Articles

The Role of Personal Innovativeness and Facilitating Conditions in Shaping the Attitudes of Mobile Internet Banking (MIB) Adoption among Generation Y in Malaysia

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Abstract: The study investigates the determinants of mobile Internet banking adoption among Gen-Y in Malaysia. Align the issue of the study and research objectives, and the study underpinned Technology Acceptance Model (TAM) as the main guideline or a blueprint to analyze the research model. The study applied survey research design and analyzed using Structural Equation Modelling (SEM) under the PLS-SEM technique with SmartPLS 2.0. A total of 358 mobile internet banking users in Malaysia were random proportional selected as respondents and analyzed. Results from the partial least square structural equation modeling (PLS-SEM) revealed that perceived ease of use, perceived usefulness, facilitating condition, and personal innovativeness in IT have significantly influenced the attitude of mobile internet banking adoption in Malaysia. Additionally, perceived ease of use and facilitating conditions found to have a significant influence on the perceived usefulness of Mobile Internet Banking. Lastly, facilitating conditions and personal innovativeness in IT are significantly influence the perceived ease of use of mobile internet banking among Gen-Y in Malaysia.

Keywords: Attitude; Perceived Ease of Use; Perceived Usefulness; Facilitating Condition; Personal Innovativeness in IT; Mobile Banking; Generation Y.

1. Introduction

The banking industry begins to adapt to technology since 1960, and they are still experiencing the changes in technologies in the management of banking information from time to time [1, 2]. Traditionally, a large number of banking services can obtain from the bank branches located near customers. Nevertheless, this traditional channel has started to be substituted by digital channels [3]. Mobile Internet Banking, which acts as the alternative channel, can add additional value to the traditional service [4]. However, there are still limited numbers of consumers adopt to mobile internet banking [5].

According to Malaysia [6], the penetration rate in Malaysia remaining low as compared to the growth of Smartphone usage. Although there is a large number of mobile service subscriptions, the penetration rate of mobile internet banking still lowers less than half of the population that applies to mobile internet banking [6]. It can conclude that the adoption of mobile internet banking is still unfamiliar to consumers [7, 8]. There is a potential of rejection to adopt mobile internet banking [9, 10]. Additionally, Malaysia [11] highlighted in the *Financial Stability and Payment System Report* 2015 that extra efforts are needed to guarantee the improvement of convenience, flexibility, and security measure of mobile internet banking.

The vigorous growth of the mobile industry has stimulated marketers to focus on the Gen-Y as they occupied more than half of the industry [12]. They are the most profitable segment of mobile internet banking in the coming ten years, and there is a must to have the best strategy for banks to

attract this digital native [2, 13]. Thus, examining the factors of mobile internet banking adoption among Gen-Y is necessary. Sejin, et al. [14], Lim, et al. [7], and Moazenzadeh [15] illustrated there is an important issue to investigate the behavior of consumers in the adoption of new technology as it will influence the success or failure of the particular product or service. Therefore, this study aims to adapt the Technology Acceptance Model (TAM) with additional constructs of facilitating condition and personal innovativeness in IT to predict the attitude of the individual to adopt mobile internet banking among generation Y in Malaysia.

2. Literature Review

2.1. Mobile Banking

Mobile banking (Mobile Internet Banking) is under the subcategory of mobile commerce (m-commerce). It is an act of new trend for users to perform any bank-related transactions in terms of internet-based services by using mobile phones or tablets without going to the bank or the Automated Teller Machine (ATM) [7, 16]. Additionally, users can access financial and non-financial services like bill payment, funds transfer, PIN change, mobile balance recharge, and account management anytime and anywhere [11, 17, 18]. By referring to the *Financial Stability and Payment System Report* (2015) issued by Malaysia [11], only thirteen banks are offering mobile internet banking services compare to thirty-three banks that offering internet banking services in Malaysia.

2.2. Generation Y

Generation Y (Gen-Y) are individual who born in the year 1981 to 2000 [19-21]. Gen-Y always adapted to the latest lifestyle, and they are more likely to adopt mobile internet banking compare to other generations [22]. Gen-Y will be looking for a more convenient way to conduct their banking transaction than the traditional way as the advance of IT will stimulate the decision to do so [2, 23]. This phenomenon creates opportunities for financial institutions to utilize technology in order to improve their business [2].

2.3. Technology Acceptance Model (TAM)

TAM initially introduced by Davis [24]. TAM modified from the TRA, which specifically tailored to predict and describe the acceptance and adoption of IT. Two beliefs identify the attitude of a user toward the actual use of new information technology or information system: perceived ease of use and perceived usefulness, and perceived ease of use has a causal influence on perceived usefulness. TAM was used in previous studies in several technology contexts such as [3, 25-28] to predict and explain the acceptance of IT-related behavioral and usages, including mobile banking, television commerce, and internet business transaction.

3. Theoretical Framework

The theoretical framework refers to how particular phenomena or variables or concepts are related to each other in a model, and the beliefs of explanation why these variables are related to each other [29]. Based on the previous empirical studies, this study adapted the TAM with additional constructs, namely facilitating conditions and personal innovativeness in IT [30].
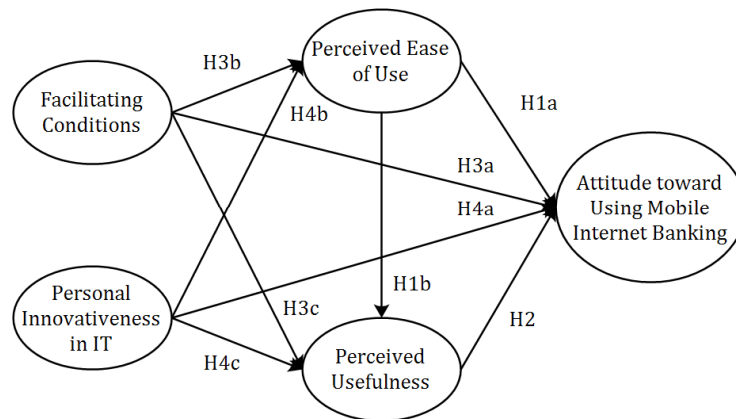
Figure 1. Theoretical Framework

3.1. The Influence of Perceived Ease of Use

Perceived ease of use is one vital construct in TAM, and it refers to the extent of the beliefs toward adopting the particular system, which will bring convenience for them in terms of physical and mental effort [24]. The link between perceived ease of use, perceived usefulness, and attitude confirmed in TAM [24, 31]. Individuals who have recognizes a high level of ease of use on mobile internet banking will lead to a positive attitude to accept the technology because it helps to minimize the barriers of consumers in using technology [7, 32].

Moreover, the influence of perceived ease of use on attitude toward mobile internet banking adoption confirmed by some of past studies such as Lule, et al. [26] and Khasawneh [33]. Furthermore, perceived ease of use has recognized to influence attitude through perceived usefulness [34]. Past studies also confirm the significant effect of perceived ease of use toward perceived usefulness [35-37]. Mobile internet banking needs to be both easy to learn and comfortable in the adoption of a mobile internet banking system. Thus, we can hypothesize the following:

H1a: Perceived ease of use has significantly influenced attitude toward using mobile internet banking.

H1b: Perceived ease of use has significantly influenced the perceived usefulness of mobile internet banking.

3.2. The Influence of Perceived Usefulness

Perceived usefulness is one of the vital constructs in TAM, and it refers to the degree to which an individual is confident with the adoption of a particular system that will enhance their job performance [24]. The link between perceived usefulness and attitude confirmed in TAM Davis [24], and it is an essential cause of attitude as it inspires banking consumers to adopt more innovative technologies that create value for them to performing transactions [35]. Thus, consumers who perceived a high level of users will have a more healthy attitude for mobile internet banking adoption [38]. Additionally, perceived usefulness found to behave a significant influence on attitude toward using mobile internet banking [26, 33, 35]. Accordingly, it hypothesized that:

H2: Perceived usefulness has significantly influenced attitude toward using Mobile Internet Banking.

3.3. The Influence of Facilitating Conditions

Facilitating conditions are related to the constructs perceived behavioral control which necessary condition such as the opportunities and resources exists for an individual to adopt specific behavior [39]. Facilitating conditions which help in the delivery of mobile internet banking service will enhance the perception of usefulness and confidence of an individual to have a positive attitude to adopt mobile internet banking [25]. The support line from the financial organization removes obstacles to use technological services [2]. The better and higher service implementation will create a 'helping

hand' such as providing tutorials, and expert assistance will create a relationship between facilitating condition and perceived usefulness toward the mobile internet banking adoption as individuals perceived the availability of adequate supports [30]. Individuals who perceive mobile internet banking is comfortable to use when they are aware of environmental conditions, which can help them to learn the method of using mobile internet banking even they are not familiar with it [40]. Thus, we stated three hypotheses:

H3a: Facilitating conditions have significantly influenced attitudes toward using mobile internet banking.

H3b: Facilitating conditions have significantly influenced the perceived ease of use of mobile internet banking.

H3c: Facilitating conditions has significantly influenced the perceived usefulness of mobile internet banking.

3.4. The Influence of 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 attitude in the IT field expected to develop a positive attitude to use new technology compared to customers who lack personal innovation in the IT field. [41]. The influence of personal innovativeness in IT on attitude receiving poor attention from past researchers [42]. The individual who has a high degree of personal innovativeness considered to have greater positive perceptions and attitudes about the methods in terms of ease of use and usefulness to adopt mobile internet banking [41, 43]. Therefore, the following hypotheses are:

H4a: Personal innovativeness in IT has significantly influenced attitude toward using mobile internet banking.

H4b: Personal innovativeness in IT has significantly influenced the perceived ease of use of mobile internet banking.

H4c: Personal innovativeness in IT has significantly influenced the perceived usefulness of mobile internet banking.

4. Research Methods

4.1. Sampling

According to Sekaran and Bougie [29], sampling refers to the selection of an appropriate number of right individuals from the population to estimate the parameter of the population. Moreover, sampling also reduces the time and cost of the data collection process [44]. Students in three public universities, which including University Sains Malaysia (USM), University Utara Malaysia (UUM), and University Malaysia Perlis (UniMAP), are the target respondents for this study. The questionnaire distributed in the way of proportional stratified random. The student in universities was targeted as respondents because they are the younger generation who frequently use mobile phones and more sensitive to technology Camhi [13].

4.2. Data Collection Method

Data collection refers to the procedure of preparing and gathering data [29]. The technique of data collection in this study was using self-administered questionnaires that distributed to the students in three targeted universities. Measurement items in the questionnaire adopted from Aboelmaged and Gebba [45]; Alalwan Ali, et al. [46]; Baptista and Oliveira [47]; Zhou [5]. Out of 494 sets of questionnaires, 358 sets are useable for analysis.

4.3. Data Analysis Techniques

The data collected from the administration of questionnaires were analyzed using statistics, namely the Partial Least Square (PLS) with Structural Equation Modelling (SEM). PLS provide high-

quality statistical analysis and always been used to test the degree to which information system research fulfills predictable standards [48, 49]. PLS, It also facilitates the researcher in response to a set of interrelated research question in the proposed model by modeling the relationships among multiple constructs [50]. PLS was suitable for explaining the complicated relationship [51].

5. Result And Discussion

5.1. Result

The assessment of the measurement model is the first step to evaluate the model in PLS-SEM [52]. PLS-SEM takes care and eases the prediction of the endogenous variables by maximizing the variance explained of the endogenous variable [52]. Hair, et al. [44] defined that convergent validity is a validity technique where several items are employed to measure and confirmed a concept. Measurement can be relevant to the average variance extracted (AVE), composite reliability, and loading value of the factor. The requirements to be ensured for convergent validity are that the AVE value must be above 0.50, composite reliability value must be more than 0.70, and the value of factor loading for each item must be more than 0.50 [52]. As depicted in Table 1, all the loading values for each measurement item and all composite reliability values for each variable are all meet the requirements to ensure convergent validity.

Table 1. The Convergent Validity Assessment Results

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

Note: Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

Discriminant validity is a kind of construct validity, where its use to predict two variables that are not correlated or different constructs do not overlap [29]. Moreover, Fornell and Larcker [53] revealed that discriminant validity is recognized when the square root of AVE value is more significant than its squared correlation value. As is demonstrated in Table 2, the square root of AVE of the model constructs is all bigger than its squared correlations, meaning that discriminant validity in this study is confirmed.
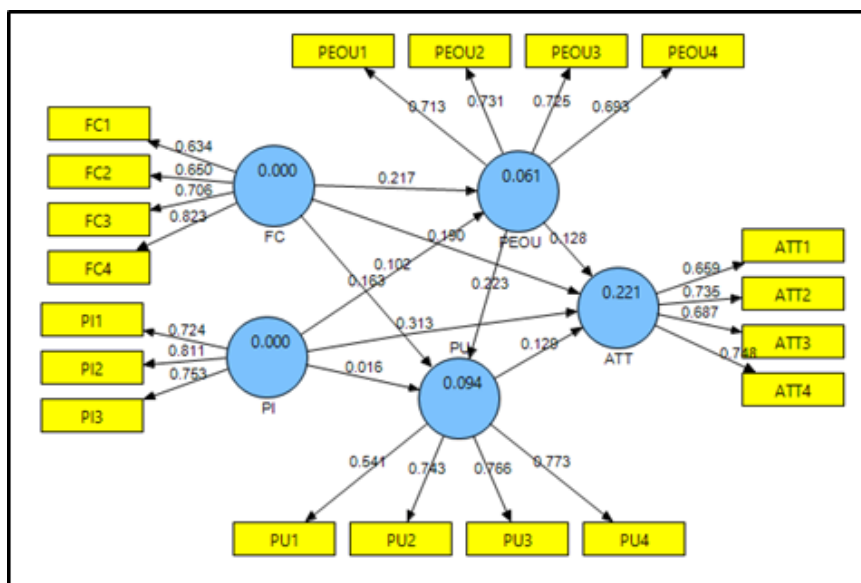
Table 2. Discriminant Validity of Constructs

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**

Note: *Significant at p<0.05 at a two-tailed T statistics value of 1.96. Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

In order to determine and explain the variance and measure the quality of the model's endogenous variables, the structural model specification uses the R^2 values to investigate the quality of each variable in the structural model. The value of R^2 ranges from 0 to 1, with higher levels indicating a higher level of predictive accuracy. Thus the acceptable R^2 value depends on the complexity of the model Hair, et al. [44].

In Figure 2 and Table 3, ATT as one of the endogenous variables is at a moderate level, which at 22.10 percent. Moreover, the R^2 value of PEOU and PU is 6.09 percent and 9.40 percent, which at the weak but acceptable level.

Figure 2. Final Model (Standardized)
Note: Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

Additional support of communality value with the 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 requirements for the verification of the structural model.

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

Constructs	Level of Construct	R-Square	Redundancy	Communality
PU	First Order	0.0940*	0.0217	0.5074

Note: Significant level R^2 (Cohen, 1988): >0.32 (Substantial)***, >0.15 (moderate)**, >0.02 (weak)*. Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

In the method of partial least squares (PLS), the global standard of the goodness of fit (GoF) applied to measure the entire model. GoF for PLS is the geometric mean of the average communality and average R-square for the endogenous constructs. For this purpose, GoF evaluates the variance extracted by both measurement and structural models [54]. Table 4 shows the overall results of the GoF calculations.

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
$\sum x/n$	0.0752	0.5209	
$[(\sum x R^2)/n] \times [(\sum x Comm/n]$		0.0392	
The goodness of Fit (GoF)		**0.1979***	

Note: According to Wetzels et al. (2009) for global validation of PLS models, GoF_{small} = 0.10*, GoF_{medium} = 0.25**, and GoF_{large} = 0.36***. Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

According to Wetzels, et al. [55], the evaluation was made with the baseline values of GoF (small = 0.1, medium = 0.25, large = 0.36). Therefore, the result of this study shows that GoF of the model is small and acceptable to indicating 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 eventually to get standard errors for testing the hypothesis [52]. The following Figure 3 shows the PLS Bootstrapping for the study model.
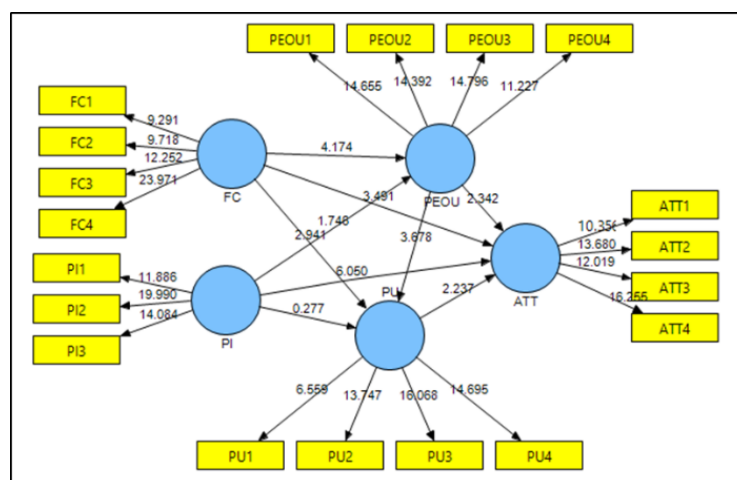

Figure 3. Full Model (Bootstrapping)
Note: Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating

conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

The following Table 5 generated to show the summary of the hypothesized structural relationship between each of the endogenous variables and exogenous variables.

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: *Significant at p<0.10 at a two-tailed T statistics value of 1.65.* Where the 'ATT' abbreviation refers to attitude toward using mobile banking. FC = facilitating conditions, PEOU = perceived ease of use. The 'PU' abbreviation refers to perceived usefulness. The 'PI' abbreviation refers to personal innovativeness in IT.

The requirement T-value with at least 1.65 for 10 percent of a significant level for a two-tailed test is the standard to supported hypotheses in this study. As illustrated in Table 5, the finding of all the variables, which are perceived ease of use, perceived usefulness, facilitating condition, and personal innovativeness in IT with T value of 2.83, 2.24, 4.45, and 6.70 have a significant influence on the attitude toward using mobile internet banking. Personal innovativeness in IT has highly significant on the attitude toward using mobile internet banking with the beta value of 33.1 percent a significant level of p<0.05. Thus, hypotheses H1a, H2, H3a, and H4a are supported.

Next, the result of the influence of perceived ease of use, facilitating condition, and personal innovativeness in IT toward the perceived usefulness. Perceived ease of use with a T-value of 3.68 and facilitating condition with a T-value of 3.93 has a significant influence on perceived usefulness at a significant level of p < 0.10. Perceives ease of use has the most significant influence on perceived usefulness with a beta value of 22.3 percent. However, personal innovativeness in IT with a T-value of 0.68 did not indicate any significant influence on perceived usefulness. Therefore, H1b and H3c are supported, while H4c is not supported.

Last, the finding of both influence of facilitating condition and personal innovativeness in IT has a significant influence on perceived ease of use with the T-value of 4.17 and 1.75, respectively, at a significant level p < 0.10. Facilitating conditions and personal innovativeness in IT generated a beta value of 21.7 percent and 10.2 percent, respectively. From these results, H3b and H4b are both supported.

5.2. Discussion

This study has shown that attitude toward using mobile internet banking among Gen-Y was affected by perceived ease of use, perceived usefulness, facilitating conditions, and personal innovativeness in IT was found significant among Gen-Y in Malaysia. The finding of the relationship between perceived ease of use and attitude is consistent with those of prior research [26, 33]. This result indicated that Gen-Y's mobile internet banking users who perceived higher ease of use of mobile internet banking systems have a more healthy attitude to adopt mobile internet banking in Malaysia. Moreover, the predictor of perceived usefulness toward attitude is in line with other findings in previous studies [35]. Generally, the significant influence of perceived usefulness on attitude toward using mobile internet banking among Gen-Y in Malaysia has expected as wealth benefits attract them to using mobile internet banking. This research suggests that the increasing ease of use and usefulness of mobile internet banking applications will strengthen the attitude of Malaysians to adopt mobile internet banking.

Facilitating conditions found to be significantly affecting attitude toward using mobile internet banking among Gen-Y in Malaysia. It means that the facilitating conditions in Malaysia shape participants' attitudes in this study. The result of this empirical study is consistent with other researcher's findings [25, 56]. It shows that the influence of external factors, such as the availability of resources, can affect their perception toward the facilities involved in mobile internet banking. Furthermore, empirical evidence from this research shows that personal innovativeness in IT has significantly influenced the attitude toward using mobile internet banking among Gen-Y in Malaysia. Therefore, it is consistent with Rao and Troshani [42]. This study indicated that Gen-Y in Malaysia's innate willingness to accept mobile internet banking enthusiastically.

The result also portrayed that perceived ease of use has significantly influenced perceived usefulness. Thus, the result is consistent with the TAM research hypothesized and other researchers' findings in prior studies [35-37]. Gen-Y in this study has recognized that perceive ease of use will enhance the usefulness of mobile internet banking toward their performance. They perceived that the ease of use would lead to higher usage of mobile internet banking as a majority of the respondents owned more than one phone in this study.

Moreover, empirical evidence from this study reveals that facilitating conditions has significantly influenced perceived usefulness. Although facilitating conditions received minimum attention from researchers [7], and Raleting and Nel [36] argued that facilitating conditions do not influence perceived usefulness in mobile internet banking. However, this study found that facilitating conditions is an essential factor in predicting the perceived usefulness of mobile internet banking among Gen-Y in Malaysia. This research suggests that the availability of facilitating conditions will increase the perception and capabilities of an individual toward the usefulness of the mobile banking application.

Besides that, the perceived ease of use is significantly influenced by facilitating conditions and personal innovativeness in IT. Empirical evidence from this study explains that facilitating conditions influence the perceived ease of use significantly. The empirical findings are consistent with prior studies [36, 40]. The researcher argued that users would be perceived as mobile internet banking to be ease of use when they know that the external environment conditions that assist them in learning the method of using the system. This result shows that participants recognized the importance of external environmental conditions that make them feel the ease of use on mobile internet banking.

Additionally, the significant influence of personal innovativeness in IT on perceived ease of use of Mobile Internet Banking among Gen-Y in Malaysia has observed in this study. The finding is consistent with the prior study [37]. The result indicated that Gen-Y, who has the natural tendency to try new technology feels that mobile internet banking is easy to use. In other words, the result shows that Gen-Y, with a higher level of innovativeness, found mobile internet banking to be easy to use.

6. Contribution Of The Study

This study adds to the existing literature on the issue related to attitude toward the use of mobile internet banking. Practically, this study has also contributed to practitioners in Malaysia, primarily commercial bank operators who operate mobile internet banking as one of their banking services. Since Malaysia is facing the low penetration rate of mobile internet banking among mobile phone users, the outcome of this study suggested that marketers in financial institutions should help in developing a positive attitude for potential mobile internet banking adopters. University students are in the right market segment since they are active users of mobile technology devices. The financial institution in Malaysia should promote, inform, and emphasized the advantages of using mobile internet banking toward the young generation. By highlight the values of mobile internet banking and educate them to build up a positive attitude toward the adoption of mobile internet banking for non-adopters as they are a potential market for mobile internet banking services.

7. Conclusion

This study had identified the antecedent variables that influenced the attitude of using Mobile Internet Banking, perceived usefulness, and perceived ease of use. After analyzed the results, the

proposed framework had provided insight and understanding into the relationship between each variable that influenced the attitude toward the use of Mobile Internet Banking among Gen-Y in Malaysia. It also concluded that personal innovativeness in IT found to be an insignificant predictor of perceived usefulness. It also understood that perceived usefulness has not existed when participants are willing to try and adopt new technologies. The research suggests that financial institutions should increase more promotion on the advantages of mobile internet banking to assist the enthusiastic technology seekers in having a more substantial influence on the perceived usefulness of mobile internet banking.

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