Cryptocurrency Adoption in Indonesia: Economic Drivers Behind Behavioral Intentions Using UTAUT/2

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Abstract:

The purpose of this study is to empirically examine the influence of constructs from the modified UTAUT/2 on behavioral intention to use cryptocurrency in Indonesia. The sampling technique employed non-probability sampling through an online questionnaire on a Likert scale of 1-6 and succeeded in getting 327 respondents. The research model with 12 hypotheses was tested using PLS-SEM (variance-based SEM). The results show that performance expectancy, effort expectancy, social influence and facilitating conditions have a positive effect on behavioral intention to use cryptocurrency. However, the influence of gender and age as moderating variables is not supported by existing data.

1. Introduction

Cryptocurrency initially emerged as a medium of exchange or payment through computer networks. Over time, its utility has expanded beyond transactions to include investment, speculation, and technological applications for transparency and security (Salamzadeh et al., 2021; Milutinović, 2018; Guo & Liang, 2016; Zhang & Wen, 2017; Dorri et al., 2017). The use of cryptocurrency is generally not illegal in most countries, although its status as a payment method varies. For example, the US Securities and Exchange Commission (SEC) allowed trading Bitcoin through exchange-traded funds (ETFs) in January 2024, gaining global attention (Schmitt, 2024).

Bitcoin, the first cryptocurrency, was introduced in 2008 by an entity named "Satoshi Nakamoto" (Berentsen & Schar, 2018) and launched in 2009 (Meera, 2018). It operates on a decentralized system recorded on a transparent blockchain, enabling secure, direct transfers without intermediaries (Nakamoto, 2008). Currently, there are over 8,800 types of cryptocurrencies, including Ethereum, BNB, Solana, and Dogecoin. Cryptocurrency has the potential to revolutionize the global economy by addressing issues in conventional payment systems like speed, security, and efficiency (CoinMarketCap, 2024).

In the past decade, the global cryptocurrency market capitalization has grown significantly, increasing over three hundredfold since 2014. As of February 2024, the

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total market capitalization is $1.893 trillion (CoinMarketCap, 2024). However, despite this growth and attention, research on cryptocurrency remains limited, particularly due to its relatively young age (Salamzadeh *et al*., 2021; Battour *et al*., 2020). Most existing literature focuses on developed countries (Roos, 2015; Ermakova *et al*., 2017; Walton & Johnston, 2018; Al-Amri *et al*., 2019), while studies in developing countries, such as Indonesia, are scarce (Yeong *et al*., 2019; Al-Amri *et al*., 2019; Salamzadeh *et al*., 2021).

The Unified Theory of Acceptance and Use of Technology (UTAUT) posits that user intention to adopt technology is influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions, moderated by gender, age, experience, and voluntariness of use (Venkatesh *et al*., 2003). UTAUT was later updated to UTAUT/2, adding hedonic motivation, price value, and habit as independent variables while removing the voluntariness of use moderation (Venkatesh *et al*., 2012).

Previous research using UTAUT to study financial technology adoption has shown inconsistent results across different contexts (Kishore & Sequeira, 2016; Farah *et al*., 2018; Arias-Oliva *et al*., 2019). For example, studies in Spain found significant influences of performance expectancy, effort expectancy, and facilitating conditions on behavioral intention, but not social influence (Arias-Oliva *et al*., 2019). In contrast, studies in India (Kishore & Sequeira, 2016) and Pakistan (Farah *et al*., 2018) found significant impacts of performance expectancy, effort expectancy, and social influence, but not facilitating conditions. Additionally, many studies do not fully utilize UTAUT by excluding moderating variables (Venkatesh *et al*., 2012).

Despite increasing cryptocurrency adoption by companies like Microsoft, Amazon, and Tesla (Beigel, 2020; Musk, 2021), its usage remains low in many developing countries, with small and medium enterprises in Malaysia avoiding it due to perceived complexity and risk (Shahzad *et al*., 2018). Perceived risk, defined as the potential for loss when using a technology (Chen *et al*., 2019), is a significant factor in individual consumer behavior (Zeisberger, 2022). However, previous studies indicate that perceived risk does not significantly impact behavioral intention in the context of cryptocurrency (Salamzadeh *et al*., 2021; Arias-Oliva *et al*., 2019; Mendoza-Tello *et al*., 2018; Walton & Johnston, 2018), possibly because users accept the inherent risks.

In Indonesia, cryptocurrency is not a legal payment instrument, according to Bank Indonesia (Bank Indonesia, 2014). However, the political climate may change this status, with notable support from influential political figures (CoinDesk, 2024).

Given the limited research on behavioral intention to use cryptocurrency in developing countries, this study aims to fill this gap by exploring the factors influencing the intention to use cryptocurrency in Indonesia using the UTAUT/2 model. This study also aims to determine the influence of UTAUT/2 independent variables on the behavioral intention to use cryptocurrency in Indonesia. Additionally, it seeks to examine the moderating effect of UTAUT/2 variables on the relationship between independent variables and the behavioral intention to use cryptocurrency in

Indonesia. The limitations of this research include its focus solely on the intention to use cryptocurrency in Indonesia, rather than examining the actual usage behavior. This study provides insights for exchange platforms, developers, academics, and policymakers on the factors influencing the intention to use cryptocurrency in Indonesia. It also contributes to the theoretical understanding of cryptocurrency adoption in developing countries, offering a foundation for future research.

2. Theoretical Background

Cryptocurrency is a digital asset with various types, but Bitcoin is recognized as the first cryptocurrency introduced in 2008 by an anonymous entity named "Satoshi Nakamoto" through a white paper (Berentsen & Schar, 2018). Bitcoin was launched in 2009 (Meera, 2018). The white paper states that Bitcoin is created in a blockchain network, where transaction rotations are recorded in a decentralized and transparent manner, allowing owners to transfer Bitcoin securely without intermediaries (Nakamoto, 2008). This feature is advantageous because every transaction is recorded on the blockchain and cannot be altered (Giudici & Hashish, 2019). Since Bitcoin, other cryptocurrencies have emerged with different features and innovations. As of the writing of this paper, there are over 8,000 types of cryptocurrencies (CoinMarketCap, 2023), including Ethereum, BNB, XRP, Dogecoin, and many more. Globally, since the emergence of Bitcoin and other cryptocurrencies, they have gained increasing attention from consumers, mass media, financial industries, and governments (Raymaekers, 2015). The technology of cryptocurrencies is generally considered a solution to various problems in conventional payment systems, such as speed, security, efficiency, and collaboration (Federal Reserve System, 2017; Deloitte, 2015). Additionally, cryptocurrencies are relatively easy to access from various parts of the world as long as there is internet access, without being heavily influenced by government regulations (Frankenfield, 2022). These advantages make cryptocurrencies useful not only as a transactional tool but also as an investment tool, speculation, technology utilization for transparency, security, and more (Guo & Liang, 2016; Zhang & Wen, 2017; Dorri et al., 2017), making them a force that can transform the global economic sector (Salamzadeh et al., 2021).

Extended Unified Theory of Acceptance and Use of Technology (UTAUT/2)
For decades, researchers have relied on various technology acceptance models to understand how people accept new technologies (Salamzadeh et al., 2021). These models include TRA (Theory of Reasoned Action) (Fishbein & Ajzen, 1975), TAM (Technology Acceptance Model) (Davis, 1989), motivational model (Davis et al., 1992), TPB (Theory of Planned Behavior) (Ajzen, 1991; Taylor & Todd, 1995), PC utilization model (Thompson et al., 1991), IDT (Innovation Diffusion Theory) (Moore & Benbasat, 1991), SCT (Social Cognitive Theory) (Compeau & Higgins, 1995), and finally UTAUT (Unified Theory of Acceptance and Use of Technology) (Venkatesh et al., 2003) along with its extension, UTAUT/2 (Venkatesh et al., 2012).

UTAUT was created to form a framework to test determinants of technology adoption intention. UTAUT integrates essential constructs from the eight mentioned theories and significant moderators.

The UTAUT model consists of performance expectancy, effort expectancy, social influence, and facilitating conditions affecting an individual's behavioral intention to use new technology. In 2012, UTAUT was extended to UTAUT/2, adding new constructs such as habit, hedonic motivation, and price value. UTAUT/2 outperforms the models of the eight aforementioned theories, which have varying explanatory power (17%-53%) for intention to use technology (Venkatesh *et al*., 2003), while UTAUT/2 has nearly 0% variance for the same context (Venkatesh *et al*., 2012). Given that this study examines behavioral intention (in the context of intention to use cryptocurrency as a new technology), UTAUT/2 is assumed to be the most appropriate framework.

Previous Research and Main Reference
Since Bitcoin was launched in 2009, research on cryptocurrencies in general only began to be published around 2011 (Baur *et al*., 2015). In the context of behavioral intention regarding cryptocurrencies, a total of 23 studies from the period 2015 to 2023 have been included in this literature review, which were collected through searches on academic research sites such as Emerald, Elsevier, and others via the intermediary of the Perpustakaan Universitas Indonesia website. Among the 23 studies, the research by Salamzadeh *et al*. (2021) titled 'Behavioral intention to use cryptocurrency in Malaysia: an empirical study' is used as the main reference. Salamzadeh *et al*. (2021) adapted the UTAUT/2 model, which was adjusted by using the variables of performance expectancy, effort expectancy, social influence, facilitating conditions, age, gender, and behavioral intention in their study. Additionally, Salamzadeh *et al*. (2021) included a new independent variable, perceived risk, which is considered a barrier that can negatively affect consumer adoption intentions (Salisbury *et al*., 2001) and due to inconsistencies from previous studies (Shin, 2009; Koenig-Lewis *et al*., 2015; Kishore & Sequeira, 2016; Faqih, 2016; Farah *et al*., 2018).
However, in the context of cryptocurrency, the negative influence of perceived risk on behavioral intention is not supported by existing data (Mendoza-Tello *et al*., 2018; Walton & Johnston, 2018; Arias-Olivia *et al*., 2019; Salamzadeh *et al*., 2021). The reason why the negative influence of perceived risk on behavioral intention in the context of cryptocurrency is not supported by existing data is suspected to be because users are already aware of the risks of cryptocurrency even before using it, and this does not deter them from obtaining the expected benefits from cryptocurrency (Salamzadeh *et al*., 2021). Therefore, the researcher uses the model by Salamzadeh *et al*. (2021) as the main reference but excludes the perceived risk variable. For clarification, Salamzadeh *et al*. (2021) adapted the UTAUT/2 model without including the constructs of habit, hedonic motivation, price value, experience, and use behavior for the following reasons.

Habit is defined as an individual's automatic behavior that occurs as a result of repeated practice (Limayem *et al*., 2007). Given that cryptocurrency is a new

technology, the majority of consumers are assumed not to have specific habits when intending to use cryptocurrency (Salamzadeh *et al*., 2021). Previous research shows that habit is not expected to play a significant role in determining behavioral intention in the context of financial technology (Koenig-Lewis *et al*., 2015; Alalwan *et al*., 2017). Therefore, habit is also not included in this study.

Hedonic motivation is the fun or pleasure derived from using technology and plays a vital role in influencing technology acceptance and use (Brown & Venkatesh, 2005). Given the consistently fluctuating price of cryptocurrency (Salamzadeh *et al*., 2021), which can potentially lead to significant losses and cannot consistently provide fun or pleasure. Furthermore, previous studies show that there is no correlation between hedonic motivation and behavioral intention in the context of adopting financial technology (Roos, 2015; Koenig-Lewis *et al*., 2015; Hussain *et al*., 2018). Therefore, hedonic motivation is also not included in this study.

Price value is perceived as positive when the benefits of using a particular technology exceed the costs incurred (Venkatesh *et al*., 2012). Cryptocurrency, being a digital currency, is prohibited from being used as a payment tool and is not recognized as such in Indonesia, the context of this study (Bank Indonesia, 2018). This raises questions about the credibility of cryptocurrency and increases the risk of its fluctuating value. Additionally, previous studies show that there is no correlation between price value. and behavioral intention in the context of financial technology (Koenig-Lewis *et al*., 2015; Hussain *et al*., 2018). Therefore, price value is also not included in this study.

Experience reflects the opportunity a person has to use a technology over time (Venkatesh *et al*., 2003; Kim & Malhotra, 2005). This study is categorized as a single cross-sectional design, where a sample of respondents is taken only once, so experience is not included in this study because it is deemed inappropriate to study experience growth over separate periods (Arenas-Gaitán *et al*., 2015).

Finally, use behavior (actual usage behavior) is not included because this study focuses on the intention to use cryptocurrency in Indonesia. This study does not cover the actual behavior of using cryptocurrency in Indonesia, so behavioral intention is considered sufficient to study the intention to use cryptocurrency. Therefore, use behavior is not included in this study.

Research Model and Hypotheses
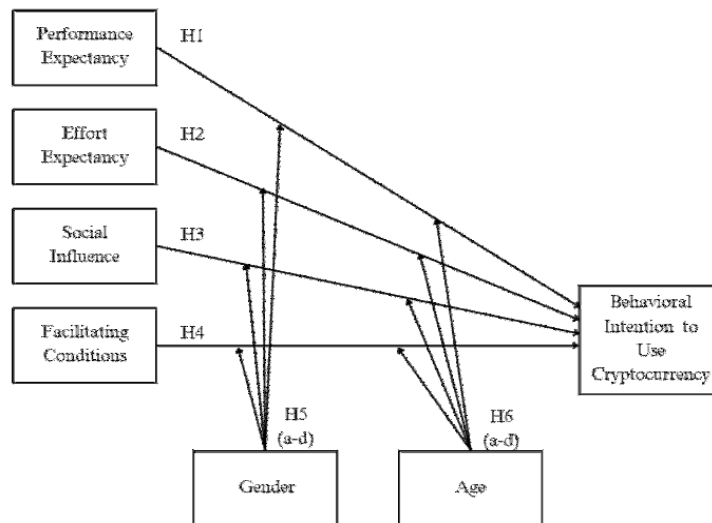
Figure 1. Research Model

There are six hypotheses in this study based on the interactions of the existing variables. Performance expectancy is the extent to which a user expects that using the system/mechanism will help them achieve the desired performance (Venkatesh *et al.*, 2003). When users feel that cryptocurrency can facilitate their goals, performance expectancy can increase consumers' intention to use cryptocurrency (Salamzadeh *et al.*, 2021). Previous research in both developed and developing countries shows that performance expectancy positively influences behavioral intention in the context of using technology-based financial services such as mobile banking (Kishore & Sequeira, 2016), online banking (Khan *et al.*, 2017), electronic banking (Sanchez-Torres *et al.*, 2017), and biometric authentication payment systems (Kim *et al.*, 2018). In the context of cryptocurrency, previous studies show that performance expectancy positively influences behavioral intention to accept or use cryptocurrency (Arias-Olivia *et al.*, 2019; Gunawan & Novendra, 2017; Salamzadeh *et al.*, 2021). The researcher wants to determine whether performance expectancy positively influences the behavioral intention to use cryptocurrency; thus, the hypothesis proposed is:
H1: Performance expectancy has a positive influence on behavioral intention to use cryptocurrency.

Effort expectancy relates to how easy it is to use a system (Venkatesh *et al.*, 2003) and represents the effort required to use a system based on its complexity level. In this study, effort expectancy can be described as consumers' perception/understanding of the ease of using cryptocurrency. One does not need to understand the general workings of cryptocurrency, but basic knowledge of the technology is necessary and can make it easier to use cryptocurrency (Salamzadeh *et al.*, 2021). Previous research in the context of developing countries shows that effort expectancy positively influences behavioral intention to accept technology-based financial services such as mobile banking (Kishore & Sequeira, 2016), electronic banking (Sanchez-Torres *et*

al., 2017), and biometric authentication payment systems (Kim *et al.*, 2018). In the context of cryptocurrency, previous studies show that effort expectancy positively influences behavioral intention to accept or use cryptocurrency (Shahzad *et al.*, 2018; Arias-Olivia *et al.*, 2019; Salamzadeh *et al.*, 2021). The researcher wants to determine whether effort expectancy positively influences the behavioral intention to use cryptocurrency; thus, the hypothesis proposed is:

H2: Effort expectancy has a positive influence on behavioral intention to use cryptocurrency.

Social influence can be defined as how much an individual perceives the importance of others' opinions in adopting a new system (Venkatesh *et al.*, 2003). This variable facilitates one's belief in using a new system (Salamzadeh *et al.*, 2021). In this study, social influence helps consumers use cryptocurrency if many others recommend it, especially family, friends, or media information. Previous research shows that social influence positively affects behavioral intention to use technology-based financial services such as mobile banking (Kishore & Sequeira, 2016), crowdfunding (Moon & Hwang, 2018), and biometric authentication payment systems (Kim *et al.*, 2018). However, previous research in the context of cryptocurrency shows different results. Social influence does not significantly affect behavioral intention in the context of cryptocurrency adoption (Arias-Olivia *et al.*, 2019) and cryptocurrency usage (Salamzadeh *et al.*, 2021). Thus, the researcher wants to determine whether social influence positively influences the behavioral intention to use cryptocurrency, and the hypothesis proposed is:

H3: Social influence has a positive influence on behavioral intention to use cryptocurrency.

Facilitating conditions represent the extent to which an individual believes that the existing technical and organizational infrastructure can support the use of a system (Venkatesh *et al.*, 2003). Facilitating conditions are essential in determining one's intention to use cryptocurrency in Spain (Arias-Oliva *et al.*, 2019). In this study, facilitating conditions are defined as the extent to which consumers believe that the existing technical and organizational infrastructure can support the use of cryptocurrency. Previous research examining the behavioral intention to adopt blockchain found that facilitating conditions do not significantly influence developing countries (India) but do significantly influence developed countries (the United States) (Queiroz & Wamba, 2019). This result is thought to occur because developing countries like India do not have sufficient facilities to support the emergence of new technologies such as blockchain, while facilities in the United States are adequate. However, there is a contradiction in other studies that reveal that facilitating conditions significantly influence the use of technology-based financial services in developing countries, such as mobile payments in Bangladesh (Hussain *et al.*, 2018) and online banking in Pakistan (Khan *et al.*, 2017). In the context of cryptocurrency, facilitating conditions significantly influence the acceptance of cryptocurrency in Spain (Arias-Oliva *et al.*, 2019) and the use of cryptocurrency in Malaysia. Based on the above description, the following hypothesis is proposed:

H4: Facilitating conditions have a positive influence on behavioral intention to use cryptocurrency.

Gender is one of the moderating variables in the UTAUT model retained in this study. This demographic factor, traditionally based on the majority of religion, culture, and health sciences worldwide, is divided into male and female (Rathus *et al*., 2010; Nadal, 2017; Sigelman & Rider, 2017; Maddux & Winstead, 2019). It has been stated to have a significant influence on the adoption of new technology in previous studies, such as purchase intention in online shopping (Faqih, 2016), internet banking (Yani-de-Soriano, 2012), and the adoption of 3D printing systems (Wang *et al*., 2016). However, there are also studies that use the UTAUT model but omit gender as a moderating variable, such as consumer behavioral intention towards Bitcoin (Shahzad *et al*., 2018), m-payment (Park *et al*., 2018), and mobile wallet (Shin, 2009). Venkatesh et al. (2003) argued that gender significantly moderates the relationship between performance expectancy, effort expectancy, and social influence on behavioral intention. Several previous studies support this view (Yani-de-Soriano, 2012; Khechine *et al*., 2014; Faqih, 2016). Gender is also added as a variable moderating the relationship between facilitating conditions and behavioral intention in the UTAUT/2 model (Venkatesh *et al*., 2012). The UTAUT/2 model explains that gender differences can affect the need for external support factors related to facilitating conditions. Several previous studies support this view (Dillon *et al*., 2014; Faqih, 2016). Based on this explanation, the following four hypotheses are proposed: *H5: Gender moderates the relationship between a) performance expectancy, b) effort expectancy, c) social influence, and d) facilitating conditions and behavioral intention to use cryptocurrency.*

Just like gender, age is also a moderator variable retained from the UTAUT model in this study. Previous research has proven that age significantly moderates factors related to technology-based financial services, such as internet banking (Yani-de-Soriano, 2012) and mobile banking adoption (Chawla & Joshi, 2018). However, there are other studies that show different results, such as in m-payment (Park et al., 2018) and crowdfunding acceptance (Moon & Hwang, 2018). In the UTAUT model, it is explained that age moderates the relationships between performance expectancy, effort expectancy, social influence, and facilitating conditions with behavioral intention (Venkatesh et al., 2003). It is further explained that performance expectancy affects behavioral intention more strongly in certain age groups compared to others. The same applies to effort expectancy, social influence, and facilitating conditions. Previous research has noted that the relationship between performance expectancy and intention to use webinars is influenced by age moderation (Khechine et al., 2014). Meanwhile, the relationship between effort expectancy and behavioral intention in the context of internet banking adoption is influenced by age (Yani-de-Soriano, 2012), but age moderation is not significant in the intention to use webinars (Khechine et al., 2014). Furthermore, the relationship between social influence and behavioral intention in the context of mobile wallet acceptance is influenced by the respondent's age (Shin, 2009). For facilitating conditions, Khechine et al. (2014) support the UTAUT model that age moderates the relationship between facilitating conditions and behavioral intention. In the context of cryptocurrency, previous research shows that the relationship between social influence and behavioral intention to use is influenced by age. However, age does not significantly moderate the relationships between performance expectancy, effort expectancy, and facilitating conditions with the

intention to use cryptocurrency (Salamzadeh et al., 2021). Based on the above explanation, the following hypotheses are proposed:

H6: Age moderates the relationships between a) performance expectancy, b) effort expectancy, c) social influence, and d) facilitating conditions with behavioral intention to use cryptocurrency.

3. Methodology

The research design is conclusive, descriptive, and employs a single cross-sectional design. The process of developing the measurements was carried out by following steps starting from defining each construct, creating operational definitions for the variables (including translating from English into Bahasa Indonesia), conducting wording tests, and pretests before finally collecting the main data (Shaughnessy *et al*., 2011). The measurement of each construct was adapted from Venkatesh *et al*. (2012). There are 17 (seventeen) questions measured using a 1-6 Likert scale questionnaire, where 1 (one) indicates 'strongly disagree' and 6 (six) indicates 'strongly agree.' The use of an even Likert scale (1-6) is a forced choice method that eliminates the neutral option because the neutral option is considered an easy choice when respondents are unsure about their answers (Allen & Seaman, 2007). Previous literature explains that there is no significant difference when using the middle option present in odd Likert scales (1-5 or 1-7) (Armstrong, 1987). The gender variable is measured with a dichotomous question 'male' and 'female,' which will be coded as 0 for 'female' and 1 for 'male' during data processing. Finally, the age variable is measured with an open-ended question in years. question in years.

Sampling

The unit of analysis in this study is individual consumers from across Indonesia who are familiar with but have never used cryptocurrency and are at least 21 years old. The population of this study is Indonesian residents who are familiar with but have never used cryptocurrency and are at least 21 years old. The estimated number of the population can be approximated by calculating the number of residents aged 21 and over as well as the level of digital literacy since the number of those who are familiar with but have never used cryptocurrency is unknown. Digital literacy is related to the ability to learn, think critically, creatively, and innovatively for digital competence (UNESCO, 2022). According to LiterasiDigital.id (2022), Indonesia's digital literacy index is 3.54 on a scale of 1-5. When converted to a percentage, Indonesia's digital literacy rate is 70.8%. Meanwhile, the number of Indonesians aged over 21 years is 187.15 million people (Indonesia Statistic Centre, 2022). Based on this data, it can be estimated that the number of people aged 21 years and possessing digital literacy is 132.63 million people.

Screening questions were used to obtain respondents who meet the criteria to be included in data processing. Various methods can be used to determine the sample to be taken, as referenced in previous studies. There is the 10 times rule of thumb, which states that the sample size should be ten times the number of independent variables (Barclay *et al*., 1995), which, if applied to this study, would be 4 x 10 = 40.

Additionally, there is the method of multiplying the number of indicator questions by five (Malhotra, 2007), which, if applied to this study, would be 17 x 5 = 85. Recently, the inverse square root method recommended by Kock & Hadaya (2018) with assumptions from Hair *et al*. (2022) suggests a minimum sample size of 155. However, the larger the sample size, the better the data processing results (Malhotra, 2007).

Data Collection & Analysis

Primary data was obtained using a questionnaire in Google Forms, which was distributed online through various social media platforms owned by the researcher. These social media platforms included Instagram, WhatsApp, Telegram, and Discord, during the period of April – May 2024. During the main data collection, the researcher successfully gathered 327 respondents; however, 27 of the 327 respondents did not meet the criteria due to failing the screening questions provided, resulting in 300 respondents being used for the main test.

Table 1. Sample Demographic

	Total	Percentage
Gender	300	100%
Male	153	51%
Female	147	49%
Age (Years Old)	300	100%
26	5	1,7%
27	44	14,7%
28	50	16,7%
29	66	22%
30	49	16,3%
31	46	15,3%
32	37	12,3%
33	3	1%
Education Level	300	100%
High School / Vocational / Equivalent	99	33%
Associate	39	13%
Bachelor	144	48%
Master	15	5%
Doctoral	3	1%
Others	0	0%
Job	300	100%
Student	81	27%
Private / State-Owned Enterprise Employee	138	46%
Civil Servant	24	8%
Enterpreuner	51	17%
Others	6	2%
Residence	300	100%
Jabodetabek	138	46%
Banten	24	8%
West Java (outside Jabodetabek)	30	10%
Central Java	24	8%
East Java	30	10%

Yogyakarta	24	8%
Bali and Nusa Tenggara	12	4%
Sumatra	9	3%
Kalimantan	6	2%
Sulawesi	3	1%
Maluku and Papua	0	0%
Others	0	0%

Data analysis was divided into wording test, pretest, and data analysis. In conducting data analysis, this study will use structural equation modeling (SEM). SEM allows researchers to create models and assess complex relationships among several independent and dependent variables (Hair *et al*., 2022). More specifically, this study uses partial least squares structural equation modeling (PLS-SEM, also known as PLS path modeling and variance-based SEM). This study employs PLS-SEM because of its ability to estimate coefficients with the aim of maximizing the R^2 value of the dependent variables (Hair *et al*., 2022). This aligns with the research objectives and tests hypotheses related to the dependent variable of this study (behavioral intention to use cryptocurrency). There are two main stages in conducting PLS-SEM analysis: measurement model analysis (referred to as the outer model in PLS-SEM) and structural model analysis (referred to as the inner model in PLS-SEM.

4. Empirical Findings/Result

The first analysis in this study is the wording test, which was conducted by sending a questionnaire link via WhatsApp to 10 respondents who are members of the academic community. These 10 respondents were asked to read the questions in detail, answer them, and indicate whether the words or sentences in the questionnaire were easy to understand or not. In general, the respondents could understand all the questionnaire items, so there were no significant changes made to the questions.

The next analysis is the pretest, conducted by distributing the questionnaire link through various social media platforms owned by the researcher (Instagram, WhatsApp, Telegram, and Discord) to 50 respondents to understand their comprehension of the questionnaire questions by performing reliability and validity tests on each question item. All 50 respondents met the criteria to participate in the pretest, namely being at least 21 years old, familiar with cryptocurrency, having never used cryptocurrency, and residing in Indonesia. To test convergent validity, the loading factor values for all research variable indicators were examined first. For subsequent validity and reliability tests, the values of average variance extracted (AVE), Cronbach's Alpha, and composite reliability (CR) were measured to ensure validity and reliability. The results of the reliability and validity tests on the data obtained from the 50 respondents showed that the questionnaire had sufficient validity and reliability. As an additional note, the gender and age variables were not included in the validity and reliability tests.

The data collection for the main test was carried out in the same way as the pretest, but starting from scratch without including the pretest data. In the main data collection, the researcher successfully gathered 327 respondents. However, 27 of the

327 respondents did not meet the criteria because they failed the screening questions provided. Consequently, the data used for the main test came from 300 respondents.

The main test analysis was conducted by testing the validity and reliability of the measurement model in the same way as the validity and reliability tests on the pretest data. However, it also included a discriminant validity test by examining the Heterotrait-Monotrait ratio (HTMT) and the Fornell-Larcker criterion. Unlike the pretest, when performing the discriminant validity test using the HTMT values, the moderation variables of gender and age will be included as referenced by Salamzadeh et al. (2021).

Table 2. Discriminant Validity using HTMT Ratio

	1	2	3	4	5	6	7
1. Age							
2. BI to use cryptocurrency	0,026						
3. Effort Expectancy	0,040	0,775					
4. Facilitating Condition	0,020	0,814	0,449				
5. Gender	0,670	0,007	0,003	0,004			
6. Performance Expectancy	0,021	0,733	0,480	0,472	0,010		
7. Social Influence	0,015	0,764	0,418	0,508	0,002	0,543	

As shown in the Table 2, it can be seen that all HTMT values between variables are below the maximum threshold of 0.85, as referenced by Henseler et al. (2004). For further discriminant validity testing, the Fornell-Larcker method will be used, as can be seen in the following table.

Table 3. Discriminant Validity using Fornell-Larcker Method

	1	2	3	4	5
1. BI to use cryptocurrency	0,912				
2. Effort Expectancy	0,709	0,904			
3. Facilitating Condition	0,744	0,424	0,891		
4. Performance Expectancy	0,671	0,455	0,433	0,910	
5. Social Influence	0,700	0,391	0,462	0,500	0,922

As shown in the Table 3, the discriminant validity of this model is met because the cross-loading values for the same variable are greater than for different variables (Fornell & Larcker, 1981). This result indicates that the existing model does not have discriminant issues. Next, convergent validity will be tested by examining the loading factor values for all research variable indicators. Further validity and reliability tests will also be conducted by examining the values of average variance extracted (AVE), Cronbach's Alpha, and composite reliability (CR).

As shown in the Table 4, all question items can be considered valid because they have loading factor values greater than 0.7, according to Hair et al. (2022). Furthermore, the AVE values for all variables are greater than 0.5, in line with the validity reference by Hair et al. (2022). Each research question item is also considered reliable if the Cronbach's alpha and composite reliability values are greater than 0.7 (Malhotra & Birks, 2007). With this explanation, it can be concluded that the measurement model in this study meets the requirements for discriminant validity, convergent validity, and reliability tests.

Table 4. Validity and Reliability

Construcs	Indicators	Loadings	AVE	Composite Reliability (CR)	Cronbach's Alpha
Performance Expectancy	PE1	0,909	0,828	0,935	0,897
	PE2	0,931			
	PE3	0,888			
Effort Expectancy	EE1	0,913	0,817	0,947	0,925
	EE2	0,878			
	EE3	0,902			
	EE4	0,921			
Social Influence	SI1	0,925	0,850	0,945	0,913
	SI2	0,920			
	SI3	0,922			
Facilitating Condition	FC1	0,898	0,793	0,939	0,914
	FC2	0,874			
	FC3	0,897			
	FC4	0,893			
BI to use Cryptocurrency	IN1	0,915	0,832	0,937	0,899
	IN2	0,913			
	IN3	0,909			

5. Discussion

From the hypotheses proposed earlier (as shown in Figure 1), the data analysis results found that 4 hypotheses were supported (H1, H2, H3, and H4) and 8 hypotheses were not supported (H5a, H5b, H5c, H5d, H6a, H6b, H6c, and H6d). A hypothesis is considered significant and acceptable if the T-Value is above 1.65 or the P-Value is less than 0.05 (Hair et al., 2022).

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Table 5. Final Results

Hypothesis	Path Coefficient	T-Values	P-Values	Result
H1	0,206	5,793	0,000	Supported
H2	0,349	10,349	0,000	Supported
H3	0,288	9,163	0,000	Supported
H4	0,373	10,583	0,000	Supported
H5a	-0,006	0,111	0,456	Not supported
H5b	0,027	0,618	0,268	Not supported
H5c	-0,040	0,896	0,185	Not supported
H5d	-0,036	0,814	0,208	Not supported
H6a	0,003	0,054	0,478	Not supported
H6b	-0,040	0,854	0,197	Not supported
H6c	0,064	1,499	0,067	Not supported
H6d	0,056	1,245	0,107	Not supported

Based on the hypothesis testing results as shown in Table 5, the researcher will discuss each hypothesis one by one

H1: Performance expectancy has a positive effect on the behavioral intention to use cryptocurrency.

H1 is accepted and supported by the existing data, and this result aligns with similar previous studies in the context of cryptocurrency, such as in Malaysia (Salamzadeh et al., 2021) or Spain (Arias-Oliva et al., 2019). This result is also consistent with earlier research in the context of financial technology, such as mobile banking adoption in Jordan (Alalwan et al., 2017) and Pakistan (Farah et al., 2018). The use of cryptocurrency offers several benefits and advantages, such as financial gains from investment or trading and the utilization of features like security (Guo & Liang, 2016; Dorri et al., 2017; Zhang & Wen, 2017). This indicates that consumers in Indonesia consider the performance they can gain from using cryptocurrency.

H2: Effort expectancy has a positive effect on the behavioral intention to use cryptocurrency.

H2 is accepted and supported by the existing data, and this aligns with previous research that states effort expectancy is positively and significantly related to behavioral intention in the context of adopting and using cryptocurrency (Shahzad et al., 2018; Arias-Olivia et al., 2019; Salamzadeh et al., 2021). Several previous studies also show the same results, such as in the context of e-banking in Colombia (Sanchez-Torres et al., 2017) and mobile banking in Pakistan (Farah et al., 2018). Using cryptocurrency, which can be considered a new technology, requires sufficient knowledge and skills (Salamzadeh et al., 2021). This indicates that consumers in Indonesia consider the perceived ease of use and complexity of cryptocurrency before intending to use it. This result also provides insight that consumers in Indonesia might perceive cryptocurrency as easy to learn.

H3: Social influence has a positive effect on the behavioral intention to use cryptocurrency.

H3 is accepted and supported by the existing data, and this research finding differs from previous studies in the context of cryptocurrency. Salamzadeh et al. (2021) and

Arias-Oliva et al. (2019) explained that social influence does not significantly affect behavioral intention. However, this research aligns with previous studies in other contexts within financial technology, such as mobile banking (Farah et al., 2018) and mobile payment (Koenig-Lewis et al., 2015), which state that social influence has a positive and significant effect on behavioral intention. This indicates that consumers in Indonesia consider the opinions of important others and cultural group references in certain social situations before intending to use cryptocurrency. This finding is also supported by the phenomenon known as fear of missing out (FOMO). Fear of missing out is the feeling of worry about not keeping up with information and making decisions that are perceived to be life-changing (Przybylski et al., 2013). FOMO has become a significant part of cryptocurrency (Cecilia, 2021). The majority of cryptocurrency users worldwide (including in Indonesia) may experience FOMO to gain substantial profits quickly due to the influence of people around them (Cecilia, 2021).

H4: Facilitating conditions have a positive effect on the behavioral intention to use cryptocurrency.

H4 is accepted and supported by the existing data, and this result aligns with similar previous studies in the context of cryptocurrency, such as in Malaysia (Salamzadeh et al., 2021) or Spain (Arias-Oliva et al., 2019), which state that facilitating conditions have a positive effect on behavioral intention. This result is also consistent with previous research in the context of financial technology, such as the adoption of mobile banking (Hussain et al., 2018) and mobile payment (Nisha, 2016) in Bangladesh. These findings suggest that consumers in Indonesia consider the facilities and infrastructure relevant to cryptocurrency use before intending to use cryptocurrency. This finding also provides insight that consumers in Indonesia may view the existing facilities and infrastructure as sufficient to help them engage in activities related to cryptocurrency use. Facilities and infrastructure here include, but are not limited to, internet networks, computers or laptops, access to markets or exchanges that enable cryptocurrency use, human resource assistance, and government regulations.

H5a: Gender moderates the relationship between performance expectancy and behavioral intention to use cryptocurrency.

H5a is not supported by the existing data, and this research finding is contradictory to previous studies in the context of cryptocurrency, which state that gender moderates the relationship between performance expectancy and behavioral intention (Salamzadeh et al., 2021). However, there are previous studies related to behavioral intention in the context of mobile technology adoption that also explain that gender does not significantly moderate the relationship between performance expectancy and behavioral intention (Jambulingam, 2013). Financial gains from investment or trading and the utilization of features such as security are some of the benefits of using cryptocurrency (Guo & Liang, 2016; Dorri et al., 2017; Zhang & Wen, 2017). These findings provide insight that specific gender groups do not have significant differences in what they expect from using cryptocurrency.

H5b: Gender moderates the relationship between effort expectancy and behavioral intention to use cryptocurrency.

H5b is not supported by the existing data, and this research finding is contradictory to previous studies in the context of cryptocurrency, which state that gender moderates the relationship between effort expectancy and behavioral intention (Salamzadeh et al., 2021). However, there are previous studies related to behavioral intention in the context of mobile technology adoption that also explain that gender does not significantly moderate the relationship between effort expectancy and behavioral intention (Jambulingam, 2013). Using cryptocurrency, which can be considered a new technology, requires sufficient knowledge and skills (Salamzadeh et al., 2021). The hypothesis test results suggest that individual consumers in Indonesia have the same expectations regarding the difficulty of the effort and endeavor required to use cryptocurrency, regardless of gender. This is quite surprising, as certain genders are typically more concerned with the level of difficulty before using new technology (Venkatesh et al., 2012). However, because cryptocurrency is a new technology (Salamzadeh et al., 2021), these findings may provide insight that individual consumers in Indonesia start from the same baseline before intending to use cryptocurrency, without being influenced by gender. Consequently, their perceptions of the difficulty and effort level to use cryptocurrency are almost the same.

H5c: Gender moderates the relationship between social influence and behavioral intention to use cryptocurrency.

H5c is not supported by the existing data, and this research finding is contradictory to previous studies in the context of internet shopping technology (Faqih, 2016) and internet banking (Abu Shanab & Pearson, 2007) in Jordan, which state that gender moderates the relationship between social influence and behavioral intention. However, this research aligns with previous literature in the context of cryptocurrency in Malaysia (Salamzadeh et al., 2021). This result indicates that individual consumers in Indonesia are influenced by social factors from individuals in their surroundings, both directly and indirectly, without significant differences due to gender. This finding is also supported by the phenomenon known as fear of missing out (FOMO). Fear of missing out is the feeling of worry about not keeping up with information and making decisions that are perceived to be life-changing (Przybylski et al., 2013). FOMO has become an important part of cryptocurrency (Cecilia, 2021). The majority of cryptocurrency users worldwide (including in Indonesia) may experience FOMO to gain substantial profits quickly due to the influence of people around them (Cecilia, 2021). This finding provides insight that individual consumers in Indonesia may be influenced by FOMO in the context of cryptocurrency regardless of gender. This insight is supported by previous research in psychology, which explains that FOMO is not influenced by gender (Rozgonjuk et al., 2021).

H5d: Gender moderates the relationship between facilitating conditions and behavioral intention to use cryptocurrency.

H5d is not supported by the existing data, and this finding is quite surprising because it differs from the statement by Venkatesh et al. (2012) that gender differences lead individuals to pay more attention to available resources and facilities, including support systems that can help them before using new technology. However, this result

aligns with previous research in the context of cryptocurrency in Malaysia (Salamzadeh et al., 2021). Additionally, previous studies in the context of mobile technology adoption also explain that gender does not significantly moderate the relationship between facilitating conditions and behavioral intention (Jambulingam, 2013). Facilitating conditions can be interpreted as factors in the environment where observers agree that these factors are easy to use (Thompson et al., 1991). Facilitating conditions can also be defined as the extent to which a person believes that the existing technical and organizational infrastructure supports the use of the system (Venkatesh et al., 2003). This finding provides insight that gender differences among individual consumers in Indonesia statistically do not have a significant difference in perceiving the available facilities that can be used for cryptocurrency use.

H6a: Age moderates the relationship between performance expectancy and behavioral intention to use cryptocurrency.

H6a is not supported by the existing data, and this finding contradicts previous research stating that the relationship between performance expectancy and behavioral intention is moderated by age (Khechine et al., 2014; Yousafzai & Yani-de-Soriano, 2012). However, this research finding aligns with previous studies in the context of cryptocurrency in Malaysia (Salamzadeh et al., 2021). Previous research related to behavioral intention in the context of mobile technology adoption also explains that age does not significantly moderate the relationship between performance expectancy and behavioral intention (Jambulingam, 2013). The hypothesis test results indicate that age differences among individual consumers in Indonesia do not lead them to expect different things; thus, individual consumers in Indonesia expect the same financial benefits or utilization of existing features (Guo & Liang, 2016; Dorri et al., 2017; Zhang & Wen, 2017) from using cryptocurrency without significant differences.

H6b: Age moderates the relationship between effort expectancy and behavioral intention to use cryptocurrency.

H6b is not supported by the existing data, and this finding is quite surprising because it indicates that regardless of age differences, individual consumers in Indonesia have similar expectations regarding the effort and level of difficulty they will experience when using cryptocurrency. This finding may be due to the relatively narrow age range of respondents obtained in this study, which spans only seven years. However, several previous studies support this finding, especially in the context of cryptocurrency in Malaysia, which also states that age does not significantly moderate the relationship between effort expectancy and behavioral intention (Salamzadeh et al., 2021). Additionally, similar results are found in studies on the adoption of 3D printers in India (Chawla & Joshi, 2018). This finding also provides insight that age may not be relevant to someone's knowledge of cryptocurrency because the age of cryptocurrency is relatively young (Salamzadeh et al., 2021; Battour et al., 2020), so many consumers in Indonesia, regardless of their age, start from the same baseline.

H6c: Age moderates the relationship between social influence and behavioral intention to use cryptocurrency.

H6c is not supported by the existing data, and this finding is consistent with previous research in the context of webinar usage, which states that age does not significantly

moderate the relationship between social influence and behavioral intention (Khechine et al., 2014). Similarly, previous research in the context of internet banking in Jordan also found the same result (Abu Shanab & Pearson, 2007). Based on the results of this hypothesis test, it can be assumed that individual consumers in Indonesia, regardless of age differences, are influenced by people around them when it comes to using cryptocurrency (such as being influenced by fear of missing out or FOMO) without significant differences. However, statistically, it is interesting to note that the T-Value and P-Value of the H6c test results are not significantly different from the reference limits provided by Hair et al. (2022). If the number of respondents is increased, the data may yield different results for H6c. This could be due to previous research indicating that age can influence FOMO (Rozgonjuk et al., 2021).

H6d: Age moderates the relationship between facilitating conditions and behavioral intention to use cryptocurrency.
H6d is not supported by the existing data, and this result aligns with similar research in the context of cryptocurrency in Malaysia (Salamzadeh et al., 2021). Previous research on behavioral intention in the context of mobile technology adoption also found that age does not significantly moderate the relationship between facilitating conditions and behavioral intention (Jambulingam, 2013). This indicates that individual consumers in Indonesia, regardless of age differences, share a similar perception and assessment that they consider the available facilities adequate for using cryptocurrency. However, statistically, it is interesting to note that the T-Value and P-Value of the H6d test results are not significantly different from the reference limits provided by Hair et al. (2022). If the number of respondents is increased, the data may yield different results for H6d. This could be due to findings from previous research indicating that age differences may lead individuals to pay more attention to the facilities and resources available before intending to use specific technologies (Venkatesh et al., 2012; Khechine et al., 2014).

6. Conclusions

This study aims to examine how the independent variables in the adapted UTAUT/2 model (performance expectancy, effort expectancy, social influence, and facilitating conditions) influence the behavioral intention to use cryptocurrency among consumers in Indonesia. The research also aims to investigate the moderating effects of gender and age on the relationships between the aforementioned independent variables and the behavioral intention to use cryptocurrency among individual consumers in Indonesia.

Theoritical Contributions
This study contributes to the academic world regarding the partial use of the UTAUT/2 model in the context of cryptocurrency in developing countries. It enriches the general understanding of the partial constructs of UTAUT/2 (performance expectancy, effort expectancy, social influence, and facilitating conditions) on behavioral intention to use technology in the context of cryptocurrency. The research also incorporates moderating variables that have often been overlooked in previous

studies (Venkatesh et al., 2012) and provides findings that are less commonly encountered in prior research, namely that the moderating effects of gender and age are not supported by the data available.

Specifically for Indonesia, which is part of the developing countries, this study also contributes to the limited literature on cryptocurrency in developing countries that addresses behavioral intention to use (Salamzadeh et al., 2021). With the findings of this research, it is hoped that it can fill the existing research gaps, especially concerning behavioral intention in the context of cryptocurrency.

Practical Contributions
This study is expected to provide practical contributions to relevant stakeholders in the cryptocurrency sector, particularly (but not limited to) exchanges, developers, academics, and government officials. The research findings can bridge the knowledge gap in the field of cryptocurrency, especially in understanding consumers' intentions to use cryptocurrency. Here are examples of recommendations for relevant stakeholders in the cryptocurrency field:

Exchanges can launch marketing campaigns emphasizing the ease of use of their platforms without regard to gender and age. For instance, they could create simple and easy-to-follow video tutorials and provide responsive customer support services to assist new users. This is expected to increase new users, transaction volumes, and profits for exchanges.

Developers can gain a competitive advantage by developing intuitive and user-friendly cryptocurrency applications, thereby reducing barriers for new users. These applications could also include features that support safe and efficient usage.

Academics can contribute to the general public by conducting further research on the social influences affecting cryptocurrency adoption and disseminating findings in more accessible formats such as infographics, articles, reels, short videos, etc.

Government can develop policies that support infrastructure and facilities facilitating cryptocurrency usage. This may include clear and supportive regulations and public education programs about cryptocurrency. This approach can stimulate the growth of the fintech sector and blockchain-based startups, potentially creating new job opportunities, attracting foreign investments, and enhancing economic competitiveness.

This study focuses on the intention to use cryptocurrency in Indonesia. It does not cover actual cryptocurrency usage behavior in Indonesia. Additionally, the study's unit of analysis includes individuals aged at least 21 years old with no upper age limit. However, the oldest respondent in this study was 33 years old. The limitations of this research also include data collection conducted between March and May 2024, during a period when cryptocurrency prices and market volumes were generally experiencing an increase (CoinMarketCap, 2024). The study does not account for the euphoria and positive sentiment prevailing during this period, which could have influenced

respondents. Lastly, this study does not resolve the issue of inconsistent findings from previous research. It attempts to address this inconsistency by incorporating moderation variables often omitted in previous similar studies. However, inconsistencies remain as this study differs from previous similar research that also used moderation (the influence of social influence on behavioral intention to use cryptocurrency was not supported by the data in Salamzadeh et al. (2021) in Malaysia).

For future research improvements and scientific advancement, it is recommended to use the complete UTAUT/2 model including hedonic motivation, price value, habit, and experience. It is hypothesized that habit and experience constructs will become more relevant in the future as cryptocurrency adoption increases, making habits and experiences more established compared to when this study was conducted. Additionally, consideration should be given to adding other variables to enrich insights and address inconsistencies in existing research findings. Subsequent studies could encompass full behavioral usage patterns of cryptocurrency. Gathering samples using non-probability sampling techniques other than convenience sampling, such as snowball sampling or purposeful sampling, could capture respondents across a broader age range.

References:

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management, 37*(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002

Al-Amri, R., Zakaria, N. H., Habbal, A., & Hassan, S. (2019). Cryptocurrency adoption: Current stage, opportunities, and open challenges. *International Journal of Advanced Computer Research, 9*(44). https://doi.org/10.19101/ijacr.pid43

Allen, I. E., & Seaman, C. A. (2007). Likert scales and data analyses. *Quality Progress, 40*, 64–65.

Arenas-Gaitan, J., Peral-Peral, B., & Ramon-Jeronimo, M. (2015). Elderly and internet banking: An application of UTAUT2. *Journal of Internet Banking and Commerce, 20*(1).

Arias-Oliva, M., Pelegrín-Borondo, J., & Matías-Clavero, G. (2019). Variables influencing cryptocurrency use: A technology acceptance model in Spain. *Frontiers in Psychology, 10*, 1–13. https://doi.org/10.3389/fpsyg.2019.00475

Armstrong, R. (1987). The midpoint on a five-point Likert-type scale. *Perceptual and Motor Skills, 64*(2), 359–362. https://doi.org/10.2466/pms.1987.64.2.359

Badan Pusat Statistik Indonesia. (2022). The number of citizen based on age group. Retrieved February 2024, from https://sensus.bps.go.id/topik/tabular/sp2022/188/1/0

Bank Indonesia. (2014). *Pernyataan Bank Indonesia terkait Bitcoin dan virtual currency lainnya*. Retrieved February 2024,

from https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_160614.aspx

Barclay, D., Thompson, R., & Higgins, C. (1995). The partial least squares (PLS) approach to causal modeling: Personal computer use as an illustration. *Technology Studies, 2*.

Baur, A. W., Bühler, J., Bick, M., & Bonorden, C. S. (2015). Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of Bitcoin and Co. *Open and Big Data Management and Innovation, 9373*, 63–80. https://doi.org/10.1007/978-3-319-25013-7

Beigel, O. (2020). Who accepts Bitcoin as payment? *99Bitcoins*. Retrieved February 2024, from https://99bitcoins.com/bitcoin/who-accepts/

Berentsen, A., & Schär, F. (2018). A short introduction to the world of cryptocurrencies. *Federal Reserve Bank of St. Louis Review, 100*(1), 1–16. https://doi.org/10.20955/r.2018.1-16

Brown, S. A., & Venkatesh, V. (2005). Model of adoption of technology in the household: A baseline model test and extension incorporating household life cycle. *MIS Quarterly, 29*, 399–426. https://doi.org/10.2307/25148690

Chawla, D., & Joshi, H. (2018). The moderating effect of demographic variables on mobile banking adoption: An empirical investigation. *Global Business Review, 19*(3_suppl), S90–S113. https://doi.org/10.1177/0972150918757883

Chen, C. Y. H., & Hafner, C. M. (2019). Sentiment-induced bubbles in the cryptocurrency market. *Journal of Risk and Financial Management, 12*(2), 53. https://doi.org/10.3390/jrfm12020053

CoinDesk. (2024). Indonesia picks crypto-friendly team in presidential election. Retrieved February 2024, from https://www.coindesk.com/policy/2024/02/14/indonesia-picks-crypto-friendly-team-in-presidential-election/

CoinMarketCap. (2024). Top 100 cryptocurrencies by market capitalization. Retrieved February 2024, from https://coinmarketcap.com/

Compeau, D. R., & Higgins, C. A. (1995). Development of a measure and initial test. *MIS Quarterly, 19*(2), 189–211.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology, 22*(14), 1111–1132.

Deloitte. (2015). *State-sponsored cryptocurrency: Adapting the best of Bitcoin's innovation to the payments ecosystem*. Retrieved from www.federalreserve.gov/newsevents/pressreleases/files/other20170906a1.pdf

Dorri, A., Kanhere, S. S., Jurdak, R., & Gauravaram, P. (2017). Blockchain for IoT security and privacy: The case study of a smart home. *2017 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, 618–623.

Ermakova, T., Fabian, B., Baumann, A., Izmailov, M., & Krasnova, H. (2017). Bitcoin: Drivers and impediments. *SSRN Electronic Journal*.

Faqih, K. M. S. (2016). An empirical analysis of factors predicting the behavioral intention to adopt internet shopping technology among non-shoppers in a developing country context: Does gender matter? *Journal of Retailing and Consumer Services, 30*, 140–164. https://doi.org/10.1016/j.jretconser.2016.01.016

Farah, M. F., Hasni, M. J. S., & Abbas, A. K. (2018). Mobile-banking adoption: Empirical evidence from the banking sector in Pakistan. *International Journal of Bank Marketing, 36*(7). https://doi.org/10.1108/IJBM-10-2017-0215

Federal Reserve System. (2017). *Federal reserve next steps in the payments improvement journey*. Retrieved from www.federalreserve.gov

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Addison-Wesley. https://doi.org/10.2307/2065853

Frankenfield, J. (2022). *Bitcoin mining.* Retrieved from https://www.investopedia.com/terms/b/bitcoin-mining.asp

Giudici, P., & Abu-Hashish, I. (2019). What determines bitcoin exchange prices? A network VAR approach. *Finance Research Letters, 28*, 309-318. https://doi.org/10.1016/j.frl.2018.05.013

Gunawan, F. E., & Novendra, R. (2017). An analysis of bitcoin acceptance in Indonesia. *ComTech: Computer, Mathematics and Engineering Applications, 8*(4), 241-247. https://doi.org/10.21512/comtech.v8i4.3885

Guo, Y., & Liang, C. (2016). Blockchain application and outlook in the banking industry. *Financial Innovation, 2*, 24. https://doi.org/10.1186/s40854-016-0034-9

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM).* Sage Publishing.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135. https://doi.org/10.1007/s11747-014-0403-8

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424-453.

Hussain, M., Mollik, A. T., Johns, R., & Rahman, M. S. (2018). M-payment adoption for bottom of pyramid segment: An empirical investigation. *International Journal of Bank Marketing, 37*(1). https://doi.org/10.1108/IJBM-01-2018-0013

International Monetary Fund. (2022). *World economic and financial surveys*. Retrieved February, 2024, from https://www.imf.org/external/pubs/ft/weo/2022/01/weodata/groups.htm

Jambulingam, M. (2013). Behavioral intention to adopt mobile technology among tertiary students. *World Applied Sciences Journal, 22*(9), 1262-1271. https://doi.org/10.5829/idosi.wasj.2013.22.09.2748

Khan, I. U., Hameed, Z., & Khan, S. U. (2017). Understanding online banking adoption in a developing country: UTAUT2 with cultural moderators. *Journal of Global Information Management, 25*(1), 43-65. https://doi.org/10.4018/JGIM.2017010103

Khechine, H., Lakhal, S., Pascot, D., & Bytha, A. (2014). UTAUT model for blended learning: The role of gender and age in the intention to use webinars. *Interdisciplinary Journal of E-Skills and Lifelong Learning, 10*, 33-52. https://doi.org/10.28945/1994

Kim, S., & Malhotra, N. (2005). A longitudinal model of continued IS use: An integrative view of four mechanisms underlying post-adoption phenomena. *Management Science, 51*, 741-755. https://doi.org/10.1287/mnsc.1040.0326

Kim, S. Y., Lee, S. H., Chi, Y. D., Im, E. T., & Gim, G. Y. (2018). A study on the factors affecting the intention to payment service using biometrics. *International Journal of Advanced Science and Technology, 114*, 69-80. https://doi.org/10.14257/ijast.2018.114.07

Kishore, K. S. V., & Sequeira, A. H. (2016). An empirical investigation on mobile banking service adoption in rural Karnataka. *SAGE Open, 6*(1), 1-21. https://doi.org/10.1177/2158244016633731

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal, 28*. https://doi.org/10.1111/isj.12131

Koenig-Lewis, N., Marquet, M., Palmer, A., & Zhao, A. L. (2015). Enjoyment and social influence: Predicting mobile payment adoption. *The Service Industries Journal, 35*(10), 537-554. https://doi.org/10.1080/02642069.2015.1043278

Kumar, D. (2023). *Re: When to use AMOS or SMART-PLS?* Retrieved February, 2024, from https://www.researchgate.net/post/When_to_use_AMOS_or_SMART-PLS

Limayem, M., Hirt, S. G., & Cheung, C. M. K. (2007). How habit limits the predictive power of intention: The case of information systems continuance. *MIS Quarterly, 31*(4), 705-737. https://doi.org/10.1002/fut.10029

Lin, C., & Kim, T. (2016). Predicting user response to sponsored advertising on social media via the technology acceptance model. *Computers in Human Behavior, 64*, 710-718.

Literasi Digital. (2024). *Indeks literasi digital*. Retrieved February, 2024, from https://survei.literasidigital.id/metode-survei-dan-profile-responden

Maddux, J. E., & Winstead, B. A. (2019). *Psychopathology: Foundations for a contemporary understanding.* Routledge.

Malhotra, N., & Birks, D. (2007). *Marketing research: An applied approach.* Prentice Hall.

Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173-191.

Meera, A. K. M. (2018). Cryptocurrencies from Islamic perspectives: The case of Bitcoin. *Bulletin of Monetary Economics and Banking, 20*(4). https://doi.org/10.21098/bemp.v20i4.902

Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing workforce. *Personnel Psychology, 53*(2), 375-403. https://doi.org/10.1111/j.1744-6570.2000.tb00206.x

Nadal, K. L. (2017). *The Sage encyclopedia of psychology and gender* (p. 401). Sage.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. https://bitcoin.org/bitcoin.pdf

Nisha, N. (2016). Exploring the dimensions of mobile banking service quality: Implications for the banking sector. *International Journal of Business Analytics, 3*(3), 1–24. https://doi.org/10.4018/IJBAN.2016070104

Park, J., Amendah, E., Lee, Y., & Hyun, H. (2018). M-payment service: Interplay of perceived risk, benefit, and trust in service adoption. *Human Factors and Ergonomics in Manufacturing & Service Industries, 29*(1), 31–43. https://doi.org/10.1002/hfm.20750

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29*(4), 1841–1848. https://doi.org/10.1016/j.chb.2013.02.014

Queiroz, M. M., & Wamba, F. S. (2019). Blockchain adoption challenges in supply chain: An empirical investigation of the main drivers in India and the USA. *International Journal of Information Management, 46*, 70–82. https://doi.org/10.1016/j.ijinfomgt.2018.11.021

Rozgonjuk, D., Sindermann, C., Elhai, J. D., & Montag, C. (2021). Individual differences in Fear of Missing Out (FoMO): Age, gender, and the Big Five personality trait domains, facets, and items. *Personality and Individual Differences, 171*. https://doi.org/10.1016/j.paid.2020.110546

Salisbury, W. D., Pearson, R. A., Pearson, A. W., & Miller, D. W. (2001). Perceived security and World Wide Web purchase intention. *Industrial Management & Data Systems, 101*(4), 165–177. https://doi.org/10.1108/02635570110390071

Sanchez-Torres, J. A., Arroyo-Cañada, F. J. A., Sandoval, A. V., & Alzate, J. A. S. (2017). E-banking in Colombia: Factors favoring its acceptance, online trust, and government support. *International Journal of Bank Marketing, 36*(1). https://doi.org/10.1108/IJBM-10-2016-0145

Schmitt, W. (2024). Bitcoin trading volumes surge after debut of long-awaited US ETFs. *Financial Times*. https://www.ft.com/content/f30ece62-0f1c-492a-8ccd-63ec9730573c

Shahzad, F., Xiu, G. Y., Wang, J., & Shahbaz, M. (2018). An empirical investigation on the adoption of cryptocurrencies among the people of mainland China. *Technology in Society, 55*. https://doi.org/10.1016/j.techsoc.2018.05.006

Shaughnessy, J., Zechmeister, E., & Jeanne, Z. (2011). *Research methods in psychology* (9th ed.). McGraw Hill.

Shin, D. H. (2009). Towards an understanding of consumer acceptance of mobile wallet. *Computers in Human Behavior, 25*(6), 1343–1354. https://doi.org/10.1016/j.chb.2009.06.001

Sigelman, C. K., & Rider, E. A. (2017). *Life-span human development* (p. 385). Cengage Learning.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144–176. https://doi.org/10.1287/isre.6.2.144

Ter Ji-Xi, J., Salamzadeh, Y., & Teoh, A. P. (2021). Behavioral intention to use cryptocurrency in Malaysia: An empirical study. *The Bottom Line, 34*(2), 170–197. https://doi.org/10.1108/BL-08-2020-0053

Teddlie, C., & Yu, F. (2007). WITHDRAWN - Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research, 1*(1), NP1–NP1. https://doi.org/10.1177/2345678906292430

United Nations. (2019). *World population prospects 2019, online edition*. Department of Economic and Social Affairs, Population Division.

Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly, 24*(1), 115–139.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.

Wang, Q., Sun, X., Cobb, S., Lawson, G., & Sharples, S. (2016). 3D printing system: An innovation for small-scale manufacturing in home settings? Early adopters of 3D printing systems in China. *International Journal of Production Research, 54*(20). https://doi.org/10.1080/00207543.2016.1154211