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THE RISE OF VIRTUAL BANKS: FACTORS INFLUENCING ITS ADOPTION USING TRUTAUT FRAMEWORK

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ABSTRACT

Background and Purpose: In 2022, the Malaysian central bank granted five licenses to run virtual banks. Despite the high online banking usage in Malaysia, virtual banking is still considered a new experience to potential users and may present challenges as individuals may exhibit resistance and hesitance to adopt. Hence, understanding the factors influencing the intention to adopt virtual banking is crucial for its successful implementation and widespread acceptance. The objective of this study is twofold: 1) to examine the current technology readiness of customers, and 2) to examine the factors influencing customers' intention to adopt virtual banking in Malaysia.

Methodology: This study adopts a quantitative method where questionnaires were distributed to bank customers as the target population. Data gathered from 157 respondents was analysed using variance-based partial least squares structural equation modelling (PLS-SEM) method.

Findings: The findings of this study revealed that optimism and innovativeness are significant motivators to shape an individual's positive perception of the use of technology. Meanwhile, bank reputation, performance expectancy, and facilitating conditions have a significant influence on the intention to adopt virtual banking.

Contributions: In light of the inaugural award of digital banking licenses by Bank Negara Malaysia, this study offers valuable insights to the virtual banks to effectively promote the adoption of virtual banking in Malaysia. By combining Technology Readiness (TR) and Unified Theory of Acceptance and Use of Technology (UTAUT) into one research framework, this study employs an integrated model (TRUTAUT) which will provide a more in-depth understanding of the factors influencing customers to adopt the new virtual banking phenomenon in Malaysia. This integrated model posits that both personality dimensions and system-specific dimensions, as represented by TR and UTAUT respectively, have a significant bearing on the customers' propensity to adopt new technology. In addition, this study also introduces bank reputation construct, which is believed to be important in influencing customer intention to adopt virtual banking.

Keywords: Virtual bank, digital transformation, Technology Readiness (TR), Unified Theory of Acceptance and Use of Technology (UTAUT).

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1.0 INTRODUCTION

"Change is the only constant in life. One's ability to adapt to those changes will determine their success in life." – Benjamin Franklin

In the wake of digitalization, life has seen changes in literally all aspects. Today, the digital transformation seems to be the key to business success – failing to jump onto the bandwagon in time has witnessed how many global large companies such as Borders, Toys "R" Us, and Blockbuster succumbed to the rapid change. The financial services industry is among the frontrunners in embracing digital technologies in its service offering – which is not a surprise given the fact that it was also the early adopter of technology when it first introduced the automated teller machine (ATM) back in 1967 (Panetta, 2018). The term "fintech" which is short for financial technology, has become more than just a buzzword, proving itself as a significant driver for industry innovations.

The phenomenon of virtual banks is not particularly new in Asia. The concept has been materialised decades ago when Japan first opened its financial market in October 2000 to an internet-only bank i.e., Japan Net Bank (JNB) (Farhoomand et al., 2002). JNB's existence to

this day proves the feasibility of the virtual bank concept, however, that is not always the case for other virtual banks of the same era. The closest example is Singapore's first digital bank called FinatiQ, which was launched by OCBC Singapore in April 2000. Having survived for eleven years, FinatiQ finally announced to shut its doors for good in June 2011.

Today, the concept of virtual banks revives and has been the talk of the industry again. A virtual bank is defined as "*a bank primarily delivering banking services through the internet or other forms of electronic channels without the presence of physical branches*" (PwC, 2019). Singapore, for instance, once again develops virtual banks despite the earlier demise of FinatiQ. In December 2020, the Monetary Authority of Singapore (MAS) announced four successful applicants for digital bank licenses. They will be granted the banking licenses upon meeting all relevant prudential requirements and licensing preconditions, and are expected to start their operations in early 2022.

Asia is the next hotspot for virtual banks, and Malaysia is no exception to this. The country's move in this virtual bank phenomenon is generally influenced by the success of new players, especially the fintech companies, challenging the incumbent banks in other Asian markets such as Hong Kong, Singapore, and the Philippines, by offering new and low-cost services (Daga, 2021). In April 2022, Bank Negara Malaysia (BNM) announced five successful applicants for the virtual bank licences who will undergo the operational readiness process for a period of 12 to 24 months before they are allowed to commence operation. The approval would be based on the audit results by the BNM.

With a total of 29 license applications received by BNM, it is evident that there is a strong interest on the supply side. However, it is equally important to ensure strong demand for virtual banking in order for its implementation to succeed. Despite the high online banking usage among the Malaysian population, a totally virtual banking is still considered as a new experience to the potential users. Therefore, it presents unique challenges as individuals may exhibit resistance and hesitance to adopt. This could be attributed to the uncertainty regarding the benefits, functionalities, and risks of adopting virtual banking. Hence, understanding the factors influencing the intention to adopt virtual banking is crucial for its successful implementation and widespread acceptance. In addition, the fact that virtual banking is largely about technological innovation, the technology readiness antecedents of the factors is correspondingly important to be examined.

In view of the above discussion, the objective of this study is twofold: 1) to examine the current technology readiness of customers, and 2) to examine the factors influencing customers' intention to adopt virtual banking in Malaysia. The findings from this study are

expected to explicate the customer behavioural intention about the adoption of virtual banking. Following that, appropriate strategies could be devised by the respective virtual banks to attract bank customers to embrace this novel way of banking once it is officially launched in Malaysia.

2.0 LITERATURE REVIEW

2.1 Underlying Theories

This study is developed based on two underlying theories namely, Technology Readiness (TR), and Unified Theory of Acceptance and Use of Technology (UTAUT). By combining these two theories into one research framework, this study employs an integrated model (TRUTAUT) which will provide a more in-depth understanding of the factors influencing customers to adopt the new virtual banking phenomenon in Malaysia. This integrated model posits that both personality dimensions and system-specific dimensions, as represented by TR and UTAUT respectively, have a significant bearing on the customers' propensity to adopt new technology.

Technology Readiness (TR) was introduced by Parasuraman (2000), which suggests that the tendency for customers to embrace technology depends on the interplay between the motivators and inhibitors of technology readiness. Specifically, the components of the motivators are optimism and innovativeness. Meanwhile, the components of the inhibitors are discomfort and insecurity. Considering significant changes in the technology development since the index was first formulated, it was then updated and streamlined to be TRI 2.0 by Parasuraman and Colby (2015), which can provide a robust prediction of technology-related behavioural intentions. The use of TR in this research framework is important because as highlighted by Parasuraman and Colby (2001), the different TR profiles indicate different customer behaviour concerning internet-related technology.

Unified Theory of Acceptance and Use of Technology (UTAUT) is another prominent theory used as the theoretical lens in technology-related studies. Past literature posits that UTAUT has been extensively used to identify factors affecting technology adoption intention in a social context. According to this theory, the behaviour to adopt is influenced by performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). In addition to the original four UTAUT independent variables, this study added bank reputation as new construction because the researchers believe that a good bank reputation will most likely influence the intention to use virtual banking services.

2.2 Hypotheses Development and Research Conceptual Framework

2.2.1 Technology Readiness: Personality Dimension

Parasuraman (2000, p. 311) defines optimism as "*a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives*". Godoe and Johansen (2012) find that people who are generally optimistic about technology believe that technologies enable them to gain more benefits from performing their tasks and jobs. This is further supported by Qasem (2021) who reports that optimism displays the strongest positive impact on the performance expectancy, indicating a favourable perception of technology in the respondent's online shopping experience. In addition, customers would also find it relatively easier to adopt new technology compared to less optimistic people (Jeong & Ha, 2020; Godoe & Johansen, 2012). As explained by Pham et al. (2018), optimism plays a role in shaping how people perceive the ease of use of a certain technology. Optimist people are more likely to perceive that less effort is needed to use the technology (Qasem, 2021).

Innovativeness is defined as "*a tendency to be a technology pioneer and thought leader*" (Parasuraman, 2000, p. 311). Intuitively, innovativeness is anticipated to have a positive impact on performance expectancy. As one is more innovative, he may be more likely to resonate with the idea that new technology could provide benefits in performing a certain task or job. However, it is interesting that previous studies have reported a negative association between the two (Godoe & Johansen, 2012; Walczuch et al., 2007). The explanation for this negative relationship stems from the possibility that innovative individuals are likely to be more critical in evaluating a certain technology. As technology-savvy, they would have a relatively higher demand and expectations from the technology. Meanwhile, Godoe and Johansen (2012) report that innovativeness is positively related to perceived ease of use, indicating that innovative people are expected to find it relatively easier to adopt new technology, and hence less effort is needed to embrace it. In addition, Seol et al. (2017) find that motivators i.e., optimism and innovativeness, have a significant positive impact on the effort expectancy.

Discomfort is defined as "*a perceived lack of control over technology and a feeling of being overwhelmed by it*" (Parasuraman, 2000, p. 311). By having discomfort feeling, it may affect one's perception of how technology could provide benefits and assistance in performing the virtual banking transactions. Khalilzadeh et al. (2017) report that in the context of mobile payment, some customers fear that their personal information is divulged to third parties – and this hurts their use of the technology. In addition, discomfort is also expected to affect how one feels about how much effort needs to be made to use the technology related to virtual

banking. When one feels discomfort, likely, the technology may not be user-friendly, and more effort needs to be made to use the system (Godoe & Johansen, 2012).

Parasuraman (2000, p. 311) defines insecurity as "*distrust of technology, stemming from scepticism about its ability to work properly and concerns about its potentially harmful consequences*". As highlighted by Napitupulu et al. (2020), insecurity involves suspicion of the technology, especially from the transaction security aspect. Given the crucial role played by security in the setting of a new digital technology environment (Khalilzadeh et al., 2017), it is therefore important to examine the customers' behaviour regarding the adoption of virtual banking, it is, therefore important to address the insecurity issue. Insecure individuals would feel that it is not easy to use the technology in a way that would make them feel safe. In addition, they will also tend to feel that there is insufficient organizational and technical infrastructure to support the use of the new technology.

Thus, it is hypothesized that:

H1: Optimism will positively influence performance expectancy.
H2: Optimism will positively influence effort expectancy.
H3: Innovativeness will positively influence performance expectancy.
H4: Innovativeness will positively influence effort expectancy.
H5: Discomfort will negatively influence performance expectancy.
H6: Discomfort will negatively influence effort expectancy.
H7: Insecurity will negatively influence effort expectancy.
H8: Insecurity will negatively influence facilitating conditions.

2.2.2 Unified Theory of Acceptance and Use of Technology: System-Specific Dimension

Performance Expectancy is an important construct in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Performance expectancy is defined as the extent to which technology-based services assist users in performing banking transactions and operations (Brown & Venkatesh, 2005). For example, in the context of this research, performance expectancy measures the extent to which an individual believes that using virtual banking services will provide consumers benefits in performing bank transactions. Al-Qeisi and associates reported that users are more at ease when conducting digital banking services when performance expectations are in place (Al-Qeisi et al., 2014). Likewise, previous studies found positive relationships between performance expectancy and the banking customers'

behavioural intention (Chan et al., 2010; Venkatesh et al., 2016; Sharma et al., 2020; Merhi et al., 2019; Alalwan et al., 2018).

Effort expectancy is associated with customers' ease of use with technology-enabled services (Eke & Singhry, 2020). In other words, effort expectancy is the degree of digital banking system simplicity. Previous empirical evidence suggests that effort expectancy is a factor that would positively influence the intention to use technology-related services (Venkatesh et al., 2016; Saad & Ihab, 2018; Maruping et al., 2017; Rahi et al., 2018). This implies that less effort is required to use a technology-enabled service. In the context of this study, it is expected that if the virtual banking service is easy to use, users will be motivated to accept and use the digital banking services.

Another important aspect drawn from the UTAUT model is facilitating conditions. This core determinant was previously found to benefit older women who viewed resources and support as essential to accept and adopt a new technology (Venkatesh et al., 2012). With this finding, it can be postulated that elderly individuals need technological infrastructure support to motivate them further to adopt a technology. Generally, previous literature posits that facilitating conditions positively influence users' intention to adopt and use digital banking services (Rahi et al., 2018; Martins et al., 2014; Oliveira et al., 2016). Conversely, one recent study reported facilitating conditions was not the determinants of FinTech acceptance (Shaikh & Amin, 2023).

Social influence comprises the change of attitude, beliefs and behaviour through the influence of others. It is found that individuals tend to consult their social network circle first before adopting new technology or are somewhat pressured by that influence to adopt new technology (Slade et al., 2007). More specifically, past literature reports that social influence had a positive impact on the intentions to adopt digital banking (Chaouali et al., 2016; Thomas & Vinuales, 2017). In contrast, social influence was not found as one of the determinants for FinTech acceptance (Shaikh & Amin, 2023). Thus, in the context of this study, the researchers believe that the extent of influence by members of a social network to use digital banking services is a significant determinant of customers' intention to use virtual banking services.

Thus, it is hypothesized that:

H9: Performance expectancy will positively influence the intention to use virtual banking.
H10: Effort expectancy will positively influence the intention to use virtual banking.
H11: Facilitating conditions will positively influence the intention to use virtual banking.
H12: Social influence will positively influence the intention to use virtual banking.

2.2.3 Bank Reputation

Fombrun (1996) reports four features of a good bank reputation which are credibility, reliability, responsibility, and trustworthiness (Fombrun, 1996; Ponzi et al., 2011). These features are indicators of the quality of business and service provided by banks over some time. A positive reputation is a vital component of a bank's ability to spark trust and improve customers retention. Banks that have a good reputation are more likely to gain customers' trust for their banking transactions. Trust increases customers' confidence, reduces uncertainties, and reduces risk perceptions of customers (Keh & Xie, 2009). Many researchers reported that a corporate reputation is reflected by customers' perception concerning the business excellence characteristics (Boivie et al., 2016; Park & Rogan, 2019). Consequently, a good bank reputation is a signal to the behavioural intentions of the customers to use their banking services. It also leads to a significant influence over banking decisions, competitive advantage and higher financial performance.

Thus, it is hypothesized that:

H13: Bank reputation will positively influence the intention to use virtual banking.

In light of the above discussion, Figure 1 presents the research conceptual framework of this study which illustrates the integration of two theories i.e., Technology Readiness (TR) and Unified Theory of Use and Adoption of Technology (UTAUT). This integrated framework is expected to provide an enhanced prediction accuracy in examining consumers' behavioural intention in technology-related products and services.

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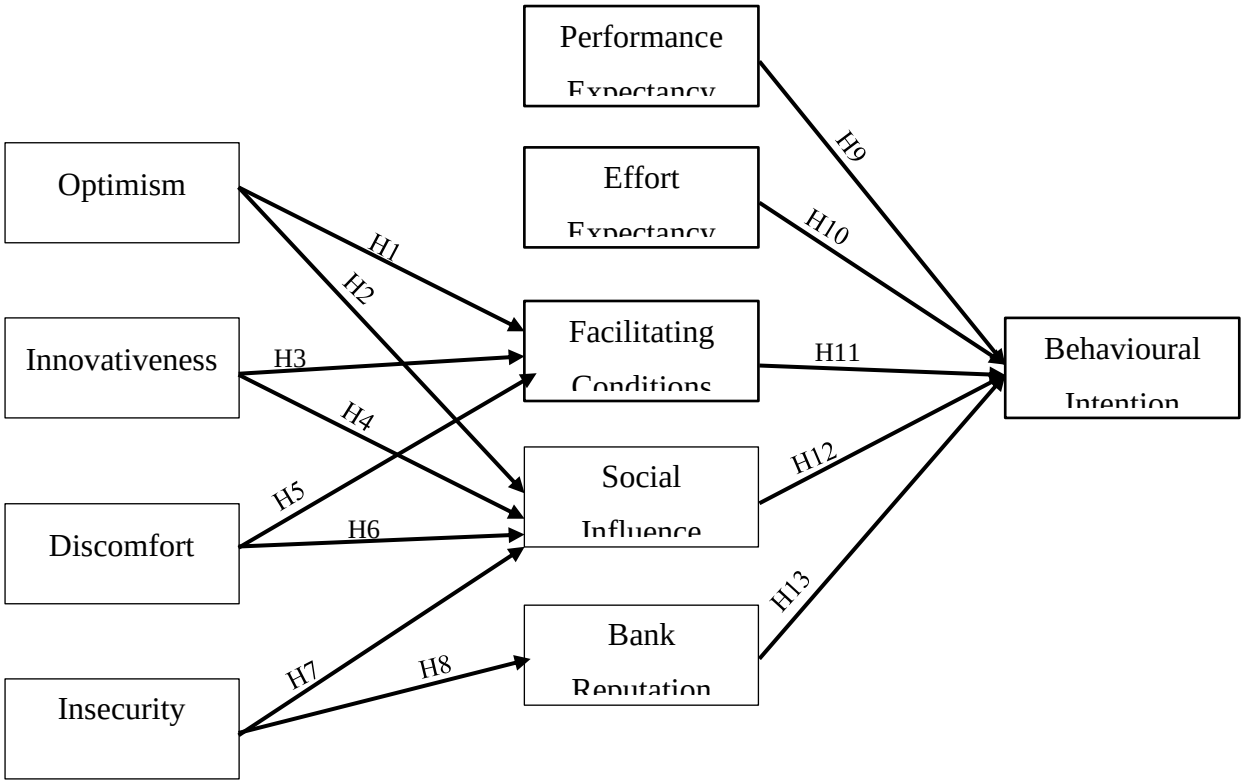

Figure 1: Research conceptual framework

3.0 RESEARCH DESIGN

3.1 Sample and Procedure

This study adopts a quantitative method to test the hypotheses as presented in the proposed research model. The target population is bank customers, whereby self-administered questionnaires were distributed to them to collect primary data for this study. A convenience sampling technique was used in this study. The study was conducted over a relatively short period (from September 2021 to March 2022), and convenience sampling allowed for quicker data collection and analysis. This was important to ensure that the research remained timely and relevant, given the rapidly evolving nature of the banking industry and customer preferences. The data collection was conducted by distributing the questionnaires through Google Forms to the respondents in Malaysia. Given the restricted movement control order due to the Covid-19 pandemic, online distribution of questionnaires was considered the best option for safety and health reasons. Furthermore, it also has the potential to reach a wider range of respondents. Daniel Soper Calculator was used in estimating the sample size for this study, and it yielded a minimum sample size of 113. A total of 159 respondents participated in

this survey. Thus, it can be deemed that the number of respondents obtained for this study is adequate.

3.2 Measures and Instrument

The questionnaire in this study comprises 47 questions in four main sections. The first section asks about the demographic information of respondents which includes gender, age, education level, employment, household income, and virtual banking awareness. Meanwhile, the second section consists of 16 questions on Technology Readiness. The technology readiness research scale was adapted from TRI 2.0 (Technology Readiness Index). TRI provided measures for four technology readiness dimensions which are optimism, innovativeness, discomfort, and insecurity. Permission to use TRI items was obtained from Rockbridge Associates Inc. on 23 August 2021. The third section comprised 20 questions on the possible influencers constructs i.e., performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). The fourth section comprised 4 questions on behavioural intention. All items were rated using a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).

A pre-test was conducted to check whether the instrument is easily understood by the respondents (Hulland et al., 2018). Likewise, all adapted scales should be pre-tested to confirm whether the questions work in a new setting with new respondents (Memon et al., 2017). Although no ideal sample size has been specified in the literature, it was decided that the pre-test should involve a minimum of 5 and more respondents mentioned in one of the guidelines (Willis, 2005). Thus, thirty respondents were sampled for the pre-test. All the respondents completed and returned their questionnaires. Validity and reliability test were performed. Based on the test results, some questions were dropped from the questionnaire to achieve the instrument reliability and validity. The questionnaire was amended accordingly for the actual data collection. Table 1 presents a summary of construct measurement and its sources.

Table 1: Sources of construct measurement

Constructs	**No. of items**	**Sources**
Behavioural Intention (BIN)	4	Lew et al. (2020)
Optimism (OPT)	4	Parasuraman & Colby (2015)
Innovativeness (INN)	4	Parasuraman & Colby (2015)
Discomfort (DIS)	4	Parasuraman & Colby (2015)
Insecurity (INS)	4	Parasuraman & Colby (2015)
Performance Expectancy (PE)	5	Chan et al. (2010), Venkatesh et al. (2012), Kuberkar & Singhal (2020)
Effort Expectancy (EE)	4	Chan et al. (2010), Venkatesh et al. (2012), Kuberkar & Singhal (2020)
Social Influence (SI)	3	Venkatesh et al. (2012)
Facilitating Conditions (FC)	4	Chan et al. (2010), Venkatesh et al. (2012), Kuberkar & Singhal (2020)
Bank Reputation (BR)	4	Aparicio et al. (2021), Kim & Lennon (2013), Keh & Xie (2009)

3.3 Data Analysis

SPSS (v.25) was used for descriptive analysis to describe the degree of awareness among respondents on virtual banking. Variance-based partial least squares structural equation modelling (PLS-SEM) method was also employed to estimate the composite model of this study. PLS-SEM was employed because the research aim of this study is oriented towards prediction. SMARTPLS 3 software allows the measurement and structural model analysis. Measurement model analysis provides the validity and reliability results of the research model. Meanwhile, the structural model analysis provides the relationship between constructs.

4.0 ANALYSIS AND DISCUSSION

4.1 Demographic Profiling

A total of 159 questionnaires were completed, however, two respondents did not agree to the Personal Data Protection Act acknowledgement. Therefore, those records have been removed, leaving a balance of 157 respondents to be analysed. Based on the demographic profile of respondents, 65% were male respondents and the remaining 35% were female respondents. Respondents within the age group of 24 years and below were the majority respondents (54.1%), followed by respondents within the age group of 25-40 (28%). Respondents between the age of 41 – 56 constituted 12.7% and only 5.1% of respondents consist of adults within the age group of 57 and above. The majority of the respondents were educated holding at least a

bachelor's degree (58.8%). Interestingly, only 50.56% of the respondents have heard of virtual banking starting in Malaysia soon. This provides an early indicator that the awareness level regarding the implementation of virtual banking in Malaysia is still low. This calls for a more active promotion to the public because higher awareness may help to pique people's interest to adopt virtual banking.

4.2 Measurement Model Assessment

The assessment of reflective measurement models includes individual indicator reliability, measured through factor loadings, internal consistency measured through composite reliability (CR) and convergent validity measured through average variance extracted (AVE). The results are presented in Table 2. This study ensured that all factor loadings of the reflective constructs met the minimum threshold value of 0.4 suggested by Hulland (1999). Based on the results, two items were removed (INS5, DIS3), starting with the lowest loading because they did not meet the threshold value. With the caveat of deleting loadings, the researchers of this study ensured that no more than 20% of the indicators were deleted (Hair et al., 2017). Correspondingly, all constructs have also met the satisfactory level of AVE result of >0.5 and CR result of >0.7. The composite reliability assessment was made based on Hair et al. (2019), where values between 0.6 and 0.7 are considered acceptable.

Table 2: Indicator reliability analysis

Construct	Item	Loading	Average Variance Extracted (AVE)	Composite Reliability (CR)	Variance Inflation Factor (VIF)
Optimism (OPT)	OPT1	0.863	0.686	0.897	2.120
	OPT2	0.848			2.017
	OPT3	0.818			1.831
	OPT4	0.782			1.713
Innovativeness (INN)	INN1	0.773	0.653	0.882	1.666
	INN2	0.743			1.770
	INN3	0.857			1.981
	INN4	0.852			1.786
Discomfort (DIS)	DIS2	0.618	0.500	0.738	1.204
	DIS4	0.515			1.167
	DIS5	0.923			1.159
Insecurity (INS)	INS2	0.917	0.595	0.735	1.105
	INS3	0.600			1.381
	INS4	0.533			1.400
Bank Reputation (BR)	BR1	0.858	0.778	0.933	2.588
	BR2	0.931			3.922
	BR3	0.889			2.898
	BR4	0.847			2.448
Social Influence (SI)	SI1	0.846	0.798	0.922	2.043
	SI2	0.898			2.516
	SI3	0.934			3.031
Performance Expectancy (PE)	PE1	0.852	0.735	0.932	3.087
	PE2	0.905			4.036
	PE3	0.891			3.031
	PE4	0.882			2.820
	PE5	0.746			1.783
Effort Expectancy (EE)	EE1	0.847	0.749	0.923	2.152
	EE2	0.905			3.099

	EE3	0.906			3.335
	EE4	0.799			2.032
Facilitating Conditions (FC)	FC1	0.786	0.609	0.860	1.656
	FC2	0.832			2.434
	FC3	0.867			2.488
	FC4	0.613			1.173
Behavioural Intention (BIN)	BIN1	0.909	0.828	0.951	3.627
	BIN2	0.932			4.281
	BIN3	0.912			3.524
	BIN4	0.887			3.042

Note: DS3 and INS5 were deleted due to low loadings

The assessment of the reflective measurement model also includes discriminant validity. In this study, the heterotrait-monotrait ratio (HTMT) was used to examine discriminant validity. HTMT was employed because recent research has identified that traditional approaches such as cross- loadings and the Fornell-Larcker criterion were not reliable in identifying discriminant validity issues (Hair et al., 2017). The HTMT approach is an estimate of what the true correlation between two constructs would be if they were perfectly reliable. According to the HTMT discriminant validity assessment, Table 3 depicts no issue of discriminant validity following the guidelines of all values below 0.85 (Kline, 2011) and 0.90 (Gold et al., 2001).

Table 3: Discriminant validity using Heterotrait-Monotrait ratios (HTMT)

	BR	BIN	DIS	EE	FC	INN	INS	OPT	PE	SI
BR										
BIN	0.536									
DIS	0.099	0.223								
EE	0.445	0.663	0.216							
FC	0.533	0.598	0.121	0.634						
INN	0.17	0.326	0.385	0.413	0.637					
INS	0.131	0.205	0.569	0.156	0.109	0.098				
OPT	0.424	0.647	0.258	0.645	0.536	0.452	0.218			
PE	0.508	0.826	0.306	0.804	0.553	0.357	0.210	0.744		
SI	0.205	0.443	0.237	0.715	0.578	0.438	0.133	0.55	0.505	

Note: BR: Bank Reputation; BIN: Behavioural Intention; DIS: Discomfort; EE: Effort Expectancy; FC: Facilitating Conditions; INN: Innovativeness; OPT: Optimism; PE: Performance Expectancy; SI: Social Influence

4.3 Structural Model Assessment

Before the structural assessment model, it is necessary to ensure there is no lateral collinearity issue in the structural model (Kock & Lynn, 2012). According to the results of the lateral multicollinearity test, all indicators met the VIF values and consistently fell below the cutoff point of 5 (Hair et al., 2017). Therefore, it can be said that collinearity in any of the constructs did not approach critical levels and that it did not affect the estimation of the PLS path model in this investigation. In this study, bootstrapping function was used to assess the research hypotheses. Based on Table 4, six relationships were found to have a t-value of >=1.645, significant at 0.05 level of significance. Specifically, the Optimism construct is positively related to Performance Expectancy (β=0.601) and Effort Expectancy (β=0.466). The predictor Innovativeness is positively linked to Effort Expectancy (β=0.198). Moreover, Bank Reputation (β=0.139), Performance Expectancy (β=0.597) and Facilitating Conditions (β=0.142) has a positive relationship with Behavioural Intention, consequently supporting H1, H2, H3, H9, H11 and H13. The R^2 value of 0.627 was obtained, suggesting this model is substantial. Generally, R^2 values of 0.02, 0.13, and 0.26 for target constructs are considered weak, medium, and substantial, respectively (Cohen, 1988). Figure 2 depicts the measurement model with t-values for this study.

Table 4: Hypotheses testing

	Hypotheses	**Std Beta**	**Std Error**	**t-value**	**p-value**	**Decision**
H1	Optimism -> Effort Expectancy	0.466	0.075	6.301**	0.000	**Supported**
H2	Optimism -> Performance Expectancy	0.601	0.062	9.695**	0.000	**Supported**
H3	Innovativeness -> Performance Expectancy_	0.081	0.066	1.119	0.263	Not Supported
H4	Innovativeness -> Effort Expectancy	0.198	0.084	2.213**	0.027	**Supported**
H5	Discomfort -> Performance Expectancy	-0.111	0.069	1.524	0.127	Not Supported
H6	Discomfort -> Effort Expectancy	-0.053	0.085	0.517	0.605	Not Supported
H7	Insecurity -> Effort Expectancy	0.076	0.089	0.793	0.428	Not Supported
H8	Insecurity -> Facilitating Conditions	-0.016	0.126	0.264	0.792	Not Supported
H9	Performance Expectancy-> Behavioural Intention	0.597	0.075	7.973**	0.000	**Supported**
H10	Effort Expectancy -> Behavioural Intention	0.04	0.093	0.423	0.672	Not Supported
H11	Facilitating Conditions -> Behavioural Intention	0.142	0.066	2.201**	0.028	**Supported**
H12	Social Influence -> Behavioural Intention	0.014	0.071	0.183	0.855	Not Supported
H13	Bank Reputation -> Behavioural Intention	0.139	0.059	2.218**	0.027	**Supported**

*Note : **p<0.05*

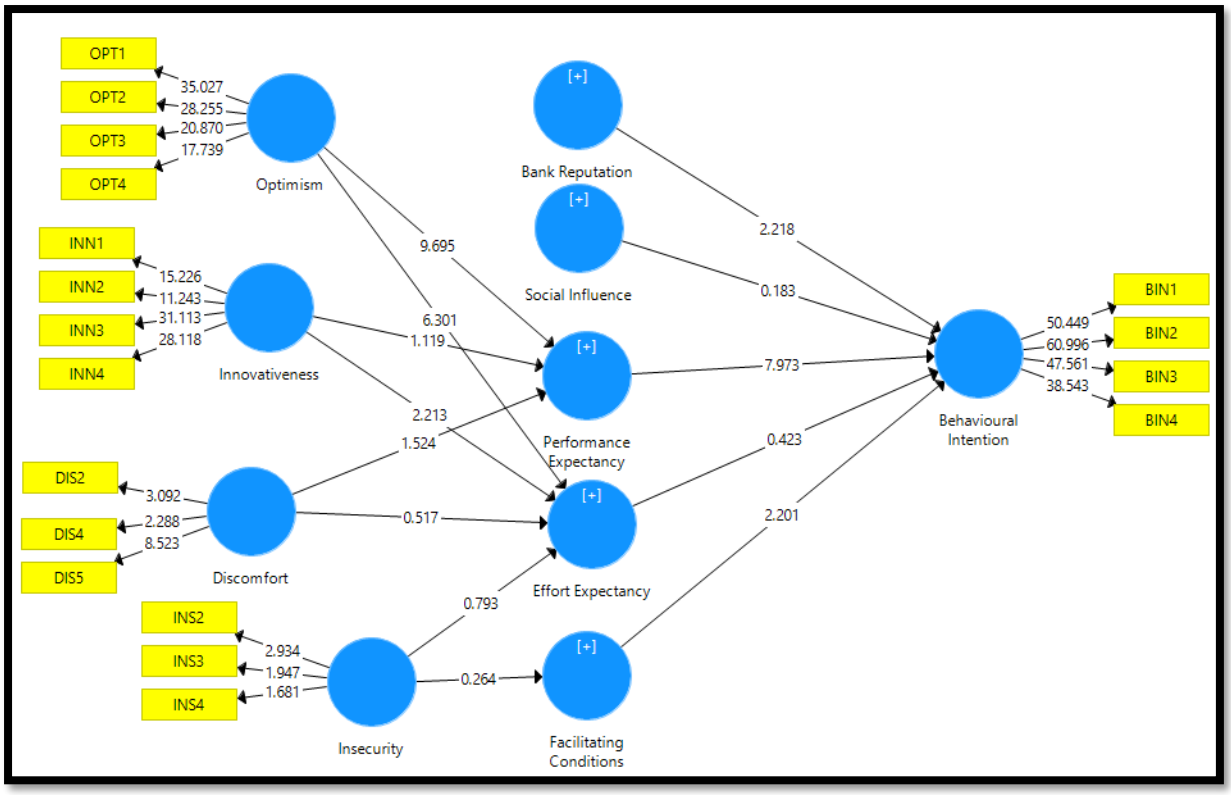

Figure 2: Measurement model with t-values

5.0 DISCUSSION

The results attained from the analysis revealed that optimism has a significant and positive impact on performance expectancy and effort expectancy. In this study, optimism – which represents a positive perception of technology, its functionality, and its efficiency (Pham et al., 2018), proves to influence individuals to believe that the use of virtual banking assists users in performing banking transactions and operations. In addition, it is also believed to provide value-added benefits in their banking transactions. This is in line with previous findings reported by Yoon and Oh (2018), and Qasem (2021) in various contexts. Optimism is also found to influence individuals to believe that it is easy to use the virtual banking technology, whereby more optimist individuals believe that it requires less effort to adopt virtual banking technology. This result further supports previous findings by Yoon and Oh (2018) and Seol et al. (2017). With this, both H1 and H2 are supported. Furthermore, it has been discovered that demographic variables have a substantial impact on how optimism and how individuals view virtual banking technologies. For instance, research by Alshari and Lokhande (2017) found that income and education levels have a strong positive impact on how clients perceive the value of utilising banking technologies and services. In another study, researchers found marital status, age and education to be the significant predictors in utilising banking

technologies (Izogo et al., 2012). Younger people frequently show higher degrees of optimism about technology, according to research by Izogo et al. (2012), but older adults may approach new technologies with more caution.

Meanwhile, this study finds that another motivator variable in this study i.e., innovativeness, does not have a significant influence on performance expectancy. This study could not substantiate the notion suggested by Turan et al. (2015) that innovative individuals are likely to expect substantial performance from using technologies due to their inclination towards technology. Therefore, the findings in this study do not support H3. On the contrary, innovativeness is found to have a significant positive impact on the effort expectancy, where H4 is supported. It implies that innovative individuals i.e., those with the tendency to be technology pioneers and thought leaders, would expect it to be relatively easier to adopt new technology and therefore find it to be more effortless to embrace it. It supports prior literature by Seol et al. (2017).

On another note, all hypotheses of H5 to H8 involving the inhibitors i.e., discomfort and security, are found to be insignificant. The findings do not provide statistically significant support to the relationship between discomfort and performance expectancy as well as effort expectancy. Therefore, regardless of any discomfort feelings towards technology, the use of technology seems to be inevitable and therefore has an insignificant influence on the performance and effort expectancy of technology adoption. Although virtual banking is still a new concept to be materialised in Malaysia, it is not very different from the use of existing online banking offered by traditional banks. To a certain extent, people are already familiar with doing banking transactions digitally. Therefore, whether one feels insecure or otherwise is found to have insignificant bearings towards the effort expectancy. There is also no empirical support for any significant relationship between insecurity and facilitating conditions. It could be presumed that familiarity and extensive use of technology in current banking transactions plausibly causes any insecurity feelings to be discounted. Therefore, it does not significantly influence how individuals perceive the requirement of organizational and technical infrastructure support for the adoption of virtual banking.

The significant relationship between performance expectancy and behavioural intention is consistent with past studies, demonstrating that people believe that using digital banking services will provide consumers benefits in performing bank transactions (Sharma et al., 2020; Merhi et al., 2019; Alalwan et al., 2018). When customers believe that performing virtual banking transactions can benefit them, they will be more encouraged to actively participate in more transactions. In the aspect of virtual banks, this way of interacting with customers will

boost the competitiveness in the banking industry. Recently, authors have highlighted that customers' positivity is a determining element in virtual banking usage (Carranza et al., 2021). In the context of this study, the concept of attitude toward behaviour reflects the degree to which an individual is confident to use digital technology. Consequently, customers' positive attitude and belief toward technology, generates outcomes that are favourable to both customers and the business. With this, H9 is supported.

In the context of digital banking, it is observed that customers' ease of use with technology-enabled services represents one of the critical aspects that explain behaviour intention to use digital banking services (Malaquias & Hwang, 2019). Effort expectancy examined in this study measured the ease of use associated with the use of virtual banking services. However, the findings of this study revealed that behavioural intention was not significantly influenced by effort expectancy, where H10 is not supported. A glimpse into the demographic profile of this study shows that majority of respondents are younger than 24 years of age. This implies that for the younger generation, utilising digital technologies comes naturally to them and therefore, it does not seem to be a determining factor in decision making. This insignificant finding could also imply that this generation is digitally literate. Moreover, more than half of the respondents (58.8%) were educated with having at least a bachelor's degree. The findings postulate that while ease of use is critical in customer usage, it is not a determining factor among the younger generation who were born into technology as compared to the older generation.

Previous literature reported that elderly individuals need more support in terms of technology adoption to assist and motivate them to use a technology (Rahi et al., 2018; Oliveira et al., 2016). The data from this study did not support H11. This is probably because the demographic profiling of the respondents in this study mainly consists of the younger generation. Facilitating conditions in the context of this study could represent the individuals' familiarity, availability of resources, system availability, and technical support, among others. Although the findings of this study do not resonate with prior literature, it postulates that the younger generation does not have technology support as they are naturally comfortable and well-versed with using technology. In Malaysia, only five virtual bank licences were awarded on 30 March 2022. Therefore, with the start of virtual banking services in Malaysia, facilitating conditions could act as an enabler if the resources and facilities are sufficient.

Although earlier researchers have revealed that individuals tend to consult their social network circle first before adopting new technology (Chaouali et al., 2016; Thomas & Vinuales, 2017), the results of this study demonstrated otherwise. The findings of this study

revealed that social influence does not influence the intention to use virtual banking, where H12 is not supported. Among the possible reasons for this finding is the confident mindset of the younger generation towards technology, where they do not feel the need to be influenced by friends or family to use new technology. Interestingly, a recent Malaysian study revealed that social influence does affect the intention of use (Wen Ni, 2020) among the 25-34 age group. The social influence factor perhaps is primarily targeted at certain individuals who are not familiar with digital technologies. This also strengthens the discussion that Gen Z is true digital natives that thrive in the digital environment. This technologically saturated generation also lived in social isolation during the Covid-19 pandemic which had a profound effect on human behaviour and the way digital technology was adopted. A better understanding of the digital competency of individuals will enable virtual banks to churn more positive prospects for virtual banking.

The study also empirically tested the significance of bank reputation, a new variable towards behavioural intention. The findings of the study supported H13 as with prior literature. Past literature found that a good reputation inspires trust and improves customer retention rates (Boivie et al., 2016; Park & Rogan, 2019). Besides, banks that provide customers with transparent information about the products and services available to them help build customer trust. This finding points out the importance for customers to build trust first before they engage in any banking transaction digitally, especially since virtual banking is a new business approach in Malaysia. Furthermore, the finding also indicates the importance of improving reputational risk management in banks as this valuable strategy is needed in building customer trust. Basically, this finding confirms the pivotal role played by bank reputation, supporting it as the new construct added into this research framework.

6.0 CONCLUSION

The inaugural establishment of virtual banks in Malaysia is a digital transformation of the country's financial system to drive the nation to a high-income economy. With many neighbouring Asian countries starting to make their moves, Malaysia certainly does not want to be left behind in the global rush for virtual banks. This study proposed and examined the factors that may influence the adoption of virtual banking in Malaysia within the framework of two seminal theories i.e., Technology Readiness (TR) and Unified Theory of Acceptance and Use of Technology (UTAUT). The findings suggested that optimism and innovativeness are significant motivators to shape an individual's positive perception of the use of technology. Meanwhile, bank reputation, performance expectancy, and facilitating conditions have a

significant influence on the intention to adopt virtual banking. However, there is one caveat i.e., to a certain extent, the unfamiliarity of individuals with virtual banking may pose some limitations to the study in the context of the finding's generalisation. The findings may not accurately represent the broader population's experience due to the limited familiarity of the respondents. Nevertheless, in order to mitigate this problem, we concisely explained the concept of virtual banking in the context of this study in the distributed questionnaires so that every respondent would have the same understanding. Despite the caveat, this study offers valuable insights to the virtual banks and their respective technology developers to effectively promote the adoption of virtual banking in Malaysia.

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