

Factors that Influence Individuals' Intention to Adopt Blockchain in Banking Institutions in Malaysia

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ABSTRACT

The industry of blockchain technology has become more and more important with the rapid development of the financial industry. Blockchain technology in many developed countries is relatively mature, and Malaysia still has a large blockchain market compared to it. The main purpose of this research is to study factors that influence individuals to adopt blockchain in banking institutions in Malaysia. Through the Unified Theory of Technology Acceptance and Use Technology (UTAUT) theory, this study determines the relationship between effort expectancy, performance expectancy, enabling conditions, and social influence on an individual's behavioral intention to adopt blockchain. A survey of 300 participants was carried out by distributing questionnaires via social media platforms. The results were analyzed using SPSS to test factor analysis, reliability, Pearson correlation analysis, and multiple linear regression analysis. The findings revealed that all; effort expectancy, performance expectancy, enabling conditions, and social influence, have direct relationships with blockchain behavior intention in Malaysia.

Keywords: *behaviour, blockchain, intention, social influence, UTAUT theory*

INTRODUCTION

Blockchain technology presents many opportunities for the banking industry. The banking industry can benefit from blockchain, such as by facilitating customer transactions. Blockchain allows for transparent auditing of transactions, for example, by opening up new frontiers in banking services that can benefit both banks and customers by allowing for safer, more inclusive, cheaper, and faster transactions (Portilla et al., 2021).

Banking institutions all over the world have taken numerous steps to transition to digitally driven business models. An example of this is Maybank, one of the banks listed in Malaysia, a pioneer in digitalization that has conquered the rapidly expanding digital banking sector with its extensive portfolio of digital products and services that can be seamlessly integrated into the customers' day-to-day lives. The reluctance shown by Maybank stands in stark contrast to the widespread enthusiasm shown by other firms for blockchain technology. The global blockchain technology market size from 2017 to 2027, can be seen growing from \$4.9 billion in 2021 to over \$67.4 billion in 2026. In banking and finance, blockchain use cases are few and far between, but they are being implemented on a large scale. In addition, there have been other regulatory impediments that have created barriers to entry for blockchain. Despite these obstacles, banks have started to experiment with the technology on a modest basis (Chirag, 2022).

The need for traditional banks to use modern blockchain technology is to cut down on fraud and make high-security transactions possible on a permanent blockchain ledger. The use of ledgers based on the blockchain has a big effect on the security of banking organizations (Kumar, 2022). Blockchain technology will have a significant impact on banking. It makes it easier to send large amount of money, but also poses a lot of security risks. Because of this, these two problems are easy to be solved with blockchain technology. Several banking tasks can be done automatically with the help of blockchain technology (Pathrose, 2022).

In the process of developing and testing blockchain technology, an exhaustive model of the factors that influence customer acceptance and willingness to adopt the technology is being investigated. The sample was chosen using a methodology known as systematic random sampling. To test the hypothesized relationship, the researchers used structural equation modeling (SEM). The findings indicated that six of the eight hypothesized relationships have some level of support. The customers' perception of both the product's usefulness and its usability are the single most important factor in determining their overall attitude (Hao et al., 2020).

The blockchain environment in the Malaysian banking sector has been making steady progress. In 2018, Malaysian virtual currency exchanges enforced KYC, including the collection of identification documents to increase transparency. In 2019, under the supervision of the Malaysian Securities Commission, the Minister of Finance of Malaysia announced that an order to treat digital currencies and digital tokens as securities has come into effect. After the new rules came into effect in January 2019, Malaysia started approving exchanges in June 2019. Within five years, Malaysia took steps to properly regulate the buying and selling of cryptocurrencies (Sheldon, 2021).

It is crucial to understand the background of the Malaysian blockchain ignorance issue, which may be connected to the lack of effective disclosure of blockchain knowledge to the general public, particularly to the community in the banking system (Golder, 2019). Additionally, Yatim (2018) stated that, Malaysia is a country that disdains the use of blockchain technology, particularly from the perspective of the government. Previous study has shown that users are quite concerned about the adoption of blockchain technology. One of the biggest obstacles to the mainstream adoption of blockchain technology and the cryptocurrency ecosystem is privacy concerns (Ku-Mahamud, et al. 2018).

However, there are still untapped markets related to the awareness of the use of blockchain in the banking industry, particularly in Malaysia. Due to that, this research explores the factors that influence the behaviour and intentions towards the use of blockchain in the banking institutions in Malaysia. The factors are performance expectancy (PE), social influence (SI), enabling conditions (EC), and effort expectancy (EE) that will affect customer intention to use the blockchain in Malaysia.

LITERATURE REVIEW

Behavioral Intention

This study used the UTAUT, a technology acceptance model formulated by Venkatesh et al. (2003). The UTAUT theory aims to explain user's intention to use the information system and user's subsequent use behaviour. The theory considers four key structures: performance expectancy, enabling conditions, effort expectancy, and social influence. The theory was developed by integrating and reviewing the construction of different models; Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Decomposed Theory of Planned Behaviour (DTPB), and Innovation Diffusion Theory (IDT), which were used by earlier research to explain information system usage behaviour (Venkatesh et al., 2003). In Malaysia, some studies are based on UTAUT, such as Ooi et al. (2018) who apply these theories to understand the adoption of cloud computing by Malaysian manufacturing companies. This study makes use of UTAUT to ascertain the elements affecting Malaysian banking institutions' adoption of blockchain technology.

Performance Expectancy

Performance expectancy (PE) is considered to be the degree to which the use of the system will help to achieve improvement in job performance (Venkatesh et al., 2003). Performance expectancy (PE) is a basic construct that several studies have also empirically examined as a factor in blockchain adoption (Tarhini et al., 2015; Kalinic et al., 2020). According to Sumak et al. (2010), behavioral intention to use Moodle is significantly affected directly by performance expectancy. Similar to this, El-Gayar and Moran (2006) examined how performance expectancy significantly influences behavioral intention to accept tablet PCs. In this study, it is assumed that PE has a positive relationship with behavioural intention to adopt blockchain in Malaysia.

H1: PE is positively correlated with factors influencing blockchain adoption in Malaysian banking institutions.

Effort Expectancy

Effort expectancy (EE) is viewed as a relationship between putting in a certain amount of effort at work and then getting a reward or performance for that effort (Marinković et al., 2020). For example, efforts are expected to be directly linked to the use of computers for online learning by college students. Studies have revealed a strong correlation between the effort expectancy of mobile banking and the likelihood of people's initial readiness to utilize it (Alalwan et al., 2017; M. Aboelmaged & Gebba, 2013; Akturan & Tezcan, 2012). In this study, it is hypothesized that EE will have a positive impact on the effect to adopt blockchain in banking institutions in Malaysia.

H2: EE is positively correlated with factors that affect the adoption of blockchain in banking institutions in Malaysia.

Social Influence

Social influence (SI) refers to efforts in changing other person's behavior, beliefs, and attitudes. Furthermore, persuasion is usually intentional and requires some level of awareness, but social influence is mostly accidental (Marinković et al., 2020). For example, online shopping has been boosted to some extent by COVID-19. Social influence is based on concepts such as social image and subjective norms (Farah et al., 2018), whereby people typically opt for actions that are supported by their social connections (Farzin & Fattahi, 2018). In addition, many previous studies have shown that SI is very important when it comes to technology adoption such as M-banking (Mbrokroh, 2016). In this study, SI

is hypothesized to have a positive impact on the effect of adopting blockchain in banking institutions in Malaysia.

H3: SI is positively correlated with factors that affect the adoption of blockchain in banking institutions in Malaysia.

Enabling Condition

An enabling condition (EC) is the simultaneous occurrence of necessary initiation events for proceeding to the next step. For example, the enabling condition of a factory requires machinery and equipment, etc., which are related to the operating mode of the factory. In this study, it is assumed that EC has a positive impact on the effect to adopt blockchain in banking institutions in Malaysia (Venkatesh et al., 2012; Marinković et al., 2020). Raza et al. (2021) discovered a satisfactory correlation between both a learning management system's behavioral purpose of effort expectation and social isolation, as well as between an LMS's behavioral purpose and utilization patterns. Moreover, another study stated that enabling conditions had an immediate and substantial influence over the usage in universities (Park & Ahn, 2021).

H4: EC is positively correlated with factors that influence the adoption of blockchain in banking institutions in Malaysia.

METHODOLOGY

In line with the aim of the current study, which focuses on examining the factors impacting Malaysian customers' intentions and adoption of blockchain in banking institutions in Malaysia, the sampling frame of the current study comprised all Malaysian banking customers (both potential users and actual users in banks) residing in the main city in Malaysia: Kuala Lumpur. Figure 1 shows the conceptual framework used in this study.

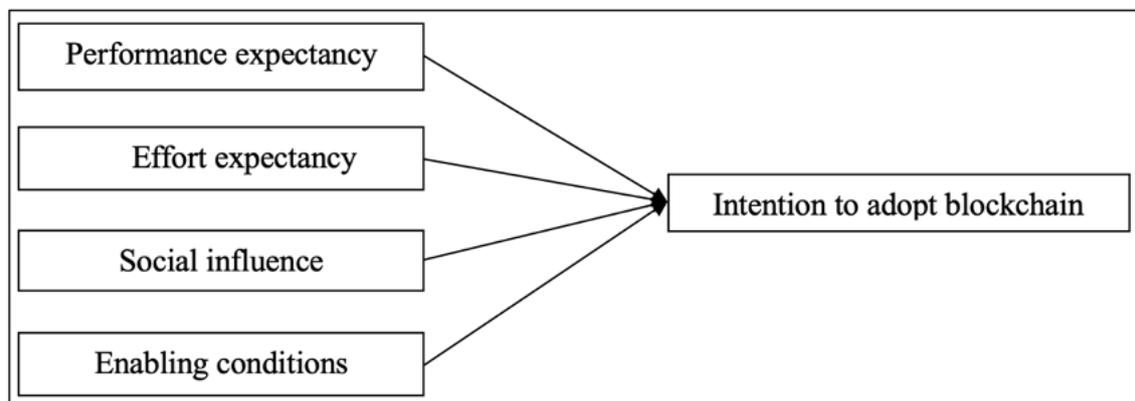


Figure 1: Conceptual Framework (Kalinic et al., 2020)

In line with the aim of the current study, which focuses on examining the factors impacting Malaysian customers' intentions and adoption of blockchain in banking institutions in Malaysia, the sampling frame of the current study comprised all Malaysian banking customers (both potential users and actual users in banks) residing in the main city in Malaysia: Kuala Lumpur. Figure 1 shows the conceptual framework used in this study. Data was collected using convenience sampling in the Klang Valley with 384 respondents based on Krejcie and Morgan table.

DISCUSSION

Descriptive Analysis

The descriptive analysis from the respondents as shown in Table 1 were male with 56.60% (150). Meanwhile, another 43.39% (115) consisted of female respondents. In addition, respondents aged 18 to 30 and 31 to 40 make up the majority of the group, with a total percentage of 41.13% (109) and a total percentage of 38.49% (102) respectively, while 13.58% (36) of the respondents were between 41 and 50 years old. In addition, 6.79% (18) of them were 51 years of age or older. Additionally, 65.28% (173) were single and 34.71% (92) were married. Furthermore, most of the respondents have a relatively high monthly income, of which 36.22% (96) have an income between RM4,001 and RM5,000. In addition, 36.60% (97) of the respondents have an income of RM3,000 – RM4,000. 21.88% (58) of the respondents earn more than RM5,000 per month. However, there were also 5.28% (14) who earn less than RM3,000 per month.

Table 1: Descriptive Analysis

Variables	Items	Values (%)
Gender	Male	56.60
	Female	43.39
Age	18-30	41.13
	31-40	38.49
	41-50	13.58
	More than 50	6.79
Marriage status	Married	34.71
	Single	65.28
Income	Less than RM3,000	5.28
	RM3,000 – RM4,000	36.60
	RM4,0001 – RM5,000	36.33
	More than RM5,000	21.88

Reliability Result

According to Table 2, the variable with the highest alpha value is effort expectancy, which has a 0.904, indicating that the scale of the reliability is very good and that the data for the study is considered reliable. Meanwhile, the other alpha values include behavioral intention (0.887), performance expectancy (0.862), social influence (0.859), and enabling conditions (0.889). Based on a rule of thumb for reliability analysis, all values are greater than 0.7, so both variables indicate good reliability. The respective alpha values after removing this problem are 0.862 and 0.904, which are greater than 0.7 and are also considered reliable.

Table 2: Reliability Analysis

Variables	Number of items	Alpha
Performance expectancy	4	.862
Effort expectancy	4	.904
Social influence	4	.859
Enabling conditions	4	.889
Behavioral Intention	4	.887

Normality Test

Referring to Table 3, it shows that each of the variables is normally distributed as the scores of skewness and kurtosis are within the range, which is +2 and -2 for the skewness and +1 and -1 for the kurtosis.

Table 3: Normality Test

Variables	Skewness	Kurtosis
Performance expectancy	-.624	-.614
Effort expectancy	-.760	-.371
Social influence	-.953	.213
Enabling conditions	-.826	-.207
Behavioral Intention	-.893	.468

Pearson's Correlation Analysis

As can be seen from Table 4, all the independent variables, namely performance expectations, effort expectations, social influence, and enabling conditions, have a positive correlation with behavioral intentions as the dependent variable. This is due to the fact that the correlation values for each of the variables ranged from 0.328 to 0.385. Furthermore, all of the independent variables were significant when paired with the dependent variable at the 0.01 level of significance. The table also highlights that performance expectation is the most important factor that has a positive relationship with the dependent variable compared to the other independent variables. The reason for this is that the expectation of effort is close to 1 compared to the other independent variables.

Table 4: Pearson's Correlation Analysis

Variables	Behavioral Intention	performance expectancy	effort expectancy	social influence	enabling condition
BI	1				
PE	.385**	1			
EE	.345**	.380**	1		
SI	.380**	.241**	.344**	1	
EC	.328**	.276**	.332**	.339**	1

Multiple Linear Regression

Based on Table 5, there are no multiple correlations between the independent variables examined in this investigation. This is due to the fact that the tolerance values for each variable exceeded 0.1. The tolerance values for each variable were found to be greater than 0.1, whereas the variance inflation factor (VIF) values indicated that they were less than 10. This also indicated that the model is deemed to be a good fit for the data.

Table 5: Multicollinearity Test

Variables	Tolerance	VIF
Performance expectancy	0.824	1.214
Effort expectancy	0.760	1.316
Social influence	0.818	1.222
Enabling conditions	0.815	1.228

Table 6 depicts that performance expectations (PE), effort expectations (EE), social impacts (SI), and enabling conditions (EC) are significantly correlated with the dependent variable, i.e., the factors of blockchain technology adoption in Malaysian banks. This is because these variables are significant at the 0.05 level, but their values are below the 0.05 level of significance.

Table 6: Multiple Linear Regression Analysis

Variables	Unstandardized Coefficients	Standardized Coefficients	effort expectancy	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.578	0.344		4.594	0.000
PE	0.235	0.057	0.242	4.150	0.000
EE	0.117	0.056	0.127	2.086	0.038
SI	0.223	0.056	0.231	3.943	0.000
EC	0.126	0.053	0.140	2.390	0.018

Based on the results in Table 7, performance expectations (PE), effort expectations (EE), social impact (SI), and enabling conditions (EC) are significant at the 0.05 level of significance. In general, it can be said that there is a significant relationship between PE, EE, SI, and EC and the adoption of blockchain technology by Malaysian banks. Therefore, the null hypotheses are rejected, and the alternative hypotheses are accepted.

Table 7: Hypothesis Results

Variable	Result	Significant Level	Beta
Performance Expectancy	Reject null hypothesis	0.000	0.242
Effort Expectancy	Reject null hypothesis	0.038	0.127
Social Influence	Reject null hypothesis	0.000	0.231
Enabling Condition	Reject null hypothesis	0.018	0.140
Performance Expectancy	Reject null hypothesis	0.000	0.242

CONCLUSION

This research is conducted to investigate the factors that influence the adoption of blockchain in banking institutions in Malaysia. To address the research question, four hypotheses were constructed by referring to previous studies. These factors come from the UTAUT, namely effort expectancy, performance expectancy, enabling conditions, and social influence. The dependent variable is Bank Malaysia's Behavioral intent to adopt blockchain; while the independent variables are effort expectancy, performance expectancy, enabling conditions, and social influence.

The study concluded that there is a positive but moderately significant relationship between effort expectancy and Bank Malaysia's behavioral intention to adopt blockchain. For performance expectancy, the result shows that blockchain has a good effect on improving the degree of bank job performance, which is consistent with the findings of Nazim et al. (2021). The study concluded that there is a positive but moderately significant relationship between effort expectancy and behavioral intention to adopt blockchain.

The results showed that social influence had a relatively positive impact on the behavioral intention to adopt blockchain in Malaysian banks. This proves that blockchain is effective in increasing the social impact of banking efforts, and that social impact is important and predicted by the intention to be used in a particular innovation (Khazaei & Khazaei, 2016). Blockchain is a public technology. Social influence can be derived from family, peers, and colleagues. Therefore, this study concludes that social influence plays an important role in determining the intention of banking institutions to adopt blockchain.

The relationship between the behavioral intention of Malaysian banks to adopt blockchain and enabling conditions was investigated. The results showed that enabling conditions had a relatively positive impact on the behavioral intention of Malaysian banks to adopt blockchain. This proves that blockchain is effective in improving the enabling conditions of banking work, which is in line with the findings of Nazim et al. (2021). Therefore, this study concludes that enabling conditions play an important role in determining the intention of banking institutions to adopt blockchain.

It is recommended to account for the impact on Malaysian banks' adoption of blockchain technology by including more independent variables in forthcoming research studies. Future researchers may look into the idea from Perceived Trust (PT) or Perceived Security (PS) to emphasize this claim. PT is seen to be a major indicator of behavioral intent, especially in e-commerce and information technology (Mondego, 2018) and PS is the degree to which users believe that the technology, service, or product they use to disclose sensitive data, such as transaction or credit card information, is secure (Salisbury et al., 2001).

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AUTHORS' CONTRIBUTION

Ruixui, W. and Yahui, W. managed the process of research project sections. Zainordin, N. A., Izni, N. A., and Annuar, N. provided critical feedback and helped shaping the research, analysis, and writing as well as proofreading of the manuscript. The final manuscript was read and approved by all authors.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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