

Behavioral Financing and the Adoption of Cryptocurrency in Indonesia

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Abstract: - The aim of this research is to identify the factors that influence an individual's financial behavior in the adoption of cryptocurrency. This research is a quantitative study, and the respondents were selected through purposive sampling, of which the following criteria were applied; 1) owning cryptocurrency 2) using cryptocurrency for investment or purchasing needs 3) having a minimum of 3 years of investment experience. A questionnaire was distributed to a total of 121 valid respondents. The research data was processed using SEM-PLS, and from this, it was found that 21 out of 23 questionnaire items were valid. This research found that the adoption of cryptocurrencies can be influenced by several factors; trust and perceived value can improve the adoption of cryptocurrency, while financial literacy and perceived risk do not influence the adoption of cryptocurrency. Also, the moderation of short/long horizon variables is not able to strengthen the influence of perceived risk on adoption.

Key-Words: - Adoption, Cryptocurrency, Behavior Financing, financial literacy, perceived risk, Trust.

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1 Introduction

Cryptocurrency is a digital currency that functions independently of any centralized authority, such as a financial institution or government, [1]. This decentralized nature of cryptocurrency is revolutionizing the financial industry by facilitating direct peer-to-peer transactions, eliminating the necessity for intermediaries such as banks or traditional financial establishments, [2]. Cryptocurrency has the potential to serve as a viable alternative investment option for individuals. Cryptocurrencies show an annual increase in face value and are immune to inflationary pressures due to their limited supply. There are many types of cryptocurrencies in terms of market capitalization, such as Bitcoin, Ethereum (ETH), Dash, Monero (XMR), Ripple (XRP), and Litecoin (LTC), [3]. cryptocurrency is revolutionizing the financial industry by facilitating direct peer-to), Ripple (XRP), Litecoin (LTC), [3].

Throughout history, virtual currencies have gained popularity in modern societies, [4] and the global population of users exceeds 100 million individuals. This numerical value is anticipated to exhibit a sustained upward trend in the forthcoming years, [3]. The emergence of cryptocurrency in Indonesia has drawn attention as one of the countries accepting virtual currency. According to a

report by the Ministry of Trade of the Republic of Indonesia, the number of individuals utilizing cryptocurrencies in Indonesia peaked at 16.55 million users in 2022. Furthermore, statistics from the same year showed that the overall number of cryptocurrency investors in the country reached 6.27 million persons.

Investors use cryptocurrency because they see it as a potential investment that can provide high returns within a certain period. Transactions with cryptocurrency are faster and cheaper than those through banks. Cryptocurrency transactions can be conducted worldwide with low fees and without geographical limitations. All cryptocurrency transactions are recorded in a blockchain that is accessible publicly and open to everyone. Cryptocurrency also holds potential investment value, as the value of crypto assets can experience significant increases over time, offering opportunities for investors to profit.

However, cryptocurrency also presents several challenges, such as volatile fluctuations in cryptocurrency value over short periods. Digital cryptocurrency wallets can be targets for contamination or loss if not adequately secure. Some countries lack clear regulations regarding crypto, so the risk of legalization remains, making cryptocurrency prohibited for use as a legal payment

method, as in Indonesia, where cryptocurrency cannot be used as a valid payment tool. These phenomena lead this study to be more precise on the identification of the factors that drive to the adoption of cryptocurrencies in Indonesia.

2 Literature Review and Hypotheses Development

2.1 Cryptocurrency

Presently, the number of individuals utilizing cryptocurrencies has witnessed substantial growth, reaching levels comparable to the populations of certain small nations, [3]. Cryptocurrencies are digital representations of value that rely on cryptography for exchange. They utilize peer-to-peer technologies on networks composed of user computers. These emerging methods of exchange are expected to play a significant role in the future of electronic commerce, where financial transactions are conducted through electronic information exchanged over telecommunications lines, [5]. Data from Chainalysis shows a 65% increase in the amount of digital money sent to merchant service providers like BitPay between January and July 2019, [6]. Furthermore, the ongoing COVID-19 pandemic has further fueled this trend. [7], demonstrated that individuals heavily engaged in electronic commerce are increasingly turning to cryptocurrencies for their electronic transactions. Cryptocurrencies offer intrinsic features that help mitigate the uncertainties associated with the new realities brought about by the pandemic.

Cryptocurrency is a digital form of currency that uses encryption techniques to regulate the generation of units of currency and verify the transfer of funds, [8]. Cryptocurrencies may revolutionize digital trade markets by creating a free-flowing trading system without fees. Cryptocurrency returns are exposed to cryptocurrency network factors but not cryptocurrency production factors. There is a strong time-series momentum effect, and proxies for investor attention strongly forecast future cryptocurrency returns, [9]. Cryptocurrency is viewed as a speculative investment instead of a long-term investment, [10]. Cryptocurrency as a speculative investment activity is a natural response to an unbalanced interplay between high and low impulses, [11]. The findings of his study, which was conducted in South Korea, imply that Bitcoin speculation uses a decision-making process similar

to that used by other unplanned or risky IT behaviors.

Following, [12], who investigated factors influencing customers' behavior, a series of other variables that play a pivotal role in cryptocurrency, namely: financial literacy, and perceived risk. It emerged that herding behavior, perceived risk, perceived benefits, and financial literacy were other important variables to consider when assessing the intention to use cryptocurrencies for electronic commerce, [12]. Furthermore, referring to [13], financial behavior can also be influenced by trust. The perceived value that cryptocurrencies give in terms of comfort and usability can also have an impact on how widely they are adopted, [14].

2.2 Hypotheses Development

Financial literacy is becoming increasingly important in modern society, as everyone needs to make responsible decisions in their daily lives, [15]. Financial literacy is an important factor in cryptocurrency adoption, [16]. Financial literacy is also defined as individuals' or society's ability to comprehend and manage finances. It can also be regarded as the ability to effectively understand and manage financial matters, [15]. According to a study which utilizes data from the Japan 2019 Financial Literacy Survey to evaluate the demographic characteristics, financial behavior, and financial literacy of Japanese adopters of crypto assets, and financial literacy were factors that affect the cryptocurrency adoption, [17]. Meanwhile, in Africa, the different financial literacy levels are considered as a challenge to cryptocurrency adoption, particularly outside the cities, [18]. Additionally, the dynamic nature of the cryptocurrency world requires appropriate regulation to ensure trust and prevent companies from collapsing overnight. Overall, while financial literacy may play a role in cryptocurrency adoption, it is not the only factor and other variables such as investment experience may also be influential, [16].
H₁: Financial Literacy positively influences on Adoption of Cryptocurrency.

Trust is the positive expectation or belief that others will not act opportunistically through their words, actions, policies, and behavior. Public perceptions of trust and confidence in institutions significantly contribute to cryptocurrency adoption. Lower perceived trust in people and higher perceived confidence in civil service and international regulatory bodies increase cryptocurrency adoption, while perceived

confidence in political and financial institutions discourages cryptocurrency adoption, [19].

H₂: Trust positively influences on Adoption of Cryptocurrency.

Perceived risk strongly influences consumer decision-making, [20], [21]. Previous studies as [22], proposed that when the level of perceived risk is determined then it is easy to determine how customers behave in connection to that risk. Consumers may sometimes encounter high risk when purchasing an investment product as a financial value is frequently higher and there is no guarantee or options for returning the purchase. [23], have revealed in their paper that customers who perceived less risk are likely to have a more positive attitude towards the behavior. Perceived risk is a variable to understand customer's perception of risk when adopting cryptocurrency investment. So was suggested by [24], who stated that short and long horizons actually strengthen the relationship of perceived risk towards adoption.

H_{3a}: Perceived Risk negatively influences on Adoption of Cryptocurrency.

H_{3b}: Short/Long Horizon strengthens the influence of Perceived Risk on Adoption of Cryptocurrency.

Perceived value refers to the worth or value that a customer believes they receive from a product or service which made by the customer based on their individual needs, preferences, and experiences, [25], [26]. Perceived value is an important factor in the adoption of cryptocurrencies. Based on perceived value, there is a significant positive direct effect of financial perceived value on the intention to use cryptocurrencies, [27]. A value-based approach to understanding what drives people to use cryptocurrencies for value exchange has been studied, and it was found that perceived value is an important factor in adoption, [27]. According to [28], based on cryptocurrency users, it was found that they were motivated to adopt cryptocurrency due to their desire for privacy, control over their money, and their perception of the value of Bitcoin currency.

H₄: Perceived Value positively influences on Adoption of Cryptocurrency.

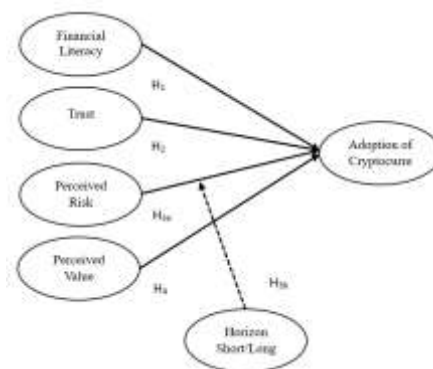


Fig. 1: Model of research

Figure 1 presents the proposed research model and delineates the variables under examination and their interrelations in addressing the research problem. This study will explore factors that influence cryptocurrency adoption by investors, including financial literacy, trust, perceived risk, and perceived value. Additionally, this study will discuss the influence of short/long horizons on the impact of perceived risk. Financial literacy and trust are considered crucial because they shape individuals in navigating the complexities of cryptocurrency. Perceived risk and perceived value also play an important role, where lower perceived risk tends to result in more positive attitudes. Additionally, a short/long horizon is proposed to strengthen the impact of perceived risk.

3 Methodology

3.1 Research Design

This research is a quantitative study, where quantitative research refers to research that involves processing numerical data. The data source for this study is primary data, which is obtained directly through a questionnaire assessed using a Likert scale. The Likert scale is a numbering system used to determine the extent to which statements are evaluated by respondents, where scores from 1 to 5 are assigned. The respondents of this study were selected through purposive sampling, with the following criteria: 1) owning cryptocurrency; 2) using cryptocurrency for investment or purchasing needs; 3) having a minimum of 3 years of investment experience. A minimum observation-to-variable ratio of 5:1 is suggested by the sample-to-variable ratio, while values of 15:1 or 20:1 are recommended, [29]. The minimum sample size for this research is 80 samples. However, in this study, a questionnaire was distributed to 121 valid respondents. The questionnaire was administered to

respondents through Google Forms. The collected data is then processed using SEM-PLS (Structural Equation Modeling-Partial Least Squares).

3.2 Measurement Item

The Questionnaire items used in this research were adopted from previous studies that examine the same variables and focus. This research consists of 6 variables, where the first variable is Financial Literacy (FL), [30], Trust, Perceived Risk [13] and Perceived Value [14], [31], Furthermore, long / short horizon as a moderating variable adopted from [13] and lastly Adoption of cryptocurrency [13].

4 Result and Discussion

4.1 Characteristics of Respondents

This research selected 121 respondents obtained from a Google Form, where the respondents met the following criteria: 1) owning cryptocurrency, 2) using cryptocurrency for investment or purchasing needs, and 3) having a minimum of 3 years of investment experience. The distribution of respondent characteristics can be found in Table 2.

Table 1. Characteristics of respondent

Respondent Characteristics		Frequency	Percentage
Gender	Female	50	41%
	Male	71	59%
Occupation	Business Owner	17	14%
	Student	8	7%
	Employee	71	59%
	Self-Employee	1	1%
	Private Civil Servant	5	4%
	Professional	14	12%
	Age	18 - 24	18
	25 - 30	45	37%
	41 - 45	15	12%
	31 - 35	20	17%
	35 - 40	12	10%
	51 - 55	5	4%
	46 - 50	5	4%
	> 55	1	1%
Education	Master's Degree	27	22%
	Bachelor's Degree	81	67%
	High School	9	7%
	Diploma	1	1%
	D-1	1	1%
	PhD	1	1%
	S3	1	1%
	Master's Degree	27	22%

Based on Table 1, it was found that there were 121 valid respondents consisting the majority of participants were male, accounting for 71 respondents (41%), while the female respondents were in the minority with 50 participants (59%). The respondent's occupations were primarily employees with 71 respondents (59%), followed by business owners with 17 respondents (14%). The research participants were divided into different age groups with a dominant age of 25 - 30 years with 45 respondents (37%). The education level consists of a bachelor's degree as the highest respondent with 81 participants (67%).

4.2 Confirmatory Factor Analysis

Table 2 shows the total measurement of all indicators to find the validity and reliability scores. The value of outer loading, average variance extracted (AVE), cronbach alpha dan composite reliability show 21 of 23 items fulfilled the validity and reliability requirements. As presented in Table 2, the remaining variables had outer loading and AVE more than 0.5 as the requirement of convergent validity, and Cronbach's alpha and composite reliability of greater than 0.7 as the requirement of construct reliability

Table 2. Measurement Model Test

Variabel	Item	OL	CA	CR	AVE
Ad	Ad1	0.879	0.909	0.936	0.785
	Ad2	0.881			
	Ad3	0.922			
	Ad4	0.860			
FL	FL1	0.858	0.852	0.908	0.766
	FL2	0.849			
	FL3	0.917			
Tr	Tr1	0.896	0.918	0.939	0.754
	Tr2	0.905			
	Tr3	0.864			
	Tr4	0.791			
	Tr5	0.881			
PR	PR1	0.746	0.838	0.878	0.646
	PR2	0.932			
	PR3	0.835			
	PR4	0.681			
PV	PV1	0.865	0.860	0.914	0.781
	PV2	0.866			
	PV3	0.919			
S/L H	SL1	0.855	0.837	0.914	0.841
	SL3	0.975			

Legend: Ad (Adoption); FL (Financial Literacy); PR (Perceived Risk); PV (Perceived Value); S/L H (Short/Long Horizon); Tr (Trust); OL (Outer Loading); AVE (Average variance extracted); (CA) cronbach alpha; CR (Composite reliability)

To test discriminant validity, the Fornell-Lacker Criterion can be used. According to Ghozali and Latan (2015), the Discriminant Validity method involves testing reflective indicators by examining the Cross Loading values for each variable, which should be > 0.70. The Fornell-Lacker Criterion is shown in Table 3. Thus, the requirement for Discriminant Validity through the Fornell-Lacker Criterion test has been met.

Table 3. Discriminant Validity Test

Variabel	Ad	FL	PR	PV	S/L H	Tr
Adoption	0.886					
Financial Literacy	0.184	0.875				
Perceived Risk	-0.148	0.094	0.804			
Perceived Value	0.762	0.303	-0.168	0.884		
Short/Long Horizon	0.177	-0.057	0.172	0.120	0.917	
Trust	0.713	0.215	-0.173	0.756	0.026	0.868

Legend: Ad (Adoption); FL (Financial Literacy); PR (Perceived Risk); PV (Perceived Value); S/L H (Short/Long Horizon); Tr (Trust)

4.3 Hypothesis Testing

Table 4 displays the result of the research hypothesis testing. Firstly, out of the five hypotheses, two hypotheses are below 0.05 which is considered as accepted and the other is above 0.05 (Rejected). The highest coefficient value is seen in the relationship between perceived risk and adoption at 50.7% followed by trust and adoption at 32.7%. While financial literacy and perceived risk are unable to influence the adoption of cryptocurrency. This suggests that this study supports H₂ and H₄ but rejects H₁ and H_{3a}. The moderation of the short/long horizon ($\beta=0.603$, $p=0.269$) doesn't enhance the impact of perceived risk on adoption, thus leading to the rejection of H_{3b}.

Table 4. Inner Model test

Hypothesis	β	t-Values	P Values	R ²	Desc
FL-> Ad	-0.025	0.391	0.696	0.643	Rejected
Tr-> Ad	0.327	3.492	0.000		Accepted
PR -> Ad	-0.008	0.096	0.923		Rejected
PV ->Ad	0.507	5.637	0.000		Accepted
S/LH x PR	0.603	1.105	0.269		Rejected

Note: FL (Financial Literacy), Ad (Adoption), Tr (Trust), PR (Perceived Risk), PV (Perceived Value), S (Short), LH (Long Horizon)

Financial literacy empowers individuals to develop effective financial management practices

such as budgeting, saving, and responsible investing. While some prior research has suggested that the level of financial literacy can influence individual financial behavior, its effect on cryptocurrency adoption requires further clarification. Analytical findings reveal that there is no significant relationship between the level of financial literacy and cryptocurrency adoption. Even though individuals with high financial literacy might possess a better understanding of the technical concepts of cryptocurrency, it doesn't appear to influence their decisions to adopt cryptocurrency. This study, [32], corroborated the notion that perceived risk diminishes individuals' capacity to adopt cryptocurrency technology.

It is critical to establish trust since it is closely associated with the credibility of platforms and services that offer cryptocurrency services. People tend to select reputable, transparent, and trustworthy platforms or services. If a high level of trust is fostered within these platforms or services, they will feel at ease engaging in transactions and interacting with cryptocurrencies. Our finding is in line with [33], who reported that trust promotes the capacity to adopt cryptocurrency technology.

Perceived risk is frequently considered in the adoption process. This factor refers to how individuals perceive cryptocurrency's potential losses or negative consequences. On the contrary, the present study highlights that perceived risk does not always play a critical role in deciding cryptocurrency adoption. Several investors have concerns about the security, potential fraud, or value volatility of cryptocurrencies. Thus, rather than solely addressing risk-related concerns, it may be more effective to emphasize the benefits and opportunities of cryptocurrencies.

The prices of cryptocurrencies are known to fluctuate significantly over short periods. This volatility can create uncertainty, which in turn, decreases the perceived value of cryptocurrencies as a stable store of value or exchange medium. The limited acceptance of cryptocurrencies as a payment method by businesses and merchants also contributes to the reduced perceived value of cryptocurrencies. If an individual thinks that cryptocurrencies have limited use in the real world or is unable to use them for their desired transactions, they will feel discouraged from adopting cryptocurrencies. Moreover, if an individual perceives that cryptocurrencies do not have clear and meaningful uses in daily life or business, this may negatively influence the adoption. Hence, it is crucial for the perceived

value of cryptocurrencies to be aligned with practical needs and benefits to encourage adoption.

5 Conclusion

Our study demonstrates that cryptocurrency adoption is influenced by trust and perceived value, where this factor can improve cryptocurrency adoption. On the other hand, financial literacy and perceived risk do not influence cryptocurrency adoption. The moderation of the short/long horizon variable is not able to the moderation strengthen the influence of perceived risk on adoption.

Although financial literacy was found not to be a factor that influences cryptocurrency adoption, efforts towards financial education remain important. Educational endeavors should be directed toward teaching individuals about investment portfolio diversification, the benefits of blockchain technology, and the potential value growth of cryptocurrencies. By building a better understanding, people may be more open to exploring and utilizing cryptocurrencies.

To promote cryptocurrency adoption, fostering trust among potential users is essential. This can be achieved by providing accurate and easily comprehensible information about the benefits and value of using cryptocurrencies. Promotional campaigns may concentrate on giving insights into how blockchain technology works, the benefits of fast and low-cost transactions, as well as the potential value growth of cryptocurrencies.

Despite having no significant influence on cryptocurrency adoption, perceived risk is still important to acknowledge that some individuals may have concerns regarding risks. As such, communication and education strategies should be done to address potential risks, such as secure storage, the use of reputable platforms, and other security practices.

In future research, other factors that may influence cryptocurrency adoption and the moderation mechanism involved should be further explored. By expanding the scope of research, a more comprehensive understanding of cryptocurrency adoption behavior can be obtained. Collaboration among academics, practitioners, and regulators is the key to strengthening the overall cryptocurrency ecosystem. Dialogue and information exchange between researchers and stakeholders should be established, which can contribute to policy and strategy development that supports sustainable growth and broader cryptocurrency adoption.

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- Eirene Jusi Umboh carried out the writing, original draft, reviewing, editing, statistic
- Dewi Tamara was responsible for the conceptualization and supervising the research process.

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