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Personal innovativeness and facilitating conditions in shaping the outlooks toward m-banking adoption among generation Y in Malaysia

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ABSTRACT

The study investigated the determinants of m-banking adoption among generation Y (Gen-Y) in Malaysia. The study underpinned the technology acceptance model as the main guideline or a blueprint for analyzing the research model. The study applied a survey research design and investigated structural equation modeling (SEM) under the partial least-square SEM (PLS-SEM) technique using SmartPLS 2.0. A total 358 m-banking users in Malaysia were exerted as respondents who were randomly selected and then investigated. The results of the analysis conducted with PLS-SEM reveal the existence of usage convenience, facilitating conditions, and personal innovation in information technology that has been remarkably influenced by the outlooks that have adopted m-banking in the country of Malaysia. In addition, the usage convenience that has been felt and facilitated by the conditions found can affect the appraised practicality of m-banking remarkably. Finally, the usage convenience of m-banking that is felt among Gen-Y in Malaysia is influenced by the remarkable activation of personal conditions and innovations exerted in information technology.

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1. INTRODUCTION

The banking industry initiated technology adaptation in 1960, and they are still experiencing adjustments in technologies in the management of banking information from time to time [1], [2]. Traditionally, the customers can be served many banking services from bank branches. Nevertheless, this conventional instrument has initiated to be substituted by digital instruments [3]. Mobile banking or m-banking for short which acts as the substitute instrument, can build on additional value to the conventional service [4]. However, there are still limited numbers of consumers who fully understood how m-banking works [5].

Conforming to Bank Negara Malaysia, Malaysia's penetration rate remains low compared to smartphone usage growth [6]. Although many use mobile service subscriptions, the penetration rate of

m-banking is less than half of the population using m-banking [6]. It may be concluded that consumers are still unfamiliar with the adoption of m-banking [7], [8]. Decision to adopt m-banking [9], [10] has the potential to be refused. In addition, in the financial stability and payment system report 2015, Malaysia [11] highlighted the need for additional efforts to ensure an increase in m-banking's convenience, flexibility and security measure.

The vigorous growth of the mobile industry has stimulated marketers to focus on generation Y (Gen-Y) as they occupy more than half of the industry [12]. Gen-Y individuals were born between 1981 and 2000 [13]–[15]. They have usually adapted to the latest lifestyle and are more likely to adopt m-banking than other generations [16]. Gen-Y will be looking for a more convenient way of conducting their banking transaction than the conventional way as the advance of information technology (IT) will stimulate the decision to do so [2], [17]. This phenomenon creates opportunities for financial institutions to utilize technology to improve their business [2]. Financial institutions are the most profitable segment of m-banking in the coming 10 years, and there is a need to have the best strategy for banks to attract this digital native [2], [18]. Thus, an investigation of factors of m-banking adoption among Gen-Y is necessary.

Lim *et al.* [7], Ha *et al.* [19], and Moazenzadeh and Hamidi [20] explained that a remarkable problem is the investigation of consumer behavior when implementing new technologies since it will impact the success or failure of the specific product or service, one of which is the technology acceptance model (TAM). TAM was initially introduced by Davis [21]. TAM is a modification of theory of reasoned action (TRA), specifically tailored to predict and describe the acceptance and adoption of information technology (IT) [21]. Two assumptions represent the user's outlook towards the practical use of new information or information technology, namely the usage convenience and practicality appraised by its users and has a causal effect on the practicality. In previous studies have been widely exerted TAM into numerous technological contexts to predict and disclose in-receipt of change acceptance and use of IT-related behaviors, relating to m-banking, television commerce, and internet business transactions [3], [22]–[25]. Individuals who have innovative ideas in the active search for information about new ideas is the result of innovation diffusion research has long been carried out. They are better able to cope with high levels of uncertainty and develop a more positive intention leading into acceptance [26]. Many studies in the diffusion of innovation, marketing, and social psychology research have investigated the effects of personal traits on adoption behavior as internal motivational stimuli [27]–[30]. We conclude that innovative individuals will continue to adopt new technologies, including m-banking services.

Facilitation conditions are defined as an external environment that helps users overcome obstacles in using new technology [31]. Users will find the m-banking service easy to use as they consider that environmental conditions will help them learn how to use m-banking services, while not being able to use its full features. This research was carried out because there was still little user acceptance in Malaysia to adopting m-banking systems as new banking technology. Therefore, the aim in this study is to adapt TAM to the construction of additional condition facilitation and personal innovation in it to predict individual outlooks regarding acceptance of m-banking usage among Gen-Y in Malaysia.

2. THEORETICAL FRAMEWORK

The cellular phone is the most commodiously utilized information and communication technologies (ICT) among disadvantaged groups in emerging countries. M-banking connects digital and financial inclusion for these billions. M-banking is a social informatics phenomenon that relies on the capacity of the poor to overcome barriers to access to cellular phones and financial services. The framework is presented in Figure 1.

2.1. Appraised usage convenience

Appraised usage convenience is one vital assemble in TAM. It refers to the extent of the beliefs of m-banking users toward adopting a particular system, which will bring convenience for them in terms of physical and mental effort [32]. TAM [32] authenticated the correlation between appraised usage convenience, practicality, and outlook. Individuals who have recognized a high level of usage convenience on m-banking will have a positive outlook to accept the technology because it helps to minimize their barriers in using technology [7], [33].

In addition, some of the recent research, including those by Lule *et al.* [23] and Khasawneh [34], reported the impact of apprehend usage convenience on outlook regarding m-banking adoption. In addition, it has been recognized that apprehend usage convenience affects outlook through apprehend practicality [35]. Past studies also confirm appraised usage convenience on apprehend practicality [36]–[38]. A m-banking program needs to be easy to understand and convenient to follow. Therefore, we can assume the following hypotheses:

- H1a: Appraised usage convenience affected the outlook towards using m-banking considerably.
- H1b: Appraised usage convenience considerably influenced m-banking's appraised practicality.

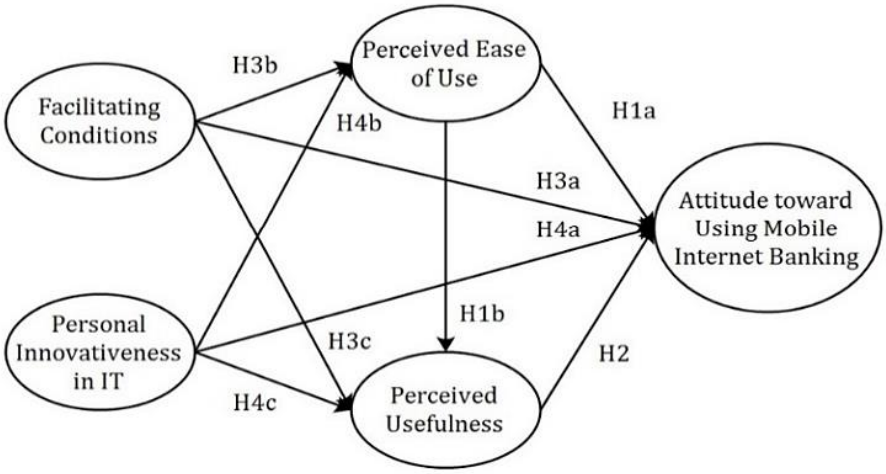

Figure 1. Theoretical framework

2.2. Appraised practicality

One of the uses that can be felt is one of the vital constructions in TAM. It refers to the degree to which a person is confident in adopting that particular system that will improve performance on his job [32]. The link between appraised practicality and outlook is confirmed by the TAM [32]; this model inspires banking consumers to adopt more innovative technologies that help to facilitate easier transactions [36]. Thus, consumers who discern a high level of users will be a healthier outlook toward m-banking adoption [39]. In addition, it was found that it can be felt remarkably practicality and it has influenced outlooks towards the use of m-banking [23], [34], [36]. Accordingly, we hypothesized the following:

- H2: appraised practicality has remarkably influenced outlook toward using m-banking.

2.3. Facilitating conditions

Facilitating conditions associated with the construction of behavioral control that can be appraised with the necessities, such as the opportunities and resources that exist for an individual to adopt a specific behavior [40]. Facilitating conditions that help in the delivery of the m-banking service will enhance the perception of practicality and confidence of an individual to have a positive outlook to adopt m-banking [22]. The financial organization's support line eliminates obstacles to using technical resources [2]. Implementation of better and higher service would provide a "helping hand," such as offering tutorials, and expert assistance would build a partnership between promoting conditions and appraised practicality towards m-banking adoption as individuals discern adequate support availability [41]. Many people consider m-banking as user-friendly because they are aware of environmental factors, which may help them know how to use m-banking even though they are not familiar with it [42]. Therefore, we put forward three hypotheses:

- H3a: facilitating conditions have remarkably influenced outlooks toward using m-banking.
- H3b: facilitating conditions influenced the appraised usage convenience of m-banking remarkably.
- H3c: conditions promoting greatly affected m-banking's appraised practicality.

2.4. Personal innovativeness in IT

Personal innovativeness in IT refers to the innate willingness of a person to use and embrace new technologies. Customers who have a higher personal innovation outlook in the IT field are expected to develop a positive outlook toward using new technology compared to customers who lack personal innovation in the IT field [43]. The influence of personal innovativeness in IT on outlook has received poor attention from researchers [44]. An individual with a high degree of Personal Innovativeness is considered to have more positive perceptions and outlooks about the methods in terms of usage convenience and practicality for adopting m-banking [43], [44]. And the following theories have been formulated:

- H4a: The approach towards using m-banking has remarkably been affected by personal innovativeness in IT.
- H4b: Personal IT innovation has greatly affected the appraised usage convenience of m-banking.
- H4c: The appraised value of m-banking has remarkably been affected by personal IT innovations.

3. METHOD

3.1. Sampling

Conforming to Sekaran and Bougie [45], sampling refers to adopting an appropriate number of right individuals from the population to estimate a parameter of the population. Moreover, sampling also reduces the time and cost of the data accumulation process [46]. In this study, convenience sampling has been applied to student subjects in three public universities, namely University Sains Malaysia (USM), University Utara Malaysia (UUM), and University Malaysia Perlis (UniMAP). The questionnaire was distributed to the way of the proportional stratified random sample. The University students in universities were targeted as respondents because they are the younger generation who frequently use cellular phones and are more sensitive to technology [18].

3.2. Data accumulation method

Preparing and acquiring data is referred to as data accumulation [45]. Self-administered questionnaires were addressed to University students at the three targeted universities as the data accumulation tool in this study. The questionnaire's quantification items were derived from [5], [47]–[49]. Only 358 of the 494 University students in the target sample were willing to complete the questionnaire, resulting in a 72.46% success rate in data accumulation (response rate).

3.3. Data analysis techniques

This research is a quantitative study with data collected through the administration of questionnaires that were investigated using statistics, namely the partial least-square (PLS) with structural equation modeling (SEM). PLS offers statistical investigates of high quality and has also been exerted to assess to what degree information system analysis meets predictable expectations [50], [51]. It also facilitates the researcher by modeling relationships among multiple constructs in response to an accumulation of interrelated research questions within the proposed model [52]. PLS was suitable for explaining the complicated relationship [53].

4. RESULTS AND DISCUSSION

The evaluation of the measuring model is the first step towards evaluating the model in PLS-SEM [54]. PLS-SEM takes care and eases the prediction of endogenous variables by maximizing the variance of the endogenous variable [54]. Hair *et al.* [46] mentioned that convergent validity is method where numerous items are employed to measure and confirm a concept. The quantification can be relevant to the average variance extracted (AVE), composite reliability, and loading value of a factor. The necessities for convergent validity are that the AVE value must be above 0.50, the combined reliability value must be more than 0.70, and the value of factor loading for each item must be more than 0.50 [54]. As depicted in Table 1, all the loading values for each quantification item and all composite reliability values for each variable meet the necessities to ensure convergent validity.

Discriminant validity is a kind of construct validity exerted to predict two variables that are not correlated, or different constructs do not overlap [45]. In addition, Fornell and Larcker [55] also revealed that discriminative validity is accepted when the square root of the AVE value is more remarkable than its square correlation value. As is demonstrated in Table 2, the square root of AVE of the model constructs is greater than its squared correlations, meaning that discriminant validity in this study is confirmed.

The structural model specification employs R2 values to investigate the quality of each variable in the structural model to ascertain and explain the variance and quantify the quality of the model's endogenous variables. R2 values vary from 0 to 1, with higher numbers demonstrating greater prediction accuracy. As a result, the admissible R2 value is ascertained by the complexity [46]. In Figure 2 and Table 3, ATT as one of the endogenous variables is at a moderate level, 22.10%. Moreover, the R2 values of perceived ease of use (PEOU) and perceived usefulness (PU) are 6.09% and 9.40%, respectively, which are at a weak but acceptable level. Additional support of the communality value of more than 0.4 and the small value of redundancy, which is not more than 0.10 for a total of three endogenous constructs in this study, is supported. Thus, all constructs have met all the necessities for verifying the structural model.

Table 1. The convergent validity assessment results

Model construct	Measurement item	Loadings	AVE	Composite reliability
ATT	ATT1	0.6589	0.5015	0.8006
	ATT2	0.7352		
	ATT3	0.6866		
	ATT4	0.7483		
FC	FC1	0.6344	0.5000	0.7983
	FC2	0.6502		
	FC3	0.7058		
	FC4	0.8225		
PEOU	PEOU1	0.7126	0.5123	0.8077
	PEOU2	0.7311		
	PEOU3	0.7252		
	PEOU4	0.6935		
PU	PU1	0.5405	0.5074	0.8018
	PU2	0.7433		
	PU3	0.7660		
	PU4	0.7733		
PI	PI1	0.7244	0.5832	0.8072
	PI2	0.8113		
	PI3	0.7527		

Note: ATT abbreviation refers to outlook toward using m-banking, FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT.

Table 2. Discriminant validity of constructs

Constructs	ATT	FC	PEOU	PI	PU
ATT	**0.708**				
FC	0.271	**0.707**			
PEOU	0.242	0.225	**0.716**		
PI	0.351	0.080	0.119	**0.764**	
PU	0.221	0.215	0.261	0.055	**0.712**

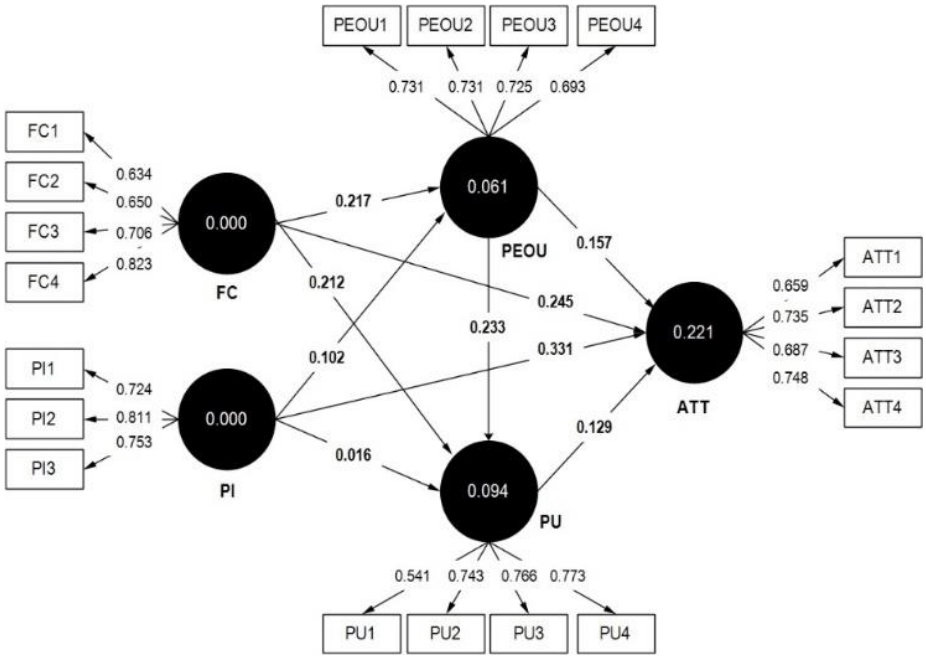

Figure 2. Final model (standardized). Note: ATT refers to outlook toward using m-banking. FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT

The PLS approach uses the global standard of goodness of fit (GoF) to investigate the whole model. The geometric mean of the average communality and average R-square for the endogenous constructs is exerted to calculate the GoF for PLS. GoF assesses the variation derived by both quantification and structural models [56]. The overall results of the GoF computations are presented in Table 4.

Table 3. Structural model specification

Constructs	Level of Construct	R-Square	Redundancy	Communality
ATT	First Order	0.2210**	0.0335	0.5015
FC	First Order	First Predictor	First Predictor	0.5000
PEOU	First Order	0.0609*	0.0241	0.5123
PI	First Order	First Predictor	First Predictor	0.5832
PU	First Order	0.0940*	0.0217	0.5074

Note: Remarkable level R^2(Cohen, 1988): >0.32 (substantial)***, >0.15 (moderate)**, >0.02 (weak)*. ATT refers to outlook toward using m-banking. FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT.

Table 4. Structural model specification

Construct	R-Square	Communality	Redundancy
ATT	0.221	0.5015	0.0335
FC	-	0.5000	-
PEOU	0.061	0.5123	0.0241
PI	-	0.5832	-
PU	0.094	0.5074	0.0217
∑x/n	0.0752	0.5209	
$[(\sum xR^2)/n]\times[(\sum xComm/n]$		0.0392	
The Goodness of Fit		0.1979*	

Note: Conforming to Wetzels *et al.* (2009), for global validation of PLS models, GoF_{small}=0.10*, GoF_{medium}=0.25**, and GoF_{large}=0.36***. ATT refers to outlook toward using m-banking. FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT.

Conforming to Wetzels *et al.* [57], the evaluation was made with the baseline values of GoF (small=0.1, medium=0.25, and large=0.36). Therefore, the result of this study indicates that GoF of the model is small and acceptable to indicate an adequate PLS model validity. The hypotheses testing, the bootstrapping technique, uses repeated random sampling with replacement from the original sample to create a bootstrap sample, which is eventually exerted to get standard errors for testing the hypothesis [54]. Figure 3 shows the PLS bootstrapping for the study model. Table 5 was generated to summarize the hypothesized structural relationship between endogenous and exogenous variables.

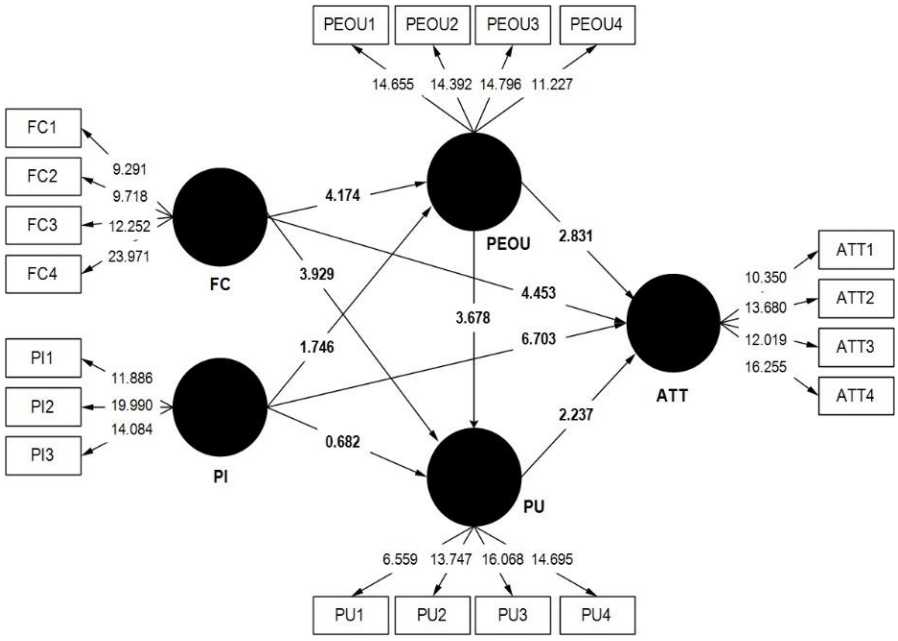

Figure 3. Full model (bootstrapping). Note: ATT refers to outlook toward using m-banking. FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT

The requirement t-value with at least 1.65 for 10% of a remarkable level for the two-tailed test is the standard for supporting hypotheses in this study. As shown in Table 5, all variables appraised to be usage convenience, appraised practicality, facilitating condition, and personal IT innovation with t values of 2.83, 2.24, 4.45, and 6.70, respectively, have a major impact on the outlook towards using m-banking. The outlook towards using m-banking with a beta value of 33.1% at a substantial level of $p<0.05$ is essential for personal IT innovation. Therefore, it supports the hypotheses H1a, H2, H3a, and H4a.

Table 5. Hypothesis testing

Relationship	Beta Value	Standard Error	t Statistics	Supported
PEOU→ATT	0.157	0.056	2.831	H1a (Yes)
PEOU→PU	0.223	0.061	3.678	H1b (Yes)
PU→ATT	0.129	0.058	2.237	H2 (Yes)
FC→ATT	0.245	0.055	4.453	H3a (Yes)
FC→PEOU	0.217	0.052	4.174	H3b (Yes)
FC→PU	0.212	0.054	3.929	H3c (Yes)
PI→ATT	0.331	0.049	6.703	H4a (Yes)
PI→PEOU	0.102	0.058	1.746	H4b (Yes)
PI→PU	0.038	0.056	0.682	H4c (No)

Note: *Remarkable at $p<0.10$ at a two-tailed t statistics value of 1.65. ATT refers to outlook toward using m-banking. FC is facilitating conditions, and PEOU is appraised usage convenience. PU refers to appraised practicality, and PI refers to personal innovativeness in IT.

Afterwards, the effect of appraised usage convenience, facilitating condition, and personal IT innovativeness for appraised practicality. Appraised usage convenience with a t-value of 3.68 and facilitating condition with a t-value of 3.93 substantially affect appraised practicality at a substantial $p<0.10$ point. Perceives usage convenience with a beta value of 22.3% having the most vital effect on appraised practicality. However, private IT innovativeness with a t-value of 0.68 did not remarkably impact appraised practicality. H1b and H3c are both supported while H4c is not supported

Finally, the finding of both facilitating condition and personal innovativeness in IT remarkably influences appraised usage convenience with the t values of 4.17 and 1.75, respectively, at a remarkable level of $p<0.10$. Facilitating conditions and personal IT innovation generated 21.7 and 10.2% respectively. From these results, H3b and H4b are both supported.

This study demonstrated that the outlook towards using m-banking in Gen-Y was influenced by appraised usage convenience, practicality, facilitating conditions, and personal IT innovation, which were vital in Gen-Y in Malaysia. The relationship between appraised usage convenience and outlook is consistent with previous research [23], [34]. This result suggested that m-banking users of Gen-Y who expected greater usage convenience of m-banking systems have a healthier outlook towards m-banking adoption in Malaysia. In addition, the indicator of appraised outlook practicality is consistent with other results from previous studies [36]. Generally, the remarkable influence of appraised practicality on outlook toward using m-banking among Gen-Y in Malaysia was expected as wealth benefits attract them to using m-banking. This research discovers that m-banking applications' growing usage convenience and practicality would reinforce Malaysians' outlook towards adopting m-banking.

In Malaysia, facilitating conditions substantially impacted Gen-Y views toward using m-banking. This shows that the promoting elements in this study affect the views of Malaysian participants. This empirical analysis agrees with the findings of previous reports [22], [58]. It demonstrates how external factors, such as resource availability can remarkably impact Gen-view Y's of the m-banking facilities. Furthermore, empirical evidence from this study reveals that personal innovativeness in IT has a major influence on Gen-outlook Y's on adopting m-banking in Malaysia. As a result, it agrees with the previous study conducted by Rao and Troshani [44]. Conforming to the findings of this study, Malaysian Gen-Y has an intrinsic inclination to adopt m-banking.

The result also portrayed that appraised usage convenience has remarkably influenced appraised practicality. Thus, the result is consistent with the TAM research hypothesized and other researchers' findings in prior studies [36], [38]. Throughout this report, Gen-Y has acknowledged that appraised usage convenience would enhance m-banking's practicality towards its efficiency. We appraised that usage convenience would result in increased usage of m-banking because most respondents in this study owned more than one smartphone.

The study also found that enabling conditions influenced appraised practicality. In fact, a previous study reported that facilitating conditions has insignificant impact on appraised utility in m-banking [37]. A more vital element in investigating the appraised utility of m-banking among Malaysian Gen-Y is enabling

conditions. The existence of favorable conditions may boost an individual's perception and ability to use a m-banking application.

Promoting IT supporting conditions and human innovativeness has a big impact on appraised usage convenience. This study's empirical evidence reveals that enabling conditions have a remarkable impact on appraised usage convenience. The methodological findings are consistent with earlier research [37], [42]. Conforming to the researcher, consumers should consider m-banking to be simple to use because they are aware of external factors that assist them in learning how to use the software. This study demonstrates that participants acknowledged the significance of exterior ambient factors, which made them feel convenience when utilizing m-banking.

The remarkable influence of personal innovativeness in IT on appraised usage convenience of m-banking among Gen-Y in Malaysia has been observed in this study. This finding is consistent with a prior study [38]. The result indicated that Gen-Y, who naturally tend to try new technology, feel that m-banking is easy to use. In other words, the result indicates that Gen-Y, with a higher level of innovativeness, found m-banking to be easy to use.

5. CONCLUSION

The preceding variables that influenced the outlook toward using m-banking, appraised utility and convenience of use were established in this study. After analyzing the results obtained, the proposed framework can provide insight and understanding of the relationship between each component that can influence outlooks towards the use of m-banking among Gen-Y Malaysia. It also concluded that personal innovativeness in IT was a non-remarkable predictor of appraised practicality. Furthermore, it is acknowledged that appraised practicality does not exist if customers are unwilling to experiment with and accept new technology. Conforming to the findings, financial institutions should increase their promotion of the benefits of m-banking in order to help enthusiastic technology user have a greater influence on the appraised utility of m-banking.

CONTRIBUTION OF THE STUDY

This study adds to the current knowledge on the topic of outlooks toward the use of m-banking. In practice, this study has built the understanding of Malaysian practitioners, mainly commercial bank operators who offer m-banking as one of their banking services. It was because Malaysia has a low penetration rate of m-banking among cellular phone users, the findings of this study suggest that marketers in financial institutions could assist in developing a good outlook for potential m-banking users. Because they are frequent users of mobile technology devices, University students at colleges are in the right market segment. Malaysian financial institutions should promote, inform, and underline the benefits of m-banking to the younger generation. This can be accomplished by emphasizing the values of m-banking and teaching Gen-Y to foster a positive outlook toward m-banking adoption for non-adopters, who represent a potential market for m-banking services.

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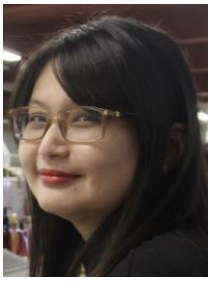

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