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Regulation as a Game-Changer: Factors Driving Cryptocurrency Adoption among Millennials

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ABSTRACT

Cryptocurrency is a digital asset designed to work as a medium of exchange that utilizes cryptography for security, unlike traditional currencies. Generally, the acceptance of Cryptocurrency in Malaysia is still in its early stages of adoption. The study examined the key factors influencing Millennials' willingness in Malaysia and how regulation moderates the relationship between these factors and Millennials' willingness to adopt cryptocurrency. Data were collected using a questionnaire developed from the literature. A total of 385 respondents from the millennial age group participated in this study. SMART PLS software was used for analysis involving measurement and structural models. The findings indicated interesting results. Millennials were very aware of cryptocurrency. However, when applying the regulation moderator, the results showed a high understanding of the importance mainly derived from Social Influences. The adoption of the knowledge in practice was not significant. With the inclusion of the major banking institutions, the market scope of cryptocurrency will inevitably increase soon.

Keywords: Performance Expectancy, Technology Expectancy, Social Influence, UTAUT 2 Model, Cryptocurrency, Millennials
JEL Classifications: G23, O33, D91, E42

1. INTRODUCTION

Cryptocurrency is a digital asset designed to work as a medium of exchange that utilizes cryptography for security; unlike traditional currencies, cryptocurrency operates independently of central banks or governments. Transactions are recorded on a distributed public ledger called a blockchain (Стойка, 2021). Bitcoin, the first and most well-known cryptocurrency, made its debut in 2009, paving the way for a rapidly expanding market that now includes other cryptocurrencies in the market, namely Ethereum, Litecoin, Ripple, Zeash, Stellar, Monero, and Cardano (Regulated United Europe, 2024). In 2019, cryptocurrencies had a global market capitalization of about US178 billion, and Bitcoin's market capitalization alone was US120 billion; Malaysia, like many other countries, has seen an increase in interest in cryptocurrencies, particularly among millennials (Khuen, 2025).

Millennials, also known as Generation (Lee and Circella, 2019), are generally defined as those born between 1981 and 1996 (Sim et al., 2022). Although the awareness of cryptocurrencies has risen in Malaysia, based on an online survey sample of 3,006 respondents aged 18 and over living in Malaysia, Philippines, and Vietnam, one-third of the respondents in the Philippines and Vietnam owned cryptocurrencies, whereas only 23% of Malaysians held these assets (Khuen, 2025).

The acceptance of Cryptocurrency in Malaysia is generally still in its early stages of adoption (Ku-Mahamud et al., 2018; Yeong et al., 2019; Yusof et al., 2018). Without a clear understanding of the regulators' stand on these assets, the expansion of the idea is left stagnant, whereby investors are reluctant to indulge further in the investment, taking a minimalistic risk as well as expanding the idea where cryptocurrency can be used as a trading commodity for business purposes (Sukumaran et al., 2022).

From a technological standpoint, even though various technologies have been brought into the market, the lack of internal exploratory manuals and attention to Malaysian users has led to limited adoption of cryptocurrencies in Malaysia (Esmady and Asshari, 2022). According to Kayani and Hasan (2024), cryptocurrency acceptance in Malaysia's digital economy is also not completely developed, making it much less desirable for millennials to adopt or venture into cryptocurrency. While most millennials have a basic understanding of cryptocurrency, many milliners still lack knowledge about how cryptocurrencies work and their potential benefits (Yeong et al., 2019).

Compared to the value of current currencies, the value of cryptocurrency is very unstable and can change quickly, and this can be a factor that prevents users from investing or using cryptocurrency as a medium of exchange because of the risks associated with value fluctuations, another factor is the limitation of physical places or services that accept payments with Cryptocurrency (Giudici et al., 2020). This also contributes to the lack of use of this crypto in everyday life; to increase the use of Cryptocurrency among Malaysian millennials and the general public, overcoming some of these factors by providing better education about the technology and its benefits is imperative. In addition, the government needs to improve clear and stable regulations and improve the safety and reliability of crypto platforms to the public. This will simultaneously increase acceptance and daily use (Yeong et al., 2019).

1.1. Problem Statement

Cryptocurrencies have emerged as a game changer in the financial industry, providing an alternative to traditional fiat currencies and payment systems. Despite the potential benefits of cryptocurrencies, such as increased financial inclusion, cost-effective cross-border transactions, and access to alternative investment vehicles, their adoption rate among Malaysian millennials is relatively low (Alam et al., 2019). Millennials, known for their tech-savvy and openness to new technologies, are a significant demographic group that could potentially drive the widespread adoption of cryptocurrencies in the country; however, several factors are influencing the adoption of cryptocurrencies among them in Malaysia (Yeong et al., 2019).

There is a knowledge gap where there is a significant lack of awareness and comprehensive understanding about the subject matter, such as technology, potential benefits, and the identification of risk, which is a deterrence to adoption (Ismail, 2023). Cryptocurrency research remains limited despite its growing popularity, where research has primarily focused on developed countries like the USA, UK, and EU, with few studies examining developing countries like Malaysia (Chen et al., 2022). Further Cryptocurrency research should consider provider and user perspectives (Ter Ji-Xi et al., 2021). There is a need for relevant stakeholders like financial institutions, government bodies, and educational institutions to collaborate in creating educational programs that can educate and create interest not only among the millennials but also in the broader generation's scope of this trading asset. Information from authorized institutions and stakeholders will garner confidence as reliable sources compared to unethical social media and external parties, which opens the door to miscommunication, manipulation, and wrongful dissemination of information.

Notably, the lack of confidence is a barrier, especially for those unfamiliar with blockchain technology, and this applies to millennials who are not comfortable navigating complex digital platforms or understanding the technical aspects of cryptocurrency wallets and exchanges (Yeong et al., 2019). The root cause of the issue is the policy gap in the regulatory framework, as it lacks clear and comprehensive regulatory guidelines in Malaysia, which has led to uncertainty, ambiguity, and concerns regarding legal status, taxation, and potential risk. The Malaysian government adopted the cryptocurrency law on January 15, 2019 (Sukumaran et al., 2022). Clear regulations can provide a more stable environment for innovation and attract millennials to embark on cryptocurrency; unfortunately, the unpredictable nature of the regulations can discourage millennials with entrepreneurial aspirations from exploring opportunities (Nawang and Azmi, 2021).

By identifying and understanding the relative importance and impact of factors such as education awareness, regulatory environment, technological environment, integration with daily life, and financial empowerment, the study this paper aims to find the reasons that may come from the individuals' perceived understanding and financial ability to venture into cryptocurrency, to the external factors such as regulations and security which are still ambiguous and lacking. The following two research questions guided the study.

1.2. Research Question

1. What are the key factors influencing the willingness of Millennials in Malaysia to adopt cryptocurrency?
2. To what extent does regulation moderate the relationship between contributory factors and Millennials' willingness to adopt cryptocurrency?

2. LITERATURE REVIEW

Globalization and the development of financial markets have increased people's ability to invest in securities and financial instruments as national borders no longer bind them (Raihan et al., 2023). Malaysia faces various challenges in expanding and implementing Cryptocurrency, especially among millennials. Lack of public awareness and understanding of cryptocurrency is one of the major hurdles, as people either lack the knowledge of the fundamentals of cryptocurrency or are unaware of the risks and gains from venturing into this trading asset (Sukumaran et al., 2022). In the case of Malaysian youth, they lack financial awareness, and this situation is not favorable to the development of the country (Mohd Padil et al., 2022). Lack of regulatory information creates uncertainty, especially in areas of taxation and licensing,g and doubts are fueled further by potential fraud and scams, which require vigilance and enforcement (Agarwalla et al., 2012). It has been recognized that millennials, often described as tech-savvy and open to new technologies, may drive widespread adoption of cryptocurrencies in the future (Folkinshteyn and Lennon, 2016).

2.1. Underpinning Theories

The global cryptocurrency market cap was 1.053 trillion dollars at June 2023 (Stevanović et al., 2023). It has been getting a lot of attention since its debut, and more importantly, central banks are exploring options to adopt the system for retail and large-value payments (Wansleben, 2023). It was estimated that the impact of the digital economy will increase Malaysia's GDP to 400 billion in 2025 (Yeong et al., 2019). Contributory factors influencing cryptocurrency adoption among young millennials in Malaysia are performance expectancy, technology acceptance, facilitating conditions, and social Influence (Janteng et al., 2024).

2.2. The Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) Model

Despite being a relatively recent theoretical framework developed within the last decade, the UTAUT2 model has gained widespread recognition and application, as evidenced by its substantial citation count exceeding 6,000 references (Tamilmani et al., 2019).

The UTAUT 2 is a comprehensive framework that consolidates and integrates various previously established theories and models concerning individuals' acceptance and utilization of technological innovations. It amalgamates the core constructs and principles from eight distinct models, offering a unified perspective on the factors influencing users' intentions and usage of new technologies (Restuputri et al., 2023). Therefore, the UTAUT2 model was used to analyze the influence of Performance Expectancy, Technology Acceptance, Facilitating Conditions, Social Influence, Hedonic Motivation and Price Value.

2.3. Conceptual Framework

The study is based on a proposed research framework, depicted in Figure 1. While many factors influence cryptocurrency adoption in Malaysia, the focus will be on the young millennials. The legal status and political perspectives surrounding cryptocurrencies could impact individuals' intentions to adopt Cryptocurrency (Steinmetz et al., 2021). Thus, regulation is chosen as a moderator. In addition, the UTAUT 2 was modified to suit our research by excluding the habit construct and using only six constructs from the UTATUT2 model. According to (Tamilmani et al., 2019), only 35% of studies utilized habit in their research studies. This is due to the screening of users for the adoption of new technology and habits not yet formed in voluntary settings.

Existing research has highlighted the importance of regulatory uncertainty in shaping Malaysian millennials' attitudes and behaviors toward cryptocurrency. The regulatory ambiguity and concerns about the legality of cryptocurrencies were significant barriers to investment for Malaysian millennials (Sukumaran et al., 2022). The lack of clear regulatory guidelines made them hesitant to participate in the cryptocurrency market.

Researchers also investigated how regulatory responses affected Malaysian confidence and investment decisions. Ku-Mahamud et al. (2018) found that implementing regulatory frameworks, such as the Securities Commission Malaysia's digital asset guidelines, has helped alleviate some of millennials' concerns. However, the study found that ongoing regulatory changes and uncertainties continued to influence their investment decisions.

A few studies have compared the regulatory environments for cryptocurrencies in Malaysia with other countries and their impact on millennials' investment decisions. Moorthy (2018) found that Malaysian millennials were more cautious in their cryptocurrency investments compared to their counterparts in countries with more established regulatory frameworks, such as Singapore and Japan.

While existing literature provides information on the importance of regulation in shaping the millennials' interest in cryptocurrency, several areas require further research, such as the changing and evolving regulatory landscape regarding Cryptocurrency in Malaysia. The Securities Commission Malaysia (SC) has taken steps to regulate digital assets and initial coin offerings (ICOs) through the Capital Markets and Services (Prescription of Securities) (Digital Currency and Digital Token) Order 2019 (Securities Commission Malaysia, 2019). This order provides a framework for regulating digital asset exchanges and issuing digital tokens. However, as the technology, complexity and usage of the trading asset increases, regulators will have to constantly update and revisit regulations to protect the interest of cryptocurrency holders.

Extending this line of research, Yeong et al. (2019) explored the moderating role of the regulatory environment on the relationship between facilitating conditions and cryptocurrency adoption among 268 Malaysian millennials. The authors found that the effect of facilitating conditions on adoption intention was stronger in a more favorable regulatory climate, as clear and supportive policies helped to ensure the availability of necessary resources and infrastructure for using cryptocurrency.

According to Sukumaran et al., (2022), the research unveiled that investors' perception of the potential advantages and rewards associated with cryptocurrencies was pivotal in driving their adoption. This study also revealed that while investors' perception of the potential advantages and rewards associated with cryptocurrencies played a pivotal role in driving their adoption, the perceived risks inherent in these digital assets did not bear a significant impact, shedding valuable insights into the burgeoning cryptocurrency investment sector within the Malaysian landscape.

2.4. Hypothesis

The following hypotheses were developed from the literature review:

H_1: Performance Expectancy has a positive and significant impact on willingness to adopt Cryptocurrency

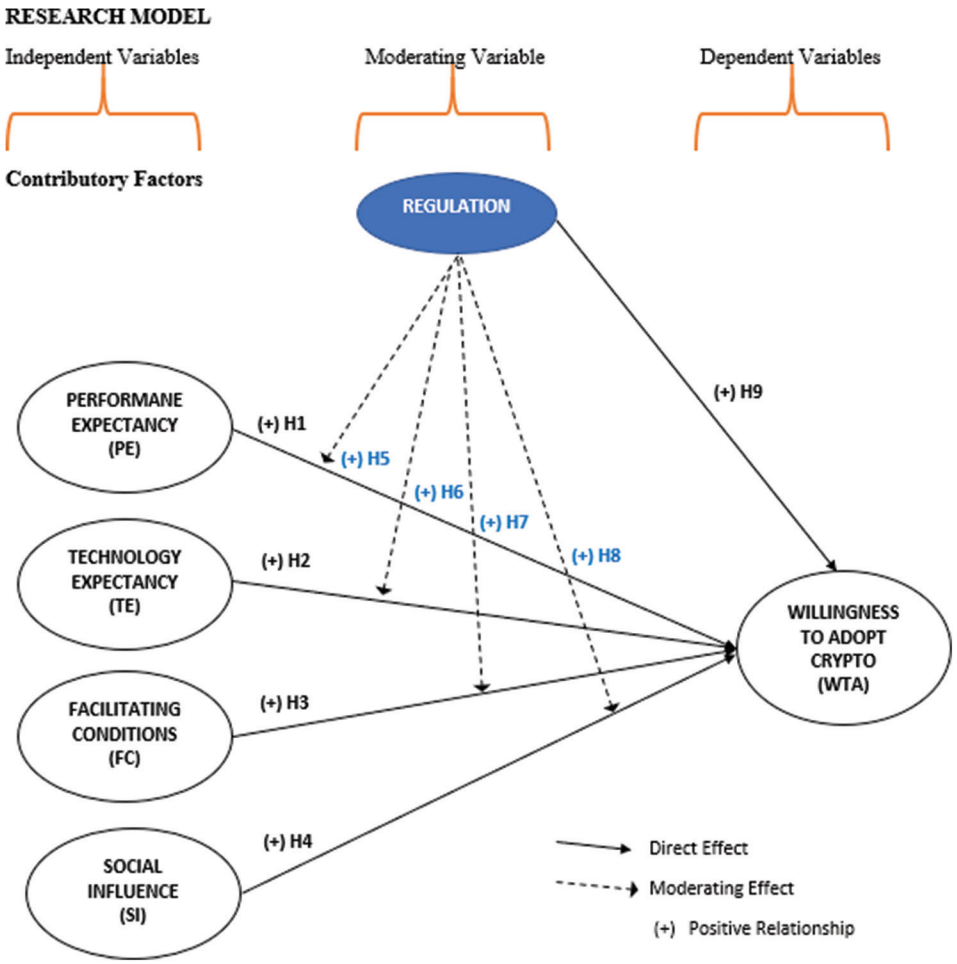
H_2: Technology Expectancy has a positive and significant impact on willingness to adopt Cryptocurrency

H_3: Facilitating Conditions has a positive and significant impact on willingness to adopt Cryptocurrency

H_4: Social Influence has a positive and significant impact on willingness to adopt Cryptocurrency

H_5: Regulation will positively moderate the relationship between Performance Expectancy and willingness to adopt Cryptocurrency

Figure 1: Conceptual framework



H_6: Regulation will positively moderate the relationship between Technology Acceptance and willingness to adopt Cryptocurrency

H_7: Regulation will positively moderate the relationship between Facilitating conditions and willingness to adopt Cryptocurrency

H_8: Regulation will positively moderate the relationship between Social Influence and willingness to adopt Cryptocurrency

H_9: Regulation has a positive and significant impact on willingness to adopt cryptocurrency.

3. RESEARCH METHODOLOGY

3.1. Research Design

A research design is comprised of numerous elements (i.e., research paradigm, research approach, research design, and data collection method that provide guidelines for carrying out the study (Creswell and Clark, 2017) while a correlational research design is used to determine the relationship between two or more than two variables (Cohen et al., 2002). Thus, a correlational research design of a quantitative approach (positivism paradigm) was used At the same time, a cross-sectional survey method was applied to collect data about studied variables.

3.2. Population

This study's target population consisted of individuals aged 28-43 (Millennials) potentially engaged in Cryptocurrency usage (Taherdoost, 2016).

3.3. Sampling

There are numerous approaches, encompassing various formulas, for determining sample sizes in categorical data analysis. The Krejcie and Morgan table is widely recognized for sample size determination within behavioral and social science research. Utilizing this table does not necessitate complex calculations and applies to any specified population (Krejcie and Morgan, 1970). A sample size of 385 is sufficient for a population of 9,476,000 (Krejcie and Morgan, 1970).

3.4. Instrument

A questionnaire consisting of 34 items was developed, and items were adopted and adapted from the literature (Appendix 1). The questionnaire is divided into sections A to E. Section A gathered the demographic composition of the respondents, such as gender, age, occupation, and income. Section B gathers data with independent variables, which are the influencing factors, and the dependent variable, which is the willingness of millennials to use cryptocurrency. Section C is the relation of the moderator, which

is regulation with the dependent variable; Section D is the relation of the moderator and independent variable.

3.5. Pilot Study

A pilot study was conducted with a small sample (60) of the target population to assess the survey items' clarity, comprehension, and face validity. The reliability assessment for each construct was conducted using PLS software, and the results are presented in the following table. The data demonstrates that all constructs have exceeded the minimum threshold of 0.7 for Cronbach's alpha, indicating satisfactory internal consistency and reliability. The reliable constructs (Table 1) are suitable for analyzing the research problem and interpreting the findings within the study context.

4. FINDINGS

The study findings demonstrated in Table 2 show the respondents' demographic information. Regarding the age distribution, the majority (67.3%) were between 36 and 44. The majority (56.4%) were female. Regarding the education level of the respondents, half of the respondents had a bachelor's degree (51.4%) and only 1.3% had a doctorate. The majority had >RM9,000 (28.1%) and <RM1,500 (1.6%).

4.1. Pearson Correlations Analysis

The Pearson correlation analysis was used to determine the level of correlation between the dependent and independent variables. As reflected in Table 3 below, the correlations among all variables are positive, indicating a positively linear influence between tested variables. The r value between all variables is significant at 1% confidence level. The highest correlation is with Regulation (RE) (r = 0.799), suggesting that regulatory factors significantly influence the willingness to adopt.

Technology Expectancy (TE) has the highest correlation with Facilitating Conditions (FC) (r = 0.818), indicating that as individuals' expectations of technology increase. Social Influence (SI) shows the highest correlation with Facilitating Conditions (FC) (r = 0.771), suggesting that social influences are closely tied to the conditions facilitating adoption. Regulation (RE) has strong correlations with all constructs, the highest being with Willingness to Adopt (WTA) (r = 0.799), indicating the crucial role of regulatory factors.

Table 1: Reliability analysis

The study variables	Short form of variables	No. of items	Cronbach's Alpha
Performance expectancy	PE	4	0.894
Technology acceptance	TE	4	0.885
Facilitating conditions	FC	4	0.893
Social influence	SI	4	0.903
Regulation to willingness to adopt cryptocurrency	RWT	4	0.851
Regulation to performance expectancy	RPE	3	0.889
Regulation to technology acceptance	RTE	3	0.913
Regulation to facilitating conditions	RFC	3	0.885
Regulation to social influence	RSI	3	0.899
Willingness to adopt cryptocurrency	WTA	2	0.894

4.2. Evaluation of The Model Quality for PLS-SEM

The analysis follows a two-stage approach (Hair et al., 2011). The first stage involves testing the measurement model (outer model) for validity and reliability, including convergent and discriminant validity assessments using confirmatory factor analysis (CFA). The second stage analyzes the structural model, evaluating R-square, effect size, predictive relevance, and path coefficients through bootstrapping for hypothesis testing. Figure 2 illustrates this two-stage process.

The study's original model comprises 36 reflective measurement items representing eleven latent variables, including four independent variables, one dependent variable, and one moderator variable. These form nine hypothesized relationships within the model.

4.3. PLS-SEM Measurement Model

The evaluation of measurement models in PLS-SEM follows a four-stage process as outlined by (Hair et al., 2011), encompassing both reliability and validity assessments. This process includes evaluating indicator reliability through loadings of 0.70 or higher, assessing internal consistency reliability via composite reliability of 0.70 or above, measuring convergent validity using Average Variance Extracted (AVE) of 0.50 or greater, and examining discriminant validity by ensuring the square root of AVE for each latent construct exceeds its correlations with other constructs. Reliability, as defined by (Sekaran, 2016), measures

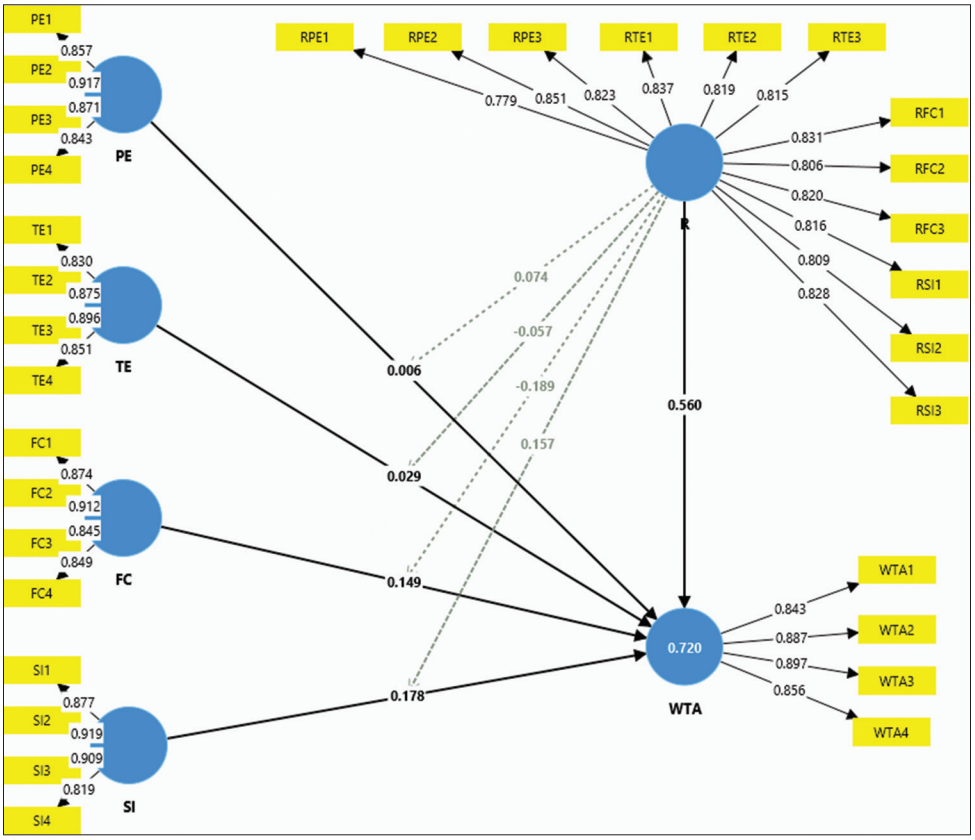
Table 2: Respondents profile

Variable	Frequency	Percentage
Age		
Between 28 and 35	126	32.7
Between 36 and 44	259	67.3
Gender		
Male	168	43.6
Female	217	56.4
Marital status		
Married	217	56.4
Single	114	29.6
Divorced	44	11.4
Widowed	10	2.6
Highest educational level		
Bachelors	198	51.4
Masters	104	27.0
Diploma/Advanced	66	17.1
Doctorate	5	1.3
SPM and Lower	12	3.1
Employment status		
Government Sector	84	21.8
Self Employed	87	22.6
Private Sector	208	54.0
Home-maker	6	1.6
Household's income (Monthly)		
≤RM1,500	6	1.6
RM1,501–RM3,000	21	5.5
RM3,001–RM5,000	59	15.3
RM5,001–RM7,000	89	23.1
RM7,001–RM9,000	108	28.1
≥RM9,000	102	26.5

Table 3: Pearson correlation analysis

Correlation analysis	WTA	PE	TE	FC	SI	Re
WTA						
Pearson Correlation	1					
Sig. (2 tailed)						
N	3.85					
PE						
Pearson Correlation	0.671*	1				
Sig. (2 tailed)	0.000					
N	385	385				
TE						
Pearson Correlation	0.696*	0.793*	1			
Sig. (2 tailed)	0.000	0.000				
N	385	385	385			
FC						
Pearson Correlation	0.726*	0.726*	0.818*	1		
Sig. (2 tailed)	0.000	0.000	0.000			
N	385	385	385	385		
SI						
Pearson Correlation	0.690*	0.729*	0.733*	0.771*	1	
Sig. (2 tailed)	0.000	0.000	0.000	0.000	0.000	
N	385	385	385	385	385	
RE						
Pearson Correlation	0.799*	0.692*	0.721*	0.740*	0.639*	1
Sig. (2 tailed)	0.000	0.000	0.000	0.000	0.000	
N	385	385	385	385	385	385

Figure 2: Items loadings, path coefficient, and R^2 values



an instrument's consistency in assessing a concept, while validity evaluates how well an instrument measures its intended concept.

Convergent validity assesses the correlation between a construct's measures and alternative measures of the same construct, while discriminant validity examines the extent to which a construct differs from others(Hair Jr et al., 2016). The following subsections present and discuss the results of the constructs' validity and reliability (Table 4) assessments based on these criteria, ensuring a comprehensive evaluation of the measurement model and

providing a solid foundation for subsequent structural model analysis and hypothesis testing (Table 5) and moderation hypothesis testing (Table 6).

Table 4: First-order measurement result for internal consistency reliability and convergent validity

Construct	Item	Loadings	Cronbach's alpha	CR	AVE
Performance expectancy	PE1	0.857	0.895	0.927	0.761
	PE2	0.917			
	PE3	0.871			
	PE4	0.843			
Technology expectancy	TE1	0.830	0.886	0.921	0.745
	TE2	0.875			
	TE3	0.896			
	TE4	0.851			
Facilitating conditions	FC1	0.874	0.893	0.926	0.758
	FC2	0.912			
	FC3	0.845			
	FC4	0.849			
Social influence	SI1	0.877	0.904	0.933	0.778
	SI2	0.919			
	SI3	0.909			
	SI4	0.819			
Willingness to adopt	WTA1	0.843	0.894	0.926	0.759
	WTA2	0.887			
	WTA3	0.897			
	WTA4	0.856			
Regulation	RPE1	0.892	0.956	0.961	0.672
	RPE2	0.941			
	RPE3	0.881			
	RTE1	0.837			
	RTE2	0.819			
	RTE3	0.815			
	RFC1	0.831			
	RFC2	0.806			
	RFC3	0.820			
	RTE1	0.837			
	RTE2	0.819			
	RTE3	0.815			

5. DISCUSSION

Hypotheses 1-5 and 9 were accepted, while 6, 7, 8 were rejected; further elaboration is provided in the following discussion. Numerous studies have highlighted a significant positive effect of performance expectancy on users' intentions to Use Cryptocurrency (Shaw and Sergueeva, 2019). In the context of Malaysia, (Ter Ji-Xi et al., 2021)also found performance expectancy to be a key determinant of the intention to use cryptocurrency. However, (Chen et al., 2022) suggested that performance expectancy might negatively influence this intention. Consequently, the findings from these studies are contradictory. Therefore, the non-significant hypothesis relationship by regulation suggests that perhaps due to the dynamic state of cryptocurrency regulations and their lagged impact on user perceptions, regulatory factors are not currently influencing the relations between performance expectancy and adoption intentions (El-Chaarani et al., 2023).

The finding is consistent with the study's outcome in (Ter Ji-Xi et al., 2021), that respondents are more inclined to adopt cryptocurrency when they perceive sufficient support mechanisms. The advancement of infrastructure in technology and the development of network services, especially in the urban areas in Malaysia, can increase the Influence of adopting Cryptocurrency in Malaysia. Studies from (Khan et al., 2017) on the development of mobile banking in Pakistan and (Hussain et al., 2023) on banking and payment systems in Bangladesh support this understanding that fundamental development in communication technology will increase respondents' participation in it.

These facilitating conditions might include access to technical support, detailed user guides and tutorials, and regulatory frameworks that ensure cryptocurrency's safe and lawful use. Millennials, who often seek convenience and reliability in the technologies they use, are likely to be influenced by the perceived ease of obtaining help and guidance when needed (Leal Filho and Pallant, 2019).

Table 5: Results of hypothesis testing

Hypothesis	Relationship	t-value	P-value	Decision
Hypothesis 1	There is a significant positive relationship between performance expectancy and the willingness of millennials to adopt cryptocurrency	2.788	0.005	Supported
Hypothesis 2	There is a significant positive relationship between technology expectancy and the willingness of millennials to adopt cryptocurrency	2.055	0.040	Supported
Hypothesis 3	There is a significant positive relationship between facilitating conditions and the willingness of millennials to adopt cryptocurrency	4.423	0.000	Supported
Hypothesis 4	There is a significant positive relationship between social influence and the willingness of millennials to adopt cryptocurrency	2.930	0.003	Supported

Table 6: Results of moderation hypothesis testing

Hypothesis	Relationship	t-value	P-value	Decision
Hypothesis 5	There is a significant positive relationship between Regulation and the willingness of millennials to adopt Cryptocurrency	10.312	0.000	Supported
Hypothesis 6	Regulation factor positively moderate the relationship between Performance Expectancy and the willingness of millennials to adopt Cryptocurrency	1.018	0.309	Not Supported
Hypothesis 7	Regulation factor positively moderate the relationship between Technology Expectancy and the willingness of millennials to adopt Cryptocurrency	0.753	0.452	Not Supported
Hypothesis 8	Regulation factor positively moderate the relationship between Facilitating Conditions and the willingness of millennials to adopt Cryptocurrency	1.936	0.053	Not Supported
Hypothesis 9	Regulation factor positively moderate the relationship between Social Influence and the willingness of millennials to adopt Cryptocurrency	2.664	0.008	Supported

According to (Moorthy, 2018), the Malaysian regulator's policy approach compared to other countries still needs to be improved in terms of a complete and comprehensive framework. The cryptocurrency regulation approach currently places the responsibility on the users of cryptocurrency. The Malaysian regulators need better control of the growing crypto markets, including the mining process that needs to be regulated. The Malaysian Central Bank (BNM)must take the role of the Central Bank to exercise control of all crypto-creation processes and transactions.

Compared to other countries, there have been more initiatives to address the crypto market growth and the need for robust regulation. In Australia, the government has classified cryptocurrency as an asset and needs to revise its Anti-Money Laundering and Counter-Terrorism Financing Act. Civil penalties will be introduced to unregistered operators of virtual currency exchange services (Intelligence, 2019). China, which in 2017 outlawed domestic cryptocurrency exchanges and initial coin offerings (ICO), has intensified its regulation in 2021 by focusing on crypto mining and has introduced its Digital Currency Electronic Payment System, a state-backed digital currency managed by the People's Bank of Chin (Zmudzinski, 2019). Singapore, which initially did not impose any direct rules and regulations, has now recognized cryptocurrency as an asset and the Revenue Authority of Singapore (IRAS) has set out guidelines on the taxation and profit derived from the trade of digital currencies (Moorthy, 2018).

The study tested the moderating effect of performance expectancy on millennials' willingness to adopt cryptocurrency. Performance expectancy refers to cryptocurrency's perceived usefulness in enhancing job performance or deriving personal benefit. However, the results of the moderation analysis did not support the moderating variable. The interaction terms with performance expectancy and all other variables, such as performance expectancy, technology expectancy, and facilitating conditions, were insignificant in strengthening or lessening the relationships (Cleophas and Zwinderman, 2018).

This finding indicates that technology expectancy does not play a crucial role in enhancing or diminishing the effectiveness of other factors influencing cryptocurrency adoption. Whether millennials believe that the technological infrastructure supporting cryptocurrency is robust and reliable, the Influence of performance expectancy, facilitating conditions, and social influence on their willingness to adopt remains unchanged.

The findings contradict research by (Kshetri, 2018), which concluded that government regulation is important in creating a conducive environment for Bitcoin adoption because it will provide legal clarity and legitimacy for using cryptocurrency. However, with the research findings margins being relatively close to indicating a significant relationship, we cannot conclusively determine that the regulation can be excluded from millennials' decision-making. This lack of interaction suggests that facilitating conditions do not enhance or reduce the Influence of other factors on the willingness to adopt cryptocurrency. Whether millennials perceive that adequate support and resources are available or not, the impact of performance expectancy, technology expectancy, and social influence on their willingness to adopt remains consistent (Jackson and White, 2018).

At the internalization stage, an individual's adoption of community norms into their values enhances their connection with the community. This integration often fosters consumer and brand relationships (He et al., 2017). It contributes to forming a harmonious community characterized by collective motives, confidence, and group attachment (Liu et al., 2023).

Millennials are particularly influenced to adopt cryptocurrency by aligning themselves with realistic and contemporary trends. This demographic tends to be tech-savvy and aware of the latest technological advancements, making them more open to innovative financial solutions like cryptocurrency. By staying in line with ongoing developments, millennials can remain relevant and up-to-date in a rapidly evolving digital landscape.

This behavior supports the idea that social Influence, when moderated by regulation, significantly enhances their willingness to adopt cryptocurrency. Social Influence, defined as the impact of peers and societal norms on an individual's decisions, plays a crucial role in this context. When millennials observe positive endorsements and cryptocurrency adoption within their social circles, they are more likely to follow suit. Regulation adds another layer of security and legitimacy to this process, reducing perceived risks and uncertainties associated with cryptocurrency. Thus, the combined effect of social Influence and supportive regulation creates a conducive environment for millennials to adopt cryptocurrency, highlighting the importance of these factors in shaping their adoption decisions.

Through the analysis findings, the real problem of realizing the adoption of cryptocurrency among millennials in Malaysia is the lack of confidence, Based on the results of the analysis, the real obstacle to the adoption of cryptocurrency among millennials in Malaysia is lack of confidence especially for those unfamiliar with blockchain technology and this applies to millennials who are not comfortable navigating complex digital platforms or understanding the technical aspects of cryptocurrency wallets and exchanges (Yeong et al., 2019). Millennials may perceive cryptocurrencies as less useful due to a lack of real-world use cases and practical applications in Malaysia's mainstream economy and daily transactions. The industry gap is widening further with the lack of skilled professionals in the blockchain and cryptocurrency industry (Bazel et al., 2023).

The lack of robust consumer protection frameworks for cryptocurrency transactions, including unclear regulations and inadequate security measures, undermines millennials' confidence. This demographic becomes wary of potential scams, cyberattacks, hacking, and market manipulations. Although Bitcoin transactions in Malaysia reportedly date back to 2012, as claimed on BitcoinMalaysia.com (Nawang and Azmi, 2021), historical analysis reveals that the Malaysian public has not yet fully embraced cryptocurrencies' potential (Zahudi and Amir, 2016). Identified

several potential risks contributing to slow adoption: loss or theft, fraud, unauthorized use, wallet or exchange failures, inadequate disclosure, and transaction processing issues. (Nawang and Azmi, 2021) support this view, emphasizing that most factors hindering adoption relate to security and consumer protection.

The root cause lies in the policy gap. Malaysia's regulatory framework lacks clear, comprehensive guidelines, leading to uncertainty about legal status, taxation, and potential risks. While BNM does not regulate digital currencies, they are not recognized as legal tender in Malaysia despite no explicit prohibition on their use. Consequently, cryptocurrencies lack the market-standard protections applicable to BNM-regulated financial institutions.

This regulatory uncertainty poses a significant barrier to widespread cryptocurrency adoption in Malaysia. Recognizing millennials as potential drivers of cryptocurrency development, the Malaysian Ministry of Communication and Multimedia advocates for regulators to legitimize cryptocurrency as legal tender. The ministry aims to boost youth participation in digital assets through this legalization process (Yusof et al., 2018).

Millennials in Malaysia have a strong understanding of the currency, are aware of the perceived benefits, and have concrete intentions to engage or invest in cryptocurrency. The research findings, when integrating regulation into the model, indicate a strong awareness of regulation towards adoption; however, when applying the moderating role of regulation towards the factors, only Social Influence indicated a strong relationship, implying that social Influence either through media or people heavily influences millennials' perception of adoption. It can be deduced that the lack of knowledge puts millennials at risk of not knowing the legal aspects of cryptocurrency investment. Millennials might be caught off guard by legal disputes, especially between cryptocurrency vendors, platforms, and agencies. Malaysian regulators should consider these findings when developing initiatives, policies, rules, and cryptocurrency regulations. This will help safeguard Malaysians' interests from any potential drawbacks of the technology.

With the inclusion of significant banking institutions, the market scope of cryptocurrency will inevitably increase shortly. In line with these, reviews will be made, especially regarding regulation in the capital market and retail banking landscape. Future research should focus on the Malaysian government's plans and reactions to this shift in cryptocurrency adoption in Europe and America. The research focuses on technology, implementation, market capitalization, and, most importantly, regulation.

It is recommended that future research also be conducted to gauge the standing of Malaysia and its readiness and ability to adapt and adopt cryptocurrency acceptance as a trading currency for business. A significant shift in global trading practices can affect the local economy and business if unprepared or caught off guard. As such, further research must be done to understand the Malaysian government's action plan to implement and be a part of the crypto markets and the effects of adopting cryptocurrency on the economy.

7. ETHICS APPROVAL STATEMENT

UNITAR's ethics committee approved the study's ethical protocols (UNITAR/FEH/REC/2024/5/01).

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APPENDIX

Appendix 1: Questionnaire variable constructs and elements

Variables	Code	Elements	Adopt/ Adapt	No of item	Sources
Performance expectancy (PE)	PE1	I find the cryptocurrency system user-friendly	Adopt	4	Alqaryouti, O., Siyam, N., Alkashri, Z., and Shaalan, K. (2020)
	PE2	I believe cryptocurrency would be useful for my financial needs	Adapt		
	PE3	With cryptocurrency, I can instantly transfer money	Adopt		
	PE4	Using Cryptocurrencies would increase my productivity in managing money	Adapt		
Technology expectancy (TE)	TE1	It is easy for me to learn new tools for cryptocurrency	Adopt	4	Alqaryouti, O., Siyam, N., Alkashri, Z., and Shaalan, K. (2020)
	TE2	I am familiar with cryptocurrency gateways	Adapt		
	TE3	Cryptocurrencies are compatible with other technologies that I use	Adapt		
	TE4	It is easy for me to become skilful at using Cryptocurrencies as an investment platform	Adapt		
Facilitating conditions (FC)	FC1	I know the transaction process of cryptocurrency	Adopt	4	Shahzad, M. F., Xu, S., Lim, W. M., Hasnain, M. F., and Nusrat, S. (2024)
	FC2	I have the resources necessary to use cryptocurrency	Adapt		
	FC3	I believe the technology should be upgraded to widen the use of cryptocurrency in business	Adapt		
	FC4	I discuss cryptocurrency with people around me	Adopt		
Social influence (SI)	SI1	People who are important to me think that I should use Cryptocurrencies	Adopt	4	Arias-Oliva, M., Pelegrín-Borondo, J., and Matías-Clavero, G. (2019
	SI2	People who influence my behavioural think that I should use Cryptocurrencies.	Adopt		
	SI3	People whose opinions that I value prefer that I use Cryptocurrencies	Adopt		
	SI4	I feel social pressure to adopt cryptocurrency	Adapt		
Willingness to adopt cryptocurrency (WTA)	WTA1	The current cryptocurrency regulation is sufficient for user interest	Adapt	4	Arias-Oliva, M., Pelegrín-Borondo, J., and Matías-Clavero, G. (2019
	WTA2	When using cryptocurrency, there is no central authority that has custody of my deposits	Adapt		
	WTA3	I believe that government backing enhances cryptocurrency's security	Adapt		
	WTA4	There is enough materials published by the government/ regulators that will increase my confidence in cryptocurrency	Adapt		
Regulation - PE	RPE1	The presence of clear government regulations and guidelines for cryptocurrency use would increase the impact of my willingness to adopt them	Adapt	3	Chen, X., Miraz, M. H., Gazi, Md. A. I., Rahaman, Md. A., Habib, Md. M., and Hossain, A. I. (2022)
	RPE2	The potential benefits and advantages of using cryptocurrencies (e.g., faster transactions, lower fees) would have a stronger impact on my decision to adopt them if there were adequate consumer protection measures in place	Adapt		
	RPE3	The impact of my willingness to adopt and advantages of using cryptocurrencies would be greater if there were clear legal frameworks and guidelines in place	Adapt		
Regulation - TE	RTE1	Government policy to regulate cryptocurrency platforms will encourage me to use cryptocurrency	Adapt	3	Mensah, I. K., and Mwakapesa, D. S. (2022)
	RTE2	Regulations to punish any illegal use of cryptocurrency for unauthorized transactions are good	Adapt		
	RTE3	Regulations to guide and protect consumers' money from fraudsters are needed	Adapt		
Regulation - FC	RFC1	I intend to invest in cryptocurrency because the government supports the existence of cryptocurrency	Adopt	3	Prasetyo, T. G., and Kurniasari, F. (2023)
	RFC2	I intend to invest because of the government's efforts to reduce risk in cryptocurrency	Adopt		
	RFC3	I intend to invest because the government wants to be responsible by regulating the use of cryptocurrency	Adopt		
Regulation - SI	RSI1	The presence of clear government regulations and guidelines for cryptocurrency use would increase the Influence of my friends and family on my willingness to adopt cryptocurrencies.	Adopt	3	Arias-Oliva, M., Pelegrín-Borondo, J., and Matías-Clavero, G. (2019)
	RSI2	The Influence of social media influencers and online communities on my decision to use cryptocurrencies would be greater if there were adequate consumer protection measures in place	Adapt		
	RSI3	The opinions and recommendations of influential people in my social circle would have a stronger impact on my decision to invest in cryptocurrencies if there were clear legal frameworks and guidelines in place	Adapt		