 and a significance value of 0.000, demonstrates that perceived security is a major factor influencing consumers' attitudes toward mobile payment in supermarkets. The findings indicate that the higher the perceived security, the greater the consumers' intention to use mobile payment in supermarkets. Furthermore, the independent variable significantly predicts the dependent variable, with an F-value of 101.95 and a significance value less than 0.05. These results confirm that the model significantly enhances the ability to predict the outcome variables.

Table 2 Summary of Hypothesis Testing Hypothesis Expected Sign Test Result

H1: PU will have a positive effect on the intention to use Mobile Payment.	+	ACCEPT
H2: PEU will have a positive effect on the intention to use Mobile Payment.	+	ACCEPT
H3: PS will have a positive effect on the intention to use Mobile Payment.	+	ACCEPT
H4: SI will have a positive effect on the intention to use Mobile Payment.	+	ACCEPT
H5: PI will have a positive effect on the intention to use Mobile Payment.	+	ACCEPT

Additionally, the hypothesized relationships were evaluated based on the results of the path analysis using an extended TAM model, which was adapted from the TRA and TPB models. Table 2 presents a summary of the

hypothesis assessments for this study. All hypotheses are supported with positive and statistically significant values.

DISCUSSION AND LITERATURE

The study found that Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Security (PS), Social Influence (SI), and Personal Innovativeness (PI) positively and significantly influence customers' intention to use mobile payments in supermarkets. Among these, PU has the strongest, positive, and direct effect on consumers' intention to use mobile payments. Consumers are more likely to adopt this payment method when they perceive significant advantages, such as speed, convenience, and flexibility, compared to traditional methods. This finding aligns with prior studies which emphasize PU as a critical factor in shaping intention to use [13], [15], [19].

Perceived ease of use also showed a significant positive relationship with customers' intention to use mobile payments. This result can be attributed to the similarity between paying with a smartphone and using a physical card, both involving simple actions like waving the device over a terminal. Respondents viewed mobile payments as easier than using plastic credit or debit cards. This finding supports prior studies reporting a positive correlation between PEU and intention to use [13], [15], [19]. Moreover, the demographic characteristics of respondents influenced this result. For instance, 42.3% of the respondents were middle-aged adults (36–50 years), who generally have less experience with new technology, making ease of use a significant factor in influencing attitudes toward mobile payment. Efforts to simplify mobile payment services could enhance motivation and actual usage, particularly during the early stages of exposure. However, hands-on experience and clear guidelines are essential to help consumers operate mobile payment systems effectively.
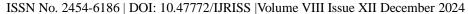
Perceived Security (PS) was found to significantly influence intention to use mobile payments, consistent with previous studies [11], [21], [29]. PS reflects consumers' confidence in the security of their transactions and the reliability of payment processing. Many consumers already trust physical cards, as evidenced by their frequent use of debit and credit cards [30]–[31]. To boost confidence in mobile payments, banks and service providers must ensure robust security systems. Measures such as mobile digital signatures, secure passwords, and emergency services to halt transactions in case of device loss can enhance trust. Continuous improvements in security systems are crucial to maintaining consumer confidence in online transactions.

Social Influence (SI) also significantly affects intention to use mobile payments, highlighting the impact of family and friends on adoption decisions [32]. Younger respondents (aged 20–35) are particularly influenced by their social circles, making SI a critical factor in this demographic. Service providers can leverage this dynamic by considering the opinions and behaviours of consumers' social networks to promote adoption. Prior research [33]– [34] similarly identifies the importance of attitude and social influence in technology acceptance.

Lastly, Personal Innovativeness (PI) was found to positively and significantly influence intention to use mobile payments. Respondents with higher PI levels are more likely to embrace new technologies. This finding aligns with prior studies [31], [35]–[36] that identify PI as a significant predictor in the adoption of mobile services. Consumers' willingness to explore and engage with new technologies plays a vital role in shaping their behavioural intentions. This study underscores the importance of these factors in influencing mobile payment adoption, providing valuable insights for service providers and marketers aiming to enhance usage rates.

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