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Factors Influencing Cryptocurrency Retention Of Use In Indonesia

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Abstract

This research investigates the determinants of continued cryptocurrency usage in Indonesia by extending the Technology Acceptance Model (TAM). A quantitative research approach was employed using a survey method to collect data from cryptocurrency users located in Java and Bali. Respondents were selected through purposive sampling to ensure that participants had prior experience using cryptocurrency. The collected data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software to assess the reliability and validity of the measurement model, as well as to examine the structural relationships among variables through bootstrapping techniques. The results indicate that perceived ease of use and perceived usefulness both have a positive and significant influence on cryptocurrency retention of use, confirming their importance in post-adoption behavior. In addition, cryptocurrency knowledge plays a moderating role in the model. Specifically, higher levels of cryptocurrency knowledge strengthen the relationship between perceived usefulness and retention of use, while weakening the effect of perceived ease of use. This finding suggests that knowledgeable users tend to prioritize functional benefits and investment advantages over system simplicity when deciding whether to continue using cryptocurrency. From a practical perspective, the study provides valuable insights for cryptocurrency platform developers, educators, and policymakers. Enhancing system functionality, improving user education, and developing supportive regulatory frameworks may help promote sustainable and long-term cryptocurrency usage in Indonesia.

Keywords: Cryptocurrency Retention, Perceived Ease Of Use, Perceived Usefulness, Cryptocurrency Knowledge, Technology Acceptance Model (TAM)

1. Introduction

Since its first introduction, cryptocurrency has brought major changes in the global financial system. Unlike traditional currencies controlled by central authorities such as central banks, cryptocurrencies are decentralized and operate through blockchain technology [1]. This technology allows transactions to be conducted directly between users without intermediaries, while ensuring transparency and data security [2]. With these characteristics, cryptocurrency has significant potential to increase financial inclusion, especially in developing countries that still face limited access to formal financial services [3], [4].

Globally, cryptocurrency use shows rapid growth each year. According to a Coinlaw report (2025), the number of cryptocurrency users worldwide reached more than 580 million, a 34% increase compared to the previous year. Bitcoin ownership also grew by 13%, indicating growing public acceptance of this digital asset. A similar phenomenon is also occurring in Indonesia. According to a report from the Commodity Futures Trading Regulatory Agency (BAPPEBTI), the number of crypto asset users in Indonesia reached 14.16 million by April 2024, a 3.28% increase in just one month. Transaction value also surged dramatically to IDR 650.61 trillion compared to IDR 149.3 trillion the previous year. However, it should be noted that cryptocurrency in Indonesia is not yet recognized as legal tender, as stipulated in BAPPEBTI Regulation Number 8 of 2021, which stipulates that crypto assets are categorized as digital commodities that may be traded but not used as an official means of exchange. This situation has led the majority of Indonesians to use cryptocurrency as an investment rather than for daily transactions [5]. Therefore, it is important to understand the factors that encourage users to maintain their use of cryptocurrency.

In the context of technology adoption, most previous research has focused on initial adoption factors, such as a person's intention to start using cryptocurrency [6], [7]. However, retention of use is a crucial aspect in ensuring the long-term success of this technology. Retention of use refers to a user's willingness to continue using

cryptocurrency after the initial adoption stage. Retained users demonstrate satisfaction, trust, and confidence in the benefits provided by the technology [8], [9].

To examine the determinants of cryptocurrency usage retention, this study focuses on three key constructs: perceived ease of use, perceived usefulness, and trust. Perceived ease of use refers to the degree to which individuals believe that cryptocurrency can be utilized with minimal effort, is easy to understand, and offers flexibility in conducting financial transactions [10], [11]. Perceived usefulness represents users' perceptions of the tangible benefits provided by cryptocurrency, including increased efficiency, enhanced control over assets, and improved personal financial performance [12]. Trust is considered a critical factor, as users are more likely to continue using cryptocurrency when they perceive the system as secure, transparent, and dependable [13]–[15].

Drawing on the Technology Acceptance Model (TAM 2), which explains the relationship between perceived ease of use, perceived usefulness, and technology usage intentions, and extending this framework by incorporating cryptocurrency knowledge within the context of digital asset usage, this study proposes a conceptual model to explain cryptocurrency retention behavior.

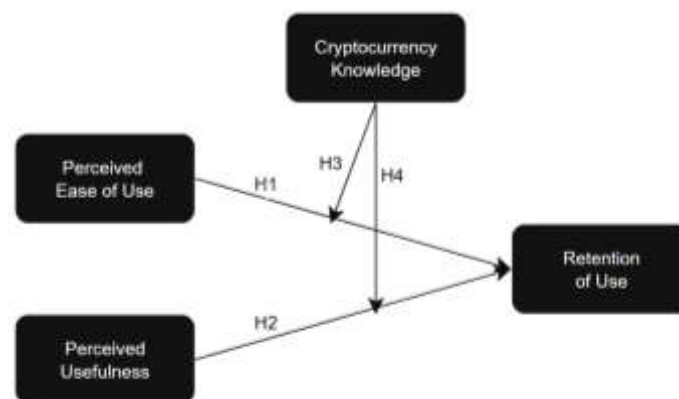


Figure 1. Framework Proposed

Accordingly, this study seeks to examine the effects of perceived ease of use, perceived usefulness, and cryptocurrency knowledge on the retention of cryptocurrency usage in Indonesia. Academically, the results are expected to contribute to the literature by extending the Technology Acceptance Model (TAM 2) to the context of digital asset usage retention. From a practical perspective, the findings are anticipated to provide valuable insights for platform developers and policymakers in better understanding cryptocurrency user behavior in Indonesia.

Based on the issues identified, several research questions are formulated to guide the analysis. First, the study investigates whether perceived ease of use has a positive influence on cryptocurrency usage retention. Second, it examines whether perceived usefulness positively affects the continued use of cryptocurrency. In addition, this research explores whether cryptocurrency knowledge moderates the relationship between perceived ease of use and cryptocurrency retention of use. Finally, the study assesses whether cryptocurrency knowledge moderates the relationship between perceived usefulness and cryptocurrency retention of use.

In line with these research questions, four primary research objectives are established. The first objective is to analyze the impact of perceived ease of use on cryptocurrency retention of use. The second objective is to evaluate the effect of perceived usefulness on cryptocurrency retention of use. Furthermore, this study aims to examine the moderating role of cryptocurrency knowledge in the relationship between perceived ease of use and cryptocurrency retention. Lastly, the research seeks to assess the moderating effect of cryptocurrency knowledge on the relationship between perceived usefulness and cryptocurrency retention of use.

This study is expected to broaden the application of the Technology Acceptance Model by shifting the focus from initial adoption to post-adoption behavior, particularly usage retention. Moreover, by incorporating cryptocurrency knowledge as a key explanatory factor, this research highlights the importance of user understanding in sustaining the use of blockchain-based technologies. From a practical standpoint, the findings may assist cryptocurrency service providers in enhancing system usability, security, and user trust. For policymakers, the results can inform the development of regulatory frameworks that balance technological innovation with investor protection.

Additionally, for users, this research may increase awareness and understanding of cryptocurrency usage, encouraging more informed and sustainable participation in the digital asset ecosystem.

2. Research Methods

This study adopts a quantitative research design employing a survey approach. Primary data were collected through an online questionnaire distributed via Google Forms to cryptocurrency users located in Java and Bali. These regions were selected because they account for approximately 66.2% of cryptocurrency users in Indonesia, thereby representing the country's digital economic and investment activities [16]. The target population comprised all cryptocurrency users residing in Java and Bali. A purposive sampling technique was applied, with selection criteria limited to individuals who had actively used cryptocurrency for at least one year and were domiciled in Indonesia. The minimum sample size was determined using the Ten Times Rule [17], calculated by multiplying the number of indicators by six, which resulted in a minimum requirement of 120 respondents.

The questionnaire was structured into two main sections. The first section collected demographic information, including respondents' age, gender, and duration of cryptocurrency usage. The second section consisted of measurement items related to the research constructs, which were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The measurement constructs in this study were derived from established theoretical frameworks and prior empirical studies. Perceived ease of use was based on the Technology Acceptance Model (TAM) proposed by Davis (1989) and supported by subsequent studies such as Chen and Aklikokou (2020), which emphasized its importance in digital technology adoption [10], [18]. Perceived usefulness was grounded in the extended TAM framework developed by Venkatesh and Davis (2000) [19] and has been widely applied in cryptocurrency adoption research, including the work of Mendoza-Tello et al. (2018) [20]. Cryptocurrency knowledge was incorporated as a user-related factor, drawing on previous studies by Islam et al. (2023) and Al-Omoush et al. (2022), which highlight the role of knowledge in influencing user confidence and decision-making in cryptocurrency platforms [14], [15]. Retention of use was measured using indicators adapted from Al-Omoush et al. (2023) and Hariguna et al. (2023), who identify continued usage as a critical behavioral outcome in digital and financial technology contexts [14], [21]. Collectively, these sources provide a robust theoretical basis for examining the relationships among perceived ease of use, perceived usefulness, cryptocurrency knowledge, and retention of use.

Data analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with the support of SmartPLS software. The analysis followed a two-stage procedure. First, the outer (measurement) model was evaluated to assess construct validity and reliability using criteria such as outer loadings (>0.70), Average Variance Extracted (AVE >0.50), and composite reliability (>0.70). Second, the inner (structural) model was examined to analyze the relationships among variables by evaluating R^2 , Q^2 , and path coefficient values. Hypothesis testing was performed through a bootstrapping procedure, with relationships considered statistically significant when the t-statistic exceeded 1.96 at the 5% significance level [17], [22].

3. Results and Discussions

3.1. Results

The online survey yielded 165 valid responses obtained through purposive sampling, targeting cryptocurrency users in Indonesia who had been actively using digital assets for at least one year. As presented in Table 1, the demographic composition indicates that male respondents constituted the majority of the sample (96 individuals or 58%), while female participants represented 42%. With respect to age, most respondents were within the 29–44 year age group (49%), followed by those aged 28 years or younger (41%), and a smaller segment aged between 45 and 60 years (10%). In terms of geographic distribution, respondents were predominantly located in DKI Jakarta (26%), Bali (21%), and West Java (14%), highlighting the concentration of cryptocurrency activity in key urban and economic regions.

Regarding monthly income, the majority of respondents fell into the middle-income bracket, with the largest proportions earning between Rp 5,000,000 and Rp 6,999,999 (28%) and Rp 7,000,000 to Rp 10,000,000 (27%). This pattern indicates that cryptocurrency participation is more common among individuals with relatively stable financial conditions and available disposable income. Concerning the length of cryptocurrency usage, more than half of the respondents (56%) reported using cryptocurrency for one to two years, suggesting early-stage adoption accompanied by sufficient user experience. Additionally, 24% of participants had been using cryptocurrency for two to three years, while 19% reported usage exceeding three years, indicating that a substantial number of respondents possess long-term exposure to digital assets. Overall, these demographic findings illustrate a profile

of cryptocurrency users in Indonesia who are economically active, technologically proficient, and engaged in the digital financial ecosystem.

Table 1. Respondents' demographic profiles (N=165)

Features	Category	Frequency	%
Gender	Male	96	58
	Female	69	42
Age	≤ 28	67	41
	29-44	81	49
	45-60	17	10
Domicile	Bali	35	21
	Banten	10	6
	Daerah Istimewa Yogyakarta	15	9
	DKI Jakarta	43	26
	Jawa Barat	23	14
	Jawa Tengah	21	13
	Jawa Timur	18	11
Income per Month	< Rp 3.000.000	21	13
	> Rp 10.000.000	17	10
	Rp 3.000.000 - 4.999.999	37	22
	Rp 5.000.000 - 6.999.999	46	28
	Rp 7.000.000 - 10.000.000	44	27
Cryptocurrency use	1-2 Years	93	56
	2-3 Years	40	24
	More than 3 years	32	19

Source: Data processed with SmartPLS (2025)

Data were analyzed using SmartPLS version 3.2.9 to assess both the measurement model and the structural model. Convergent validity was evaluated by examining outer loading values and Average Variance Extracted (AVE), discriminant validity was assessed using the Fornell–Larcker Criterion, and construct reliability was measured through Cronbach's Alpha and Composite Reliability. As presented in Table 2, all measurement indicators satisfy the established criteria for validity and reliability.

The outer loading values ranged from 0.628 to 0.839, exceeding the minimum acceptable threshold of 0.60, while all AVE values were greater than 0.50, indicating adequate convergent validity across all constructs. Discriminant validity was also confirmed, as the square root of each construct's AVE was higher than its correlations with other constructs, demonstrating clear differentiation among the variables.

Furthermore, the reliability analysis supports the robustness of the measurement model. Cronbach's Alpha values ranged between 0.752 and 0.817, and Composite Reliability values ranged from 0.834 to 0.873, all of which exceed the recommended threshold of 0.70. These results confirm that the constructs of Cryptocurrency Knowledge, Cryptocurrency Retention of Use, Perceived Ease of Use, and Perceived Usefulness exhibit strong internal consistency and reliable measurement.

Table 2. Results of validity and reliability (N=165)

Variables	Loadings	α	CR	Rho_A	AVE
Cryptocurrency Knowledge (CK)					
CK1	0.702	0.752	0.834	0.771	0.503
CK2	0.664				
CK3	0.628				
CK4	0.730				
CK5	0.810				
Cryptocurrency Retention of Use (CROU)					
CROU1	0.750	0.783	0.852	0.786	0.536
CROU2	0.724				
CROU3	0.667				
CROU4	0.748				
CROU5	0.766				
Perceived Ease of Use (PEOU)					
PEOU1	0.789	0.815	0.871	0.819	0.576
PEOU2	0.758				
PEOU3	0.701				
PEOU4	0.740				
PEOU5	0.801				

Perceived Usefulness (PU)					
PU1	0.772	0.817	0.873	0.819	0.580
PU2	0.759				
PU3	0.669				
PU4	0.758				
PU5	0.839				

Source: Data processed with SmartPLS (2025)

Discriminant validity was assessed using the Fornell–Larcker Criterion, which compares the square root of AVE values with the correlations among constructs. As shown in Table 3, the diagonal values (CK = 0.709; CROU = 0.732; PEOU = 0.759; PU = 0.761) are higher than their corresponding inter-construct correlations. This indicates that each construct shares more variance with its own indicators than with other constructs. Therefore, all variables in this model meet the required discriminant validity criteria [23], confirming that each construct is conceptually distinct.

Table 3. Results of Fornell-Larcker criterion

	CK	CROU	PEOU	PU
CK	0.709			
CROU	0.664	0.732		
PEOU	0.524	0.709	0.759	
PU	0.664	0.661	0.682	0.761

Source: Data processed with SmartPLS (2025)

3.2. Discussion

Structural model testing was conducted using the bootstrapping procedure in SmartPLS. The findings in Table 4 summarize the significance of each path in the research model. Four hypotheses were tested, all of which show statistically significant relationships ($p < 0.05$).

Table 4. Results of Hypothesis Test

Hypothesis	Path	Original sample (O)	T statistics	P values
H1	PEOU → CROU	0.305	3.385	0.000
H2	PU → CROU	0.271	1.893	0.029
H3	CK x PEOU → CROU	-0.259	2.253	0.012
H4	CK x PU → CROU	0.191	2.501	0.006

Source: Data processed with SmartPLS (2025)

The empirical findings demonstrate that perceived ease of use has a significant positive effect on cryptocurrency usage retention ($\beta = 0.305$; $t = 3.385$; $p = 0.000$). This result indicates that users who perceive cryptocurrency platforms as simple and user-friendly are more inclined to continue using them. Such evidence is consistent with previous TAM-based research, which identifies ease of use as a key determinant of sustained technology adoption [10], [24].

Perceived usefulness is also found to have a statistically significant and positive influence on retention ($\beta = 0.271$; $t = 1.893$; $p = 0.029$). This finding suggests that users who perceive cryptocurrency as providing tangible benefits—such as facilitating transactions, supporting investment activities, or improving financial access—are more likely to maintain long-term usage. This outcome aligns with earlier studies emphasizing perceived usefulness as a fundamental predictor of continuance intention in financial technology contexts [21], [25].

Furthermore, cryptocurrency knowledge plays a significant moderating role by strengthening the relationship between perceived usefulness and retention ($\beta = 0.191$; $t = 2.501$; $p = 0.006$). This indicates that individuals with higher levels of cryptocurrency knowledge are more likely to sustain usage when they recognize its practical benefits. This finding supports prior literature suggesting that domain-specific knowledge enhances user confidence and promotes continued engagement with digital financial technologies [14], [15].

Conversely, cryptocurrency knowledge is found to negatively moderate the relationship between perceived ease of use and retention ($\beta = -0.259$; $t = 2.253$; $p = 0.012$). This result implies that for more knowledgeable users, ease of use becomes a less critical factor in determining continued usage. Instead, experienced users tend to focus more on functional value, system performance, and utility rather than simplicity. This outcome contrasts with the findings of Islam et al. (2023) and Al-Omouh et al. (2022), who suggested that higher levels of cryptocurrency knowledge generally enhance favorable user perceptions, including perceived ease of use, thereby reinforcing continued usage [14], [15].

4. Conclusion

This research seeks to analyze the determinants of continued cryptocurrency usage in Indonesia by extending the Technology Acceptance Model (TAM). The proposed model incorporates perceived ease of use, perceived usefulness, and cryptocurrency knowledge, with cryptocurrency knowledge positioned as a moderating variable in the relationship between perceived ease of use, perceived usefulness, and usage retention. The findings indicate that all three variables play a significant role in explaining cryptocurrency retention behavior. Both perceived ease of use and perceived usefulness exhibit positive and significant effects on continued usage, thereby reinforcing the core assumptions of TAM. Moreover, cryptocurrency knowledge not only has a direct positive impact on retention but also amplifies the effect of perceived usefulness on continued use, suggesting that users with higher levels of knowledge are better able to recognize and appreciate the practical value of cryptocurrency, leading to stronger usage continuity. From a theoretical perspective, this study contributes to the literature by extending TAM through the inclusion of a moderating factor that is particularly relevant to the cryptocurrency context. The integration of cryptocurrency knowledge enhances the understanding of how cognitive and informational dimensions influence post-adoption behavior. This contribution is especially valuable for digital finance research in developing economies, where disparities in user literacy and technological familiarity remain significant. The results further confirm that continued cryptocurrency usage is shaped not only by perceived technological benefits but also by users' level of understanding and experience with the system. In practical terms, the findings provide meaningful implications for policymakers, cryptocurrency exchanges, and digital asset service providers. Given that ease of use and perceived usefulness are strong predictors of continued usage, service providers should prioritize intuitive interface design, straightforward system navigation, and features that clearly communicate the functional advantages of cryptocurrency. Additionally, educational initiatives such as training sessions, tutorials, and in-application learning tools can enhance users' cryptocurrency knowledge, thereby increasing confidence and fostering long-term engagement. Improving public literacy is essential to support safe, informed, and sustainable participation in the digital asset ecosystem. Despite its contributions, this study has several limitations. First, cryptocurrency usage is examined in a general context without differentiating among specific types of digital assets such as Bitcoin, Ethereum, or stablecoins, each of which may exhibit distinct characteristics in terms of usefulness, ease of use, and user knowledge. Consequently, future research may yield more nuanced insights by focusing on individual cryptocurrencies. Furthermore, the reliance on self-reported survey data may introduce potential biases, including social desirability bias and recall inaccuracies. Future studies are therefore encouraged to expand the research model by incorporating additional variables such as trust, perceived risk, and regulatory awareness, as well as to conduct comparative analyses across different cryptocurrencies, demographic groups, and geographic regions.

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