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Uncovering the Intention to Use Digital Banking Services among Commercial Banks' Customers: Structural Equation Modelling Approach

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Abstract: Digital banking in Malaysia has seen significant growth in recent years. The government actively promotes digital financial services and regulatory bodies supporting fintech innovation. However, the factors influencing Malaysians' behavioural intention to use digital banking services still need to be discovered. Hence, this study investigates the factors influencing Malaysian customers' willingness to use digital banks. The study examined the factors influencing the attitude and intention to use digital banking in Malaysia among 562 commercial bank customers using the Technology Acceptance Model. The findings revealed that perceived ease of use has a positive and significant effect on perceived usefulness; perceived ease of use and perceived usefulness both have a positive and significant effect on attitude; and perceived trust has a positive and significant direct effect on attitude and intention. Finally, it was discovered that attitude positively and significantly mediated perceived trust and intention to use digital banking among bank customers. Hence, this study has proven that all seven hypotheses were supported. The study found practical implications that policymakers, bankers, and fintech players could use in creating a policy encouraging Malaysians to use digital banking services. Hence, it will assist the government and financial institutions towards digital banking development.

Keywords: Digital Banking, Digital Bank, Adoption, Intention

1. Introduction

Digital banking stands as a new global banking trend. Digital banks, online banks, and neo-banks are financial institutions that only operate online and have no physical branches. They provide various banking services via digital platforms [1]. Digital banking is becoming more popular because people want more convenience and digital technology. According to a Federal Reserve Board study, mobile banking apps increased from 43% in 2015 to 53% in 2019 [2]. Globally, digital banking is being adopted. Furthermore, the Malaysian Central Bank has recognized the potential of digital banking and issued guidelines for establishing digital banks in the country. These guidelines encourage banking industry innovation and competition while providing consumers with more options.

Despite the government's efforts to promote digitalization and financial inclusion, Malaysians have been slower than other countries to adopt digital banking. According to a 2020 report by the Malaysia Digital Economy Corporation (MDEC), only 41% of Malaysians use digital banking services, with the vast majority still preferring traditional banking methods [3]. Digital banking penetration in Malaysia remains low, according to Fitch Ratings. The United States has the lowest percentage among adults at 8%, followed by Malaysia and the Philippines at 13% and Germany and Portugal at 14%. Based on a survey in Malaysia conducted by Finder in April 2022 with a convenience sample of 1,501 people,

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13% of Malaysians own a digital bank account, which showed a 7% decrease from 2021. While 13% of Malaysians own a digital bank account, another 8% intend to have an account within the next year, reaching the total number of Malaysians with a digital bank account to 21%. By 2027, the percentage is anticipated to grow only to 28%. During the pandemic, adults with digital-only bank accounts dropped in five countries compared to a survey from the year before. Malaysia had the most significant drop, which was 7%, followed by the Philippines, Germany, and Ireland. It contrasts with countries such as Brazil, which is expected to be the leader in digital banking by 2022, with 43% of those polled having an account. Following Brazil are India, Ireland, Singapore, Hong Kong, the United Arab Emirates, Spain, Mexico and South Africa [4].

Despite extensive research on global digital bank adoption, there has been little research on the factors influencing digital bank adoption in Malaysia. However, previous research has identified factors influencing digital banking adoption in Malaysia, such as trust, perceived usefulness, ease of use, and social influence [5-8]. However, more research is needed to better understand the factors influencing the adoption of digital banking services in Malaysia [9].

2. Research Objectives

For this study, the following research objectives were developed:

1. To measure whether perceived ease and perceived usefulness have a positive and significant influence on the intention to use digital banking among bank customers.
2. To measure whether perceived ease of use, perceived usefulness, and perceived trust have a positive and significant influence on attitudes in intention to use digital banking among bank customers.
3. To measure whether perceived trust and attitude have a positive and significant influence on the intention to use digital banking among bank customers.
4. To assess whether attitude mediates the relationship between perceived trust and intention to use digital banking among bank customers.

3. Literature Review

On April 29, 2022, Bank Negara Malaysia (BNM) announced the five successful applicants for digital banking licenses [10]. Digital banking encompasses all online-exclusive financial services, transactions, and operations. Malaysia continues transforming its banking sector by establishing new digital banks with a competitive advantage over traditional banks. Traditional and digital banks' financial products and services may be similar. However, in terms of convenience, cost, speed, and customer reach, the digital architecture of the latter has distinct advantages. Companies could pool their customer bases, technological expertise, and financial resources to provide a broader range of financial services via a digital interface such as an app.

The Malaysian government and financial institutions actively promote the widespread adoption of digital banking. For instance, the Central Bank of Malaysia has implemented several initiatives, such as offering financial incentives to businesses that adopt digital solutions and promoting e-wallets and cashless payments. As technology and financial literacy continue to improve over the next few years, more Malaysians are expected to use digital banking. However, digital banks in Malaysia are not anticipated to disrupt the banking industry. This new industry trend could make the banking system even more robust in the new digital finance era if it collaborates with traditional banks [11]. According to [11], digital banks should prioritize filling market gaps in unserved and underserved segments over rivals for a portion of traditional banks' market share.

3.1. Perceived ease of use

Perceived ease of use refers to how well people understand the system, which depends on how well they know the information and reflects how users perceive technology to be simple. It significantly impacts user behavior, including adopting and utilizing digital banking [12]. Successful systems that are simple to use and understand are considered user-friendly. It has been demonstrated that perceived ease of use significantly impacts user satisfaction and adoption of digital technologies and plays an important role in shaping consumer behavior, particularly in digital financial, mobile, and online banking services [13,14]. Hence, digital banking should be easier to use than traditional banking [15].

3.2. Perceived usefulness

Reference [12] says that perceived usefulness is how much the user thinks the system will help them do their job better. It has significantly impacted user satisfaction, adoption, and use of digital technologies such as mobile and online banking. It reflects users' assessments of the technology's ability to meet their financial needs and improve their financial management. Users' subjective assessments of the technology's relevance and benefits can influence their behavioral intentions of adoption and usage [13,14].

3.3. Perceived trust

Perceived trust is an individual's subjective belief that a particular entity or institution is trustworthy [16]. It significantly impacts consumer behavior, especially in adopting new technologies such as digital banking [16-19].

3.4. Attitude

Attitude is a psychological term that describes a person's feelings towards a particular thing, person, or circumstance. It is a learned tendency to respond

predictably to a particular object, person, or situation [20]. Regarding digital banking adoption, individuals' attitudes towards digital technology and banking services can significantly influence their propensity to adopt and utilize them [21]. Thus, fostering a positive attitude will boost bank customers' confidence in online banking [8].

3.5. Intention

Intention is a cognitive construct that refers to a person's decision or plans to engage in a particular behavior in the future [22]. Individuals' intent to adopt and utilize digital banking services significantly predicts their behavior [23].

4. Hypothesis

4.1 Perceived Ease of Use and Perceived Usefulness

Perceived ease of use significantly impacts consumers' perceived usefulness and adoption of mobile payment systems [24]. In a study examining the factors influencing consumers' intention to use mobile payment services, perceived ease of use and perceived usefulness had a strong positive relationship. The study suggested that mobile payment providers should improve the user interface and make their platforms more user-friendly to increase their perceived ease of use and consumer adoption rates [25]. According to the study, mobile payment providers should improve platform usability and design to boost consumer adoption. Thus, the following hypothesis is developed:

H1: There is a relationship between perceived ease of use and perceived usefulness in intention to use digital banking among bank customers.

4.2 Perceived Ease of Use and Attitude

Perceived ease of use significantly influenced consumers' attitudes towards mobile payment systems [24]. Another study proves that perceived ease of use significantly influenced consumers' attitudes towards intelligent home technologies [26]. Technology providers should prioritise improving the usability and functionality of their products to increase users' perceived ease of use, which can lead to more positive attitudes towards technology. Thus, the following hypothesis is developed:

H2: There is a relationship between perceived ease of use and attitude in intention to use digital banking among bank customers.

4.3 Perceived Usefulness and Attitude

Reference [27] discovered that small and medium-sized trading businesses in Indonesia believe Internet banking will benefit them and are more likely to use it. It is supported by [28], who found a similar result in Vietnam. Thus, the following hypothesis is developed:

H3: There is a relationship between perceived usefulness and attitude in intention to use digital banking among bank customers.

4.4 Perceived Trust and Attitude

Perceived trust and attitude are essential in determining consumer acceptance and adoption of new technologies, with perceived trust having a significant positive effect on consumers' attitudes. Reference [8] discovered that perceived trust impacts the attitude on intention to use the digital bank. Hence, mobile payment providers should focus on building trust with their users through secure and reliable platforms, which can lead to more positive attitudes towards technology. Thus, the following hypothesis is developed:

H4: There is a relationship between perceived trust and attitude in intention to use digital banking among bank customers.

4.5 Perceived Trust and Intention

Perceived trust is vital in determining consumers' intentions to use and adopt new technologies. Perceived trust has a significant positive effect on consumers' intentions to use mobile payment systems [24]; mobile health apps [29], and innovative home technologies [30]. Thus, the following hypothesis is developed:

H5: There is a relationship between perceived trust and intention to use digital banking among bank customers.

4.6 Attitude and Intention

A study in Congo investigated Internet banking users and non-users and discovered that attitude influences intention. Positive attitudes and an increase in perceived usefulness influence existing users' intentions to continue using Internet banking, while non-users intentions of Internet banking are influenced by positive attitudes, perceived usefulness, and perceived web security [30]. Attitudes and intentions in the banking system in Lebanon, which is a very dynamic industry and one of the strongest in Arab, found that the attitudes have a significant positive correlation with the intention to use mobile banking [31]. Thus, the following hypothesis is developed:

H6: There is a relationship between attitude and intention to use digital banking among bank customers.

4.7 Perceived Trust, Attitude and Intention

Attitude significantly mediates the connection between perceived trust and intention to adopt new technologies. According to one study, perceived trust and intention to use mobile payment systems were mediated by attitude [24]. In contrast, other studies found that attitude fully mediated the relationship between perceived trust and intention to use mobile health apps [30]; mobile banking apps [32,33]. Pakistani consumers show that attitude mediates trust and intention in online shopping adoption [34]. Hence, building consumer trust can result in positive attitudes, which can drive intentions to adopt and use technology. Thus, the following hypothesis is developed:

H7: There is a mediating effect of attitude on the relationship between perceived trust and intention to use digital banking among bank customers.

In conclusion, the following research hypotheses for this study:

H_1: There is a relationship between perceived ease of use and perceived usefulness in intention to use digital banking among bank customers.

H_2: There is a relationship between perceived ease of use and attitude in intention to use digital banking among bank customers.

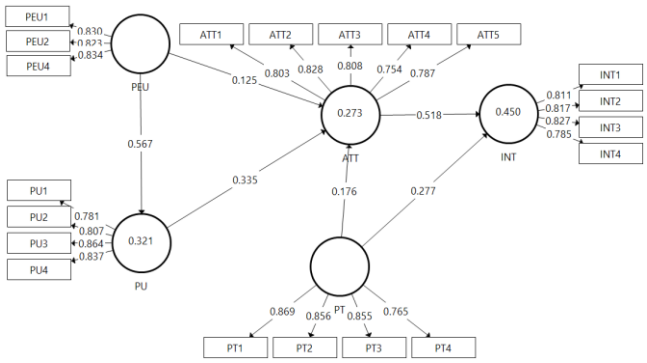
H_3: There is a relationship between perceived usefulness and attitude in intention to use digital banking among bank customers.

H_4: There is a relationship between perceived trust and attitude in intention to use digital banking among bank customers.

H_5: There is a relationship between perceived trust and intention to use digital banking among bank customers.

H_6: There is a relationship between attitude and intention to use digital banking among bank customers.

H_7: There is a mediating effect of attitude on the relationship between perceived trust and intention to use digital banking among bank customers.



5. Methodology

Commercial bank customers with at least one bank account were chosen in this research. A survey questionnaire instrument has been used to collect the primary data for this study. All of the measurement items used in this study's survey questionnaire were derived from prior research through a thorough evaluation to obtain appropriate measurements frequently utilized and possessed the required validity and reliability. The email was used to distribute survey questionnaires to the targeted samples. Due to the unavailability of the population list, the non-probability sampling technique of purposive sampling was used for data collection in this study. The 24 observed variables in this study represent both exogenous and endogenous variable measurements. 5 observed variables were used to measure the perceived ease of use construct, 4 observed variables were used to measure the perceived usefulness construct, 5 observed variables were used to measure the perceived trust construct, 5 observed variables were used to measure the attitude construct, and 5 observed variables were used to measure the intended construct. The five-point Likert scale from strongly agree to strongly disagree to measure each construct measurement item was used in this study. 598 questionnaires were returned out of the total of 770 distributed. It represented a response rate of 77.6% and was sufficient for data analysis using the structural equation modelling (SEM) technique. After screening the data and removing outliers, 562 samples were clean and ready to be analyzed. The profiles of the respondents to this study are shown in Table 1. Smartpls3 software was used for multivariate data analysis and hypothesis testing. Due to its assessment capability, Smartpls3 was also used in performing the assessment procedures on the assessment of model measurement and structural model [35].

6. Finding and Discussion

6.1 Common Method Bias

Researchers in the management field frequently face the problem of common method bias. This problem arises when the variance considered to represent variables represents the measurement method of the field being studied. This research uses Harman's single-factor test method to assess whether there is an issue of common method bias. Harman's single-factor test revealed that the primary factor was 38.7%, indicating no problem with common method bias because the principal factor did not hold most of the variance explained. Therefore, it is in line with what a study that stated that when the proportion of variance explained by the principal component is less than 50%, there is no common method bias [36].

6.2 Measurement Model

Reference [37] suggested that the validity and reliability of the outer goodness model for the study are two crucial components of PLS-SEM. The PLS-SEM algorithm assessed and validated the constructs' measurement validity and reliability. The specified model was introduced first, and the initial assessment of outer loading reliability and validity was determined. Then, two items from the perceived ease of use, one item from the perceived trust, and one item from intention constructs were deleted due to the loading less than 0.7, which caused the construct validity of Average variance Extracted (AVE) to be less than the 0.5 threshold. Low item loadings have also resulted in the Hetrotrait-Monotrait (HTMT) ratios failing to meet the requirements. After the re-specified model was established (Figure 1) and the deletion of lower loading items, all constructs attained an AVE of a minimum of 0.5 thresholds with a minimum AVE of 0.634 and maximum AVE of 0.701 (Table 1). As a result, it was confirmed that all constructs have convergent validity. Then, the discriminant validity presence was measured in this study by assessing the cross-loading of the measurement items. After the assessment, the results showed that all item loadings exceeded their respective cross-loadings (Table 1).

In addition, the Hetrotrait-Monotrait (HTMT) ratios

were assessed to determine discriminant validity. The result showed that the ratios of all five constructs were less than 0.9 (Table 2) as suggested [38]. Further, Table 1 also depicted the composite reliability for all constructs ranging from 0.868 to 0.903, which was greater than the threshold of 0.7, as suggested [39]. Hence, it can be summed up that this study has proven the validity and reliability of all latent constructs, as suggested [37].

Table 1: Constructs' Reliability, Validity & Items' Loading

Construct	Item	Loading	CA	CR	AVE
Attitude	ATT1	0.803	0.856	0.896	0.634
	ATT2	0.828			
	ATT3	0.808			
	ATT4	0.754			
	ATT5	0.787			
Intention	INT1	0.811	0.826	0.884	0.656
	INT2	0.817			
	INT3	0.827			
	INT4	0.785			
Perceived Ease of Use	PEU1	0.830	0.775	0.868	0.688
	PEU2	0.823			
	PEU4	0.834			
Perceived Trust	PT1	0.869	0.857	0.903	0.701
	PT2	0.856			
	PT3	0.855			
	PT4	0.765			
Perceived Usefulness	PU1	0.781	0.842	0.893	0.677
	PU2	0.807			
	PU3	0.864			
	PU4	0.837			

Table 2: Hetrotrait-Monotrait (HTMT) Ratio

	ATT	INT	PEU	PT
INT	0.731			
PEU	0.462	0.535		
PT	0.426	0.551	0.477	
PU	0.553	0.608	0.68	0.483

6.3 Structural Model

The structural model was evaluated by examining the path coefficient (ß) and the coefficient of determination (R2) [37]. Meanwhile, the significance level of the path coefficient was assessed by utilising the PLS technique to bootstrap 5000 sub-samples.

Table 3 shows the statistical testing results of the hypotheses' path coefficients (Beta), t-statistics, p-value, and confidence interval. For hypothesis 1, the statistical result confirmed that perceived ease of use positively and significantly influences perceived usefulness (ß=0.567, t=15.300, p=0.000); hence, H1 is supported. For hypothesis 2, the statistical result showed that perceived ease of use positively and significantly influences attitude (ß=0.125, t=2.242, p=0.025); therefore, H2 is well supported. For hypothesis 3, the statistical result confirmed that perceived usefulness positively and significantly influences attitude (ß= 0.335, t=6.536, p=0.000); hence, H3 is supported. For hypothesis 4, it was demonstrated that perceived trust positively and significantly affects attitude (ß=0.176, t=3.342, p=0.001); therefore, H4 is supported. For hypothesis 5, it was shown that perceived trust has a positive and significant direct effect on intention (ß=0.277, t=5.762, p=0.000); therefore, H5 is supported. For hypothesis 6, it has shown that attitude has a positive and significant direct effect on intention (ß=0.518, t=12.687, p=0.000); therefore, H6 is supported. In order to confirm the

mediating relationship hypotheses, the estimated path coefficient is deemed to be statistically significantly different from zero at the 5% significance level when the p-value is lower than or equal to 0.05 or when 0 is not straddled between lower level confidence of interval (LLCI) and upper-level confidence of interval (ULCI). For hypothesis 7, it was revealed that attitude positively and significantly mediated the relationship between perceived trust and intention (ß=0.091, t=3.356, p=0.000, LLCI=0.034 ULCI=0.138); hence, H6 is supported. Table 3 shows the effect size, which measures the extent of an effect independent of the sample size. The values of f2 were in the range of 0.020 to 0.150 (small), 0.150 to 0.350 (medium), or larger or equal to 0.350 (large) (Cohen, 1992). This study's effect size range was from 0.014 to 0.473 (small to large).

This assessment uses the PLS prediction procedure on intention [40, 41]. The main target construct, intention, demonstrates that the model explains a 45% variance of the construct (R2=0.450). More importantly, the model's out-of-sample predictive power is to draw conclusions and give managerial recommendations. Q2 prediction greater than 0 signifies that the PLS-SEM predictions are higher than the naïve mean value prediction standard outcomes (Table 4). Further, the PLS-SEM predictions' root means square error (RMSE) value is 9 of thirteen cases lesser than the RMSE value of the linear model (LM) prediction benchmark. These results confirm that the proposed model has predictive power (Table 4).

Table 3: Hypotheses Testing Results & f^2

Hypotheses	Beta	T Statistics	P Values	f^2	Decision
H1: PEU -> PU	0.567	15.300	0.000	0.473	*Supported*
H2: PEU -> ATT	0.125	2.242	0.025	0.014	*Supported*
H3: PU -> ATT	0.335	6.536	0.000	0.098	*Supported*
H4: PT -> ATT	0.176	3.342	0.001	0.034	*Supported*
H5: PT -> INT	0.277	5.762	0.000	0.121	*Supported*
H6: ATT -> INT	0.518	12.687	0.000	0.422	*Supported*
H7: PT -> ATT -> INT	0.091	3.356	0.001		*Supported*

7. Conclusion

Digital banking is a growing trend globally, including in Malaysia, driven by the convenience and accessibility it offers. Digital banks provide various banking services via digital platforms, eliminating the need to visit physical branches. Despite the Malaysian Central Bank issuing guidelines for digital banking, digital banking adoption in Malaysia remains relatively low compared to other countries. Factors influencing digital banking adoption in Malaysia include trust, perceived usefulness, ease of use, and social influence. However, more research is needed to better understand these factors, such as the specific factors influencing the adoption of different digital banking services among other demographic groups in Malaysia.

The statistical testing results for seven hypotheses related to the perceived ease of use, perceived usefulness, perceived trust, attitude, and intention were supported. The study found that perceived ease of use positively and significantly influences perceived usefulness, attitude, and intention. In contrast, perceived usefulness has a positive and significant influence on attitude. In contrast, perceived trust has a positive and significant direct effect on attitude and intention. Attitude also has a positive and significant direct effect on intention. The research confirms that attitude mediates the relationship between perceived trust and intention. Hence, it indicates that the proposed model has high predictive power.

Overall, the findings of the study indicate that perceived ease of use, perceived usefulness, and perceived trust are essential factors in shaping consumers' attitudes and intentions towards using technology. The study's findings have practical implications for managers who want to create and promote simple, useful, and trustworthy technology to improve customers' attitudes and intentions towards technology use.

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