



EXPLORING CRYPTOCURRENCY ADOPTION AMONG UNDERGRADUATES' STUDENTS

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ABSTRACT

This study investigates determinants of cryptocurrency adoption among Malaysian undergraduates through an extended Unified Theory of Acceptance and Use of Technology (UTAUT) framework, extended variable. Employing a quantitative design, data from 271 students at Universiti Malaysia Sabah were analysed via partial least squares structural equation modelling (PLS-SEM). Findings reveal performance expectancy, social influence, and trust as significant positive predictors of adoption, whereas effort expectancy and facilitating conditions exhibited non-significant effects. The study's originality lies in contextualising UTAUT within Malaysia's under-researched tertiary education sector, highlighting trust as a critical socio-cultural determinant often overlooked in technology adoption models. Practical implications suggest that universities and policymakers should prioritise cryptocurrency literacy programmes and regulatory frameworks that enhance platform security to foster informed adoption. A limitation is the single-institution sampling, which constrains generalisability; future research should explore demographic variables (e.g., age, discipline) and cross-cultural comparisons. By bridging theoretical and empirical gaps, this work advances understanding of behavioural drivers in digital finance, offering actionable insights for academia and Southeast Asia's evolving cryptocurrency landscape.

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1. INTRODUCTION

The commercial landscape has undergone a profound transformation in recent decades, marked by the unprecedented rise of digital marketplaces and a steady decline of traditional high-street retail. This shift has been catalysed by technological innovation, which has redefined global distribution networks, enabled scalable organisational frameworks, and revolutionised everyday consumer habits. As

societies increasingly prioritise digital interfaces for routine transactions, the boundaries of commerce continue to evolve, heralding a new chapter in the digital age. Global e-commerce revenue is forecast to reach USD 11.65 billion in 2023, reflecting the sector's sustained expansion amid digital transformation trends (Nasution, 2023). Industry analyses project further growth, with the market expected to expand at a compound annual growth rate (CAGR) of 14.24% between 2023 and 2027. By the conclusion of this forecast period, the sector's valuation is anticipated to surge to approximately USD 19.84 billion, underscoring the accelerating adoption of online retail platforms and evolving consumer preferences for digital transactions. This trajectory highlights the critical role of technological innovation and infrastructural advancements in driving long-term market scalability. At the heart of this evolution lies blockchain technology—a disruptive force with the potential to reshape e-commerce as profoundly as the advent of the internet did in the late 20th century. Today, pioneering enterprises are harnessing blockchain's decentralised architecture to develop novel business models, optimise cross-border logistics, and democratise purchasing power through peer-to-peer ecosystems. Such advancements are not only enhancing operational efficiency but also reimagining long-standing paradigms of trust and transparency in global trade. As industries adapt to this decentralised future, the interplay between technological capability and consumer adoption will likely dictate the trajectory of the next era of digital commerce—a frontier where innovation and adaptability are paramount.

Blockchain technology, a decentralised digital ledger system, underpins the emergence of cryptocurrencies—digital assets secured through cryptographic protocols that operate independently of centralised financial institutions (Nakamoto, 2008). Bitcoin, introduced in 2009 as the first decentralised cryptocurrency, marked a paradigm shift in global finance by enabling peer-to-peer transactions without intermediaries (Böhme et al., 2015). Unlike traditional fiat currencies, which rely on central banks and physical infrastructure, cryptocurrencies leverage blockchain's distributed architecture to validate transactions across a network of nodes, enhancing security and transparency (Bozkurt & Akgül, 2023). This decentralisation eliminates single points of failure, reduces reliance on institutional trust, and mitigates risks of censorship or fraud (Thangalimodzi, 2019). Moreover, cryptocurrencies offer distinct advantages over conventional systems, including lower transaction costs, faster cross-border transfers, and financial inclusion for unbanked populations (Xiong & Tang, 2020). For instance, Bitcoin's borderless nature and finite supply contrast sharply with inflationary fiat currencies, appealing to users seeking autonomy from geopolitical monetary policies (Yermack, 2015). As blockchain applications expand beyond currency—into smart contracts and decentralised finance (DeFi)—the technology challenges traditional financial frameworks, fostering a reimagining of economic interactions rooted in algorithmic trust and collective verification (Tapscott & Tapscott, 2016). One of the biggest benefits of cryptocurrency transactions is that they are fast and cost-effective. Since there are no intermediaries involved, users can transfer funds directly. To prevent fraud, each transaction is recorded and verified on a public digital ledger, adding an extra layer of security. Unlike traditional banks that rely on a central authority to manage funds, blockchain technology allows for open access, making the process more transparent for everyone involved (Ramprakash et al., 2023). Despite the growing body of research on cryptocurrencies, their complex and decentralized structure continues to intrigue scholars and practitioners.

The adoption of cryptocurrencies in emerging economies is influenced by a complex interplay of socio-technical factors, including regulatory legitimacy, environmental sustainability, and institutional trust. In Malaysia, while regulatory frameworks have evolved to accommodate digital assets—notably through the Securities Commission’s oversight since 2019 (Bakri et al., 2023)—public scepticism persists due to perceived risks associated with volatility, security breaches, and environmental externalities from energy-intensive mining practices. Collaborative governance initiatives between 2020 and 2022 further underscore Malaysia’s commitment to balancing innovation with investor protection (Sukumaran et al., 2022). However, scholarly attention to the drivers of cryptocurrency adoption remains disproportionately limited, particularly in the Malaysian context, where the technology’s socio-economic integration is still nascent. Existing scholarship on cryptocurrency adoption has predominantly centered on regulatory frameworks and institutional dynamics, with limited empirical attention to psychosocial and contextual determinants such as user trust, cultural perceptions, and technological literacy.

A recent study, such as Janteng et al. (2024) application of the Technology Acceptance Model (TAM), have advanced understanding by examining internal factors (e.g., perceived ease of use, perceived usefulness) and external variables (e.g., security, transaction processes), this focus remains narrow in scope. TAM-based analyses, though valuable, often overlook the broader socio-technical ecosystem—including social influence, facilitating conditions, and behavioral intent—that the Unified Theory of Acceptance and Use of Technology (UTAUT) holistically addresses. This gap is particularly salient in Malaysia’s nascent cryptocurrency landscape, where cultural norms and institutional trust significantly shape adoption behaviors. The reliance on TAM, rather than UTAUT’s multidimensional framework, limits insights into how systemic factors interact with individual perceptions to drive or hinder acceptance. Consequently, there is a pressing need for UTAUT-grounded studies to empirically explore these underexamined dimensions, offering context-specific insights into Malaysia’s evolving digital finance ecosystem. This gap is compounded by a lack of empirical research exploring how scepticism—rooted in environmental concerns, misinformation, and institutional distrust—impedes mainstream acceptance. This study seeks to answer the research question: How do the key constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT)—performance expectancy, effort expectancy, social influence, and facilitating conditions—influence undergraduate students’ behavioural intention to adopt cryptocurrency? To address this, the study’s objective is to examine the impact of these UTAUT constructs on cryptocurrency adoption intention among undergraduates at Universiti Malaysia Sabah (UMS).

The remainder of this paper is structured as follows: Section 2 (Literature Review) synthesises UTAUT-based studies and socio-technical adoption barriers; Section 3 (Methodology) details the sampling strategy, instrument design, and analytical workflows; Section 4 (Analysis and Findings) presents empirical results, including path coefficients and model fit indices; and Section 5 (Conclusion) discusses implications for policymakers, acknowledges limitations (e.g., single-institution focus), and proposes future research directions (e.g., cross-cultural UTAUT comparisons). By integrating UTAUT with advanced analytics, this study addresses theoretical and methodological gaps in understanding adoption dynamics within Malaysia’s evolving digital economy.

2. LITERATURE REVIEW

2.1 Behavioural intention

Behavioural intentions are defined as a key predictor of actual behaviour, which is crucial in technology acceptance, drawing from theories like UTAUT and the Theory of Planned Behaviour (Venkatesh et al., 2003). It reflects personal goals guiding voluntary actions (Chan et al., 2018). In cryptocurrency studies, behavioural intention serves as an indicator for actual user behaviour (Latif & Zakaria, 2020). Researchers, such as Bharadwaj and Deka (2021) highlight its influence on consumer attitudes toward cryptocurrency use. Within the UTAUT model for cryptocurrency, key factors like performance expectancy, effort expectancy, facilitating conditions, and social influence significantly impact behavioural intentions (Fandy Lim et al., 2021). Furthermore, in a study conducted by Ramachandran and Stella (2022) stated that behavioural intention is an individual's attitude towards how much they acknowledge the advantages or disadvantages of engaging in the behaviour. Moreover, Alaklabi (2022) also stated that behavioural intention is a person willingness to adopt cryptocurrencies. On the other hand, Bakri et al. (2023) stated that behavioural intention can predict the attitude of someone in terms of technology actual use. Finally, understanding the new system, its services, and its attributes, are significant factors that influence users' decision to adopt or not the use of cryptocurrencies (Kry & Chotiyaputa, 2023).

2.2 Performance expectancy

Venkatesh et al. (2003) define Performance Expectancy (PE) as “the degree to which individuals believe that using the system will help them to attain gains in job performance. In addition, the researcher observed that PE has a positive impact on cryptocurrency adoption. Numerous studies also found a consistent result that shows PE has a positive and significant impact on actual cryptocurrency adoption (Ebizie et al., 2022). In addition, PE has been primarily discussed as a significant factor that drives the adoption of cryptocurrencies which offers various advantages such as reduced transaction cost and enhanced fund transfer process (Alomari & Abdullah, 2023). Walsh (2018) also stated that PE was the most influencing variable of all other constructs. Based on UTAUT model framework, the most significant key indicator that influences the behavioural intention of consumer towards cryptocurrency is performance expectancy (Ghaisani et al., 2022). This statement was supported by past researcher which mentioned in the context of Malaysia, it has indeed been discovered that there has been a positive relationship appearing between cryptocurrency consumer behavioral intention and performance expectancy (Chan et al., 2018). A study by Fenech Castaldi (2022), also found performance expectancy has the highest explanatory power which is 68.45% for influence user intention to use cryptocurrency compared to other variables. The same result was found in the context of Spain, where performance expectancy as the most significant factors of intentions to use cryptocurrencies because they perceive the technology as offering a more efficient, secure, and cost-effective alternative to traditional systems (Wong et al., 2022). Therefore, Alaklabi (2022), conclude that performance expectancy can create a positive attitude and solid behavioural intention towards consumer use of cryptocurrency.

2.3 Effort expectancy

Effort expectancy is associated with the ease of using a specific technology (Venkatesh et al., 2003). Effort expectancy also can be translated as the level of simplicity involved in utilizing the system (Yusof et al., 2018). Based on the study by Gillies et al. (2020) it can be seen that, the degree of simplicity of use connected with a system has a substantial impact on technological adoption. A study by Nazim et al. (2021) found that effort expectancy is the most significant factor of having a good positive relationship with behavioural intention. This finding was supported by Al-Amri et al. (2021), where there is a positive relationship between effort expectancy and people's behavioural intention to adopt cryptocurrencies in their transactions. In addition, Chang et al. (2022), also found that effort expectancy is the most important determining factor of cryptocurrency adoption. This construct has been successfully utilised, as many empirical studies have confirmed that the adoption of a technology such as cryptocurrency is favourably influenced by the quantity of effort commitment required to master it (Ebizie et al., 2022). Therefore, effort expectancy has a favourable association towards the desire to utilize involvement in cryptocurrency payment services (Nguyen et al., 2022).

2.4 Facilitating conditions

Facilitating conditions (FC) refer to an individual's belief in the existence of organizational and technical support for using a system (Venkatesh et al., 2003). Yusof et al. (2018) assert that facilitating conditions play a crucial role in influencing people's intentions to adopt cryptocurrency. In the context of cryptocurrency research, it emphasizes the importance of regulations and laws governing cryptocurrency operations globally and locally. FC highlights that individuals with necessary technical resources and knowledge are more likely to actively engage with cryptocurrencies, indicating a correlation between facilitating conditions and cryptocurrency adoption (Safaric, 2021). In another study, it was discovered that FC helps to build greater awareness and intimate connection with intentions (Miraz et al., 2022). This study was supported by Chang et al. (2022), that found FC were the most influential in cryptocurrency acceptance. This is due to FC is generally influenced the users' adequate level of technical, organizational, infrastructural, and human support to use technology. FC also enhances the functionality of the technology and helps to enhance the users' initial trust in technology use (Jena, 2022).

2.5 Social influence

Social influence (SI) can be defined as the extent to which a person should believe how important it is he or she should use the new system based on other people opinions (Venkatesh et al., 2003). Social Influence (SI) also can be defined as any shift in an individual's ideas, feelings, or behaviours that result from other people, whether they are physically present, or their presence is imagined, expected, or just indicated (Nazim et al., 2021). Past research by Yusof et al. (2018), found that social influence in terms of blockchain technology were influence by the recommendations of co-workers, peers and people that are closed around them like friends and family. This statement was then supported by Nuryyev et al. (2020) which mentioned that SI indeed bring a significant impact on the intention to adopt new form of technology. Alomari and Abdullah (2023) contend that word-of-mouth has a significant impact on shaping people's perspectives on cryptocurrency through social influence.

The regression analysis from the study of Al-Amri et al. (2021), implied that SI and consumers' behavioural intention to utilise cryptocurrencies are positively correlated. The results showed that users' behavioural intention to use cryptocurrency is positively impacted by social influence. These findings were supported by Liaquat and Siddiqui (2021), which mentioned that SI of cryptocurrencies positively influences people's intentions to utilise them. Consequently, there is a positive relationship between social influence and behavioural intentions towards cryptocurrencies adoption in Malaysia (Fandy Lim et al., 2022).

2.6 Trust

Trust in this study represents the faith in technology, which is the assumption that cryptocurrency has the required properties to function as expected in a given situation with potentially bad implications. In this study, trust is projected to have a favourable influence on behavioural intention (Salem & Ali, 2019). In electronic and mobile technologies, like cryptocurrency, trust is acknowledged as a crucial success component because a purchase decision must be made in the midst of ambiguity (Paschalie & Santoso, 2020). In addition to that, Chathurika (2020), discovered by building a strong trust bridge helps consumers overcome risk and insecurity perceptions and encourages them to feel safe communicating with the frequently unknown, socially distant service provider via a new medium of technology. Furthermore, trust builds confidence in intent to use, which influences cryptocurrency adoption (Miraz et al., 2022).

Prior research has discovered trust to be a critical indication of behavioural intention to embrace a novel financial technology such as cryptocurrency (Abbasi et al., 2021). A study by Fandy Lim et al. (2022), in the other hand mentioned that consumers are more likely to put their trust in and invest in cryptocurrencies if they are knowledgeable about them. The analysis result from a study by Saputra and Darma (2022), conclude that the higher result of trust will increase the intention to use cryptocurrency. Recognizing factors influencing trust in cryptocurrencies is crucial for their acceptance. Noori (2023) identified eleven characteristics (transfer, immutability, knowledge, regulation, stability, security, decentralization, openness, investment, profitability, and alternative currency) impacting trust in cryptocurrency adoption.

3. METHODOLOGY

The data were collected using an online survey questionnaire. The instruments consisted of 30 items adapted from the Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh et.al (2003). The instruments will be able to identify factors influencing cryptocurrency adoption among undergraduates' students. The items were modified from existing literature to align with the objectives of the study and were measured using a 5-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree" developed by Likert (1932).

The questionnaire was divided into three sections. The first section collected demographic information to provide background on the respondents. The second section examined cryptocurrency adoption concerning dependent variables, while the third section assessed independent variables, including behavioral intention, performance expectancy, effort expectancy, facilitating conditions, social influence, and trust.

Before deployment, the questionnaire underwent pre-testing of a small group of respondents to ensure clarity and reliability. Based on the results, items with low corrected item to total correlation values were removed, and exploratory factor analysis was performed to refine the instrument. The data collection occurred between October and December 2023 which is targeting undergraduate students. The collected data was analyzed using Smart-PLS 3.0. Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed, and the results were interpreted using the guidelines of Hair et al. (2017), Hair et al. (2019), Saunders et al. (2016), Pallant (2016), Pallant (2020) and Sekaran and Bougie (2016).

3.1 Hypotheses development

A prior literature review has revealed the importance of several factors that influence individuals' behavioural intentions toward cryptocurrency adoption. Performance expectancy (PE) has consistently shown a positive and significant effect on cryptocurrency adoption, as it reflects the belief that using cryptocurrency will lead to improved performance and benefits (Venkatesh et al., 2003; Ghaisani et al., 2022). Similarly, Effort expectancy (EE), which captures the perceived ease of using cryptocurrency, has been identified as a crucial predictor of its adoption. Studies have shown that when individuals perceive technology as easy to use, they are more likely to adopt it (Chang et al., 2022; Nazim et al., 2021). Additionally, facilitating conditions (FC), which refer to the availability of support and resources for using cryptocurrency, play a critical role in influencing adoption intentions. Research indicates that access to sufficient technical and organizational support significantly contributes to the decision to adopt new technologies like cryptocurrency (Jena, 2022). Another factor, social influence (SI), or the extent to which individuals are influenced by the opinions of others, has been shown to positively impact users' intentions to adopt cryptocurrencies (Nazim et al., 2021; Nuryyev et al., 2020). Finally, Trust (TR) is a key determinant of behavioral intention toward cryptocurrency adoption. Trust reduces the perceived risks associated with using cryptocurrencies and fosters confidence in the technology and encouraging adoption of it (Saputra & Darma, 2022; Paschalie & Santoso, 2020)

Given the consistent positive correlations found between these factors and behavioral intention to adopt cryptocurrency, the following hypotheses are developed for this study:

H1: Performance expectancy will be positively correlated with undergraduates' behavioral intention to adopt cryptocurrency.

H2: Effort expectancy will be positively correlated with undergraduates' behavioral intention to adopt cryptocurrency.

H3: Facilitating conditions will be positively correlated with undergraduates' behavioral intention to adopt cryptocurrency.

H4: Social influence will be positively correlated with undergraduates' behavioral intention to adopt cryptocurrency.

H5: Trust will be positively correlated with undergraduates' behavioral intention to adopt cryptocurrency.

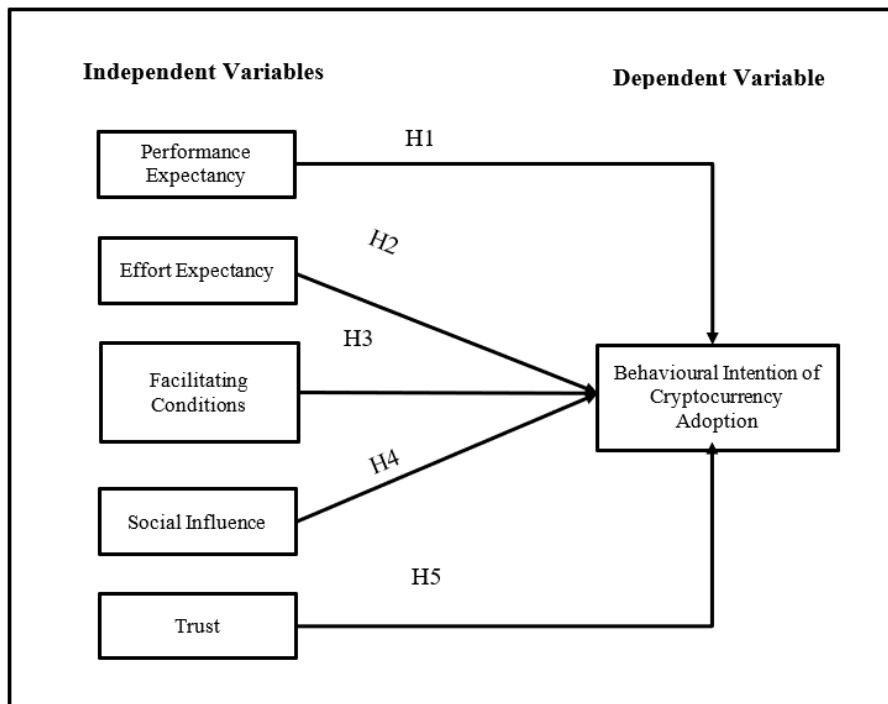


Figure 1: Conceptual Framework

4. FINDINGS AND DISCUSSION

4.1 Sampling and questionnaire items

A pre-testing was done on 30 undergraduate students with a different background of fields and years of study. Purposive sampling was used to represent the population due to the author has a specific targeted respondent precisely. Online platforms such as WhatsApp, Telegram and QR code were utilized to distribute the questionnaires. All collected data will be analyzed using statistical methods. This data is estimated to have been collected for one month, beginning on October 27 and ending on November 23.

To obtain the desired response, the researcher then distributes the questionnaire only to undergraduate's student for its to be valid. There were 271 complete questionnaires received by the researcher and excluded 4 questionnaires due to missing data and 7 because of the outlier. The total number of respondents then is 260 students. Therefore, the total effective response rate was 95.94%. This number was quite enough as mentioned by Sekaran and Bougie (2016), where a 30% response rate is acceptable and, in many cases, it's even exceptional.

Table 1: Questionnaire items and their derivation sources

Behavioural Intention (BI) [Adapted from: Almajali et al., (2022)]	
BI 1	I think using cryptocurrency in the future is a good thing.
BI 2	I think that cryptocurrency use will greatly help me in fulfilling my financial obligations on time.
BI 3	I plan to use cryptocurrency technology in the future.
BI 4	I plan to use cryptocurrency as another form of currency for my future product purchases.
BI 5	I plan to use cryptocurrency as an exchange method in the future.

Performance Expectancy (PE) [Adapted from: Bozkurt and Akgül, (2023)]	
PE 1	I find cryptocurrency technology is useful.
PE 2	I find that cryptocurrency technology enables faster transactions.
PE 3	I believe that using cryptocurrency technology would enable me to pay easily.
PE 4	I believe cryptocurrency technology is flexible because I can access it whenever I want.
PE 5	Using cryptocurrency technology will help me to achieve my financial goals quickly.
Effort Expectancy (EE) [Adapted from: Li et. al (2023)]	
EE 1	I find learning to use cryptocurrencies is easy.
EE 2	I am comfortable using cryptocurrencies.
EE 3	I believe it will be easy for me to become skilled at using cryptocurrencies.
EE 4	Interacting with cryptocurrency requires minimal effort.
EE 5	I find the usage of cryptocurrencies is understandable.
Facilitating Conditions (FC) [Adapted from: Safaric (2021)]	
FC 1	I have the required gadget software for using cryptocurrencies.
FC 2	I have all the necessary knowledge to use cryptocurrencies.
FC 3	I find cryptocurrencies is similar like other online investments (i.e stocks and bonds).
FC 4	I have the internet resources to access cryptocurrencies.
FC 5	I can find someone to help me with cryptocurrency issues.
Performance Expectancy (PE) [Adapted from: Waisman (2022)]	
SI 1	The people who matter to me believe I should use cryptocurrencies.
SI 2	The people who influence me think that I should use cryptocurrencies.
SI 3	The people whose opinions I value would like me to use cryptocurrencies.
SI 4	I will use this cryptocurrency service if many people in my community use it.
SI 5	My friends I know expect me to invest in cryptocurrency.
Performance Expectancy (PE) [Adapted from: Noori (2023)]	
TR 1	I find cryptocurrency is trustworthy.
TR 2	I trust cryptocurrency because it has advanced technology.
TR 3	I trust cryptocurrencies less when it is unstable.
TR 4	I trust cryptocurrency as a good medium for investments.
TR 5	I feel more likely to trust cryptocurrency if it is regulated by the government.

4.2 Demographic profile

Table 2 shows the demographic profile of the sample population. More than half of the respondents are female (73%), while 27% of them are male. Most respondents are between 21 and 22 years of age (58%). On another note, more than half of the respondents are

From the background Islamic Finance field of study (64%), whilst International Finance and International Marketing contribute 5% respectively for being the second highest. Meanwhile, half of the respondents are from the race of indigenous Sabah with a 50% rate of responses and 39% from the race of Malay respondents.

Table 2: Demography profile of respondents (N=260)

Demographic Profile	Frequency	Percentage
	N=260	%
Gender	Male	27
	Female	73
Race	Malay	39
	Chinese	1

	Indian	5	2
	Indigenous Sabah	131	50
	Indigenous Sarawak	20	8
Age	19 years	7	3
	20 years	49	19
	21 years	72	28
	22 years	78	30
	23 years	36	14
	24 years	14	5
	25 years	3	1
Year of Study	26 years	1	1
	Year 1	50	19
	Year 2	81	31
	Year 3	71	27
	Year 4	53	21
Program	Others	5	2
	Islamic Finance	167	64
	International Finance	14	5
	International Marketing	14	5
	Multimedia Technology	15	5
	International Financial Economics	12	4
	Business Computing	12	4
	International and Offshore Banking	11	2
	Social work	4	1
	Islamic principles	4	1
	Livestock production	3	1
	Financial Management and Banking	2	1
	Hospitality Management	1	0
Knowledge about cryptocurrency	Doctor of Medicine	1	0
	Yes	218	84
Participants in any cryptocurrency investment	No	42	16
	Yes	24	9
	No	236	91

4.3 Measurement model

The measurement model indicates how constructs connect with their indicators, which are classified as those explaining others (exogenous) and those being explained (endogenous) (Hair et al., 2017). This model was assessed using items from internal consistency reliability, convergent validity, and discriminant validity. For internal consistency reliability it was measured by Composite reliability (ρ_c). A higher ρ_c value indicates more reliability. For example, results that range from 0.60 to 0.70 are regarded acceptable for exploratory study, whereas values range from 0.70 to 0.90 are considered good. However, scores greater than 0.90 (particularly 0.95), indicate redundant and potential problems with response patterns. In such circumstances, the relationship between indicator error terms becomes unclear, affecting the construct's reliability (Hair et al., 2019). Cronbach's alpha is another measure of internal consistency reliability that uses the same threshold as composite (ρ_c). Cronbach's alpha is the lower constraint for internal consistency reliability, whereas composite reliability is the upper bound. Minimum value of 0.70 (or 0.60 for

exploratory research). Maximum 0.95 to avoid redundant pointers that risk content reliability. Recommended range between 0.70 to 0.90 (Hair et al., 2019).

Next, for convergent validity as defined by Hair et al. (2017), involves the assessment of the extent to which a measure demonstrates a robust correlation with diverse methods used to evaluate the same construct. In the evaluation of convergent validity, researchers examine both the outer loadings of the items, and the average variance extracted (AVE). The AVE, serving as a metric for a construct's communality, is considered acceptable when it attains a minimum value of 0.50. An AVE score of 0.50 or higher signifies that the construct explains 50% or more of the variance in the indicators comprising the construct. Other than that, the researchers also need to examine the discriminant validity.

Discriminant validity plays a vital role in assessing how effectively a construct can be distinguished from other constructs within a structural model. The Fornell-Larcker criteria, a commonly employed method, involves comparing the squared variance within a construct (AVE - Average Variance Extracted) to the squared inter-construct correlation. This criterion helps evaluate the extent to which a construct is uniquely identified and differentiated from other constructs in the model (Hair et al., 2017).

Table 3 shows the results of all the items' outer loadings are above the recommended threshold of ≥ 0.50 , where all CR scores > 0.70 and AVE scores > 0.50 . Cronbach's Alpha also shows the scores of ≥ 0.70 to indicate internal consistency in the model (Hair et al., 2019)

Table 3: Measurement model

Construct	Items	Cronbach's Alpha	AVE	CR
BI	5	0.934	0.792	0.950
PE	5	0.927	0.775	0.945
EE	5	0.924	0.766	0.942
FC	5	0.905	0.726	0.930
SI	5	0.929	0.781	0.947
TR	5	0.882	0.742	0.919

Next is to test discriminant validity of the study. Discriminant validity is referred to as the degree assessing how effectively a construct can be distinguished from other constructs within a structural model. The Fornell-Larcker criteria, a commonly employed method, involves comparing the squared variance within a construct (AVE - Average Variance Extracted) to the squared inter-construct correlation. This criterion helps evaluate the extent to which a construct is uniquely identified and differentiated from other constructs in the model (Hair et al., 2017).

According to Fornell & Larcker (1981), criterion, the square root of AVE of a construct should be larger than the correlations between the construct and other constructs in the model. In Table 4, the diagonal values represent the square root of the Average Variance Extracted (AVE) for each construct. Notably, the diagonal values for EE (0.875), FC (0.852), INT (0.890), PE (0.880), and SI (0.884) exceed the corresponding external values. These diagonal values indicate satisfactory discriminant validity, suggesting that each construct effectively captures distinct aspects of its latent variable. This supports the robustness of the model, affirming that

the measurement scales reliably represent different sides of provided variables in consideration.

Table 4: Discriminant validity using Fornell and Larcker criterion

	EE	FC	INT	PE	SI	TR
Effort Expectancy (EE)	0.875					
Facilitating Conditions (FC)	0.815	0.852				
Behavioural Intention (BI)	0.762	0.717	0.890			
Performance Expectancy (PE)	0.738	0.712	0.847	0.880		
Social Influence (SI)	0.823	0.854	0.784	0.743	0.884	
Trust (TR)	0.798	0.778	0.832	0.840	0.832	0.862

Therefore, based on the results in Table 3 and 4, the reflective measurement model can be said to have met internal consistency, convergent and discriminant validity.

4.4 Structural Model

The structural model is the model that assess hypothetical relationships and overall model fit. Within the domain of Partial Least Squares Structural Equation Modeling (PLS-SEM), the structural model plays a crucial role by delving into the foundational structural theories and concepts embedded in the path model. In the structural model, a distinction is made between exogenous and endogenous constructs. The key evaluation criteria for the structural model involve R² measures and the significance of path coefficients. The PLS-SEM algorithm optimizes measurement model parameters first and then estimates path coefficients in the structural model, emphasizing the importance of understanding the relationships between constructs for a comprehensive evaluation (Hair et al., 2011).

According to (Garson, 2016), bootstrapping is significant as it is often used when data cannot be assumed to be normal, in which usually the distributional properties of PLS estimates are not known for the population; and thus, bootstrapping is appropriate. In this phase, the path estimates, and t-statistics are calculated for the hypothesized relationship. The results of the structural model are presented in Table 5.

Table 5: Bootstrapping

	Path Coefficient	P values	t-values	Decisions
Effort Expectancy (EE) → Behavioural Intention (BI)	0.126	0.080	1.753	Not supported
Facilitating Conditions (FC) → Behavioural Intention (BI)	-0.064	0.430	0.790	Not supported
Performance Expectancy (PE) → Behavioural Intention (BI)	0.457	0.000	6.915	Yes
Social Influence (SI) → Behavioural Intention (BI)	0.212	0.006	2.744	Yes
Trust (TR) → Behavioural Intention (BI)	0.220	0.004	2.920	Yes

Based on the result, hypothesis 1 predicted that performance expectancy would have a positive correlated on cryptocurrency adoption ($t = 6.915, \beta = 0.457, p < 0.000$).

This result was consistent with the hypothesis. This finding indicates that performance expectancy is essential and necessary as a background for the intended use of product and service design for a new cryptocurrency (or innovation efforts for existing ones) (Bozkurt & Akgül, 2023). Therefore, this finding accepted that there is a positive relationship between performance expectancy and behavioural intention on cryptocurrency adoption among undergraduates. Next, hypothesis 2 predicted that effort expectancy has a strong positive correlation with people attitude to adopt cryptocurrency ($t = 1.753$, $\beta = 0.126$, $p < 0.080$). However, this result was not consistent with the hypothesis. The connection to continuing to use cryptocurrency is weakest with effort expectancy. This suggests that the ease of use linked to technological advancements doesn't strongly influence people's decision to keep using the technology. This observation aligns with the fact that Malaysians primarily use smartphones for accessing the Internet rather than advance technology. Therefore, effort expectancy programs fail to bear any significant result for the behavioural intention in Malaysia (Ghaisani et al., 2022). Therefore, this finding accepted the null hypothesis that there is no relationship between effort expectancy and behavioural intention on cryptocurrency adoption among undergraduates in University Malaysia Sabah (UMS).

Following, hypothesis 3 predicted that there is a significant relationship between facilitating conditions and behavioural intention of the undergraduates to adopt cryptocurrency. This hypothesis was not supported by the result of ($t = 0.790$, $\beta = -0.064$, $p < 0.430$), which supports the finding of Li et al. (2023) with regard that there seems to be no agreement on the positive impact of FC on adopting financial technology concerning utilizing cryptocurrency. Other researchers also did not manage to prove that FC can affect cryptocurrency acceptability. In addition, several researchers also verified negatives impact of FC on cryptocurrency behavioural intention. While, hypothesis 4 predicted that social influence regarding the use of cryptocurrencies is a positive predictor of the intention to use them (Waisman, 2022). This hypothesis was supported with a finding of ($t = 2.744$, $\beta = 0.212$, $p < 0.006$); which confirms the proposition that social influence (SI) is a good factor that have effects on behavioural intention to adopt cryptocurrency in the Malaysia (Nazim et al., 2021) Likewise, social influence (SI) impacts and creates more sensation on behavioral intention. This is consistent with the previous studies (Liaquat & Siddiqui, 2021). Lastly, hypothesis 5 predicted that trust would exert a positive effect on cryptocurrency adoption. This hypothesis was supported by a finding of ($t = 2.920$, $\beta = 0.220$, $p < 0.004$), which confirms the hypothesis that trust positively and significantly affects the behavioural intention among undergraduates to adopt cryptocurrency. This outcome is similar to the findings of the previous studies that stated trust is a predictor of cryptocurrency user BI in Malaysia's digital market (Abbasi et al., 2021).

In overall, the results have supported all the direct hypothesized relationship between the constructs except that which exist between effort expectancy and facilitating conditions of cryptocurrency adoption. Figure 2 see that the determinants of cryptocurrency adoption explain about the connection between the construct and with their indicators, which are classified as those explaining others (exogenous) and those being explained (endogenous). The SMARTPLS output is given below.

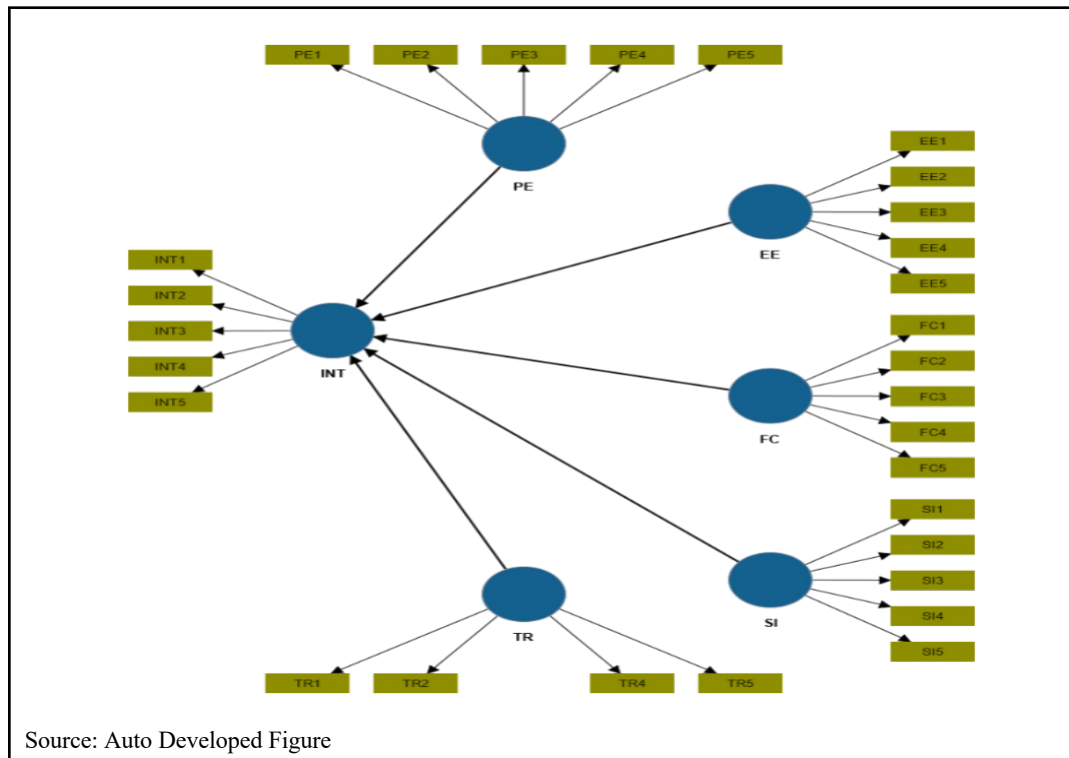


Figure 2: The visual output for SMART-PLS algorithm

5. Conclusion

This study sought to examine the determinants influencing behavioural intentions and cryptocurrency adoption among undergraduate students in Malaysia, a context marked by rapid digital financial evolution. By integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) with trust, the research extends theoretical frameworks to an understudied demographic, offering novel insights into adoption dynamics within tertiary education settings.

The findings reveal that performance expectancy (PE), social influence (SI), and trust (TR) emerged as salient predictors of cryptocurrency adoption, underscoring students' prioritisation of perceived utility, peer influence, and institutional credibility. Conversely, effort expectancy (EE) and facilitating conditions (FC) exhibited non-significant associations with adoption, suggesting that usability and infrastructural support are secondary to performance and trust considerations in this cohort. A robust positive correlation between behavioural intention and actual adoption further highlights the critical role of psychological readiness in translating intent into practice. The study's originality lies in its application of UTAUT to Malaysia's student population, a demographic pivotal to the nation's digital economy yet underrepresented in existing literature. By contextualising trust, the research addresses a gap in technology acceptance models, emphasising socio-cultural dimensions of financial innovation.

Practical implications are twofold. For academia, integrating cryptocurrency literacy into curricular programmes could enhance students' critical engagement with digital assets. Policymakers and regulatory bodies, meanwhile, should prioritise

initiatives that bolster platform security and transparency to mitigate trust deficits, thereby fostering inclusive adoption among youth. Limitations include the study's focus on a single university, which constrains generalisability, and the exclusion of demographic variables such as age, gender, and disciplinary background. Future research should explore these factors through cross-institutional or cross-cultural comparisons, as well as longitudinal analyses to assess adoption trends over time. Additionally, qualitative inquiries could elucidate subjective experiences shaping behavioural intentions, complementing quantitative frameworks like UTAUT. By bridging theoretical and empirical gaps, this study advances understanding of cryptocurrency adoption drivers, offering a foundation for policies and educational strategies that align with Malaysia's digital aspirations.

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