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FACTORS AFFECTING CONSUMERS' ADOPTION OF VIRTUAL BANKS IN THAILAND

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Abstract

To keep pace with dynamic changes in the global financial sector, the Bank of Thailand has provided the opportunity for bank operators and investors to submit for approval to set up a virtual banking business in Thailand in 2025. As this type of bank will begin operating in Thailand for the first time in 2025 consumer adoption is likely to be very challenging. In this study, the TAM model was adopted to examine the factors influencing behavioral intentions to use virtual banking services, collecting data through a self-administered questionnaire from 600 bank customers aged between 20 and 60, and residing in Bangkok. Descriptive statistics such as frequency, percentage, mean, and standard deviation, were employed to describe the sample characteristics and the level of each factor in the model. Structural equation modelling (SEM), including confirmatory factor analysis (CFA), was used to determine the construct validity of the variables. Path analysis was used to test the model's goodness of fit and the research hypotheses. The results showed that all hypotheses were supported and that factors such as corporate reputation, perceived safety of technology, personal innovativeness, and the perceived cost of technology indirectly influence behavioral intentions to use virtual banking services.

Keywords: Virtual Bank, Consumer adoption, Digital challenging bank, TAM model

INTRODUCTION

The dynamic advancement of digital technology and changes in consumer behavior, whereby customers have become more dependent on using online platforms in their daily lives, are both essential factors driving the global financial sector to create financial innovation and adjust their service systems to maintain pace with such changes (Namahoot, 2021). Thailand is no exception. To keep pace with changes in the global landscape sector, the Bank of Thailand (BOT) has issued policy guidelines to suit the rapidly changing situation and support the transition of the country to a digital economy with sustainable growth (PPTV ONLINE, 2023) as illustrated in Figure 1.

The mentioned policy combines three dimensions; firstly the policy emphasizes three issues: (1) open-digital aims to provide opportunities and fair competition among new and existing service providers; (2) open-infrastructure allows various service providers to access financial infrastructure at a reasonable and fair cost; (3) open-data aims to encourage data owners to send their data to various service providers conveniently and at a reasonable cost, including the creation of connections and transmission of data between service providers

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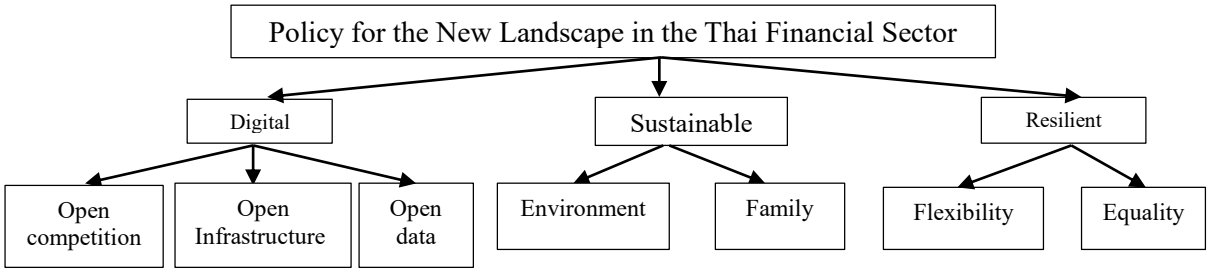
efficiently and securely with an equal standard, without binding conditions or setting excessively high fees that prevent data owners from accessing and making use of their data. (Bank of Thailand, 2021).

Secondly, the policy emphasizes the sustainability of family and environment. The third policy dimension encourages the flexibility of the overall financial structure and regulations so that service providers can promptly adjust to deal with new and significant risks (Post Today, 2023). To comply with the first dimension (Digital), BOT has announced the selection criteria and regulations for setting up a virtual bank, and allowed existing financial providers and newcomers (who meet BOT's requirements) to apply for a license to establish a virtual bank in Thailand (Thai Post, 2023). The application process was organized in 2023 (Siam Commercial Bank, 2022).

Figure 1 Policy for the New Landscape in the Thai Financial Sector (Bank of Thailand, 2023)



According to Sha and Mohammed (2017), a *virtual bank* is an online banking service that provides all types of services offered by a traditional bank, the only difference being that all services are served exclusively through the Internet. This particular banking service is not limited by the need for a brick-and-mortar location. Therefore, bank customers with computer and Internet literacy will find it more convenient and accessible. Kasikorn Bank defined a *virtual bank* as a branchless commercial bank that operates through digital channels (Kasikorn Thai Research Center, 2022). Meanwhile, the Bank of Thailand defined a *virtual bank* as a new commercial bank with no physical branches, offering services mainly through the digital channel (Siam Commercial Bank, 2022).

The first virtual bank was established in Britain in 1989. Further, the following year, the emergence and implementation of the Internet to banking business led to digital and virtual banks around the globe (Saetim, 2022). It was not only in Europe and America that this type of bank arose, but they also diffused through Asia, becoming known as "challenger banks," "neo banks," or "virtual banks". Whatever names they were called, these banks shared three common characteristics: 1) no physical branches, 2) emphasis on mobile services, and 3) providing better user experience (UX), a better user interface (UI), and more innovative services (Jonathan, 2021).

Like several Asian countries, Thailand has a significant proportion of its population of unbanked or underbanked status. Moreover, the micro, small, and medium enterprises, which make up the majority of businesses in the country, have encountered many obstacles, including a struggle to obtain credit through the traditional banking system (Saetim, 2022). Therefore, the BOT's policy to establish virtual banking was expected to offer new financial services through effective digital channels, while reducing labor, building requirements, and facility costs. Moreover, the new digital banking system can respond to the needs of customers who have difficulty accessing financial services, especially retail users and SMEs. Virtual banks were expected to operate business sustainably and not promote excessive debt, which may affect the stability of the financial system, depositors, and consumers in general (Bank of Thailand, 2023).

However, according to the Asian Business Review (2023), of the almost 250 challenger

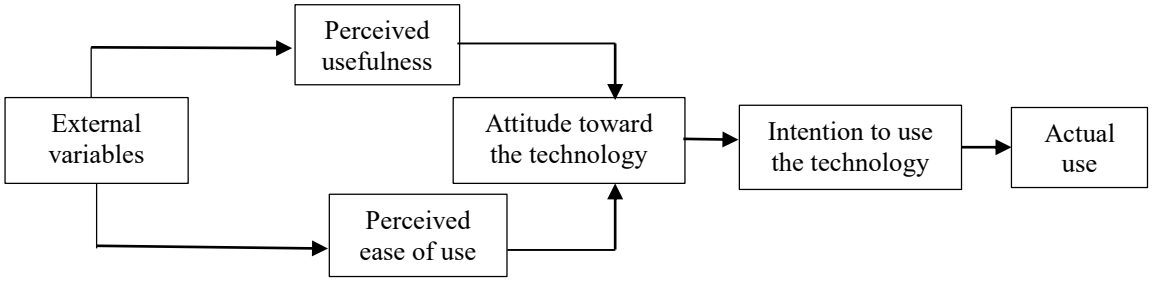
banks worldwide, only 13 have been profitable as of the end of 2021. Moreover, out of the 50 challenger banks operating in Asia, only 10 are profitable. There are several reasons behind virtual bank failures, the primary cause is their high cost. A study conducted by International Data Corporation (IDC) which collected data from 316 CIOs of 125 banks in the Asia-Pacific region, found that 70% of the platform development of these banks had failed due to high costs and excessively long development times. Furthermore, 52 % of the banks that have succeeded in developing their platforms have suffered from low efficiency and a low return on investment. Apart from the investment cost, it was found that although the banks in this region spent a large sum of money on technology development, the resulting technology was unable to provide positive experiences to customers, leading to customer dissatisfaction, which is a barrier to customer adoption (The standard, 2023).

Customer adoption of new technology is essential to business success, especially for businesses whose profits are gained from providing financial services to their customers. Therefore, understanding customer adoption will help these businesses to design, develop, and provide services that effectively respond to customers' needs, encouraging these customers to decide to use the services. Although virtual banks are expected to be established in Thailand in 2025 (Bank of Thailand, 2023), there is still a lack of information to foresee how Thai customers will adopt this new type of bank. Therefore, this research aims to use the Technology Acceptance Model (TAM) to investigate and explain the factors influencing Thai customers' adoption of virtual banks, which will benefit the financial service providers who intend to join the competition in the virtual banking business in 2025.

LITERATURE REVIEW

The Technology Acceptance Model (TAM) is a significant model accredited by many researchers to explain and assess consumers' adoption behavior regarding new technology (Mousa et al., 2021). Davis (1989) developed this model based upon the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen in the 1970s (Fishbein & Ajzen, 2011), and the Theory of Planned Behavior (TPB), a variant introduced by Ize Ajzen in 1991 (Ajzen, 1991). Both theories support the idea that many human behaviors have a rational basis determined by the subject's intention to perform that action or behavior (Martín-García et al., 2022).
Davis (1989) developed this model to better understand consumers' behavior toward accepting technology. This model investigates customers' behavioral intentions to use a new technology and offers more profound insight into the factors influencing their decisions. Based on the framework of TAM, customers' behavioral intentions to use a new technology are directly influenced by their attitude toward the new technology and indirectly by their perception of its usefulness ("perceived usefulness" = PU) and ease of use ("perceived ease of use" = PEOU) (Gokmenoglu & Kaakeh, 2022) as presented in Figure 2.

Figure 2 Original Version of TAM



Based on the framework of the mentioned TAM model, the following hypotheses were

formulated:

External Variables

Based on a comprehensive literature review, several external factors were identified as influencing perceived usefulness (PU) and perceived ease of use (PEOU). These factors include corporate reputation (Mousa et al., 2021), perceived technological safety, perceived cost of technology (Martín-García et al., 2022), and personal innovativeness (Kumar et al., 2020). While these variables are noteworthy, they have not been extensively addressed in the existing body of research. Consequently, this paper incorporates these factors to provide a better understanding of consumer adoption of virtual banks in Thailand.

Corporate Reputation (CR): Corporate reputation is viewed as the outcome of a competitive process in which a firm communicates its core attributes to stakeholders (Park et al., 2014; Schaarschmidt, 2016). A positive reputation signifies a company's integrity, reliability, and perceived high quality of its products or services (Park et al., 2014), which, in turn, enhances customers' perceived value of the firm (Walsh et al., 2014). Moreover, a strong reputation can reduce transaction costs and alleviate customer uncertainty (Bergh et al., 2010; Walsh et al., 2014). For instance, a bank's reputation plays an essential role in consumers' decisions to deal with the Bank (Poon, 2008). The excellent reputation of a bank has a positive impact on consumers' acceptance of their new services (virtual bank). Therefore, customers who perceive a good reputation of a firm are prone to believe that its products are useful and easy to use for instance; iPhone and iPad. Moreover, a study by Mousa et. al. (2021), reported the significant influence of corporate reputation on PU and PEOU (Mousa et al., 2021). Therefore, the following hypotheses were proposed.

H1: Corporate reputation (CR) influences perceived usefulness (PU)

H2: Corporate reputation (CR) influences perceived ease of use (PEOU)

Perceived Safety of Technology (PST): PST refers to the users' sense of safety and reliability while using technology (Boise et al., 2013). For some consumers, especially older adults, new technology may make them feel insecure because they fear they cannot control it or that they will lose their privacy and security by using it. A low of perceived safety for a new technology can prevent consumers from adopting that technology. On the contrary, giving consumers knowledge about the technology and assuring their privacy and security will increase their perception of the safety of the technology as well as making them feel that the technology will be easy to use and allowing them to recognize the benefit of using that technology. Moreover, the study of Martín-García et al. (2022) showed that PST positively influences PU and PEOU. Therefore, hypotheses 3 and 4 were formulated as follows:

H3: Perceived safety of technology (PST) influences perceived usefulness (PU)

H4: Perceived safety of technology (PST) influences perceived ease of use (PEOU)

Personal Innovativeness (PI): Another factor that supports one's technological readiness is PI, which is the degree to which a person is at the forefront of understanding and desiring new technologies (Ali & Warraich, 2023). Innovative users tend to be early adopters of new technology since technology can help them daily (Dutta, 2023). Consumers interested in a new technology tend to be ready to use it and will anticipate its ease of use. Moreover, it is also known that PI plays an essential role in supporting PU (Kumar et al., 2020; Musyaffi et al., 2022). Accordingly, hypotheses 5 and 6 are as follows:

H5: Personal innovativeness (PI) influences perceived usefulness (PU)

H6: Personal innovativeness (PI) influences perceived ease of use (PEOU)

Perceived Cost of Technology (PCT): PCT refers to the price consumers pay to use a technology. This includes service fees, interest rates, financial security, and privacy, apart from the technology's monetary cost. Consumers may anticipate a loss of privacy and security in the case of cybercrime (for a virtual bank).

As highlighted in the literature review, virtual banks are expected to offer new financial services through effective digital channels, reducing costs related to labor, buildings, and facilities (Bank of Thailand, 2023). Due to these lower operational costs, virtual banks can offer lower service fees to customers. Additionally, they allow clients to save on transportation expenses by enabling online transactions. Therefore, it can be inferred that customers will perceive lower service costs for virtual banking services.

Studies concerning the influences of PCT on PU and PEOU have reported varying outcomes. For instance, Kim et al. (2023) explored user's acceptance of urban air mobility extending the TAM to include trust and service quality factors. In doing so, they found that PCT had a positive influence on PU but a negative influence on PEOU. However, Özbek et al. (2015) and Martín-García et al. (2022) reported a positive influence of PCT on both PU and PEOU. In this study, it is assumed that customers will perceive the costs of virtual banking services to be lower than traditional banks (as explained in the literature review). Accordingly, hypotheses H7 and H8 were formulated based on the study by Martín-García et al. (2022), as follows:

H7: Perceived cost (PC) influences perceived usefulness (PU)

H8: Perceived cost (PC) influences perceived ease of use (PEOU)

Perceived Usefulness (PU): Davis (1989) defined perceived usefulness (PU) as "the degree to which a person believes that using a particular system would enhance his or her job performance". It determines whether users perceive the new technology as helpful in enabling them to achieve their goals. Based on the TAM model, consumers' attitudes toward a new technology are directly influenced by perceived usefulness (Gokmenoglu & Kaakeh, 2022). Further, certain studies have supported the influence of PU on consumers' attitudes toward technology (Gokmenoglu & Kaakeh, 2022; Moturi & Wairimu, 2022; Altalhi & Basiouni, 2022; Belsoka et al., 2022). The following hypothesis is proposed accordingly:

H9: Perceived usefulness (PU) influences attitudes toward technology (AT)

Perceived Ease of Use (PEOU*):* PEOU refers to "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989). This means that if the technology is easy to use, then difficulties are eliminated. Nevertheless, if the technology is challenging to use, for instance, it has a complicated interface, users may have a negative attitude towards it. Moreover, related research indicates an influence of PEOU on attitudes toward new technologies (Gokmenoglu & Kaakeh, 2022; Moturi & Wairimu, 2022; Altalhi & Basiouni, 2022; Belsoka et al., 2022). Based on the related research, the following hypothesis is proposed:

H10: Perceived ease of use (PEOU) influences attitudes toward technology (AT)

Attitude Toward Technology (AT): According to Ajzen and Fishbein (1977), attitude represents a person's reaction to particular objects or concepts. Jun et al. (2022) defined attitude as a person's liking or disliking of any object or person. Moreover, attitude significantly predicts behavioral intentions (Michalikova et al., 2022).

Behavioral Intentions (BT): A person's behavioral intention is the subjective probability of that person performing the focal behavior. According to TAM, BT is determined by the attitude Toward the Behavior (AT). Many studies have documented that positive

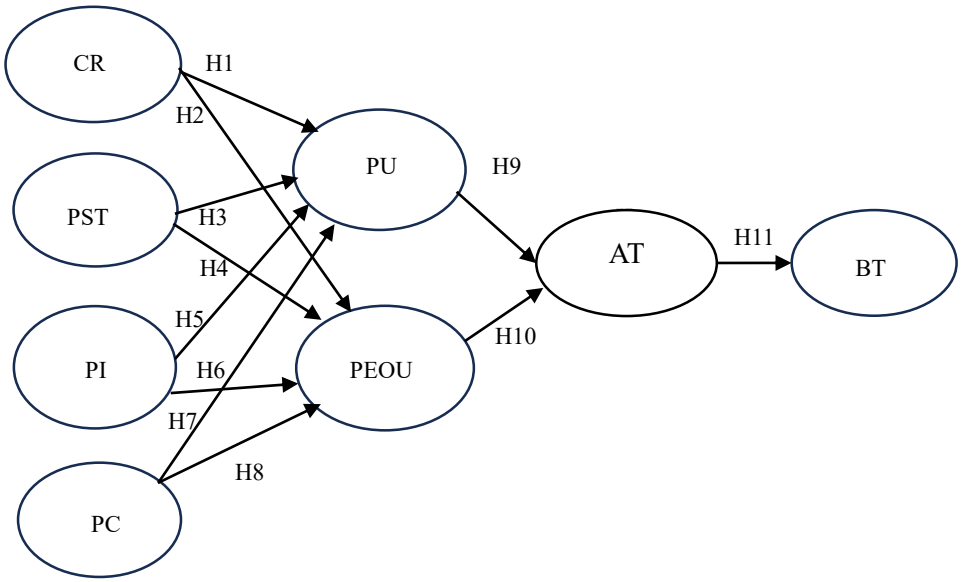
attitudes toward new technology significantly affect online behavioral intentions (Altalhi & Basiouni, 2022; Namahoot, 2021). Based on the existing literature, hypothesis H11 was formulated as follows:

H11: Attitude toward technology (AT) influences behavioral intentions to use technology (BT).

Research Framework

The formulation of hypotheses as detailed above led to the research framework as shown in Figure 3.

Figure 3 Research Framework



RESEARCH METHODOLOGY

Population and Sample

The population of this study consisted in Thai consumers who are bank customers in Bangkok and between the age of 20 and 60 years old. The appropriate sample size is 590 based on Kline's suggestion that the sufficient sample size for SEM should be 10 to 20 respondents per estimated parameter (Kline, 2015). However, this number was rounded up, such that 600 questionnaires were collected.

Self-administered questionnaires were used to collect data from the sample. The question items were adapted from several valid literature sources and used a five-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree). The sampling procedure employed a convenience sampling technique to identify respondents in the Siam-square area, the famous business center, which consists of leading department stores, high-class office buildings, education institutes, and significant transport connections such as the central Sky train station and public bus. Data collection was organized from 15 February to 30 March 2023.

Research Instrument

A self-administered questionnaire was used to collect data from the sample. Twenty-four questions were developed from several valid literature sources and reviewed by three

experts in banking business and research methodology. Each question was reviewed and selected based on the clarification of the wording, interpretation, and accuracy of the objective measured. Each expert was informed of the study's objective and instructed to give +1 to items that reached the criteria, 0 to any item they were unsure of, and -1 to any item that did not. After the results were collected, the item objective congruence (IOC) of each item was calculated. To pass the criteria, the question must have an item-objective congruence (IOC) value greater than or equal to 0.5 (Rovinelli & Hambleton, 1977). The findings indicated that the IOC value of the questions ranged from 0.67 - 1.00, reflecting the validity of the questions as indicators of the variables and the instruments used to collect data from the respondents.
A pilot test was organized to test the reliability of the questionnaire through Cronbach alpha coefficients. The outcomes yielded Cronbach's Alpha values ranging from .741 to .884, all of which fulfilled the threshold criteria of 0.7 recommended by Nunnally & Bernstein (1994), as presented in Table 1

Table 1 Reliability of the Variable's Indicators

Variables of Interest	Cronbach's Alpha
Corporate reputation (CR)	0.759
Perceive safety of technology (PST)	0.861
Personal innovativeness (PI)	0.820
Perceive cost (PCT)	0.741
Perceive usefulness (PU)	0.767
Perceive ease of use (PEOU)	0.751
Attitude toward technology (AT)	0.808
Behavioral intention to use technology (BT)	0.884

The questionnaire was divided into three parts. Part 1 included five close-ended multiple-choice questions regarding the personal data of the respondents. Part 2 consisted of 24 five-point Likert scale questions, ranging from 1 (completely disagree) to 5 (completely agree), focusing on the factors influencing the behavioral intentions of Thai consumers to use virtual banking services. Part 3 contained questions related to consumers' behavioral intentions to use virtual banking services.

Data Analysis

Confirmatory Factor Analysis (CFA) was employed to test the validity and reliability of each latent variable. The Path analysis was applied to confirm the model's goodness of fit and test the hypotheses in the study.

RESULT AND DISCUSSION

Demographic Profile

The analysis revealed that 68% of the respondents were female, while 32% were male. The most significant number of respondents (32%) were between the ages of 21 and 30, followed by those ranging from 31 to 40 years (20%) and 41 to 50 years old, respectively. Most (54%) held a bachelor's degree, followed by those who held a master's degree (25%). Regarding monthly income, the highest proportion of respondents (46%) earned between 10,000 and 50,000 Thai Baht.

Model Analysis

1. Evaluation of the Measurement Model

Confirmatory Factor Analysis (CFA) was conducted to assess the construct validity of the latent variables in the model using goodness of fit, composite reliability, and average variance extracted values. Table 2 presents the goodness of fit indices for all latent variables in the model, all of which met the model fit criteria: $\chi 2/df \leq 2.00$ (Wheaton et al., 1977; Miles & Shevlin, 2007), P-value ≥ 0.05 (Barrett, 2007), CFI ≥ 0.90 (Hu & Bentler, 1999), GFI ≥ 0.90 (Miles & Shevlin, 2007), AGFI ≥ 0.90 (Shevlin & Miles, 1998), RMSEA ≤ 0.05 (Steiger, 2007), SRMR ≤ 0.08 (Henseler & Sarstedt, 2013), and CN > 200 (Diamantopoulos & Siguaw, 2000).

Moreover, the analysis showed that factor loadings for the overall indicators ranged from 0.610 to 0.816 and were above the cut-off value of 0.6 (Awang, 2014), indicating that each indicator can explain the variation in the particular variable well. Overall R-squared values ranged from 0.388 to 0.685, which is acceptable according to Ozili (2023). CR values for the overall latent variables were above the cut-off value of 0.70 (Henseler & Sarstedt, 2013), indicating that the indicators consistently measure particular latent variables. Overall, AVE values were above the threshold of 0.50 (Hair et al., 2010; Tabachnick & Fidell, 2007), indicating that each latent variable is well measured by its indicators, as presented in Table 3.

Table 2 Goodness of Fit of Each Construct in the Measurement Model

Construct	χ^2/df	p-value	CFI	AGFI	GFI	RMSEA	SRMR
CR	0.995	0.312	.997	0.952	0.962	0.022	0.020
PST	0.885	0.454	1.000	0.956	0.964	0.014	0.015
PI	0.778	0.799	.998	0.967	0.967	0.018	0.017
PCT	0.683	0.419	1.000	0.964	0.965	0.023	0.021
PU	0.571	0.763	1.000	0.951	0.971	0.000	0.005
PEOU	1.074	0.584	1.000	0.953	0.983	0.033	0.027
AT	1.290	0.215	.998	0.961	0.981	0.043	0.037
BT	1.119	0.365	.999	0.962	0.984	0.045	0.034

Table 3 Factor loading, R-squared, Reliability, and Validity of the Latent Variables

Variable	Standard Factor Loading	R^2	CR	AVE
Corporate reputation (CR)			0.790	0.557
CR1	0.816	0.667		
CR2	0.729	0.532		
CR3	0.689	0.475		
Perceived safety of technology (PST)			0.802	0.574
PST1	0.768	0.589		
PST2	0.752	0.566		
PST3	0.783	0.613		
Personal innovativeness (PI)			0.801	0.573
PI1	0.724	0.524		
PI2	0.782	0.612		
PI3	0.766	0.587		
Perceived cost (PCT)			0.768	0.525
PCT1	0.724	0.525		

Table 3 (Continued)

Variable	Standard Factor Loading	R^2	CR	AVE
PCT2	0.661	0.437		
PCT3	0.784	0.539		
Perceived usefulness (PU)			0.770	0.528
PU1	0.685	0.475		
PU2	0.698	0.487		
PU3	0.792	0.580		
Perceived ease of use (PEOU)			0.771	0.532
PEOU1	0.623	0.388		
PEOU2	0.804	0.647		
PEOU3	0.749	0.421		
Attitude toward technology (AT)			0.806	0.581
AT1	0.694	0.482		
AT2	0.781	0.610		
AT3	0.807	0.651		
Behavioral intentions to use the technology (BT)			0.883	0.715
BT1	0.828	0.685		
BT2	0.841	0.707		
BT3	0.868	0.754		

Discriminant validity refers to the assessment of the distinction between each pair of latent variables (Hair, Sarstedt et al., 2014). Establishing discriminant validity is essential for ensuring the results are accurate and free from statistical inconsistencies (Henseler et al., 2015). According to the Fornell-Larcker criterion, a variable should exhibit higher variance with its items than other variables (Fornell & Larcker, 1981). Specifically, the correlation between any two constructs must be less than the square root of the AVE. As shown in Table 4, discriminant validity for each latent variable was confirmed.

Table 4 Discriminant Validity through the Square Root of the AVE according to the Fornell-Larcker Criterion

	CR	PST	PI	PCT	PU	PEOU	AT	BT
CR	**0.746**							
PST	0.478	**0.758**						
PI	0.547	0.465	**0.757**					
PCT	0.522	0.616	0.618	**0.725**				
PU	0.514	0.628	0.637	0.674	**0.727**			
PEOU	0.501	0.564	0.531	0.519	0.596	**0. 729**		
AT	0.536	0.641	0.682	0.626	0.629	0.588	**0.762**	
BT	0.345	0.417	0.425	0.353	0.373	0.360	0.455	**0.846**

2. Path Analysis

Path analysis was employed to test the model's congruence with the empirical data and test the study's hypotheses. The results revealed that the goodness of fit values of the theoretical model met the cut-off criterion (Chi-square(χ^2) = 192.045, df = 164, P-value = 0.066, χ^2/df. =

1.171, GFI = 0.984, AGFI= 0.962, CFI = 0.998, RMSEA= 0.017 and SRMR = 0.024). Therefore, the results confirm a good fit of the testing model, as shown in Figure 4 and Table 5.

Figure 4 Final Adjusted Model and Goodness of Fit Values

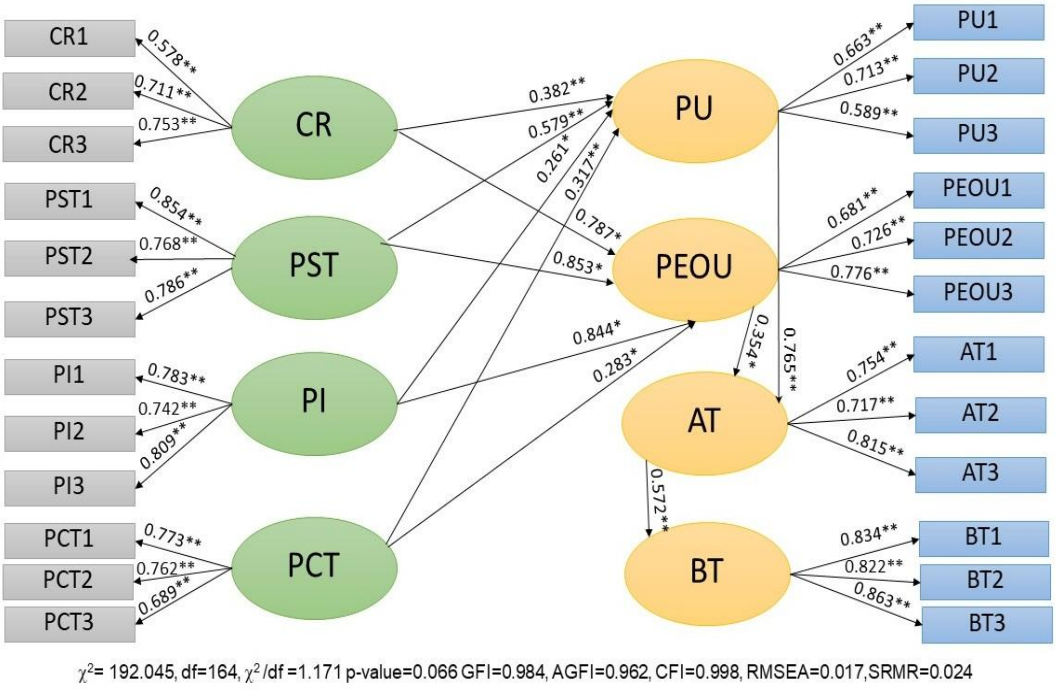


Table 5 Comparison of the Final Model's Goodness of Fit with the Criterion

Goodness of Fit indices	Criterions	Final Model	
χ^2/ df	≤ 2.00	1.171	Accepted
P-value	≥ 0.05	0.066	Accepted
CFI	≥ 0.90	0.998	Accepted
GFI	≥ 0.90	0.984	Accepted
AGFI	≥ 0.90	0.967	Accepted
RMSEA	≤ 0.05	0.017	Accepted
SRMR	≥ 0.08	0.024	Accepted

Hypothesis Test

The results of the Path analysis also provide the answers for the research hypothesis as concluded in Table 6.

Table 6 Hypotheses Results of the Structural Model

Hypotheses	Path Correlation	Standardized Path Coefficient	*t*- Value	P- Value	Results
H1	CR → PU	0.382	4.868	**	Supported
H2	CR → PEOU	0.787	2.282	*	Supported
H3	PST → PU	0.579	4.374	**	Supported
H4	PST → PEOU	0.853	2.435	*	Supported
H5	PI → PU	0.261	1.993	*	Supported

Table 6 (Continued)

Hypotheses	Path Correlation	Standardized Path Coefficient	*t*- Value	P- Value	Results
H6	PI → PEOU	0.844	2.176	*	Supported
H7	PCT → PU	0.317	2.977	**	Supported
H8	PCT → PEOU	0.283	2.052	*	Supported
H9	PU → AT	0.765	8.783	**	Supported
H10	PEOU → AT	0.354	2.213	*	Supported
H11	AT → BT	0.572	12.345	**	Supported

Note. * P-value < 0.05, ** P-value < 0.01

From the model and hypothesis tests, we found that all research hypotheses were supported. We also observed that the variables such as CR, PST, PI, PCT, PU, and PEOU indirectly affected BT through AT, as presented in Table 7.

Table 7 Indirect Effects of Affecting Variables on BT

Paths of Influence on BT	BT		
	DE	IE	TE
CR → PU → AT→ BT	-	0.167*	0.167*
CR → PEOU → AT → BT	-	0.202*	0.202*
PST → PU → AT→ BT	-	0.253*	0.253*
PST → PEOU → AT → BT	-	0.173*	0.173*
PI → PU → AT → BT	-	0.114*	0.114*
PI → PEOU → AT → BT	-	0.122*	0.122
PCT → PU → AT→ BT	-	0.138*	0.138*
PCT → PEOU → AT → BT	-	0.147*	0.147*
PU	-	0.400*	0.400*
PEOU	-	0.143*	0.143*
AT	0.572*	-	0.572*

DISCUSSION

The analysis result showed that all hypotheses are supported, implying that the variables in the hypothesized TAM model can be used to explain consumers' adoption of virtual banks in Thailand.

In detail, it was found that corporate reputation (CR) influences perceived usefulness (PU) and perceived ease of use (PEOU). Moreover, the finding reveals that PU and PEOU affect attitude toward technology (AT), which consecutively influences behavioral intentions (BT). This outcome is consistent with the statement addressed by Poon (2008) that "The excellent reputation of the bank has a positive impact on customers' acceptance of their new services (virtual bank)." The result of this study is also in line with a study of Mousa et al. (2021).

The findings also revealed that perceived safety of technology (PST) impacts PU and PEOU, which is in line with the statement addressed by Boise et al. (2013) that giving consumers knowledge about a technology and ensuring their privacy and security will increase their perception of the safety of the technology, make them feel that it will be easy to use (PEOU), and allow them to recognize the benefit of using that technology (PU). Analysis also indicated that PU and PEUO influence AT and that AT in turn influences BT. It is therefore

concluded that the more customers perceive virtual banking services as safe, the easier it is for them to adopt this type of bank. This outcome harmonizes with the study of Martín-García et al. (2022), which showed that PST positively influences PU and PEOU.

Moreover, it was found that personal innovativeness (PI) influences PU and PEOU, in line with the study of Kumar et al. (2020) and Musyaffi et al. (2022). Moreover, results indicated that PI and PEOU impact AT and that AT in turn influences BT. This finding is in line with the statement of Dutta (2023) who stated that consumers interested in using new technology tend to be ready to use it.

Additionally, it was found that perceived cost of technology (PCT) influences PU and PEOU. This result is consistent with the study of Martín-García et al. (2022). This finding implies that consumers who are aware of the cost they must pay for using a new technology and are still willing to use it must accept its usefulness and ease of use.

The finding also indicates that PU influences AT. Since PU refers to an individual's subjective perception of the usefulness and benefit of a new technology in improving their performance at work, this determines whether the users perceive new technology as helpful in enabling them to achieve their goals (Joshi & Bhatt, 2021). Therefore, consumers who recognize the usefulness of technology tend to have a positive attitude toward it. Based on the TAM model, consumers' attitude toward a new technology is directly influenced by the perceived usefulness of the technology (Gokmenoglu & Kaakeh, 2022; Moturi & Wairimu, 2022; Altalhi & Basiouni, 2022; Belsoka et al., 2022).

It was also found that PEOU influences AT. Since PEOU refers to the degree to which a person feels comfortable and free from effort in utilizing and adopting a new technology (Kumar et al., 2020), customers who feel that using and adopting a particular innovation is easy tend to have a positive attitude toward that technology. The outcome is consistent with former studies from Altalhi and Basiouni (2022), and Belsoka et al. (2022).

The final finding was that AT influences BT. This finding is in line with the statement addressed by Michalikova et al (2022), namely that attitude significantly predicts behavioral intentions, and Jun et al (2021) who stated that BT is determined by the attitude toward the behavior (AT). Moreover, many studies have documented that positive attitudes toward new technology significantly affect online behavioral intentions (Altalhi & Basiouni, 2022; Namahoot, 2021).

RECOMMENDATIONS

From the prior research findings and discussion, the following recommendations are made.

Recommendation for Banks and Companies Investing in a Virtual Banking Business

1) We found that a good corporate reputation can lead to consumers' behavioral intentions to use the services of a virtual bank; therefore, cultivating an excellent corporate reputation should be one of the essential missions of any company that wants to compete in the virtual banking business, especially new players should put their effort in creating a positive image and an excellent reputation to be able to compete with banks that have a long-term reputation.

2) The findings revealed that perceived safety of technology (PST) leads to consumers' intentions to use a virtual bank. Therefore, it is recommended that companies find an effective way to communicate with their consumers to recommend safety and personal security when using the virtual bank's services.

3) It was found that perceived cost of technology (PCT) can lead to consumers' intentions to use a virtual bank. Therefore, the company must make customers aware of the technology's value compared to the cost they must pay to use the technology.

4) The findings revealed that personal innovativeness (PI) can influence consumers' behavioral intentions. Therefore, it is suggested that virtual bank operators focus on the younger generations (x y z) since they tend to be more innovative and can adopt new technologies better than the older generation. However, they should provide knowledge and support senior people (such as the baby boomer generation) so that they are more innovative and can quickly adopt virtual banking services.

5) It was found that perceived usefulness and ease of use lead to consumers' behavioral intentions to use a virtual bank. Therefore, during product design, banks should consider the design of products so that they adequately respond to consumers' needs and ensure that consumers will require less effort in using them.

Recommendations for Future Research

This research confirms the use of the extended TAM model in explaining the behavioral intentions of Thai consumers toward virtual banking which is expected to begin in 2025. However, future research can examine different variables from this study such as perceived trust, time-saving orientation, cost-saving orientation, perceived risk, self-efficacy, compatibility, and facilitating conditions, to be able to broaden the knowledge concerning the factors that influence the adoption of virtual banking or other innovations in the future.

CONCLUSION

The advancement of global digitization has urged financial sector businesses worldwide to adjust to the changing environment, enhancing their competitiveness. To keep pace with changes in the global landscape, the Bank of Thailand (BOT) has invited banks and investors to submit for approval to set up a virtual bank in Thailand in 2025. This study examines the factors influencing Thai consumers' behavioral intentions to use the services of a virtual bank, namely CR, PST, PI, and PCT. The findings showed that all mentioned factors indirectly affects BT through PU (or PEOU) and AT. It is consequently recommend that investors recognize the significance of those four variables and add them to their marketing strategy to provide products and services that respond to the needs of the consumers and hasten the adoption of virtual banking services. Future research could examine different factors that lead to consumers' intentions to use virtual banking.

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