

Examining the Relationship between UTAUT Construct, Technology Awareness, Financial Cost and E-Payment Adoption among Microfinance Clients in Malaysia

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Abstract— Electronic payment (e-payment) is a tool used to achieve the objective of Malaysia's Financial Sector Blueprint 2010 - 2020 to become a high-income country. Furthermore, e-payment can increase the efficiency of financial transactions and reduce the costs involved. Many parties benefit from using e-payment, among them microfinance clients. The implementation of e-payment helps microfinance clients to access formal financial services. Despite this, the adoption of e-payment system among microfinance clients in Malaysia remains low. This study aims to identify the channels of e-payment used by microfinance clients. Another objective is to examine the relationship between behavioral factors, technology awareness, financial cost and the e-payment adoption among microfinance clients in Malaysia. Reliability, correlation and regression analyses were applied on six variables, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FAC), financial cost (FIC) and technology awareness (TA). The findings in correlation analysis show that PE, EE, FIC, FAC and TA have significant relationship but weak and moderate level. While social influence was found has no significant relationship with e-payment adoption. Due to the small sample size, the result from the multiple regression analysis reveals that all the variables have no influence on e-payment adoption. Notwithstanding, in view of the lack of research in this area, this study hopes to further enrich the literature on efforts to improve financial inclusion through the adoption of digital payment services among the "un-bankable" segment of the society.

Keywords—E-Payment; Microfinance; Microfinance Client; Technology Awareness; Unified Theory of Acceptance and Use of Technology

I. INTRODUCTION

High financial inclusion will contribute to the achievement of the objective of Malaysia's Financial Sector Blueprint 2010 - 2020 to become a high-income country. High financial inclusion means people can easily access formal financial services. To achieve high financial inclusion, financial institutions need to transform their paper-based payment system to an electronic payment system (e-payment). E-payment leads to greater financial inclusion by facilitating transactions of the un-banked communities (including micro-entrepreneurs, particularly those who are staying in remote areas) in the formal financial system. E-payment enables users to conduct payment transactions without having banking accounts in the formal financial institutions. With the aid of technology, the un-banked communities can now access financial services from any location. The World Bank (2014) highlighted the importance of e-payment in developing the economy by increasing the speed, security, transparency and cost efficiency of financial services. There are several channels of e-payment in Malaysia, namely Automated Teller Machines (ATM), Internet banking, mobile banking and Point of Sale (POS) terminals.

The importance of e-payment highlights a strong need to promote and facilitate all payment stakeholders (particularly microfinance institutions and their clients) to adopt e-payment. However, various stakeholders in Malaysia are still hesitant to completely accept the e-payment innovation. For example, in case of the program 'Enabling e-payment for Small and Medium Enterprises (SMEs) and Micro enterprises' in 2012 which aimed to increase the adoption of e-payment among micro-enterprises, only 14 percent from the total registered SMEs acquired the e-payment facility (Hafiz, 2015). Additionally, the feedback received for the e-payment system of M-ringgit, the mobile banking system for Amanah Ikhtiar Malaysia (AIM) clients was discouraging (Maznah, 2012). The system is now being replaced with the Cashless Micro-Credit Collection (CMCCS) System.

AIM is the biggest Islamic microfinance institution (MFI) in Malaysia. Consequently, the adoption of e-payment among AIM clients will have a big impact on the financial industry in Malaysia. Another dominant MFI in Malaysia is the National

Entrepreneurial Group Economic Fund (TEKUN Nasional). TEKUN launched its mobile application system, TEKUNPay, for the repayment of loans in January 2018. However, only two percent of the micro-entrepreneurs who received loans from TEKUN Nasional used TEKUNPay for their loan repayment (Bernama, 2018). Therefore, this study aims to identify the e-payment channels used by microfinance clients. Another objective is to examine the relationship between the determinants that influence the adoption of e-payment and the e-payment usage behaviour among microfinance clients. These determinants should be given priority in developing a successful e-payment system for the microfinance industry, particularly in Malaysia.

The participation of the MFIs in the payment industries helps poor communities to have better access to financial services. The poor communities need supporting programs such as microfinance to assist their productive activities so that wealth resources can be distributed more equitably. Focus should be given to microfinance clients to adopt e-payment because they are the largest group of the micro, small and medium enterprises in Malaysia. High adoption of e-payment among them would contribute towards achieving the government's e-payment target of 200 transactions per capita by 2020.

The main contribution of this study is the adoption of an extended Unified Theory of Acceptance and Use of Technology (UTAUT) framework. More specifically, this study aims to examine the relationship between the variables that influence the microfinance clients' e-payment adoption. Unlike earlier studies, this study contributes to enriching the literature by extending the UTAUT model through the addition of two new variables, namely technological awareness and financial cost. The discoveries of the study are anticipated to contribute to the technology adoption literature of e-payment in Malaysia. Besides, the findings can be used by MFIs to improve their e-payment system and to identify important factors affecting the failure or success of the system. They can also be used to drive better decision making. In addition, in view of the lack of research in this area, this study hopes to further enrich the literature on efforts to improve financial inclusion through the adoption of digital payment services among the "un-bankable" segment of the society.

A. Theoretical Foundation

Due to the issues and challenges in implementing e-payment, many researchers have conducted studies in helping to solve or at least mitigate the challenges. Changes in technology should have a positive impact on the daily routine of individuals and organizations. If the technology can be fully utilized, it can increase the performance of an organization by reducing costs and increasing efficiency. It is exceptionally vital for the representatives, clients, and organizations to receive or acknowledge the innovation, so it can be quickly and completely utilized.

There are many theories of technology adoption. However, the UTAUT is the best model to analyse customers' technology adoption. The UTAUT model is based on eight technology acceptance models, which are Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model, Theory of Planned Behavior (TPB), the combined TAM and TPB, the model of personal computer utilization, the Innovation Diffusion Theory, and the social cognitive theory (Venkatesh, Morris, Davis & Davis Venkatesh, 2003). Venkatesh et al. (2003) dissected the study and found an R^2 of 70%, showing that the model clarifies 70% of the change within the users' intentions to use information technology. The previous scholars used UTAUT constructs which are performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FAC) as the independent variables. Most of the previous studies found that all the factors have a noteworthy relationship with the adoption of information technology among the users.

TABLE I. UTAUT CONSTRUCTS AND DEFINITIONS

<i>UTAUT Constructs</i>	<i>Definition</i>
Performance Expectancy (PE)	PE referring to the perceptual experience of users on convenient defrayment, fast feedback, and the effectiveness of the service (Zhou et al., 2008).
Effort Expectancy (EE)	EE is the degree of informality associated with the use of the channel of e-payment (Venkatesh et al., 2003). Effort expectancy towards e-payment channels is essential to be assessed due to a difficulty in using devices to make the banking transactions (Riquelme & Rios, 2010).
Social Influence (SI)	SI refers to the normative belief structures that can be decomposed into three groups of people: peers, superiors, and subordinates (Taylor & Todd, 1995).
Facilitating Conditions (FAC)	FAC allude to how individuals accept that technical infrastructures exist to assist them utilize the framework at whatever point vital (Venkatesh et al., 2003).

B. E-payment Use Behavior

The e-payment use behaviour is represented by the "adoption of e-payment" in this study, thus is treated as the dependent variable in this study. It refers to the individual action to directly use a specific system (Davis, Bagozzi & Warshaw, 1989). Saravanan (2004) has suggested that it is very important to understand the actual usage or adoption because the costs incurred in developing digital financial services are very high. Furthermore, the acceptance or adoption has been identified as an important determinant to measure the performance of any information technology project (Davis, 1993). In this study, the determinants that have influences on e-payment use behavior of micro-entrepreneurs (the independent variables) are performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FAC), technology awareness (moderating variable), and financial cost (FIC).

Reviews of previous studies found that different variables influenced the adoption of e-payment use. Table II shows the previous studies that use UTAUT constructs with the additional variables and varieties of findings

TABLE II. SUMMARY OF LITERATURE ON THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY

<i>Author</i>	<i>Context</i>	<i>Variable</i>	<i>Finding</i>	<i>Respondents</i>
Sivathanu (2018)	Digital payment	PE, EE, SI, FAC, hedonic motivation, habit, usage barrier, value barrier, risk barrier, traditional barrier and image barrier.	All factors are significantly predicting the usage of digital banking	766 consumers in India
Ali, Yogesh & Nripendra, (2017)	Mobile banking adoption	PE, EE, SI, FAC, price, trust, hedonic motivation, behavioural intention,	Significant factors: PE, EE, hedonic motivation, price value, trust and FAC.	343 bank customers
Ammar, & Ahmed (2016)	Mobile banking	All UTAUT constructs, perceived security and privacy perceived self-efficacy, awareness, experience, banking needs. Technology, Environment and organizational (TOE) frameworks Age, gender, income, education (moderator)	Influenced the m banking adoption: All the UTAUT and TOE cosntructs.	393 microfinance customers
Evon & Jasmine (2016)	Mobile banking adoption	PE, EE, SI, FAC, perceived risk	The strongest predictor is PE followed EE, perceived risk, and SI. FAC is not significant	347 students
Oliveira, Thomas, Baptista & Campos (2016)	Mobile banking adoption	Compatibility, innovativeness, PE, EE, SI, FAC, hedonic motivation, price value, perceived technology security, age (moderator), gender (moderator), experience (moderator),	PE and SI is significant for the behavioural intention.	301 students
Sahar & Arshian (2016)	Mobile banking adoption	Task characteristic, Technology characteristic, PE, EE, SI, FAC, structural assurance, familiarity	significant contribution of task characteristics and technology characteristics, FAC, and Initial trust in m banking adoption.	151 students
Faruq (2015)	POS adoption	PE, EE, SI, FAC, Customers Concern, TA (moderator)	PE, EE, SI, FAC and Customers concern are significant in contributing to POS adoption. TA has moderating effect towards all the variables.	165 business owners
Gonçalo & Oliveira (2015)	Mobile banking adoption	PE, EE, SI, FAC, Hedonic motivation Price Value Habit, Behavioural Intention, Individualism, Uncertainty avoidance (Moderator) Short/long term (Moderator) Masculinity (Moderator) Power Distance (Moderator)	The factors that positively influence acceptance are PE, hedonic motivation and habit. Social arbitrators were found to have noteworthy impact on behavioural intention over use, namely individualism uncertainty avoidance, long/short term and power distance. The behavior intention was found has no significant impact on use behavior.	(Conceptual paper)
Marzieh & Laily (2015).	Mobile banking adoption	PE, EE, SI, FAC, Individualism	All variables are significant	2217 students
Teo, Tan, Ooi & Lin (2015)	Mobile Banking adoption	PE, EE, SI, FAC, trust. Perceived FIC, Experience (Moderator)	PE, EE, FAC, and trust (TR) are significant with the intention to adopt. Experience was found to	319 consumers

<i>Author</i>	<i>Context</i>	<i>Variable</i>	<i>Finding</i>	<i>Respondents</i>
			have a moderating effect on the relationship between PE and intention to adopt M banking.	
Junadi (2015)	e-payment adoption	PE, EE, SI, FC, culture, perceived security	PE, EE, SI, FC, culture and perceived security has various effects towards e-payment adoption.	(Conceptual paper)
Oliveira, Faria & Popovic (2014)	Mobile banking adoption	Task characteristic, technology characteristic, task technology fit, PE, EE, SI, FAC, behavioural intention, initial trust, structural assurance, user propensity to trust, gender (moderator), age (moderator)	FAC and behavioural intentions directly influence m-Banking adoption. Initial trust, PE, technology characteristics, and task technology fit have added up to impact on behavioural intention.	194 individuals
Teerapat, Supaporn & Adisorn (2013)	e-payment adoption	PE, EE, SI, FAC Service Quality, FIC, Security	PE, EE, SI, FAC are significant.	100 e-payment users
Troy, Lenandlar & Kemuel (2013)	Mobile learning adoption	PE, EE, SI, FAC, attitude	All variables are significant except EE.	322 students
Casey & Wilson (2012)	online family dispute resolution services	PE, EE, SI, FAC, personal web innovativeness, trust	All variables are significant	127 staff
Venkatesh et al., (2012).	Information technology adoption	PE, EE, SI, FAC, price, hedonic motivation, behavioural intention	All variables are significant, and the main factor is PE.	1512 customers
Roya, Augustine, Elizabeth & John (2010)	e-payment adoption	perceived benefits, EE, SI, trust, awareness, and demographic variables	Perceived benefits, EE, SI, trust, awareness, and demographic variables influenced individuals' intention to adopt e-Payments.	213 customers
Zhou, Lu & Wang (2010)	Mobile banking adoption	PE, EE, SI, FAC, task characteristic, technology characteristic, task technology fit	PE, SI, FC, task characteristic, technology characteristic, task technology fit are significant except EE.	250 mobile phone users

C. Financial Cost

Financial cost (FIC) or the price value is the consumers' cognitive trade-off between the perceived benefits of using mobile banking services and the monetary cost of utilizing it (Venkatesh, Thong & Xu, 2012). It incorporates factors such as data service carriers' costs (mobile Internet), costs of purchasing the device and service charges where appropriate. The price value is positive when the benefits of using the channels of e-payment are perceived to be greater than the cost. Previous studies indicated that the perceived financial cost inhibited the use and adoption of mobile banking services (Ali et al., 2017; Hanafizadeh, Hanafizadeh & Khodabakhshi, 2014; Teerapat et al., 2013).

D. Technology Awareness

Technology awareness (TA) can be defined as a citizen's knowledge about the existence and benefits of technology (Mofleh, Wanous & Strachan, 2008). Previous studies found that TA significantly influenced the adoption of electronic payment systems (Faruq & Hartini, 2013; Rehman, Esichaikul & Kamal, 2012; Charbagi & Mikdashi, 2003). Consensus has it that lack of awareness leads to slow adoption of e-gov (Reffat 2013), e-payment (Yaqub, Bello, Adenuga & Ogundeji, 2013) and e-commerce (Chiemeke & Evwiekpaefe, 2011).

II. RESEARCH METHODOLOGY

There are two objectives of this study which are; to identify the e-payment channels used by the microfinance clients in Jengka and to examine the relationship between behavioural factors, technology awareness, financial cost and e-payment adoption among microfinance clients in Malaysia. To achieve these objectives, descriptive, correlation and multiple regression analysis

were conducted using SPSS version 22.0. A survey questionnaire was adapted from previous studies (Zhou, Lu & Wang, 2010; Foon & Fah, 2011). The validity of all the questionnaire's contents can be confirmed after a pilot study has been conducted. Kothari (2004) stated that the pilot study is vital in research to identify the drawbacks of the questionnaire and survey techniques. Brown (1995) recommended to have at least 30 respondents in completing the pilot study. In the context of this study, 40 questionnaire sets were distributed to the microfinance clients in the Jengka area and 34 were completed and returned. Jengka is a small town located in the Pahang state of Malaysia. The purposive sampling technique was applied to collect the data. The questionnaire consisted of Section A (demographic profile) and Section B (determinants of e-payment adoption).

III. FINDING AND DISCUSSION

The finding on the demographic profiling shows that single and married respondents both make up 38.2 percent of the sample. The balance (23.6 per cent) are single parents. Most of the respondents (79.4 per cent) have primary and secondary school qualification background. Exactly 20.6 per cent of the total number of respondents have diplomas and bachelor degrees. The respondents used various e-payment channels. All of them used Automated Teller Machine (ATM). The majority (91.2 per cent) used debit cards. Point of Sale (POS) terminals has a high usage rate of 88.2 per cent of the total respondents. A few respondents (2.9 per cent) used mobile banking and none of them used internet banking due to the slow internet connection in the Jengka area.

The data in Table III shows the result of the reliability test that was conducted in this study. The value of Cronbach's Alpha for the six variables, namely performance expectation, effort expectation, social influence, facilitating conditions, financing cost and technology awareness are more than 0.8. The result proved that all the variables are reliable. Hair, Money, Samuel and Page (2007) stated that the value of Cronbach's Alpha must be more than 0.7 to ensure that variables are reliable.

This study then proceeds to the Pearson correlation coefficient in analyzing and measuring the correlation between each of the UTAUT construct, technology awareness, financing cost and e-payment adoption. The finding in Table IV shows that the relationship between SI and EPA is positive very weak and not significant ($p=0.336 > 0.05$). PE and EE have positive weak and significant relationship with EPA ($p=0.024$ and 0.028 respectively). FAC, FIC and TA have moderate and significant relationship with EPA as the correlation ranged between 0.452 - 0.534 with the p-value 0.007, 0.001 and 0.003, respectively. The findings revealed that all the variables have significant influence on the e-payment adoption except the SI. The relationship is very weak and moderate, probably due to the small sample size.

TABLE III. THE RELIABILITY STATISTIC

<i>Variables</i>	<i>Cronbach's Alpha</i>	<i>No of items</i>
Performance Expectations	0.856	6
Effort Expectations	0.847	6
Social Influence	0.899	6
Facilitating Conditions	0.841	6
Financing Cost	0.848	5
Technology Awareness	0.853	5
E-Payment Adoption	0.880	5

Table V shows the relationship between the UTAUT constructs, FA, TA and EPA. FIC and TA have positive relationships with e-payment adoption. PE, EE, SI and FAC have inverse relationships as the B values are negative figures. All the variables have no impact on the e-payment adoption as $p>0.05$. The value of the correlation coefficient is ($R=0.592$), indicating the moderate correlation between the independent variables and the dependent variable. The R^2 (0.350) indicates that the independent variables could explain 35 per cent of the change in the dependent variable.

TABLE IV. MATRIX CORRELATIONS

	<i>EPA</i>	<i>PE</i>	<i>EE</i>	<i>SI</i>	<i>FAC</i>	<i>FIC</i>	<i>TA</i>
EPA	1						
PE	0.385*	1					
EE	0.377*	0.762	1				
SI	0.170	0.358	0.510	1			
FAC	0.452**	0.772	0.812	0.553	1		
FIC	0.534**	0.745	0.787	0.586	0.896	1	
TA	0.497**	0.653	0.732	0.490	0.778	0.780	1

Note: * and ** denote significant at 5% and 1% levels (2-tailed), respectively.

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TABLE V. COEFFICIENTS

Model	Unstandardized coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	1.413	6.673		0.212	0.834
PE	-0.043	0.344	-0.034	-0.124	0.902
EE	-0.167	0.409	-0.122	-0.407	0.687
SI	-0.204	0.182	-0.221	-1.120	0.273
FAC	-0.204	0.585	-0.138	-0.348	0.730
FIC	1.268	0.718	0.678	1.765	0.890
TA	0.496	0.445	0.296	1.114	0.275
Model Summary					
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	.592 ^a	.350	.206	6.65297	2.066

IV. CONCLUSION

The application of utaut in technology adoption research has been popular in recent years due to the ability of the theory to explain the users' intention or user behaviour. Besides, it was formulated from eight technology adoption theories. Utaut has been tested and extended previously but with the technology awareness and financial cost proposed in this study, it will provide the novelty in the technology adoption literature in e-payment and microfinance context particularly in malaysia.

From the descriptive analysis, it was found that the microfinance clients used various e-payment channels. Even though most of them only have primary and secondary school qualification backgrounds, that hasn't been a barrier for them to use e-payment systems. However only a small number of the microfinance clients used mobile banking and none of them used internet banking. to use mobile banking and internet banking, customers need to deal with the bank and the internet connection should be strong. the poor internet connection in the jengka area has forced the microfinance clients to go to the jengka town to pay their loans and bills. The mfis should provide and give more options of e-payment channels to be used by the microentrepreneurs to assist them to make payments not only to their fund providers but also to the suppliers and government. In addition, the government should play their role to improve the information, communication and technology (ict) infrastructure in the jengka area.

Si has no significant relationship with the adoption of e-payment. this finding is supported and aligned with several studies conducted previously (ali et al., 2017; gocalo & oliveira, 2015; teo et al., 2015; oliveira et al., 2014). Microfinance clients do not need to be influenced by their friends or family members to use any channel of e-payment especially for repayment of loans. aim clients attend weekly meetings and they normally repay their loans during the meetings using the cmccs provided. their usage of the system didn't originate from following their friends. The correlation and regression analysis also found that pe, ee, fic, fac and ta have significant relationship but weak and moderate level. This is maybe the effect of the small sample size (34 respondents) used in this study. A study conducted by goodwin & leech (2006) concluded that a small sample may substantially affected by any changes in scores, including the addition of an outlier or transformations of the variables. The result from the previous studies have shown that almost all the utaut constructs have significant influence on the technology adoption and the sample size used are more than 100 (table 2). It is suggested that future researchers could collect the larger sample size even for preliminary studies.

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