

## PERCEIVED SECURITY, SUBJECTIVE NORM, SELF-EFFICACY, INTENTION, AND ACTUAL USAGE TOWARDS E-PAYMENT AMONG UPM STUDENTS

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### ABSTRACT

*The purpose of this study is to examine the factors contributing to the intention to adopt e-payment among students of Universiti Putra Malaysia (UPM). This research focuses on perceived security, subjective norm and self-efficacy as the independent variables developed based on Theory of Planned Behavior (TPB). The relationships between variables with the intention to adopt e-payment are then explored in this study. Next, the correlation between intention to adopt e-payment and the actual usage of e-payment is also examined. In addition, the gender difference in the intention to adopt e-payment among UPM students is determined in this research. A total of 200 UPM students participated in this study which they are drawn by using systematic sampling. The data are collected through a set of self-administered questionnaire. The findings demonstrate that UPM students have moderate level of perceived security towards e-payment system. However, the subjective norm and self-efficacy of UPM students regarding e-payment are of high level. Meanwhile, UPM students have a high level of intention to adopt e-payment but only moderate level for the actual usage of e-payment. This study further finds out that there is no gender difference in the intention to adopt e-payment among UPM students. Lastly, the findings of this study conclude that perceived security ( $r=0.620$ ,  $p=0.000$ ), subjective norm ( $r=0.0.269$ ,  $p=0.000$ ) and self-efficacy ( $r=0.264$ ,  $p=0.000$ ) are significantly related to intention to adopt e-payment among UPM students. Meanwhile, the intention to adopt e-payment has strong positive effect on the actual usage of e-payment ( $r=0.708$ ,  $p=0.000$ ). Therefore, it will help the e-payment service providers, industry players, policy makers and consumers in determining the key predictors of intention to adopt e-payment. Future researches are recommended to also study about the adoption on business side and take into account of other factors for more comprehensive understanding on intention to adopt e-payment among consumers.*

Keywords: Perceived Security, Subjective Norm, Self-Efficacy, Intention, E-Payment

### INTRODUCTION

The digital innovations have also bring along with vigorous changes in the world of business which business transactions were eliminating cash-based transactions and constantly switching to electronic-based transactions that provide convenient, fast, secured and cost effective payment method (Premchand & Choudhry, 2015). Consequently, there is an emergence of current trend of “going cashless” among individuals, organizations and government operations while forming a cashless society has been the ultimate goals in many countries (Odi & Richard, 2013).

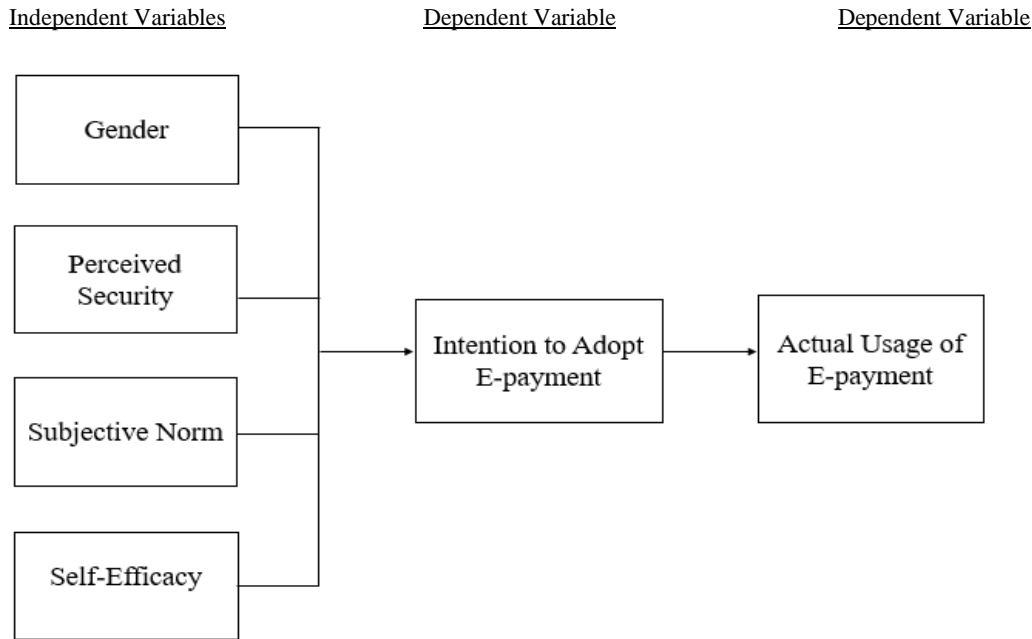
Literally, e-payment represents any kind of payment that does not involve any coin, bank note and paper cheque (Panurach, 1996). E-payment has also been defined as a payment channel or platform utilized to pay for goods and services purchase. online by making any payment over the internet (Roy & Sinha, 2014). Teoh, Chong, Lin, & Chua (2013) regard e-payment as any transfer of an electronic value of payment from one party to another through an electronic medium whereby the individuals are able to remotely access the transactions over an electronic network.

As a swiftly developing country, Malaysia has undertaken reforms in the country’s payment system after the Asian financial crisis, as evidenced by the Malaysian Central Bank’s mapping of the country’s future financial sector landscape in its Financial Sector Master Plan 2001 (The Central Bank of Malaysia, 2000). According to Teoh et al. (2013), there are two major e-payment systems used in Malaysia, namely large value payment system (SIPS) which includes real-time electronic transfer of funds and securities system (RENTAS), and retail payment system which comprises three categories. The first category is retail payment systems (e.g. national cheque information clearing system, shared automated teller machine (ATM) network, e-debit, Interbank GIRO, financial process exchange, and direct debit), followed by retail payment instruments (e.g. credit card, charge card, debit card, e-money), and retail payment channels (e.g. ATM, internet banking, mobile banking, and payment). These systems is growing gradually that economies also benefit from this.

Despite the advancement attained in the e-payment infrastructure, Malaysia remains a high number of users of cash and cheques especially when benchmarking other top cashless countries. According to Central Bank of Malaysia (2017), the usage of cheques in Malaysia per capita has reduced from 6.9 in 2011 to 4.2 in 2016. It is however still considered as high when compared to countries like Sweden, Norway and Finland where their cheques usage is extremely low with only less than 0.1 cheques per capita. According to the central bank for both countries, the number of ATM cash withdrawal per capita for the year 2016 in Malaysia is 24.4 while in Sweden is only 13.7. This indicate a higher cash usage in Malaysia whereby many of the nations would choose to withdraw cash for point of sale transactions instead of utilizing the e-payment services provided for example, paying with a credit card. It can be clearly seen that although e-payment has gained increased acceptance in Malaysia, it has not been fully utilized and adopted by all nations. Therefore, understanding the key factors affecting e-payment adoption among nations will be important for completely migrate to e-payment.

**THEORETICAL AND RESEARCH FRAMEWORK**

In order to gain an improved understanding on the determinants of e-payment adoption, an operational research framework is developed for this based on TPB. Figure 1 shows the research framework of current study developed specifically to study the relationship between four independent variables (i.e., gender, perceived security, subjective norm, and self-efficacy), intention to adopt e-payment and actual usage of e-payment among UPM students.



**Figure 1: Research Framework for the Study**

In the proposed research framework, three of the determinants affecting intention as suggested by TPB are included. The individual’s attitude towards e-payment adoption is examined in term of the perceived security of e-payment which indicates one’s beliefs regarding the security level of the system. In this study, subjective norm is also included as one of the independent variable to study on one’s perception regarding how most of the people with closed relationship perceive on whether he or she should adopt e-payment. Besides, self-efficacy as one of the perceived behavioural control which refers to one’s perceptions and confidence level on his or her necessary skills, knowledge and abilities to perform e-payment independently is proposed as the last independent variable in this research. Lastly, gender has been included as one of the independent variable in this research so as to identify the gender difference in intention to adopt e-payment among UPM students.

**LITERATURE REVIEW**

**Gender**

Venkatesh and Morris (2000) proposed that “male and female behave differently in their information handling and the utilization of socially constructive structures on technologies adoption”. Many studies carried out to study about technology acceptance have further established that men tend to be more motivated by the usefulness of the technology, women are however influenced by their opinions on the ease of use of the technology (Venkatesh & Morris, 2000; Ong & Lai, 2006; Goh, 2011). According to Wood (2005), male generally have higher willingness to try out and adopt a newly introduced technology than that of female. Similarly, Goh (2011) also found a notably lower degree of usage even in those female users who accepted and adopted the technology when compared to their male counterpart. On the other hand, some other studies found that gender has only diminutive and insignificant effect on the acceptance of a new technology system (Bigne et al., 2005). Besides, another study by Calisir et al. (2009) also revealed that gender do not affect the competency, experience and acceptance in new enterprise resource planning systems, but influence only the attitude towards the new technology. Based on these arguments, the following hypothesis is established in this study:

**Perceived Security**

Perceived security is defined as the customer’s perceptions and subjective valuations on a system security, and how well they are protected against potential risks (Linck et al. 2006). According to Tsiakis & Sthephanides (2005), users will be most likely to

refuse in e-payment transactions if the perceived security towards the system is extremely low. In contrast, consumers who perceive payment cards to be highly secured tend to use cards more frequently than cash. Moreover, a study done by Arango et al. (2014) on among Canada consumers show that cash is more likely to be used as preferred payment method over payment card due to the lacking of confidence on security and the fear of fraud at POS system. . Cheney (2010) further revealed that the increment of system security incidents could potentially exert harmful consequences on the level of confidence in e-payment instruments among consumers. However, in another research done by Ching & Hayashi (2010) on integrating perceived security as a descriptive variable across payment instruments, the findings showed insignificant effect of perceived security towards intention to adopt e-payment. Based on the past literatures, the following hypothesis is proposed:

### **Subjective Norm**

Subjective norm is defined as individuals' perceptions about how most of the people who they think are important or have closed relationship with, would think that whether they should perform a certain behaviour (Fishbein & Ajzen, 1975; Park et al., 2006). Findings by Ravi, Carr & Sagar (2007) show that subjective norm has a positive correlation with the intention to adopt retail banking services among consumers. Another study done about the acceptance of e-broker system has also confirms that subjective norm exerts a strong positive impacts on the intention to make full use of the new system (Bhattacharjee, 2000). In the context of Malaysia, a study was done by (Selvanathan, Devi Krisnan & Goh, 2017) to analyse on the factors affecting adoption of internet banking by bank consumers and he findings indicate that there is a positive relationship between subjective norms towards the adoption of internet banking. The subjective norms were shown to be more efficient and dominant towards new and potential adopters (Nasir, Wu, Yago, & Li, 2015). This is caused by the fact that inexperienced and prospective adopters and users are deficiency of self-experience and have a tendency to depend on others' counsels and information before adopting an innovation. Based on the discussion, the following hypothesis is established:

### **Self-Efficacy**

Self-efficacy is suggested by social cognitive theory as the perceptions of a person himself on his ability to successfully realize a particular behaviour (Bandura, 1986). Besides, Bandura (1986) propose that one's perception on his or her abilities will increase the possibility of completing a task successfully. This is because individual with higher confidence on his or her capability may perceive a task as easier than those who has lower confidence level. In the context of new technology system, an individual with high capability and self-efficacy may appraise a system as easier to use and have a higher intention to fully adopt a system in the long run. In contrast, the persons perceiving lower self-efficacy will be more resistant to a new technology adoption. This is justified by Dinev et al. (2009) who found that new users that have adequate knowledge and skills in technology system are more confident and adaptable when dealing with newly introduced system. In the context of Malaysia, Al-Haderi (2013) conduct a research to pinpoint the factors affecting the acceptance of technology in public sector employees and include self- efficacy as one of the variables. The findings indicate that self-efficacy has a strong positive effect on the behavioural intention to adopt the technology as well as the actual usage of the technology. This study further explained that the positive effects of self-efficacy on acceptance of technology is indirect as it is done through the influence of perceived usefulness and perceived ease of use of the technology. Based on the past findings, the following hypothesis is formulated:

### **Intention to Adopt E-Payment**

According to Liu & Guo (2008), the adoption of product and services can be explained in terms of its execution, habit, application, or fulfillment. Many researchers found that actual adoption is hard to be measured exactly by itself (Schuitema, Anable, Skippon, & Kinnear, 2013), and owing to that, most of the studies related to the technology or innovation have investigated the intention as a predictor of adoption (Irani, Dwivedi, & Williams, 2009). Behavioural intention is considered as an indicator of actual behaviour (Fishbein & Ajzen, 1975) as the actual behaviour is found to be directly and closely affected by behavioural intention. According to Ajzen (1991), intention is anticipated to play an essential role in controlling the motivational factors that will be contributing to the actual behaviour. According to Ajzen (1991), the stronger intention to deal with the behaviour will result in the higher possibility that an actual behaviour will be performed. Kim, Chan & Gupta (2007) focused on intention in order to investigate the mobile internet adoption in Japan while Yu (2012) used intention to study on the mobile commerce adoption among consumers in Saudi Arabia. Schöndienst, et al. (2011) had also implemented behavioural intention as an indicator to the actual microblogging adoption among enterprises. Based on careful literature review, intention to adopt e-payment will be used as the main dependent variable in this study to better measure the e-payment adoption respondents.

### **Actual Usage of E-Payment**

Technology Acceptance Model (TAM) and other similar theories often measure technology acceptance in term of the use of system, the terms actual usage and acceptance are therefore generally known as equal and can be used interchangeably. On the other hand, TPB also proposes that intention is the proximal predictor to the actual behaviour (Ajzen, 1991) while Fishbein & Ajzen (1975) further explain that intentions and behaviour are considered to be strongly related when they are measured at the equal level of specificity. By adopting TAM in their study, Shih & Huang (2009) examine the relationship between behavioural intention and actual usage in terms of enterprise resource planning implementation and the findings showed that intention aroused will directly lead to the actual usage. Furthermore, some other prior studies have also found empirical supports for the correlation between behavioural intention and actual usage of information systems (Vatanasakdakul et al., 2010; Mun & Hwang, 2003; Venkatesh & Davis, 2000). Based on these discussion, the following hypothesis is suggested:

## **METHODOLOGY**

### **Research Design**

This is an explanatory study on the adoption of e-payment and factors affecting it among students in University Putra Malaysia (UPM). This research examined both the independent and dependent variables through a cross-sectional study using sample survey which data were collected from different groups of students in UPM at one specific point in time. A survey research was employed in this study by distributing a set of standardized questionnaires to samples that are drawn in such way that could be generalized to all UPM students.

Besides, descriptive research is carried out to answer the five questions of who (i.e., UPM students), what (i.e., their intention to adopt e-payment, actual usage of e-payment perceived security on e-payment, subjective norm about e-payment and self-efficacy in performing e-payment), where (i.e., in UPM), when (i.e., present year, 2017), and how (i.e., the relationship between dependent variable and independent variables and gender difference). This study is conducted in the form of quantitative research as the empirical assessments consist of numerical measurement and analysis. The independent and dependent variables are used to test the hypotheses and to test the relationships among measured variables (i.e. intention to adopt e-payment, actual usage of e-payment, perceived security, subjective norm and self-efficacy) and to identify gender difference in intention to adopt e-payment among UPM students with the purpose of explaining, predicting, and controlling phenomena.

#### **Research Location**

This study has chosen UPM as the research location because the targeted respondents are the students in UPM. According to a research done by Farag, Schwanen, Dijst & Faber (2007), young consumers have more positive attitude towards internet experience as compared to aging consumers. Young people tend to be more internet and technology savvy and more likely to adopt any technology innovation including e-payment. Besides, university students are considered as the high potential adopters of e-payment as they are highly relying on information technology for their daily activities. In addition, undergraduate students in UPM as the point of interest helps also to narrow down the scope of this research.

### **Sampling Design**

The target population for this research is the 14,063 undergraduate students in University Putra Malaysia. A total of 200 respondents which are students from UPM are included in this study. This sample size is deemed to be sufficiently representing the whole population of UPM students. Next, the primary data is collected to precisely answer the research questions of this study. A survey research on the samples is conducted by distributing questionnaire with a set of structured question was asked according to the defined variables.

Probability sampling method is employed in this study so that the results can be generalized from the sample to the population of UPM students. The sampling technique used to select the sample for this study is systematic sampling in which a probability sample can be drawn without complete and prior knowledge of the sampling frame. Systematic sampling also spread the members selected for a more even measurement and tend to be more representative of the entire population. By using systematic sampling, the sampling is done by selecting every fifth student who entered the UPM library main entrance in succession after randomly selected the first person as the starting point. With this concept, the self-administered questionnaires are distributed to a total number of 200 respondents.

The survey research is carried out in UPM main library which is also known as Perpustakaan Sultan Abdul Samad (PSAS) instead of library of Engineering Faculty and Medicine and Health Science Faculty. This is because it is located in main campus of UPM and most of the UPM students from different faculties with different background of study would pay a visit to do their research, self-learning and revision. Hence, sampling done in UPM main library would be more appropriate for the findings to be generalized to the entire population of UPM students.

### **Research Instrument**

As the current research aims to identify the key predictors of e-payment adoption among UPM students, a survey research is done by using questionnaire as the main instrument. Items selected for the constructs are carefully adapted from past researches as their reliability and validity had been verified through prior studies and peer reviews. Simple English is used in this questionnaire to allow a better understanding and a more precise input.

The questionnaire started with section one that consisted of five questions on the demographic profile of the respondents. This section aims to collect some personal information includes respondent's gender, age, race, faculty, and year of study. Most of the information in this part are categorical data. For example, the answers for races part had been categorized into four alternatives which were Malay, Chinese, India and Others. The information regarding the age of respondents were collected using open-ended question, then classified into age group. Other items in section one are in the form of closed-ended questions format except the details of faculty and age of respondents. The measurement scales used in this section are nominal scale which its values represent categories with no intrinsic ranking for example, the gender and race of respondents.

**Pre-Test**

Before distributing the actual questionnaires, a pilot study or pre-test was carried out to ensure the validity and reliability of the questionnaire constructed for this study. A small sample size of 30 respondents were randomly selected to be involved in the pre-test study. According to Sekaran (2003), Cronbach’s alpha with less than 0.70 was considered to be poor while those fell more than 0.70 was acceptable. The reliability of all items in the questionnaire were determined and tabulated in the table 1 below.

**Table 1: Results for Reliability Analysis**

Section	Variables	Cronbach’s Alpha
2	Perceived Security	0.836
3	Subjective Norm	0.856
4	Self-Efficacy	0.843
5	Intention to Adopt E-Payment	0.808
6	Actual Usage of E-Payment	0.880

**Data Analyses**

The data collected from the respondents were analysed using a predetermined statistical procedure namely the Statistical Package for Social Science (SPSS 21.0). Statistical tests were applied to check the reliability and normality of the data and correlation analysis was conducted in order to see the impact of independent variables over the dependent variable. The objective criteria also evaluated the outcomes based on the hypothesized research framework.

Firstly, descriptive statistical analyses were used to describe responses of the sociodemographic information of respondents (i.e., gender, age, race, faculty, and year of study), the independent variables (i.e., perceived security, subjective norm, and self-efficacy) and also the dependent variables (i.e., intention to adopt e-payment and actual usage of e-payment). The statistics used in descriptive analysis are frequency distribution, percentage and mean. Each of the variables were described and tabulated in correspondence with the objective of the study.

Besides, a set of inferential statistical analyses were also piloted to draw a logical conclusion based on the proposed hypotheses. Independent-samples t-test was used to compare the mean scores of the dependent variable which is intention to adopt e-payment among two different groups of gender. The statistical measurement, p-value that is smaller than 0.05 indicates a significant difference between two categorical groups, while the mean scores of both group will also be compared.

Pearson’s correlation coefficient test is used to assess the relationship between three independent variables (perceived security, subjective norm, and self-efficacy) and the dependent variable (intention to adopt e-payment). Next, this technique is also used to test the relationship between intention to adopt e-payment and the actual usage of e-payment. The statistical measurement for Pearson’s correlation test is p-value. A p-value that is smaller than 0.05 indicates a significant relationship between two variables. The null hypothesis of this study would then be rejected and vice versa. R-value will also be used to measure the strength of that particular significant relationship.

**RESULT AND DISCUSSION**

**Background of Respondent**

Table 2 below represented the demographic profile of 200 respondents involved in this study. The background of respondents identified in this study include gender, race, age, year of study and faculty.

**Table 2: Background of Respondents (N=200)**

Items	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	83	41.5
Female	117	58.5
<b>Race</b>		
Malay	97	48.5
Chinese	82	41.0
Indian	16	8.0
Others	5	2.5
<b>Age (Mean = 23.2 years old)</b>		
Below 20 years old	17	8.5
20 – 22 years old	90	45.0
23 – 25 years old	86	43.0
Above 25 years old	7	3.5
<b>Year Of Study</b>		
First Year	39	19.5
Second Year	55	27.5
Third Year	36	18.0
Fourth Year	70	35.0
<b>Faculty</b>		
Agriculture	5	2.5
Biotechnology and Biomolecular Science	14	7.0
Computer Science and Information Technology	12	6.0
Design and Architecture	4	2.0
Economics and Management	28	14.0
Educational Studies	17	8.5
Engineering	10	5.0
Environmental Studies	16	8.0
Food Science & Technology	13	6.5
Forestry	15	7.5
Human Ecology	21	10.5
Medicine and Health Science	4	2.0
Modern Language and Communication	16	8.0
Science	20	10.0
Veterinary Medicine	5	2.5

A total of 200 respondents randomly sampled among all UPM students to be involved in this study. More than half (58.5%) of the respondents were female. The ratio of both genders were controlled in this study in order to ensure unbiased responses from different genders were taken into account. Among the respondents, 48.5% were Malay, 41.0% were Chinese, 8.0% were Indian and 2.5% of them were from other races.

Nearly half of the respondents (45.0%) were in the age range of 20 to 22 years old which are the most common age for university students. Most of the respondents involved in this study were in their fourth year of study, which is about 35.0% of the total respondents. This might because of they usually take less credit hours in their final year, and thus have more free time to be spent in the library and do their own tasks. In contrast, the third year students made up the smallest portion which is only 18.0% of the respondents in this study.

Lastly, the respondents in this study covered students from all the 15 faculties in Serdang campus. Faculty of Economics and Management served as the mode of faculty that possessed 14.0% of the respondents while Faculty of Medicine and Health Science and Faculty of Design and Architecture made up the least which is only 2.0% of the respondents for each faculty. Most of the respondents were steadily distributed among the faculties within main campus as they have easier access to the main library, while students from distanced faculties such as Faculty of Engineering constituted very small portion of the respondents because they usually go to their nearest library branches instead of main library.

**Perceived Security**

Table 3 showed the results of perceived security on e-payment system among the respondents. From the results, it can be seen that the perceived security on e-payment system by most of the respondents are on the positive side. This is evidenced by 42.5% of the respondents agreed that they perceived e-payment system as secure and 47.0% of respondents agreed on they perceived information relating to users and transactions as secure. However, there are still a substantial number of respondents who have doubt on the perceived security of e-payment system. This can be seen from the 40.5% of respondents who are neutral with whether the risk of credit card fraud for online transactions is low for them as well as the 36.5% of respondents who are unsure whether they will continue using the e-payment system when they hear about a breach in security. On the other hand, the first statement “I perceived e-payment system as secure” scored the highest mean which is 3.44 and this indicate that the respondents have high perceived security on e-payment system.

**Table 3: Perceived Security**

No.	Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean
1.	I perceive e-payment system as secure.	4.5	10.0	33.0	42.5	10.0	3.44
2.	I perceive the information relating to user and e-payment transactions as secure.	3.0	13.5	30.0	47.0	6.5	3.41
3.	I believe inappropriate parties will not be able to view the information I provide during a transaction on e-payment system.	3.5	20.0	35.5	36.5	4.5	3.19
4.	I would be free to give out my personal information when transacting online.	15.5	30.0	30.5	21.0	3.0	2.66
5.	The risk of credit card fraud for online transactions is low for me.	11.5	28.5	40.5	15.5	4.0	2.72
6.	I will continue using the e-payment system even when I hear there was a breach in security.	11.5	22.0	36.5	26.5	3.5	2.89
7.	I trust in the ability of an online bank to protect my privacy on e-payment system.	3.5	16.0	34.0	40.5	6.0	3.30
8.	I am not worried about the security of e-payment system.	8.0	27.5	34.0	25.0	5.5	2.93

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Besides, Table 4 highlighted the level of perceived security of UPM students towards e-payment system. The results of this study reported that most of the respondents (69.5%) were classified in moderate level of perceived security on e-payment system. Besides, there are 18% of respondents who have high level of perceived security which indicates a strong confidence level towards e-payment system. Lastly, there are only 12.5% of respondents who have low level of perceived security on e-payment system.

**Table 4: Level of Perceived Security**

Level	Score	Frequency (n)	Percentage (%)
<b>Low</b>	< 18.7	25	12.5
<b>Moderate</b>	18.7 – 29.3	139	69.5
<b>High</b>	> 29.3	36	18.0

In overall, the perceived security of respondents towards e-payment is high. It is however may be lowered when considering some specific aspects including personal information privacy, credit card fraud and breach in security. This finding is in line with past literatures where Cheney (2006) argued that security-related incidents may affect consumer trusts in the security of e-payment system and Arango et al. (2012) demonstrated that lacking confidence on security and fear of fraud may restrain consumers from using it.

**Subjective Norm**

Table 5 demonstrated the results of subjective/e norm on e-payment system among the respondents. The results below show that majority of the respondents has high subjective norm on e-payment system. This can be seen from mean for all the statements which are above 3.0, indicating the tendency towards the positive side. The highest mean shows 3.79 while the lowest mean is 3.50. For the statement with the highest mean of 3.79, 57.5% of the respondents agreed that others would think they are more accessible if they use e-payment system. In addition, 47.5% of the respondents even agreed that it is important for everyone in the society to use e-payment system, while there is no respondent who were strongly disagree to this statement. To summarize, majority of the respondents agreed that people who are important to them, people who influence their behavior, people whose opinions are valued and people who they respect would expect them to use e-payment.

**Table 5: Subjective Norm**

No.	Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean -
1.	People who are important to me would think that I should use e-payment system.	3.5	7.0	29.0	51.0	9.5	3.56
2.	People who influence my behavior would think that I should use e-payment system.	2.0	11.5	31.5	44.5	10.5	3.50
3.	People whose opinions are valued to me would prefer that I should use e-payment system.	1.0	7.5	30.0	53.0	8.5	3.61
4.	Peers are helpful in the use of e-payment system.	2.5	6.0	30.0	50.0	11.5	3.62
5.	It is expected that people like me should use e-payment system.	0.5	6.5	26.5	53.5	13.0	3.72
6.	People I look up to expect me to use e-payment system.	1.5	11.0	27.5	49.0	11.0	3.57
7.	I think it is important that everyone in the society should use e-payment system.	0.0	7.0	29.5	47.0	16.5	3.73
8.	Others feel that I am more accessible if I use e-payment system.	0.5	6.5	21.0	57.5	14.5	3.79

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Apart from that, Table 6 showed the level of subjective norm of UPM students regarding e-payment system. The findings showed that more than half of the respondents (50.5%) were classified in high level of subjective norm on e-payment system. Besides, there are 45.5% of respondents who have moderate level of subjective norm and lastly, only 4.0% of respondents are having low level of subjective norm on e-payment system.

**Table 6: Level of Subjective Norm**

Level	Score	Frequency (n)	Percentage (%)
Low	< 18.7	8	4.0
Moderate	18.7 – 29.3	91	45.5
High	> 29.3	101	50.5

It can be concluded that the respondents in this study generally have high subjective norm regarding e-payment system. Most of the respondents perceived that people around them would expect them to use e-payment system. This might be due to the widespread usage of technology system in today's society, everyone is expected to follow the trend and adapt to the latest electronic products and services especially the younger generation like university students. This finding could be supported by the study of Selvanathan, Devi Krisnan and Goh (2017) who also found high subjective norm among Malaysian consumers

### Self-Efficacy

Table 7 tabulated the responses of self-efficacy on e-payment system among the respondents. The findings below showed that the responses were generally skewed toward agreement and were evidenced by the mean score ranged from 3.82 to 3.99 for all statements. More than half of the respondents agreed that they could complete e-payment transactions with only the system instructions or online help for reference, 50.5% of them perceived that they could make it if plenty of time were provided, while 53.0% of them agreed that they have the resources, knowledge, and ability to use e-payment system. With the highest mean score of 3.99, most of the respondents agreed that they would be able to use e-payment system well for any financial transactions.

**Table 7: Self-Efficacy**

No.	Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean -
1.	I could complete my online transaction using the e-payment system, if there was no one around to tell me what to do.	1.5	6.0	18.0	45.0	29.5	3.95
2.	I could complete my online transaction using the e-payment system, if I had never used a package like it before.	3.0	4.0	22.5	49.0	21.5	3.82
3.	I could complete my online transaction using the e-payment system, if I had only the system instructions or online help for reference.	1.5	3.5	17.5	54.5	23.0	3.94
4.	I could complete my online transaction using the e-payment system, if I had a lot of time to complete the job.	0.0	4.5	26.0	50.5	19.0	3.84



5.	I think that I could use the e-payment system well if I wanted to.	1.0	6.0	16.5	49.5	27.0	3.96
6.	I think that I would be able to use the e-payment well for any financial transactions.	0.5	4.0	19.0	49.0	27.5	3.99
7.	I think that using e-payment system would be entirely within my control.	1.0	5.0	24.5	45.5	24.0	3.87
8.	I think that I have the resources, knowledge, and ability to use e-payment system.	1.5	3.5	21.0	53.0	21.0	3.89

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

In addition, Table 8 showed the level of self-efficacy of UPM students regarding e-payment system. It can be seen that a large portion of the respondents (65.0%) were classified in high level of self-efficacy on e-payment system. Besides, there are a smaller group of respondents (27.5%) who were reported to have moderate level of self-efficacy. Fortunately, there were only 2.5% of respondents have low level of self-efficacy on e-payment system.

**Table 8: Level of Self-Efficacy**

Level	Score	Frequency (n)	Percentage (%)
Low	< 18.7	5	2.5
Moderate	18.7 – 29.3	55	27.5
High	> 29.3	130	65.0

In relation to the self-efficacy in using e-payment, most of the respondents were keened towards agreement. This result indicates that UPM students are generally highly confident in their abilities to use e-payment and this might due to most of the university students are technology-savvy with high knowledge in using technology products. The findings from this study further strengthens the study by Dinev et al. (2009) who found that new users that have adequate knowledge and skills in technology system are more confident and adaptable when dealing with newly introduced system.

### Intention to Adopt E-Payment

Table 9 illustrated the intention to adopt e-payment system among UPM students. The findings below showed that most of the respondents are generally have high intention to adopt e-payment system despite the smaller group are having doubt in their intention to use e-payment. The responses for this section were slightly skewed toward the agreement side which can be seen from the mean score ranged from 3.51 to 3.65 for all statements. Amongst all, there are 54.5% of the respondents agree that they intend to use e-payment at the point of sale instead of using cash and 49% of them agree to their intention to use e-payment for online shopping. The average mean for the statement “Using the e-payment system for handling my online shopping is something I would do” is however the highest, at 3.65 which is more on the agreement side. This may because of most of the respondents realize that e-payment system is necessary for their online purchases. Besides, recommending e-payment system to family and friends is something that would be done by 53% of the respondents, and this would represent a high level of intention to adopt e-payment among UPM students.

**Table 9: Intention to Adopt E-Payment**

No.	Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean -
1.	I would use the e-payment system for any purchase in the future.	1.5	6.0	18.0	45.0	29.5	3.58
2.	Using the e-payment system for handling my online shopping is something I would do.	3.0	4.0	22.5	49.0	21.5	3.65
3.	I would see myself using the e-payment for handling my point of sale purchases	1.5	3.5	17.5	54.5	23.0	3.59
4.	I intend to use e-payment system to make payments for my purchases in the near future if I have access to it.	0.0	4.5	26.0	50.5	19.0	3.59
5.	I intend to make use of all different kinds of e-payment services in the future.	1.0	6.0	16.5	49.5	27.0	3.51
6.	I intend to use e-payment system more frequently in the future.	0.5	4.0	19.0	49.0	27.5	3.56
7.	I intend to try out the latest e-payment services in the future.	1.0	5.0	24.5	45.5	24.0	3.51
8.	I intend to recommend e-payment to my family and friends in the future.	1.5	3.5	21.0	53.0	21.0	3.57

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

In addition, Table 10 showed the level of intention to adopt e-payment system among UPM students. The findings from this study showed that almost half of the respondents (48.5%) have high level of intention to adopt e-payment system. While a large portion of respondents (43.0%) are having moderate level of intention to adopt e-payment in the future. Lastly, there are also a small group of respondents which is about 8.5% of them who were found to have low level of intention in adopting e-payment. In overall, UPM students can be concluded as having considerable level of intention to adopt e-payment with the exception of a minor group.

**Table 10: Level of Intention to Adopt E-Payment**

Level	Score	Frequency (n)	Percentage (%)
Low	< 18.7	17	8.5
Moderate	18.7 – 29.3	86	43.0
High	> 29.3	97	48.5

As reflected in the table above, the intention to adopt e-payment for more than half of the UPM students are generally skewed towards the agreement. It can be clearly seen from the responses that most of the respondents are open and willing to use e-payment system, with certain level of intention. This is due to Malaysian consumers especially university students may have more interest and higher adaptability towards technology innovations. Besides, this finding is also found to be identical to the study done by Selvanathan, Devi Krisnan & Goh (2017) who revealed a high level of intention on e-payment adoption in the Malaysian context.

### Actual Usage of E-Payment

Table 11 showed the results of actual usage of e-payment system among the UPM students. From the results, it can be seen that the actual usage of e-payment system by most of the respondents are slightly skewed to the agreement by looking at the average mean above 3.0. The mean for all statements are ranged from 3.17 to 3.59. With the highest mean (3.59) recorded, 44.5% of the respondents agree that they are currently using e-payment system and will continue to use it. In contrast, the statement with the lowest mean (3.17) indicates that UPM students may have limited experience in doing payments via credit cards over the internet, as there is only 32.5% students agree to this while a large group of them are either neutral or disagree. This might because of the respondents may prefer other options over credit card when paying online, for instance using FPX payment.

**Table 11: Actual Usage of E-Payment**

No.	Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean -
1.	I use e-payment system more often than others.	3.0	18.5	40.0	27.5	11.0	3.25
2.	I am currently using and will continue to use e-payment system.	1.5	9.5	31.0	44.5	13.5	3.59
3.	I make online transactions intensively using e-payment system.	3.0	11.0	36.0	39.5	10.5	3.44
4.	I have a considerable experience on using e-payment system	1.5	15.5	31.0	43.0	9.0	3.43
5.	I have a considerable experience in doing payments via credit cards over the internet.	6.0	24.5	26.5	32.5	10.5	3.17
6.	I have started using online transaction and e-payment systems considerably a long time ago.	3.0	14.0	31.5	36.5	15.0	3.47
7.	I still frequently benefit from e-payment systems	2.5	10.5	40.5	38.0	8.5	3.40
8.	Overall, I made many transactions using e-payment system.	3.5	13.0	28.0	39.5	16.0	3.52

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Table 12 clearly showed the level of actual usage of e-payment among UPM students. Surprisingly, the results in the above table showed that more than half of the UPM students have only moderate level of actual usage of e-payment. While there are another 36.0% of the respondents are having high actual usage of e-payment which means they actually use e-payment frequently and intensively. Lastly, there are only 9.0% of the respondents who were reported to have a low level of actual usage of e-payment system.

**Table 12: Level of Actual Usage of E-Payment**

Level	Score	Frequency (n)	Percentage (%)
Low	< 18.7	18	9.0
Moderate	18.7 – 29.3	110	55.0
High	> 29.3	72	36.0

From the above findings, it can be clearly seen that a large group of the UPM students are generally having considerable actual usage of e-payment system despite others are on a neutral view. This results indicate that most of the UPM students have got the access to use e-payment system and many of them have use it. However, the actual intensity of usage may differ across different individuals for instance, some of the students use it intensively while some use it occasionally. This outcome further strengthens the findings by Oney et al. (2017) who suggested that different personal experience from the consumer perspectives regarding e-payment system may result in different adoption behavior across individuals.

## HYPOTHESIS TESTING

### The Gender Difference in Intention to Adopt E-Payment among UPM Students

The first hypothesis in this research was to identify is there any gender differences in the intention to adopt e-payment among UPM students. The gender difference was tested using independent samples t-test and the results were illustrated in Table 13.

**Table 13: Gender Difference in Intention to Adopt E-Payment among UPM Students Using Independent Samples T-Test**

Intention to Adopt E-Payment	N	Mean + SD	t-value	p-value (sig. 2-tailed)
Gender	Male	83	28.36 + 6.91	-0.292
	Female	117	24.64 + 6.49	

n = number of respondents, t-value = T-test

*H<sub>01</sub>: There is no significant gender difference in the intention to adopt e-payment among UPM students.*

The above table indicated that the mean score in the intention to adopt e-payment of male students were slightly higher than that of the female students. This finding is consistent with the past literatures which concluded that male have higher intention to adopt new technology system (Wood, 2005). However, this research found that no significant difference between genders in regards with the intention to adopt e-payment among UPM students, as evidenced by the p-value (0.770) that is notably greater than 0.05. Thus, the first null hypothesis in this study was failed to reject. In this notion, the intention to adopt e-payment among UPM students could not be generalized according to gender. For instance, some male students may highly intent to adopt e-payment while some others may not. This finding can be supported by Jaradat and Faqih (2014) who confirmed that gender has no direct impact on the mobile payment adoption, as gender affect only the attitudes towards the system (Calisir et al., 2009).

### The Relationship between Perceived Security and Intention to Adopt E-Payment

The next hypothesis in this study is to determine the relationship between perceived security and intention to adopt e-payment among UPM students. The hypothesis is tested using Pearson correlation coefficient and the results are tabulated in Table 14.

**Table 14: Relationship between Perceived Security and Intention to Adopt E-Payment Using Pearson Correlation Coefficient**

Variables	Intention to Adopt E-Payment		R-value
	N	p-value (sig. 2-tailed)	
Perceived Security	200	0.000	0.620**

\*\*Correlation is significant at the 0.05 level (2-tailed)

*H<sub>02</sub>: There is no significant relationship between perceived security and intention to adopt e-payment among UPM students.*

The findings above demonstrated a significant positive relationship between perceived security and intention to adopt e-payment among UPM students as evidenced by the p-value of 0.000 which is lower than 0.05. Thus, the second null hypothesis is rejected. In this notion, this indicates that the intention to adopt e-payment among UPM students are associated with their

perceived security on the system. Next, the R-value of 0.620 indicates that the correlation between perceived security and intention to use e-payment is strong as the R-value is more than 0.50 (Cohen, 1998). Nonetheless, the current finding is consistent with the previous study done by Linck et al. (2006) whereby consumers were found to be less likely to adopt e-payment unless they trust in the system security. This means that when the perceived security on e-payment system is high, UPM students are most likely to exhibit an intention to adopt e-payment. Correspondingly, Kim et al. (2010) further confirmed that consumers will show more confident and interest in adopting e-payment when they perceive the system as secured.

### The Relationship between Subjective Norm and Intention to Adopt E-Payment

The third hypothesis in this study is to examine the relationship between subjective norm and intention to adopt e-payment among UPM students. The results from the statistical test are illustrated in Table 15.

**Table 15: Relationship between Subjective Norm and Intention to Adopt E-Payment Using Pearson Correlation Coefficient**

Variables	N	Intention to Adopt E-Payment	
		p-value (sig. 2-tailed)	R-value
<b>Subjective Norm</b>	200	0.000	0.269**

\*\*Correlation is significant at the 0.05 level (2-tailed)

*H0<sub>3</sub>: There is no significant relationship between subjective norm and intention to adopt e-payment among UPM students.*

From the above table, it can be seen that there is a significant relationship between subjective norm and intention to adopt e-payment among UPM students. This is also proved by the p-value of 0.000 which is lower than 0.05. Therefore, the second null hypothesis in this study is rejected. This indicates that the intention to adopt e-payment among UPM students can be affected by their subjective norm regarding the use of e-payment. This result is consistent with Nysveen et al. (2005) that the individual will possibly accept a certain system when the individual felt the force of social pressure subsequently from influences by elders or friends. However, the strength of this positive relationship is considered weak as the R-value shown is not more than 0.29 (Cohen, 1998). This could be explained by the concern on the system security by UPM students, as reflected by the strong correlation between perceived security and intention to adopt e-payment. It means that some students may also refuse to adopt e-payment due to security concerns although their subjective norm is high. In this notion, this finding is similar with the contradictory findings by the previous studies whereby Selvanathan, Devi Krisnan and Goh (2017) proved a significant effect of subjective norm on e-payment adoption but the findings by Venkatesh and Morris (2000) found no relationship between the two variables. This study will then draw a conclusion that subjective norm has a significant yet weak relationship with intention to adopt e-payment.

### The Relationship between Self-Efficacy and Intention to Adopt E-Payment

The fourth hypothesis in this study is to identify the relationship between self-efficacy and intention to adopt e-payment among UPM students. The results from the Pearson product-moment correlation coefficient test are presented in Table 16.

**Table 16: Relationship between Self-Efficacy and Intention to Adopt E-Payment Using Pearson Correlation Coefficient**

Variables	N	Intention to Adopt E-Payment	
		p-value (sig. 2-tailed)	R-value
<b>Self-Efficacy</b>	200	0.000	0.264**

\*\*Correlation is significant at the 0.05 level (2-tailed)

*H0<sub>4</sub>: There is no significant relationship between self-efficacy and intention to adopt e-payment among UPM students.*

For the variable self-efficacy, it was displayed to have a positive and significant relationship with the intention to adopt e-payment among UPM students. This is reflected by the p-value that is smaller than 0.05. Hence, the third hypothesis in this study is also rejected. This result suggested that the higher self-efficacy may result in the higher the intention of UPM students to adopt e-payment system. It further strengthens the previous studies by Luarn and Lin (2005) and Park et al. (2006) who demonstrate that self-efficacy positively affects the intention to adopt e-payment. The correlation between self-efficacy and intention to adopt e-payment in this study is however considered as weak when looking at the R-value of 0.264 which is less than 0.29 (Cohen, 1998). This implied that UPM students may also refuse to adopt e-payment although they have high self-efficacy in using the system, due to some other reasons. Henceforth, this result is contradicting to the research done by Al-Haderi (2013) who argued that the relationship between self-efficacy and e-payment adoption is strong.

### The Relationship between Intention to Adopt E-Payment and Actual Usage of E-Payment

The last hypothesis is to study the relationship between intention to adopt e-payment and the actual usage of e-payment among UPM students. The findings from the statistical test are presented in Table 17.

**Table 17: Relationship between Intention to Adopt E-Payment and Actual Usage of E-Payment Using Pearson Correlation Coefficient**

Variables	Actual Usage of E-Payment		R-value
	N	p-value (sig, 2-tailed)	
<b>Intention to Adopt E-Payment</b>	200	0.000	0.708**

\*\*Correlation is significant at the 0.05 level (2-tailed)

*H<sub>05</sub>: There is no significant relationship between intention to adopt e-payment and actual usage of e-payment among UPM students.*

The findings above illustrated a significant positive relationship between intention to adopt e-payment and the actual usage of e-payment among UPM students as evidenced by the p-value of 0.000 which is lower than 0.05. Thus, the last null hypothesis in this study is rejected. When looking at the R-value of 0.708, it can be concluded that the correlation between intention to adopt e-payment and the actual usage of e-payment is very strong as the R-value is higher than 0.50 (Cohen, 1998). This implies that when they have the intention of adopting e-payment, it will surely turn into the actual usage of the system. In this notion, this finding is in line with the previous research by Vatanasakdakul et al (2010) who proved that intention will strongly and positively influence the actual behavior of adopting e-payment.

### CONCLUSION

In a nutshell, current research provides comprehensive understandings into the intention to adopt e-payment based on gender, perceived security, subjective norm and self-efficacy in the context of UPM students. In the end of the study, all the general objective and specific objectives were achieved.

The findings revealed that majority of the respondents had a moderate level of perceived security which indicates a limited confidence level on the e-payment system security. In the contrary, more than half of the respondents were associated with high level of subjective norm regarding e-payment while majority of the respondents were in the high level group of self-efficacy. This shows that most of the UPM students feel a high social pressure from their social groups regarding the e-payment adoption, and they also have high confidence in their own abilities to use the system well. In addition, almost half of the respondents were highly intended to adopt e-payment but the actual usage, but more than half of them were however been reported to have moderate level of actual usage.

Nevertheless, there is no significant difference between genders in the intention to adopt e-payment as illustrated by the outcome of this research. The results of Pearson correlation coefficient further proposed that perceived security, subjective norm and self-efficacy had positive and significant relationship with intention to adopt e-payment among UPM students. Last but not least, the intention to adopt e-payment and the actual usage of e-payment were found to have a significant and strong positive relationship. The current research provides valuable insights on consumer intention to adopt e-payment and these findings can lead to contributions by providing recommendations to policy makers, merchant acquirers, technology service providers and consumers. First and foremost, this study finds no significant difference between genders in their e-payment adoption. This can be served as guidelines to the industry players in developing marketing strategies as the gender differentiation aspect can easily be eliminated and more attention can be exerted on other attributes.

From the findings of statistically proven relationship between perceived security and intention to adopt e-payment, e-payment service providers were suggested to play a vital role in assuring consumers with a transaction platform that is continually enhanced and secured so as to meet consumers' expectation along with their safety and privacy concerns. Besides, industry players such as banking institutions should showcase their e-payment products and highlight the security features to boost the confidence level of consumers that their personal and financial information are well protected.

On the account of subjective norm, the research finding (i.e., statistically proven significant positive relationship between subjective norm and intention to adopt e-payment) indicates that users are easily influence by the people close to them in adopting e-payment. E-payment service providers should perform profound analysis on the feedbacks collected from consumers and make improvements accordingly in a regular basis as word of mouth and some positive feedback from the people closest to individuals will highly influence potential users to adopt e-payment system.

In addition, the finding of significant correlation between self-efficacy and the intention to adopt e-payment shows that educating consumers are essential. Bank branches can carry out demonstrations and tutorials to deliver quality information on the features of e-payment services, eliminate any misperceptions, ease the navigation and boost confidence level of consumers when using e-payment. Moreover, the online transaction website design by service providers should prioritize on ease of use and usability as it will lead along the self-efficacy and intention of adoption among consumers.

The findings from this study are believed to raise awareness among consumers by providing in-depth understanding on e-payment its benefits brought by to the individuals and economies. By understanding the effect of subjective norm on e-payment adoption, consumers should be more helpful in providing encouragement and guidance to people around them in using e-payment and so as to work together to accelerate the transformation into a cashless society.

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