


Influencing mobile banking acceptance among consumers in Malaysia



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ABSTRACT

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The adoption of mobile banking in Malaysia is low despite the government's efforts to digitalize the national banking system. Malaysian citizens are uncomfortable embracing mobile banking due to the absence of adequate knowledge-based trust. As only 54.2% of Malaysians are willing to adopt mobile banking in daily life, this research was conducted to boost mobile banking acceptance. This study empirically investigates attributes influencing mobile banking acceptance in Malaysia. New attributes of mobile banking acceptance, such as perceived competence, perceived benevolence and perceived integrity, have been examined in this study to address the acceptance problems faced by the banking industry and customers. The purposive sampling method was used where the targeted respondents must have prior experience in mobile banking. The data was collected using an adapted questionnaire, and a total of 385 valid responses were analyzed. For hypothesis testing, structural equation modeling (SEM) was used to confirm the relationship between variables. Perceived ease of use, perceived relative advantage, perceived compatibility, perceived competence, perceived benevolence, and perceived integrity were found to have a significant effect on mobile banking acceptance. Understanding the impact of new constructs, such as perceived competence, perceived benevolence and perceived integrity, benefits banking institutions, policy makers and mobile commerce practitioners in addressing problems relating to mobile banking acceptance.

Contribution/Orioginality: This study helps banking institutions and policy makers to address contemporary mobile banking acceptance problems in the country by examining new constructs, such as perceived competence, perceived benevolence and perceived integrity. This research contributes to knowledge by providing new insights in generating better strategies for digital transformation in Malaysia.

1. INTRODUCTION

In the Financial Sector Blueprint (FSBP) 2011–2020, the Malaysian government places great emphasis on mobile banking, the main strategy for national bank digitization (Central Bank of Malaysia, 2020). Mobile banking a key strategy for financial inclusion and electronic payment penetration for affordable bank access for all Malaysian citizens (Central Bank of Malaysia, 2020). Nevertheless, Patel and Brown (2016) revealed that Malaysia is yet to develop an attractive mobile banking environment. A survey carried out by the Malaysian Communication and Multimedia Commission (MCMC) (2018) further revealed that only 54.2% of Malaysians were willing to adopt mobile banking in daily life.

The main issue that leads to low mobile banking adoption in the country is the lack of knowledge-based trust in mobile banking, as people who have not adopted mobile banking perceive mobile banking applications as too confusing (CFI Group, 2014), or not user-friendly (Merry, 2018), which results in less behavioral intention to use the applications (Patel & Brown, 2016). Small device size makes it even more difficult to use the applications (Patel & Brown, 2016). Respondents believe that they would not be able to do everything they need to via mobile banking (Patel & Brown, 2016). Poor internet connection and device incompatibility (CFI Group, 2014) also contribute to the non-acceptance of mobile banking.

This study comprehensively examines how perceived relative advantage, perceived ease of use, perceived compatibility, perceived competence, perceived benevolence, and perceived integrity influence the acceptance of mobile banking in Malaysia, and it contributes to the existing knowledge through studying new attributes of mobile banking acceptance-making such as perceived competence, perceived benevolence and perceived integrity in response to the current problem faced by the mobile industry.

The research will be beneficial to the banking industry, particularly in comprehending the key attributes of mobile banking acceptance. Understanding the antecedent attributes will assist them in designing appropriate programmes to motivate customers to adopt these services. The findings and recommendations of this study could also assist banking institutions in fixing significant problems related to mobile banking channels. Banks can plan and implement measures to solve these issues, and subsequently improve the acceptance of mobile banking services. Additionally, this research could also provide practical insights to banks in generating strategies for the digitization of banking. With better insights, banks could formulate intense business models and subsequently enhance mobile banking service quality. The underserved population in Malaysia would be able, and more willing, to use mobile banking services when the acceptance barriers are eventually resolved. Citizens who live in more rural areas can perform transactions via mobile banking, and they would not have to travel long distances in order to visit a physical bank branch. The financial inclusion rate will increase when more people have bank accounts and actively use them. The study of common problems faced by users is important for both users and banks. Banks could overcome the significant barriers, and users will benefit from the resolutions. In addition, the Malaysian Ministry of Finance (MOF) could consider this research as a reference for the next FSBP revision. Furthermore, the findings of this study could contribute to future financial sector planning. The emergence of mobile banking could creatively act as a platform for the country to introduce new innovative services.

2. LITERATURE REVIEWS

2.1. Mobile Banking Acceptance (MBA)

Success in mobile banking primarily depends on repeat usage of the service and continuance of use in the future (Audi et al., 2016). Intense competition in the financial services industry adds pressure to institutions to increase customers' mobile banking acceptance, since higher user loyalty can lead to more revenue and lower costs and provide new business opportunities for financial institutions via recommendations and minimum customer turnover (Chaouali & El Hedhli, 2018). For an institution to maintain or gain customers, it is essential to determine the key attributes that affect mobile banking acceptance as well as upgrade the service design and performance that meet individuals' wishes and needs (Yuen, 2010).

2.2. Perceived Ease of Use (PEOU)

Perceived ease of use (PEOU) is associated with the inbuilt quality of information technology, which is one of the crucial determinants of mobile banking acceptance (Ramayah & Lo, 2007). PEOU explains how simple and intelligible the communication is with the technology, the comfortability of commanding the technology to perform, and the straightforward use of the technology (Amin, Supinah, Aris, & Baba, 2012). In mobile banking, PEOU is the degree to which mobile banking is easy to comprehend and use (Deb & Lomo-David, 2014), and for mobile banking to be

more widely accepted, it should be easy to use (Moraa, 2014). In order to optimize use, mobile banking systems must be easy to learn and handle (Al-Jabri & Sohail, 2012).

Individuals prefer to use mobile technology that is user-friendly and simple and effortless to use (Shareef, Baabdullah, Dutta, Kumar, & Dwivedi, 2018). Ease of use will provide greater benefits from the innovation as far as output improvement is concerned (Aboelmaged & Gebba, 2013). In this era of fast-moving mobile innovation, individuals are more aware of experiencing easy mobile banking (Yu, 2012). Nevertheless, the specifications of mobile devices, such as limited screen size and small keypad, are a hindrance for users in the adoption of mobile banking (Deb & Lomo-David, 2014).

2.3. Perceived Relative Advantage (PRA)

In mobile banking acceptance, relative advantage is equivalent to convenience, money saving and time saving (Hosseini, Fatemifar, & Rahimzadeh, 2015). Mobile banking acceptance is reportedly linked with affordability, convenience, and immediacy (Al-Jabri & Sohail, 2012). This innovation is a global platform, and users can effortlessly access their domestic bank accounts, even when abroad, to carry out bank transactions (Zolait & Sulaiman, 2008). Customers are more motivated if they perceive that mobile banking services provide more advantages than internet Banking (Kahandawa & Wijayanayake, 2014). If the innovation has more relative advantages, customers' attitudes will be positive toward mobile banking (Siddik, Sun, & Kabiraj, 2014).

Undoubtedly, mobile banking also brings relative disadvantages, for instance, privacy concerns (Hosseini et al., 2015). Banking customers do not believe it is necessary to change their behavior and use an innovative service if it does not perform in a superior manner (Dineshwar & Steven, 2013). Individuals who are required to provide personal data before using mobile banking are likely to reject the service. When individuals feel there is little relative advantage and don't see the need to adopt the innovation, banks have to step up their efforts to make individuals see and trust the benefits of the innovation (Zolait & Sulaiman, 2008).

2.4. Perceived Compatibility (PC)

Perceived compatibility is the extent to which customers believe that mobile banking is harmonious with existing experiences and habits (Hosseini et al., 2015). It is an assessment of how an innovation fits comfortably with the way a person likes to perform their banking tasks (Audi et al., 2016). Perceived compatibility in mobile banking measures to what extent the mobile technology fits into current banking and financial management (Zhou, 2018). Research has shown that over two-thirds of traditional services fail to meet customers' needs and habits, mainly due to non-ubiquity (Hourahine & Howard, 2004). Typical issues of perceived compatibility include the "bricks and mortar" issue where customers are unable to visit a financial branch conveniently, and the "paper" issue, which means not receiving statements by post (Hosseini et al., 2015). Hanafizadeh, Behboudi, Koshksaray, and Tabar (2014) claimed that understanding customers' lifestyle would help to develop easy-to-use mobile banking and increase the number of users. High compatibility improves the acceptance of innovative services (Siddik et al., 2014), and technology should always suit the needs of the users because the service will be familiar (Ilie, Van Slyke, Green, & Lou, 2005). Even though the acceptance rate of mobile banking is low in Malaysia (Malaysian Communication and Multimedia Commission (MCMC), 2018), perceived compatibility in using mobile banking is under-studied in the existing literature. Ewe, Yap, and Lee (2015) included perceived compatibility as a mediator and technology anxiety as a moderator, but their study failed to establish an association between perceived compatibility, technology anxiety and mobile banking acceptance.

2.5. Perceived Competence (PCE)

Perceived competence is defined as the aggregation of abilities, characteristics and skills that empower a group to have impact within a specific domain (Zhou, 2018), denoted as a task-related skill (Robert, Denis, & Hung, 2009).

Competence-based trust is seen as the trustworthiness of the fundamentals of ability and reliability; it is greatly related to competence and responsibility (Ko, 2010). In the context of mobile banking, competence implies that a bank has sufficient skills and adequate knowledge to complete its responsibilities (Zhou, 2018). The synonyms of competence include ability and character (Schoorman, Mayer, & Davis, 2007). Competence depicts whether an individual possesses the abilities and skills needed to act in the required manner (Colquitt, Scott, & LePine, 2007). It is very common in nature for an individual to evaluate the relevant expertise of a party as an indication of trustworthiness (Drake & Mehta, 2006). Trust in terms of competence does not usually generalize to other circumstances (Howorth & Moro, 2005).

Perceived competence is explicit, as a party might be strongly efficient in particular areas, allowing a person to trust the party in those areas (Schoorman et al., 2007). In fact, competence has continuously appeared as a critical factor in the evaluation of trustworthiness (Howorth & Moro, 2005). A party may commit to performing work associated with the party's area of expertise but may not deliver the desired banking service to the valued customers (Schoorman et al., 2007). Robert et al. (2009) hypothesized that trust will reduce when the trustor (customer) thinks the trustee (bank) is not capable of completing the task.

2.6. Perceived Benevolence (PB)

Perceived benevolence exists when an individual feels that a service provider shows care and concern through innovation and offers beneficial features rather than solely operating with the objective of making a profit (Robert et al., 2009). In the mobile banking context, perceived benevolence indicates that banks will consider individual customer welfare more than the company's interests (Zhou, 2018).

Perceived benevolence depends on the goodwill and commonality of mobile banking users. Banking service providers will want to offer great services and products (Drake & Mehta, 2006). Hence, in the customer–mobile bank relationship context, perceived benevolence covers service providers' readiness to offer something desirable to customers (Howorth & Moro, 2005).

In the banking sector, when a service provider is truly interested in their clients' welfare, it has the intent to do something beneficial for their clients (Zhou, 2018). Bhattacharjee (2002) inferred that a benevolent company helps its mobile banking customers in spite of the obligation to do so.

2.7. Perceived Integrity (PI)

Perceived integrity refers to the trust that a mobile bank will be honest and keep its promises (Priya, Gandhi, & Shaikh, 2018). The perceived integrity of mobile banking consists of two main elements: (i) the trustee (bank) abiding by the banking rules, and (ii) how much the rules are perceived as appropriate by the trustor (customer) (Burke, Sims, Lazzara, & Salas, 2007). Perceived integrity refers to how well banks adhere to their guarantees without taking advantage of trustors (Zhou, 2018). Financial institutions are credible based on their justice, honesty and objectivity in providing mobile banking services (Lin, 2011).

Van Deventer (2020) claimed that perceived integrity is evaluated by reviewing past bank dealings to correlate the banks' conduct with customers' trust. If an oral and written bank conduct is not considered decent by the trustor, the trustee is deemed to be not credible (Van Deventer, 2020). In mobile banking, principles that hold integrity encompass giving impartial advice and keeping customer personal data confidential (Lin, 2011). These dimensions of perceived integrity reinforce customers' trust in financial institutions (Lin, 2011).

Perceived ease of use (PEOU), perceived relative advantage (PRA), perceived compatibility (PC), perceived competence (PCE), perceived benevolence (PB), and perceived integrity (PI) are hypothesized to have a significant effect on mobile banking acceptance (MBA).

The six hypotheses are as follows:

H1: PEOU significantly affects MBA.

- H2: PRA significantly affects MBA.
- H3: PC significantly affects MBA.
- H4: PCE significantly affects MBA.
- H5: PB significantly affects MBA.
- H6: PI significantly affects MBA.

3. RESEARCH FRAMEWORK

The framework of this research is developed based on literature reviews. Figure 1 illustrates the research framework of this study that measures the influence of perceived ease of use, perceived relative advantage, perceived compatibility, perceived competence, perceived benevolence, and perceived integrity on mobile banking acceptance in Malaysia.

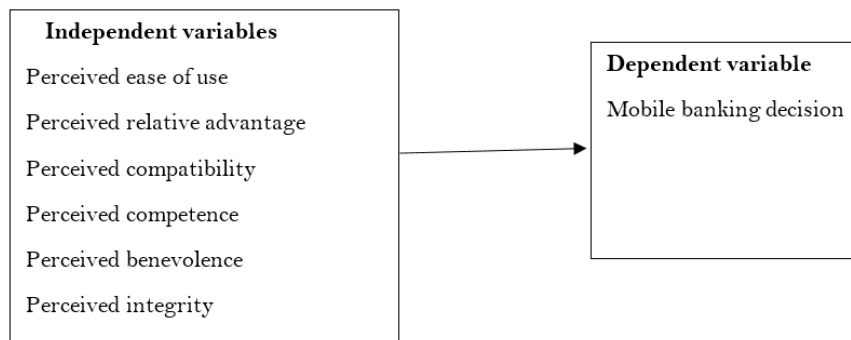


Figure 1. Research framework.

4. RESULTS

The study was conducted in four major cities with the highest mobile broadband usage—Kuala Lumpur, Johor, Pulau Pinang, and Selangor. Mobile broadband subscriptions in these four states constitute 86% of the total broadband subscriptions in Malaysia (Malaysian Communication and Multimedia Commission (MCMC), 2018). The majority of the residents in these states have mobile internet access, so the probability of finding mobile banking users is higher. Paper questionnaires were distributed to current mobile banking users living in Kuala Lumpur, Selangor, Pulau Pinang, and Johor. Approximately 900–1000 individuals were asked whether they were mobile banking users, and then invited to answer the questionnaire on the spot. However, most did not want to partake in the survey. For every 10 individuals approached, only three to four individuals were willing to answer the questionnaire. In return, the respondents received a token of appreciation upon completion. The time to complete a questionnaire was roughly 10 minutes.

A total of 410 self-administered questionnaires were distributed, of which 385 were completed, returned and analyzed. Purposive sampling depends on the purpose of the research, and the selection was based on the researcher’s judgment (Ames, Glenton, & Lewin, 2019). The respondents were required to fulfill specific criteria before answering the questionnaire. Criteria 1: The respondent must be a current mobile banking user with at least one year’s experience in performing mobile banking. Criteria 2: the respondent must live in one of the states of West Malaysia with the highest broadband penetration rate.

The results in Table 1 show that all constructs met the composite reliability (0.60) and average variance extracted (AVE) (0.50) threshold values, which implies strong convergent validity (Hair, Sarstedt, Matthews, & Ringle, 2016). The discriminant validity of the research instrument is verified, with \sqrt{AVE} values larger than the squared correlation coefficient.

Table 1. Factor loading, composite reliability and AVE of constructs.

Construct	Item	Factor loading (>0.5)	Composite reliability (>0.6)	AVE (>0.5)
Perceived ease of use (PEOU)	PEOU1	0.751	0.936	0.648
	PEOU2	0.782		
	PEOU3	0.779		
	PEOU4	0.833		
	PEOU5	0.811		
	PEOU6	0.828		
	PEOU7	0.836		
	PEOU8	0.816		
Perceived relative advantage (PRA)	PRA1	0.741	0.895	0.552
	PRA2	0.731		
	PRA3	0.579		
	PRA4	0.748		
	PRA5	0.845		
	PRA6	0.793		
	PRA7	0.738		
Perceived compatibility (PC)	PC1	0.767	0.914	0.572
	PC2	0.77		
	PC3	0.801		
	PC4	0.783		
	PC5	0.719		
	PC6	0.725		
	PC7	0.765		
	PC8	0.717		
Perceived competence (PCE)	PCE1	0.82	0.889	0.617
	PCE2	0.786		
	PCE3	0.81		
	PCE4	0.774		
	PCE5	0.734		
Perceived benevolence (PB)	PB1	0.751	0.891	0.62
	PB2	0.783		
	PB3	0.804		
	PB4	0.786		
	PB5	0.811		
Perceived integrity (PI)	PI1	0.794	0.897	0.636
	PI2	0.786		
	PI3	0.798		
	PI4	0.817		
	PI5	0.792		
Attitude (ATT)	ATT2	0.578	0.88	0.599
	ATT3	0.71		
	ATT4	0.866		
	ATT5	0.823		
	ATT6	0.855		
Mobile banking acceptance (MBA)	MBA1	0.806	0.951	0.684
	MBA2	0.811		
	MBA3	0.829		
	MBA4	0.871		
	MBA5	0.842		
	MBA6	0.826		
	MBA7	0.809		
	MBA8	0.827		
	MBA9	0.822		

The results in Table 2 suggest that PEOU influences MBA, with $\beta = 0.331$ and $p < 0.001$, indicating that PEOU has a positive and significant impact on MBA. Hence, H1 is supported.

The results in Table 2 ($\beta = 0.119$; $p = 0.01$) imply that PRA has a positive and significant impact on MBA. Therefore, H2 is supported.

The findings ($\beta=0.365$; $p<0.001$) indicate that PC has a positive and significant impact on MBA. In this research, PC was the most important predictor as it had the highest coefficient ($\beta = 0.365$). Thus, H3 is supported.

The hypothesis testing results show that PCE positively influences MBA ($\beta = 0.322$; $p < 0.001$). Therefore, H4 is supported.

PB was found to positively influence MBA ($\beta = 0.161$; $p < 0.001$). Hence, H5 is supported.

MBA is positively affected by PI ($\beta = 0.104$; $p = 0.025$). Therefore, H6 is supported.

A total of 61.3% of MBA was contributed to by PEOU, PRA, PC, PCE, PB and PI.

Table 2. Direct effect of constructs.

Structural Path	b	SE	β	p
PEOU → MBA	0.258	0.037	0.331	<0.001
PRA → MBA	0.096	0.037	0.119	0.01
PC → MBA	0.309	0.042	0.365	<0.001
PCE → MBA	0.264	0.04	0.322	<0.001
PB → MBA	0.132	0.038	0.161	<0.001
PI → MBA	0.094	0.042	0.104	0.025
	R ²	MBA	0.613	

5. DISCUSSION

The analysis results in Table 2 reveal that all identified attributes significantly affect mobile banking acceptance (MBA). Using CB-SEM with AMOS, the path analysis showed that PEOU ($p < 0.001$), PRA ($p = 0.01$), PC ($p < 0.001$), PCE ($p < 0.001$), PB ($p < 0.001$), and PI ($p = 0.025$) significantly and positively affect MBA. Therefore, all hypotheses are supported, as indicated below in Table 3.

Perceived ease of use ($\beta = 0.331$; $p < 0.001$) was shown to have a significant and positive impact on mobile banking acceptance. Banking users who perceive mobile banking to be easy to understand will develop a positive attitude toward it. A user-friendly application interface and simplified transaction process encourage banking users to complete their banking transactions using mobile banking. Hence, the initial enhancement in mobile banking may begin with ease of use. The high beta value ($\beta = 0.331$) indicates that the easier mobile banking is to use, the higher the rate of acceptance.

Perceived relative advantage ($\beta = 0.119$; $p = 0.01$) was discovered to have a significant and positive influence on users' intention to use mobile banking. Banking users are inclined to select mobile banking services that are convenient, allowing them to carry out banking transactions and manage their finances more efficiently and effectively. Mobile banking services that have more of an advantage than similar service providers will gain more market share. In Malaysia, mobile banking service providers realize the importance of the relative advantage of their services, and they are working hard to provide outstanding services, such as multilingual platforms, money transfers using mobile phone numbers or national identity card numbers, and mobile wallets within the same mobile banking application. This shows that PRA has a direct and positive relationship with MBA.

Perceived compatibility had the strongest influence on mobile banking acceptance. Consumers in Malaysia prefer mobile banking services that are designed to make their personal life and working life easier and more productive. Mobile banking services that fit into consumers' current lifestyles will be the most popular.

Perceived competence ($\beta = 0.322$; $p < 0.001$) significantly and positively affected mobile banking acceptance. Mobile banking service providers with good knowledge, expertise, ability to manage users' finances, and handle transactions appropriately can promote individuals' favorable intention toward using mobile banking. Users who have confidence in mobile banking service providers tend to accept mobile banking.

In this research, perceived benevolence ($\beta = 0.161$; $p < 0.001$) was discovered to have a significant and positive effect on mobile banking acceptance. Users who perceive mobile banking service providers to be benevolent and supportive and consider users' benefits and not just their own interests, will develop positive intentions to use mobile banking. Some service providers are open and receptive to customers' needs, and they provide instant access services

for users to apply for credit cards, loans, fixed deposit accounts, current accounts and other services using mobile banking applications.

Lastly, perceived integrity ($\beta = 0.104$; $p = 0.025$) also had a significant and positive impact on mobile banking acceptance. Banking customers who trust mobile banking service providers will form an interest in adopting mobile banking, as the customers feel that the service providers are honest, ethical, fair, unbiased, and always keep their commitments. This attribute is critical in retaining mobile banking users and allowing them to continue using mobile banking.

Table 3. Hypothesis testing results.

Hypothesis	Result
H1: PEOU significantly affects MBA.	Supported
H2: PRA significantly affects MBA.	Supported
H3: PC significantly affects MBA.	Supported
H4: PCE significantly affects MBA.	Supported
H5: PB significantly affects MBA.	Supported
H6: PI significantly affects MBA.	Supported

6. MANAGERIAL IMPLICATIONS

The advantages of a high level of mobile banking acceptance include reduced operating costs for banks because fewer bank branches are needed to cater to the local population. In Asia, large banks continue investing 50 to 100 million dollars each year in digital technologies. Mobile banking is one of these technologies, and investment in mobile banking development is worthwhile if the acceptance rate is high. Therefore, banks need to comprehend the barriers to mobile banking acceptance and study how these attributes affect mobile banking acceptance in order to overcome them.

Mobile banking providers need to ensure that the transaction process using mobile banking is easy and simple in addition to creating a user-friendly interface with a larger font size, a multi-lingual function, and clearer options. Service providers could also provide customer service support and technical support via mobile banking applications. With terms and conditions applied, service providers could offer a booking facility for face-to-face meetings between bank staff and clients for a number of banking activities and transactions. Banks could also offer tuition for people to learn how to use mobile banking technology. Mobile banking providers need to creatively enhance their relative advantage and constantly interact with banking users. Furthermore, service providers need to ensure that mobile banking applications are compatible with various versions of smartphone operating systems. To introduce and integrate mobile banking into users' lifestyles, banks could organize campaigns to encourage mobile banking usage by offering special privileges, cashback, and rewards for both new and existing customers. User awareness needs to be enhanced through awareness campaigns so that more people are aware of mobile banking. User awareness campaigns must highlight the values of mobile banking and emphasize the competitive advantages that are appealing to potential users. Banks also need to ensure that they have the capability and capacity to provide high-security and privacy protection for users of mobile banking platforms. They need to ensure that their mobile banking platform is error-free and that they have the ability to resolve mobile banking related problems quickly. Banks also need to take care of the interests of customers and be open and willing to accept customer feedback. They could commit themselves to socially responsible activities and contribute to society. Lastly, service providers need to strictly abide by banking policies and regulations to ensure fair and ethical business activities and transactions.

Banks need to formulate intense business models in order to stay competitive. To have high market penetration, banks need to innovate almost all fintech products and alternative banking channels. Mobile banking is one of the innovations for banking digitization. In Malaysia, internet banking has already highly penetrated, and now banks need to promote the acceptance of mobile banking. To ensure the success of such transformation, banks need to continuously redefine their operating models and revise the roadmap for banking digitization. By not only introducing

internet banking and mobile banking technologies, but by also going paperless and having high-tech branches, banks are one step closer to building a digitally driven organization. Mobile banking acceptance can be accelerated by providing better service quality, which, in turn, improves customer satisfaction and loyalty. Banks need to enhance users' attitudes toward their intention to adopt mobile banking. Attitude is an essential indicator in influencing the willingness to adopt mobile banking. A satisfied user will always have a favorable attitude toward using mobile banking services.

The underserved population in Malaysia would also need to be exposed to mobile banking. They need to open bank accounts in order to use mobile banking. With that, they would learn to use their accounts and understand that they do not need to carry a lot of cash. Mobile banking technology will bring more advantages, especially for those living in rural areas with less access to bank branches. As a result, the financial inclusion rate would increase as more people would have bank accounts. Mobile banking inclusion is one of the ways to reduce the informal economy and help the underserved population to step out of poverty. Having access to banking products will also improve people's access to credit, and micro-sized businesses, particularly, will have the opportunity to expand and eventually drive economic growth. When business owners have more financial knowledge, they will be able to protect their businesses and themselves with insurance cover. By empowering themselves with financial management skills and knowledge, they will also learn the importance of saving as a future financial resource. Overall, when the acceptance problems are resolved, users will enjoy greater convenience from mobile banking, and the banking industry will attain greater success. When mobile banking becomes easier to use and compatible with lifestyles and devices and has more relative advantage, banks' competence, benevolence and integrity will also improve, and more people will adopt mobile banking in their daily lives. In addition, this research could serve as a reference for the next Financial Sector Blueprint (FSBP) revision. Policy makers, the Ministry of Finance specifically, could refer to the findings and recommendations of this study. The current FSBP aims to resolve several issues, such as financial inclusion and e-payment. When more people use mobile banking, it improves the transparency of financial transactions, resulting in a lower possibility of money laundering and tax evasion. It also reduces operating costs, improves the reliability of banking users where bounced cheques can be avoided, increases transaction speed, and brings convenience to users. Since mobile banking platforms also serve as an m-wallet for m-payment, banks could introduce an m-credit card, where the credit card is connected to the mobile banking application. Just like a normal credit card, it could be used for payments and installments. However, it is much safer than holding a credit card, since it needs biometric authentication; the payWave, or contactless, feature of a credit card can be quite risky.

7. THEORETICAL IMPLICATIONS

New attributes of mobile banking acceptance, such as perceived competence, perceived benevolence, and perceived integrity, are examined in this study to address the mobile banking acceptance problems faced by the banking industry and customers.

The research framework of this study was validated through structural equation modeling, which is capable of generating precise calculations of probability distribution on the observed data. From the research, all six acceptance attributes were found to be significant drivers of mobile banking acceptance. This study provides useful insights and serves as a foundation for the advancement of mobile banking.

8. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE STUDIES

The study only included one emerging nation, Malaysia, and the data was collected from the four states with the highest mobile banking penetration, which are also considered urban areas. Future research could extend the sample areas to the whole of Malaysia by considering respondents from urban and rural areas, so that a more comprehensive sample could be gathered, and the results could be generalized to the entire population.

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Institutional Review Board Statement: The Ethical Committee of the Multimedia University, Malaysia has granted approval for this study on 18 August 2020 (Ref. No. 20200481).

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.

Competing Interests: The authors declare that they have no competing interests.

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REFERENCES

- Aboelmaged, M. G., & Gebba, T. R. (2013). Mobile banking decision: An examination of technology acceptance model and theory of planned behavior. *International Journal of Business*, 2(1), 35-50. <https://doi.org/10.24102/ijbrd.v2i1.263>
- Al-Jabri, I. M., & Sohail, M. S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, 13(4), 379-391.
- Ames, H., Glenton, C., & Lewin, S. (2019). Purposive sampling in a qualitative evidence synthesis: A worked example from a synthesis on parental perceptions of vaccination communication. *BMC Medical Research Methodology*, 19(1), 1-9. <https://doi.org/10.1186/s12874-019-0665-4>
- Amin, H., Supinah, R., Aris, M. M., & Baba, R. (2012). Receptiveness of mobile banking by Malaysian local customers in Sabah: An empirical investigation. *Journal of Internet Banking and Commerce*, 17(1), 1-12.
- Audi, M. F., Wahbi, M., Abdallah, S., Kassem, L., Jaber, N., & Makkaw, R. (2016). Decision of mobile banking applications in Lebanon. *Journal of Internet Banking and Commerce*, 21(1), 1-15.
- Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, 19(1), 211-241. <https://doi.org/10.1080/07421222.2002.11045715>
- Burke, C. S., Sims, D. E., Lazzara, E. H., & Salas, E. (2007). Trust in leadership: A multi-level review and integration. *The Leadership Quarterly*, 18(6), 606-632. <https://doi.org/10.1016/j.leaqua.2007.09.006>
- Central Bank of Malaysia. (2020). *Financial sector blue print 2011-2020*. Retrieved from <https://www.bnm.gov.my/publications/fsb3>
- CFI Group. (2014). *Bank satisfaction barometer 2014*. Retrieved from <https://cfigroup.com/resource-category/research-studies/>
- Chaouali, W., & El Hedhli, K. (2018). Toward a contagion-based model of mobile banking adoption. *International Journal of Bank Marketing*, 37(1), 69-96. <https://doi.org/10.1108/ijbm-05-2017-0096>
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007). Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4), 909-927. <https://doi.org/10.1037/0021-9010.92.4.909>
- Deb, M., & Lomo-David, E. (2014). An empirical examination of customers' adoption of m-banking in India. *Marketing Intelligence & Planning*, 32(4), 475-494. <https://doi.org/10.1108/mip-07-2013-0119>
- Dineshwar, R., & Steven, M. (2013). *An investigation on mobile banking decision and usage: A case study of Mauritius*. Paper presented at the Proceedings of 3rd Asia-Pacific Business Research Conference.
- Drake, J., & Mehta, N. (2006). *Benevolent competence and integrity-based trust in knowledge transfer: A look at software reuse*. Paper presented at the AMCIS 2006 Proceedings.
- Ewe, S. Y., Yap, S. F., & Lee, C. K. C. (2015). Network externalities and the perception of innovation characteristics: Mobile banking. *Marketing Intelligence & Planning*, 33(4), 592-611. <https://doi.org/10.1108/mip-01-2014-0006>
- Hair, J., Joe F, Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I—method. *European Business Review*, 28(1), 63-76. <https://doi.org/10.1108/eb-09-2015-0094>
- Hanafizadeh, P., Behboudi, M., Koshksaray, A. A., & Tabar, M. J. S. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, 31(1), 62-78. <https://doi.org/10.1016/j.tele.2012.11.001>

- Hosseini, M. H., Fatemifar, A., & Rahimzadeh, M. (2015). Effective factors of the adoption of mobile banking services by customers. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 33(2581), 1-13.
- Hourahine, B., & Howard, M. (2004). Money on the move: Opportunities for financial service providers in the 'third space'. *Journal of Financial Services Marketing*, 9(1), 57-67. <https://doi.org/10.1057/palgrave.fsm.4770141>
- Howorth, C., & Moro, A. (2005). *Benevolence, integrity and ability: A survey of Italian SMEs and banks*. Paper presented at the Institute for Small Business and Entrepreneurship - 28th National Conference, Blackpool, UK.
- Ilie, V., Van Slyke, C., Green, G., & Lou, H. (2005). Gender differences in perceptions and use of communication technologies: A diffusion of innovation approach. *Information Resources Management Journal*, 18(3), 13-31. <https://doi.org/10.4018/irmj.2005070102>
- Kahandawa, K., & Wijayanayake, J. (2014). Impact of mobile banking services on customer satisfaction: A study on Sri Lankan state commercial bank. *International Journal of Computer and Information Technology*, 3(3), 546-552.
- Ko, D. G. (2010). Consultant competence trust doesn't pay off, but benevolent trust does! Managing knowledge with care. *Journal of Knowledge Management*, 14(2), 202-213. <https://doi.org/10.1108/13673271011032355>
- Lin, H.-F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International Journal of Information Management*, 31(3), 252-260. <https://doi.org/10.1016/j.ijinfomgt.2010.07.006>
- Malaysian Communication and Multimedia Commission (MCMC). (2018). *Internet user survey 2018*. Retrieved from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Internet-Users-Survey-2018.pdf>
- Merry, E. A. (2018). *Mobile banking: A closer look at survey measures, FEDS notes*. Washington: Board of Governors of the Federal Reserve System.
- Moraa, O. E. (2014). *A framework for the decision of mobile banking applications in the Kenyan banking systems*. Unpublished Master Thesis, University of Nairobi, Kenya.
- Patel, K., & Brown, I. (2016). Towards a theory of multi-channel banking adoption amongst consumers. *Electronic Journal of Information Systems Evaluation*, 19(3), 37-157.
- Priya, R., Gandhi, A. V., & Shaikh, A. (2018). Mobile banking adoption in an emerging economy: An empirical analysis of young Indian consumers. *Benchmarking: An International Journal*, 25(2), 743-762. <https://doi.org/10.1108/bij-01-2016-0009>
- Ramayah, T., & Lo, M. C. (2007). Impact of shared beliefs on "perceived usefulness" and "ease of use" in the implementation of an enterprise resource planning system. *Management Research News*, 30(6), 420-431. <https://doi.org/10.1108/01409170710751917>
- Robert, L. P., Denis, A. R., & Hung, Y.-T. C. (2009). Individual swift trust and knowledge-based trust in face-to-face and virtual team members. *Journal of Management Information Systems*, 26(2), 241-279. <https://doi.org/10.2753/mis0742-1222260210>
- Schoorman, F. D., Mayer, R. C., & Davis, J. H. (2007). An integrative model of organizational trust: Past, present, and future. *Academy of Management Review*, 32(2), 344-354.
- Shareef, M. A., Baabdullah, A., Dutta, S., Kumar, V., & Dwivedi, Y. K. (2018). Consumer adoption of mobile banking services: An empirical examination of factors according to adoption stages. *Journal of Retailing and Consumer Services*, 43, 54-67. <https://doi.org/10.1016/j.jretconser.2018.03.003>
- Siddik, N. A., Sun, G., & Kabiraj, S. (2014). Financial inclusion through mobile banking: A case of Bangladesh. *Journal of Applied Finance & Banking*, 4(6), 1-7.
- Van Deventer, M. (2020). Differences in mobile banking trust amongst generation Y consumers of the major South African retail banks. *Acta Oeconomica*, 16(2), 160-175.
- Yu, C.-S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, 13(2), 1-18.
- Yuen, Y. Y. (2010). *User acceptance of internet banking services: A comparative study*. Doctoral Dissertation, Multimedia University, Malaysia.

- Zhou, T. (2018). Examining users' switch from online banking to mobile banking. *International Journal of Networking and Virtual Organisations*, 18(1), 51-66. <https://doi.org/10.1504/ijnvo.2017.10011767>
- Zolait, A. H. S., & Sulaiman, A. (2008). Incorporating the innovation attributes introduced by Rogers' theory into theory of reasoned action: An examination of Internet banking decision in Yemen. *Computer and Information Science*, 1(1), 36-51. <https://doi.org/10.5539/cis.v1n1p36>

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