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Factors Affecting Mobile Banking Adoption

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Abstract

Mobile Banking has always been the focus of the banks to provide an alternative banking channel for the bank customers. However, the adoption rate was still relatively low and increased gradually over the decade. Thus, it is important to examine the factors affecting Mobile Banking Adoption to provide better insights to improve the situation for the bank customers to adopt it for banking purpose. In this conceptual article, the past literature related to the investigation of Technology Adoption was reviewed. Based on the review and also the understanding of the theory, this article further explores on the interactions of the constructs from Technology Acceptance Model (TAM) & Unified Theory of Acceptance and Use of Technology (UTAUT), Perceived Trust, Technology Awareness and Mobile Banking Adoption. With the study of these interactions, it is very likely to create new avenues for future research.

Keywords: Mobile Banking Adoption; Technology Adoption; Technology Acceptance Model; Perceived Trust; Technology Awareness.

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Introduction

The advancement of technology has changed the way of how people access to services which used to only exist in the form of brick-and-mortar. With the introduction of technology gadgets from something as big as a personal computer to something as small as a palm-sized smartphone, physical store is definitely not the only option that one has for getting the desired products or services. Businesses have hence gone online inevitably as an alternative channel to reach out the customers easily in order to stay competitive and relevance in the market. In fact, statistics have shown that e-Commerce site such as Amazon had achieved better in terms of revenue as compared to the giant retailers such as Tesco, Aeon, Best Buy, etc. (Deloitte, 2020).

In the banking sector, digital banking exists commonly in the form of Internet Banking which is web-based in general and Mobile Banking which is app-based for the customers to perform banking remotely. Some of the main offerings on both platforms of digital banking are like balance inquiry for accounts and cards, fund transfer, prepaid card reload, bills payment, investment, proximity payment and so on (Fenu & Pau, 2015). Despite Internet Banking has a longer existence in the market even before the smartphone era, as unlike Mobile Banking, it also works on a personal computer, Fenu and Pau (2015) confirmed that the features in Mobile Banking were not any inferior comparing with Internet Banking.

In spite of that, it was observed that the Mobile Banking Adoption was still low as compared to its successor - Internet Banking. In Great Britain, the adoption of Internet Banking has increased significantly from 30% in 2007 to 76% in year 2020 (Office for National Statistics (UK), 2020). However, the adoption rate of Mobile Banking in the United Kingdom was slower. In 2010, the adoption rate was 9% (Accenture, 2016) and it was then increased gradually to 45% in 2019 (Samojło, 2019). In the United States, the Mobile Banking Adoption rate was rather low as well, which was recorded at 47% in 2017 and 49.2% in 2018 (Caroline, 2018). A similar trend was observed in Malaysia. As reported by Central Bank of Malaysia (2020), the adoption rate of Internet Banking was only recorded at 9.8% in 2005 and it was accelerated to 112.5% in 2020. On the other hand, the adoption rate was recorded at 0.5% in 2005 and increased gradually to 61.8% in 2020. Whilst Malaysian banks started focusing on mobile development as an alternative banking channel (Boey, 2020), the adoption rate of Mobile Banking was still relatively low (Central Bank of Malaysia, 2020). Hence, Mobile Banking was the context chosen for Technology Adoption study in this research.

In the past, many constructs such as Perceived Usefulness, Perceived Ease of Use, Social Influence, Facilitating Conditions and so on were used before to study Technology Adoption. Most of these constructs are based on two well-known theories for Technology Adoption namely Technology Acceptance Model (TAM) (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). It is with no doubt that numerous studies in the past agreed with TAM or UTAUT on the positive relationship between these determinants

and Technology Adoption (Baishya & Samalia, 2020; Kamal et al., 2020; Lew et al. 2020; Yein & Pal, 2021). Nonetheless, there were also evidence in the past disagreed with TAM & UTAUT due to the insignificant relationships observed between these constructs and Technology Adoption (Duarte & Pinho, 2019; Kwateng et al., 2019; Pandey & Chawla, 2019; Senyo & Osabutey, 2020).

Due to the inconsistency findings and mixed results observed in the past research, it is still not possible to draw a final conclusion of which factors that will affect an individual to adopt and start using a technology. With that, it is recommended by MacKinnon (2011) to introduce mediating and/or moderating variables which are useful for theory testing and manipulation checking to further understand these relationships. Moreover, the integration of mediating variable is also useful for building or redefining theory (MacKinnon, 2011). This article aims to explore the integration of Perceived Trust and Technology Awareness into TAM & UTAUT to study the Mobile Banking Adoption of bank customers in Malaysia

Literature Review

Technology Adoption has gained the attention from the researchers to study over the past thirty decades with various different types of technology or systems as the research context. The rapid economic growth and new technology have brought significant impact towards the accessibility of information (Muhammad Shahrin et. al., 2019). This article focuses on the exploration of the impact of Perceived Usefulness, Perceived Ease of Use, Social Influence and Facilitating Conditions on Mobile Banking Adoption. At the same time, the roles of Perceived Trust and Technology Awareness in the Technology Adoption Model will also be discussed in this article.

Mobile Banking and Mobile Banking Adoption

Mobile banking in this article refers to the banking apps used by the bank customers to perform banking transactions through their own smartphones. According to TAM (Davis, 1989) & UTAUT (Venkatesh et al., 2003), Behavioural Intention and Actual Usage Behaviour are the two common variables applied to measure Technology Adoption. However, using the latter to measure may be a bit challenging because the precision of self-declaration of the actual usage is questionable (Davis et al., 1989). A more recommended is to go through system logs that are more reliable (Venkatesh et al., 2003). However, it is impossible for any of the banks to provide the relevant system information which may require the disclosure of customers' personal data. On the other hand, Behavioural Intention has its root in the Theory of Reasoned Action (TRA) which is defined as the odds of a Behaviour (i.e. to adopt Mobile Banking) to be carried out by someone (Fishbein & Ajzen, 1975). The two theories have concluded that Behavioural Intention is the predictor of Actual Usage Behaviour. Therefore, Behavioral Intention was chosen as the measure of Mobile Banking Adoption in this study.

Perceived Usefulness and Mobile Banking Adoption

Originated from TAM, Davis (1989) defined Perceived Usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance." It the context of this research, it refers to how the banking customers believes that the adoption of Mobile Banking could enhance their banking experience. In UTAUT, Venkatesh et al. (2003) coined a similar term known as Performance Expectancy which was often used interchangeably with Perceived Usefulness in the past research (Calderón et al., 2017; Sair & Danish, 2018). Whilst there were some evidences in the past disagreed with TAM and argued that the relationship between Perceived Usefulness and Mobile Banking Adoption was insignificant (Choi & Song, 2020; Dhir et al., 2018; Hota & Mishra, 2018; Jasimuddin et al., 2017; Nedra et al., 2019), there were still quite a number of studies agreed with TAM (Budi et al., 2021; Gupta et al., 2019; Kumar et al., 2018; Shiferaw & Molla, 2018; Zhang et al., 2018). Therefore, it is proposed that:

Proposition 1: Perceived Usefulness positively affecting Mobile Banking Adoption.

Perceived Ease of Use and Mobile Banking Adoption

Similar to Perceived Usefulness, Perceived Ease of Use is also originated from TAM and defined as "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989). It is often used interchangeably with the construct Effort Expectancy in UTAUT (Lai, 2017; Sair & Danish, 2018). Majority of the past researches were in agreement with TAM in terms of the positive relationship between Perceived Ease of Use and Mobile Banking Adoption (Cserdi & Kenesei, 2020; Kamble et al., 2021; Malaquias & Silva, 2020; Priya et al., 2018, Zhang et al., 2018), although there were also some researchers doubted about that (Jewer, 2018; König & Grippenkoven, 2020; Schmidthuber et al., 2018; Tarhini et al., 2019; Yeo et al., 2021). Thus, it is proposed that:

Proposition 2: Perceived Ease of Use positively affecting Mobile Banking Adoption.

Social Influence and Mobile Banking Adoption

Social Influence was coined by Venkatesh et al. (2003) when UTAUT was formulated. It carries the meaning of "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003). Venkatesh et al. grouped a few constructs that carry the same meaning with Social Influence such as subjective norm, social factors and image to form this term. Although some of the studies in the past has an opposing finding with UTAUT (Arfi et al., 2021; Jang & Byon, 2020; Kante et al., 2019; Lallmahomed et al., 2017; Naranjo-Zolotov et al., 2019), there were still many of the researches concluded the positive relationship between Social Influence and Technology Adoption (Bawack & Kamdjoug, 2018; Ojo et al., 2019; Shrivastava et al., 2021; Talukder et al., 2019; Zhou et al., 2020). With that, it is proposed that:

Proposition 3: Social Influence positively affecting Mobile Banking Adoption.

Facilitating Conditions and Mobile Banking Adoption

Venkatesh et al. (2003) defined Facilitating Conditions as "the degree to which an individual perceives that important others believe he or she should use the new system." Same with Social Influence, Facilitating Conditions were originated from UTAUT. It was devised by Venkatesh et al. (2003) by merging a similar term such as perceived behavioural control and compatibility when formulating UTAUT. It was observed in the past studies that some of the findings was contradictory with UTAUT which proved the insignificant relationship between Facilitating Conditions and technology Adoption (Farah et al., 2018; Luyten & Marneffe, 2021; Makanyeza & Mutambayashata, 2018; Talukder et al., 2019). Nevertheless, there were also studies that were in agreement with the definition in UTAUT (Addy et al., 2018; Chawla & Joshi, 2019; Hu & Lai, 2019; Kalavani et al., 2018; Kapser & Abdelrahman, 2020). Therefore, the proposal is as follows:

Proposition 4: Facilitating Conditions positively affecting Mobile Banking Adoption.

Mediating Effect of Perceived Trust

According to Rousseau et al. (1998), Trust was widely studied in several different disciplines such as Sociology, Economics and Psychology. Gefen et al. (2003) highlighted that Trust can be defined from two different perspectives: i) a general belief that the subject can be trusted (Mayer et al., 1995); or ii) a set of beliefs such as integrity, ability, predictability and benevolence (Gefen et al., 2003). Adapting the latter version, Perceived Trust in this article is defined as the willingness of choosing Mobile Banking to access to the financial services based on the beliefs that one has in Mobile Banking (Alalwan et al., 2017). Due to the mixed findings observed in the four core variables of TAM & UTAUT as discussed previously, it is necessary to introduce a mediating variable for manipulation check purpose and also to redefine the Technology Adoption theory (MacKinnon, 2011). On top of that, there was only little evidences found that Perceive Trust serves as a mediator in a Technology Adoption Model (Enaizan et al., 2020; Kuester et al., 2018; Lee et al., 2019). More empirical findings are needed to confirm the mediating role of Perceived Trust and hence, it is proposed that:

Proposition 5a: Perceived Trust mediates the relationship between Perceived Usefulness and Mobile Banking Adoption.

Proposition 5b: Perceived Trust mediates the relationship between Perceived Ease of Use and Mobile Banking Adoption.

Proposition 5c: Perceived Trust mediates the relationship between Social Influence and Mobile Banking Adoption.

Proposition 5d: Perceived Trust mediates the relationship between Facilitating Conditions and Mobile Banking Adoption.

Moderating Effect of Technology Awareness

The origin of Technology Awareness was derived from Innovation Diffusion Theory (IDT) (Rogers, 1995). Based on IDT, Technology Awareness is defined as the knowledge that possessed by the users with regards to the features and potential use of a technology (Dinev & Hu, 2007). According to Vasudevan (1997), it also covers the interest of knowing and dealing of the technological issues. Abubakar and Ahmad (2013) suggested to incorporate moderating variable when inconsistent relationship is observed between the independent and dependent variables. In fact, it was also recommended by Abubakar and Ahmad (2013) to include Technology Awareness as the moderating variable to study its effect on Technology Adoption. There were too little evidences (Khan, 2018; Singh et al., 2020) found in the past studies to conclude the moderating effect of Technology Awareness. Hence, it is proposed that:

Proposition 6a: Technology Awareness moderates the relationship between Perceived Usefulness and Mobile Banking Adoption.
Proposition 6b: Technology Awareness moderates the relationship between Perceived Ease of Use and Mobile Banking Adoption.
Proposition 6c: Technology Awareness moderates the relationship between Social Influence and Mobile Banking Adoption.
Proposition 6d: Technology Awareness moderates the relationship between Facilitating Conditions and Mobile Banking Adoption.

Proposed Conceptual Framework

Based on the propositions suggested after reviewing the past literature, the proposed conceptual framework is depicted in the following figure:

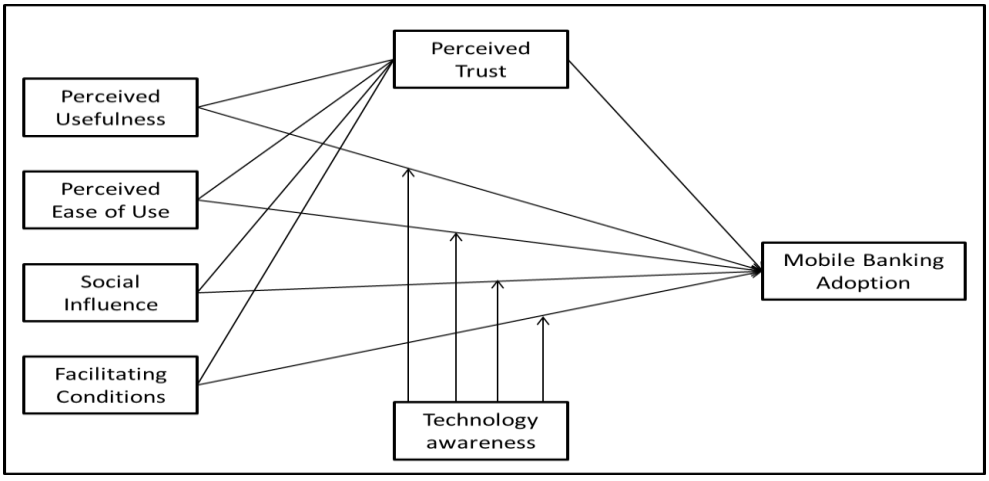

Figure 1. Conceptual Framework for Mobile Banking Adoption

Materials and Methods

This research employs explanatory approach because of the requirement to investigate the relationships among the independent variables and dependent variable (i.e. Mobile Banking Adoption). With that, a quantitative research will be carried out, survey method technique is adopted and self-administered questionnaire is used as the instrument for data collection (Mohamed-Isa, 2021). Mobile Banking app or in other words, they must be the existing mobile banking users in Malaysia. It is not possible to retrieve the list of existing Mobile Banking users from the banks due to personal data protection concern. Therefore, in the absence of sampling frame, a systematic sampling technique which involves bank intercept survey method will be used to distribute the questionnaires randomly to the bank customers who used mobile banking app before. The collected data will then be analyzed using Partial Least Squares Structural Equation Modeling approach in SmartPLS 3.0 data analysis tool.

Instruments and measurement

There are a total of 41 items adapted from the previous researches to measure the constructs of this study namely Perceived Usefulness, Perceived Ease of Use, Social Influence, Perceived Trust, Technology Awareness and Mobile Banking Adoption (i.e. Behavioural Intention). The questions were developed using five-point Likert scale ranging from 1 being strongly disagree to 5 being strongly agree to capture the feedback and perceptions of the respondents for each item.

There are 5 items adapted to measure Mobile Banking Adoption or Behavioural Intention. 3 items were adapted from Venkatesh et al.'s (2003) and the remaining 2 items from Venkatesh et al. (2012) which asking the questions if the respondents "intend", "plan" or "predict" to use Mobile Banking app in future. The respondents are required to rate their intention to use Mobile Banking app through the 5-point Likert scale with 1 being strongly disagree and 5 being strongly agree.

Next, a total of 5 items adapted from Davis's (1989) to measure Perceived Usefulness. The respondents will be asked to rate if they are agreeable that using Mobile Banking app is useful and more effective for them to perform the banking tasks. The rating will be done with the 5-point Likert scale ranges from 1 (strongly disagree) to 5 (strongly agree).

In terms of Perceived Ease of Use, the scales were adapted from Davis's (1989) as well. There are 5 questions altogether to get the response from the participant if using or interacting with Mobile Banking app is something easy and did not require huge effort. A higher score or rating (5 being the highest score) indicates that the Mobile Banking is easy to operate with a minimum effort required.

As for the variable Social Influence, there are 2 items adapted from Venkatesh et al.'s (2003), 1 item adapted from Venkatesh et al.'s (2012) and 2 items adapted from Mokhtar et al.'s (2017). The questions require the respondents to rate if they think that someone who are important to them or who influence their behaviour agree that they should use Mobile Banking. There are also two questions that ask if they think that using Mobile Banking is trendy and if it will give them a professional status. The participants will be requested to respond along the 5-point Likert scale as well to gauge the agreeableness to each item.

In regards to Facilitating Conditions, there are 6 items adapted from Venkatesh et al.'s (2003) and Venkatesh et al.'s (2012). The first two questions are about getting the opinion if the bank customers have the essential resources and knowledge to use Mobile Banking app. While the third question is to get the feedback if Mobile Banking app is compatible with the technologies that they use. The last three questions are basically required the respondents to answer the extent of the support and help that they could get from others and the banks if they face difficulty when using the app. As usual, a 5-point Likert scale (with 1 being strongly disagree and 5 being strongly agree) is used to capture the responses from the participants.

Subsequently, there are 8 items adapted from Alalwan et al.'s (2017) and Koenig-Lewis et al.'s (2010) to measure Perceived Trust. Some examples of the adapted items are "I believe or trust in Mobile Bank app", "I trust that Mobile Banking app will do the job or task right" and "I trust that the Mobile Banking app, mobile phone and the mobile data are secure to operate Mobile Banking." The respondents are asked to rate if they are agreeable to these items using 5-point Likert scale of 1 being strongly disagree and 5 being strongly agree.

Last but not least, Technology Awareness is measured by adapting 7 items from Dinev and Hu's (2007) and Vasudevan's (1997). The examples of the measures are: if they follow the news about Mobile Banking app, if they discuss about Mobile Banking experience with their friends, and if they are aware of the offerings, features, benefits of Mobile Banking. Same with the rest of the variables, the respondents need to rate these items using a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree).

Conclusion

In this research, the Mobile Banking Adoption is examined by integrating Perceived Trust (the mediator) and Technology Awareness (the moderator) into TAM & UTAUT. There is little evidence in the past which could prove that Perceived Trust and Technology Awareness coexist in the examination of a technology adoption model. The findings from this research could contribute to the knowledge in the area of Technology Adoption and at the same time could serve as a guide for the policy maker (i.e. Central Bank of Malaysia) and industry (i.e. financial institutions particularly banks) to accelerate Mobile Banking Adoption.

Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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