Adoption of Cryptocurrencies as a Means of Exchange

Chong Zhao Hern[1], Nadisah Zakaria[2], Ainin Sulaiman[3], Foo Siong Min[4], Kamilah Kamaludin[5]

Abstract

This study examines the determinants impacting the adoption of cryptocurrencies for exchange. Through a quantitative approach, data from 104 respondents were gathered via an internet-based survey. Employing a Likert scale, the study examined the relationship between financial literacy, perceived usefulness, perceived ease of use, and willingness to adopt cryptocurrencies. Results revealed that financial literacy did not directly correlate with the willingness to adopt cryptocurrencies, while perceived usefulness and ease of use exhibited a positive association with adoption. Notably, the present study highlighted the reliance on perceived financial literacy rather than actual levels. It emphasized the necessity of improving the accessibility and applicability of cryptocurrencies to encourage their adoption. The implications of this study are pertinent to policymakers and businesses venturing into cryptocurrency integration. Understanding the influencers of cryptocurrency adoption, especially perceived utility and ease of use, can inform strategic approaches to foster adoption of cryptocurrencies.

Keywords: *Financial Literacy, Perceived Usefulness, Perceived Ease of Use, Cryptocurrency, Adoption.*

Introduction

Globalisation and the development of financial markets have paved the way for cross-border investments and economic integration. In this digital transformation era, cryptocurrencies and blockchain technology have emerged as disruptive forces, revolutionised financial services and accelerated the process of digitisation (Sukumaran et al., 2022). Cryptocurrencies have become an essential part of our current global economy and are a significant component in many emerging markets (Mellor, 2021). Cryptocurrencies like Bitcoin and Ethereum have garnered considerable attention from the media and the public, reshaping the financial industry with their modern payment methods and potentially influencing the future of virtual currencies (Noreen et al., 2021) This advancement had been propelled and driven by blockchain technology's disruptive innovation, which enabled technology such as cryptocurrencies.

Blockchain technology, the underlying technology behind cryptocurrencies, has existed for over a decade and has profoundly impacted the financial industry. It provides a platform for the trading of cryptocurrencies (Raza et al., 2022; Sagheer et al., 2022). Schatsky & Muraskin (2015) explain that it acts as a "digitalised distributed transactional ledger with records stored on different database servers operated by various entities". Researchers have stated that this revolutionary technology has created an actual peer-to-peer financial framework, potentially eliminating the need for financial institutions in online transactions if electronic cash operates in a peer-to-peer manner (Nakamoto, 2008). Most cryptocurrencies, including Bitcoin, Ethereum, and Tether, are secured through blockchain technology. Cryptocurrencies are described as digital or virtual currencies independent from financial institutions, central banks, and national borders. Cryptocurrencies utilise mathematical-based cryptography to ensure the legitimacy of each transaction (Asadov et al., 2023). By operating decentralised based on peer-to-peer user consensus, cryptocurrencies eliminate the need for third-party intermediaries, such as financial institutions, while ensuring transaction security through mechanisms like proof-of-work (Daud et al., 2018).

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[1] Faculty of Business, University Malaya-Wales, 50480, Kuala Lumpur, Malaysia, Email: 20200223@student.umwales.edu.my.

[2] Department of Finance, College of Business, Prince Sultan University, Riyadh, Kingdom of Saudi Arabia, Email: nbintizakaria@psu.edu.sa, (Corresponding Author)

[3] Faculty of Business, University Malaya-Wales, 50480, Kuala Lumpur, Malaysia, Email: ainins@umwales.edu.my

[4] Accounting and Finance Department, School of Business and Economics, Universiti Putra Malaysia, 43400, Seri Kembangan, Selangor, Malaysia, Email: thomasfoo88@gmail.com.

[5] Department of Accounting, College of Business, Prince Sultan University, Riyadh, Kingdom of Saudi Arabia, Email: kkamaludin@psu.edu.sa

In Malaysia, the government has taken steps to regulate cryptocurrencies. In January 2019, the Capital Markets and Services Order 2019 was introduced, subjecting all crypto assets to Securities Commission regulations in the country. While the central bank of Malaysia, Bank Negara Malaysia, does not prohibit trading cryptocurrencies like Bitcoin or Ethereum, it does not recognise digital currencies as legal tender. According to Ku-Mahamud (2019), 26 merchants in Malaysia accept cryptocurrency as a means of exchange. Nevertheless, through the Ministry of Finance, the Malaysian government encourages the growth of digital assets and peer-to-peer lending while protecting investors in the digital assets trading space (Sukumaran et al., 2022). Bank Negara Malaysia and Securities Commission Malaysia worked closely to develop policies to regulate digital assets to facilitate innovation while minimising potential risks (Securities Commission Malaysia, n.d). In March 2023, the Malaysian social media company, Says, partnered with Luno, a cryptocurrency exchange platform, to examine whether the Malaysian population anticipates the cryptocurrency market in Malaysia needs further regulation. Based on the survey, they found that 71% of its participants think Malaysia's cryptocurrency market needs further regulation (Says, 2023).

As Malaysian policymakers and regulators are still searching for methods best to manage innovation in the cryptocurrency and digital currencies space, research on factors that might affect the Malaysian public to adopt cryptocurrency is crucial to understanding the potential use of cryptocurrencies as a means of exchange. By examining factors such as perceived usefulness, perceived ease of use and financial literacy, this research aims to provide insights into the drivers and barriers to cryptocurrency adoption in Klang Valley, which will be helpful (MANSOOR et al., 2021).

Cryptocurrencies have emerged as a topic of interest and are subjected to many doubts and debates. It has garnered significant attention from the public, as it holds the potential to shape the future of virtual currencies and revolutionise financial services. However, their acceptance and adoption depend heavily on the public's perception and awareness. Cryptocurrencies have faced many controversies, including the secrecy surrounding the creator of the first cryptocurrencies Bitcoin, Nakamoto, and their use by illicit actors on the dark web (Van Hout & Bingham, 2013; Molling et al., 2020). This may be because the cryptocurrency market is unregulated by any agency, thus leading to its high volatility and fraudulent activities (Schaupp & Festa, 2018). In June of 2023, a massive scandal in the crypto exchange involved the collapse of one of the largest digital currency exchange platforms, FTX. The founder, Sam Bankman-Fried, was found guilty of multiple fraud charges, including wire fraud, securities fraud, and money laundering. Sam Bankman-Fried had mismanaged the company funds, used them to purchase personal luxury goods, and lobbied US legislators to enact crypto-friendly policies (Huang, 2022). This significantly impacted the general public's perception of cryptocurrency as the public grows the tendency to associate fraudulent activities with the cryptocurrency market.

Additionally, there had been concerns regarding environmental damage caused by proof of work, also known as mining, as the process of authenticating transactions for a reward. This process requires vast amounts of energy (Kohli et al., 2023). In Malaysia, there have been many cases where the police forces of Malaysia had been raiding mining operations and seized the expensive equipment used in such mining operations. It was reported in 2021 that police in Miri had destroyed 1069 high technology equipment worth USD 1.3 million. This is because these pieces of equipment had been used to mine Bitcoin through stolen electricity. The Johor Tenaga Negara Berhad, the electric Utilities Company, reported an estimated loss of RM90 million due to illegal bitcoin mining activities (Azmi, 2021). Despite these controversies, cryptocurrencies can potentially disrupt and revolutionise the financial industry by offering a decentralised system that eliminates the need for third-party intermediaries (Makrov & Schoar, 2022). Understanding the level of awareness, acceptance, and understanding of cryptocurrencies among the Malaysian population is crucial in determining their potential as a medium of exchange. Researching the general public's attitudes and awareness towards cryptocurrencies sheds light on their likelihood of adoption or resistance.

Furthermore, using cryptocurrencies may significantly impact existing financial intermediaries, such as banks and government agencies. This is because cryptocurrencies may be a source of competitiveness for existing modalities of money and government agencies (Vora, 2015). Vora (2015) explains that the competitiveness of cryptocurrencies derives from their being an alternative means of transacting value and from their ease of payment, confidentiality, transaction cost and time. However, the degree of disruption

they pose to the financial industry relies on the willingness of the public to use them as a medium of exchange (Alaklabi & Kang, 2021). The greater the inclination of Malaysians towards utilizing cryptocurrencies for transactions, the more pronounced its effect will be on the financial sector.

Cryptocurrencies have often been discussed alongside financial literacy. Financial literacy is pivotal in various aspects of an individual's life, such as spending, saving money and debt management. As cryptocurrencies are an emerging new financial technology, an individual's degree of financial literacy significantly influences their understanding of cryptocurrencies, their purposes, and their potential advantages. Panos et al. (2020) found a strong correlation between the lack of fundamental financial literacy and reduced awareness of cryptocurrencies, leading to less intention to adopt them. In the context of the population in Klang Valley, researchers found that most individuals exhibited basic financial literacy, with more than half of them displaying advanced financial literacy (Boon et al., 2011). The population's financial literacy level is essential as the Malaysian central bank has stated that low financial literacy in some segments of Malaysian society has been one of the most significant barriers to adopting Digital Financial Services. A survey conducted by the Malaysian Central Bank found that despite 74% of Malaysians using digital financial services, there is a gap of 26% of Malaysians who do not. They also noted that the gap in the usage of digital financial services is due to low financial literacy, making them more susceptible to fraudulent activities (Bernama, 2023).

Although cryptocurrencies are still not recognised as legal tender, there are communities in Malaysia that wish to use cryptocurrencies as a means of exchange. For example, Safri (2021) reported that in an interview with Vincent Chin, owner of Malaysia's first fish store to accept cryptocurrency as payment, reveals that there are crypto-enthusiast communities in Malaysia who deem that such means of exchange is useful and wish to purchase items with cryptocurrencies. There is a growing population of crypto enthusiasts, as the Securities Commission Malaysia has found that there are more than 470,000 Malaysians (14% of the total Malaysian population) who own cryptocurrencies and shows trends of continuous growth. Despite the large number of Malaysians who own cryptocurrencies, Scarlett Chai, country manager of Luno Malaysia, stated that the lack of awareness and understanding towards the potential use and benefits hinders the adoption of cryptocurrencies as a means of exchange in Malaysia (Ismail, 2023). Although many Malaysian adults think cryptocurrencies are a potential investment opportunity, most do not understand the usefulness and ease of use of adopting cryptocurrencies as a means of exchange.

This research addresses the knowledge gap regarding the Malaysian population's willingness to adopt cryptocurrencies as a means of exchange. By examining the general public's financial literacy, perceived usefulness, and ease of use of cryptocurrencies, the study contributes to understanding the potential adoption and impact on the financial industry. The findings provide valuable insights for government regulators and policymakers. This government intervention is needed to protect investors from fraudulent activities. However, the lack of regulations is one of the main attractions of cryptocurrency. Thus, policymakers need to find a balance between the amount of control it has towards cryptocurrencies while ensuring that they provide opportunities for innovation and growth (Schauapp & Festa, 2023).

This study investigated the demographic residing in the Klang Valley. Klang Valley is in the central area of West Peninsular Malaysia and includes major cities of Malaysia, which include Kuala Lumpur, Subang Jaya, Ampang, Cheras, Petaling Jaya, and Klang. Three factors were adopted in this research to form the independent variables of this research, which are perceived usefulness, perceived ease of use and financial literacy. The willingness of individuals to adopt cryptocurrency as a means of exchange acts as the dependent variable of the research. By considering these factors, the researchers are motivated to determine the extent to which the general population in Klang Valley is prepared and willing to adopt cryptocurrencies as a medium of exchange.

There are three research questions that this research aims to examine.

- How does an individual's financial literacy affect their likelihood and willingness to accept cryptocurrencies as a means of exchange?

- What is the Klang Valley population's perception of the usefulness and ease of use of cryptocurrencies as a means of exchange?

- What is the current perspective of the Klang Valley population towards accepting the possible implication of cryptocurrencies as a means of exchange?

The present study identified a positive correlation between perceived usefulness and ease of use, yet found no significant relationship with financial literacy. The study indicates that the population's readiness for cryptocurrency adoption falls below average. These findings provide insights into the factors influencing adoption and suggest that efforts may be needed to enhance the population's understanding and acceptance of cryptocurrencies for widespread adoption.

Literature Review

Numerous empirical studies have explored various aspects of cryptocurrency adoption. To understand the potential uses of cryptocurrencies as a means of exchange, it's essential to begin by examining the concept of money. Money, throughout history, has taken various forms, evolving from shells and gold coins to modern forms like paper money and electronic currency. It serves three primary functions: store of value, unit of account, and medium of exchange (Hicks, 2023). Cryptocurrencies, starting with Bitcoin, introduced a disruptive innovation in the monetary system, offering an alternative means of exchange in the digital age (Limba et al., 2019). As of March 2023, the market boasts over 22,000 cryptocurrencies with an estimated market capitalization of $1.1 trillion (Hicks, 2023). These digital assets, including Bitcoin, are built on blockchain technology, a distributed ledger ensuring transparency and security through public-key cryptography (Crosby et al., 2016).

Perceived usefulness, a crucial factor in cryptocurrency adoption, has been extensively studied. It is a key construct in the Technology Acceptance Model (TAM) and determines an individual's behavioural intention (Surendran, 2012; Daud et al., 2018). Defined as an individual's confidence in a system providing advantages, perceived usefulness hinges on the belief that technology enhances overall performance (Davis, 1989). In the context of cryptocurrencies, it refers to individuals' understanding of how these digital assets can assist them and influence their behavioural intentions (Xia et al., 2019).

Perceived ease of use is a critical factor in examining individuals' behavioural intentions to adopt new technologies, as per the Technology Acceptance Model (TAM). It refers to the degree to which individuals believe a system or technology is easy to use, assessing how easily individuals can navigate and interact with technology (Davis, 1989). Gould and Lewis (1985) define perceived ease of use as the simplicity or ease with which individuals can adapt to new technology without much effort, focusing on cognitive aspects such as user interface intuitiveness and user-friendly features. Individuals are more likely to adopt technology perceived as requiring minimal effort to use and integrate into their daily routines (Davis, 1989).

Financial literacy, crucial for making informed financial decisions, lacks a universally agreed-upon definition. Financial literacy encompasses financial awareness, knowledge, attitude, skills, and behaviour. While some define it solely as financial knowledge, others, including Ouachani et al. (2021) and Huston (2010), stress the importance of applying that knowledge effectively. Possessing financial knowledge is insufficient; true financial literacy involves understanding how to apply knowledge in practical situations (Ouachani et al.,2021; Huston, 2010).

In addition to the Technology Acceptance Model (TAM), Rogers' Theory of Diffusion of Innovation (2003) offers valuable insights into the innovation-decision process. This theory has gained significant attention in academic research and is frequently employed to predict the adoption of new products or innovations. Entrepreneurs have also utilized this theory to formulate novel marketing strategies for introducing new products (Li & Sui, 2011). Originating in 1962, Rogers developed this theory to comprehend the adoption of new technology, exploring why and at what rate individuals embrace

innovations. Momani & Jamous (2017) note that the theory evolved from various studies investigating the diffusion of innovation, emphasizing individual differences in attitudes toward innovation.

As described by Rogers (2003), an innovation is an idea, practice, or project perceived as new by an individual or unit of adoption. The innovation-decision process consists of five stages: knowledge (i), persuasion (ii), decision (iii), implementation (iv), and confirmation (v). This model elucidates how an individual's awareness of an innovation (i), their attitude toward it (ii), the decision to accept or reject it (iii), implementation of the innovation (iv), and confirmation through seeking reinforcement collectively shape the adoption process.

The Theory of Diffusion of Innovation introduces five characteristics influencing an individual's decision-making regarding the adoption or rejection of new technology: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is determined by the user's perception of the innovation's usefulness and economic aspects (Choudhury & Karahanna, 2008). Compatibility assesses how well the innovation aligns with existing user values and work practices (Ramiller, 1994). Complexity gauges the ease of understanding and adopting innovation (Rogers, 2010). Trialability refers to the degree to which users can experiment with innovation on a limited basis, reducing uncertainty (Rogers, 2010). Observability measures how visible and measurable the results of the innovation are (Rogers, 2010).

Relating to the Technology Acceptance Model and the Theory of Diffusion of Innovation, both theories share similar constructs and ideologies. For instance, under the persuasion stage in Rogers' theory, factors like relative advantage and complexity align with TAM's perceived usefulness and ease of use. Researchers have attempted to integrate both models by incorporating characteristics of the Theory of Diffusion of Innovation into the Technology Acceptance Model (Lee et al., 2011).

Numerous studies have focused into the perceived usefulness and ease of use concerning the adoption of cryptocurrencies across diverse populations. Early investigations by Baur et al. (2015) revealed a varied understanding of cryptocurrency applications and a low perceived ease of use among users. However, recent studies, such as one conducted in China by Nadeem et al. (2021), identified a positive correlation between perceived usefulness and the intention to use Bitcoin. The study emphasized the impact of perceived ease of use on users' perceived usefulness, highlighting their interconnected nature. Namahoot & Rattanawiboonsom (2022), examining cryptocurrency adoption in Thailand, also affirmed the significant positive influence of perceived usefulness and perceived ease of use on cryptocurrency platform adoption. They further identified the mediating role of user attitudes in this adoption process, aligning with the findings of Riquelme & Rios (2010) regarding the influential role of perceived usefulness on users' readiness to learn new technology.

Adnan et al. (2022) employed the TAM model, revealing that perceived usefulness, ease of use, and security significantly influenced respondents' inclination to invest in cryptocurrencies. Moreover, the research observed a favourable outlook among millennials aged 24 to 39 towards cryptocurrency investment. Similarly, a study conducted in Spain using TAM underscored the pivotal role of performance expectancy in cryptocurrency acceptance (Arias-Oliva et al., 2019). This corroborates the findings of Alaklabi & Kang (2021), who identified variables such as subjective norms, perceived utility, personal satisfaction, and perceived risk as impacting cryptocurrency adoption.

Examining factors affecting customer satisfaction in adopting cryptocurrencies, a Malaysian study by Chen et al. (2022) incorporated TAM and identified variables like social influence, transparency, price value, traceability, and attitude, all directly influencing consumer satisfaction. Another Malaysian study by Olowolayemo et al. (2023), also using the TAM model, found a statistically significant positive relationship between awareness, perceived usefulness, perceived ease of use, perceived trustworthiness, and perceived risk to use cryptocurrencies.

Limited research exists on the relationship between financial literacy and the willingness to adopt cryptocurrencies as a means of exchange compared to other factors. Recognizing cryptocurrencies as an innovation in the financial industry, it is acknowledged that individual willingness to adopt such technology depends not only on its benefits but also on financial literacy (Alomari & Abdullah, 2023). Higher levels of financial literacy have been shown to positively influence the acceptance of new technology in the financial sector (Chan et al., 2022). Individuals with higher financial literacy are reported to be more confident in using alternative financial services (Lusardi, 2019). Research findings, such as those from a Japanese study by Fujiki (2020), suggest that owners of crypto assets tend to possess higher financial literacy. However, the study also notes that financially literate crypto asset owners may exhibit overconfidence, lack self-control, and display less risk aversion than non-owners. Alomari & Abdullah (2023) introduced financial literacy as a moderating factor in examining factors influencing the intention to use cryptocurrencies.

Studies by Zhao & Zhang (2021) and Panos et al. (2020) have found positive associations between financial literacy, investment experience, and investing in cryptocurrencies. However, Panos et al. (2020) reported a negative relationship between financial literacy and attitude, attributed to perceived risks associated with cryptocurrencies and negative news. Overall, financial literacy plays a role in influencing cryptocurrency adoption, but findings are diverse, reflecting various aspects of the relationship. Research on the adoption of cryptocurrencies has primarily focused on implications for investment and banking transactions. A study by Albayati et al. (2020) using TAM found trust to be the primary influencer on the acceptance of blockchain technology and cryptocurrencies in financial transactions. Variables such as social influence, design, regulatory support, and experience were identified as external factors influencing user trust. In Malaysia, Ku-Mahamud et al. (2019) reported a high level of confidence and trust among the public in blockchain technology as a secure platform for trading. In contrast, Ayedh et al. (2021) found that trust, ease of use, profitability, and subjective norms had no significant impact on Malaysian Muslims entering the cryptocurrency market. The study suggested that factors like compatibility, awareness, and facilitating conditions, including government intervention, might have a more substantial impact on Malaysian Muslims in cryptocurrency adoption. This aligns with the emphasis on technology awareness and intention in determining technology adaptation found by Igbaria et al. (1994).

Existing research on cryptocurrencies has predominantly centred on their implications for investment and banking transactions, leaving a notable research gap regarding the willingness of individuals to adopt cryptocurrencies for daily transactions. Addressing this gap is crucial for understanding the extent to which people are willing to incorporate cryptocurrencies into their everyday lives and how various factors influence this adoption. Specifically, there is limited research on the extent of understanding within the Malaysian population regarding the potential advantages of cryptocurrency transactions compared to traditional banking transactions.

Furthermore, the research gap extends to the impact of financial literacy on individuals' willingness to adopt cryptocurrencies. While existing studies focus on how financial literacy affects investment decisions, to the best of the authors' knowledge, there is a lack of research examining how financial literacy influences individuals' readiness to adopt cryptocurrencies, their trust in cryptocurrencies, and their awareness of cryptocurrencies.

Conceptual Framework

Based on the literature discussed, the conceptual framework integrates the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory. The independent variables of perceived ease of use and perceived usefulness are drawn from TAM, while the third factor, financial literacy, is derived from the Diffusion of Innovation Theory. The framework aims to examine the interplay of these variables in influencing individuals' willingness to adopt cryptocurrencies as a means of exchange (see Figure 1).
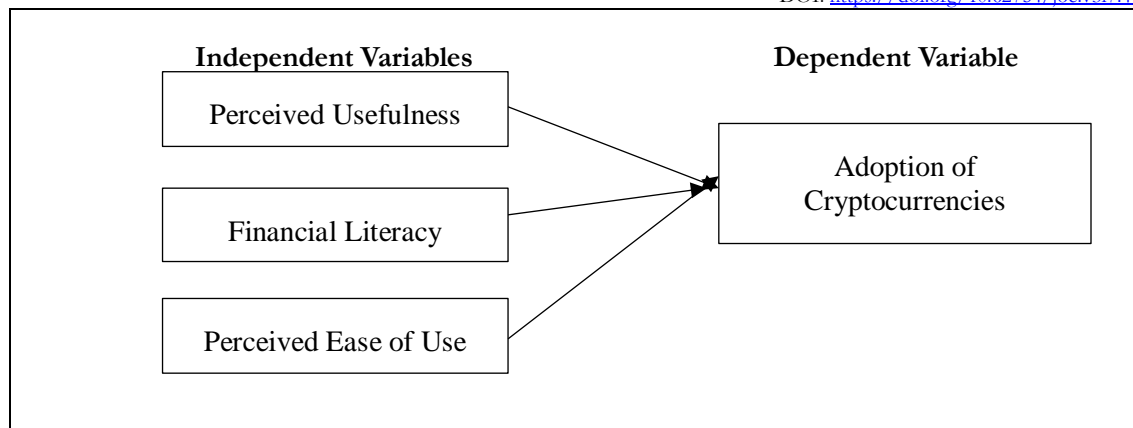
Figure 1. Conceptual Framework

(Source: adapted from Davis (1989), Shahzad et al. (2018), International Network on Financial Education (2011)

Methodology

The objective of this study was to explore the determinants influencing the adoption of cryptocurrencies for transactional purposes. To achieve this, a quantitative methodology was employed to analyse the independent variables, which encompass financial literacy, perceived usefulness, and perceived ease of use regarding cryptocurrencies. These factors were examined about the dependent variable of willingness to embrace cryptocurrencies as a medium of exchange.

The researcher opted for a survey-based data collection approach for this study. Three key literature sources were consulted in formulating the survey questions. The first source was a guide utilized by the International Network on Financial Education (2011) for assessing financial literacy across various nations. The second source was a study conducted by Shahzad et al. (2018) in China, focusing on the public's adoption of cryptocurrency in Mainland China. Survey questions drawn from these studies were adjusted slightly to better align with the research objectives. Additionally, other literature was consulted to refine and tailor the survey questions further. The third literature source is rooted in Davis's (1989) paper on the technology acceptance model. This study adhered to ethical standards and received approval from the Ethics Committee of University Malaya-Wales. Informed consent was obtained from all participants prior to their involvement. Participants were fully briefed on the study's objectives, procedures, and any potential risks or benefits. Written consent was secured, ensuring that participants understood their rights, including the ability to withdraw from the study at any point without penalty. Furthermore, all data collected were anonymized to protect participant privacy.

The survey was administered using Google Forms. Following the data collection methodologies observed in previous literature such as Nadeem et al. (2021), Arias-Oliva et al. (2019), and Alaklabi & Kang (2021), an online survey was chosen due to its remote accessibility and broader outreach compared to traditional paper-based surveys. Conducting the survey online enabled the researcher to reach diverse groups of individuals that might have been challenging to access through traditional means (Wright, 2005). The survey was disseminated to participants through various channels. The survey was shared through popular social media platforms such as WhatsApp and Telegram to attract a wider pool of participants.

The survey commenced with a comprehensive introduction to the research, outlining the research title and the structure of the survey questionnaires. Participants were explicitly informed of their consent regarding data collection for the research, with an assurance of maintaining anonymity and confidentiality. The survey comprised five sections, each containing five questions and the details are as follows:

Section A (Demographic Profile) gathers general information about participants, including age, profession, and internet usage. Section B (Financial Literacy) examines the first independent variable, Financial Literacy

(FL), with questions adopted from the International Network on Financial Education (2011). Section C (Perceived Usefulness) explores the second independent variable, Perceived Usefulness (PU), with questions adapted from previous studies. Section D (Perceived Ease of Use) investigates the third independent variable, Perceived Ease of Use (PEOU), with questions derived from existing research. Section E (Willingness to Adopt Cryptocurrencies) examines the dependent variable, Willingness to Adopt Cryptocurrencies (WA), with questions modified from various sources. The Likert scale model, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"), was employed for participants to express their perceptions and opinions. The first-person statement structure required participants to agree or disagree based on their opinions or actions.

The target population for this study is the general population of Klang Valley, comprising individuals aged 21 and above, as they represent a significant demographic contributing to the economy. The estimated population of Klang Valley is 8.4 million people (Department of Statistics Malaysia, 2021). Convenience sampling, a nonprobability technique, was employed for this research. A minimum sample size of 100 was chosen, adhering to the 10-times rule proposed by Barclay et al. (1995), ensuring an adequate representation of a simple research model.

Possible accessibility challenges include participants' inability to access the online survey via Google Forms. The researcher minimized this risk by using default settings and thorough testing. To achieve the sample size, the researcher may seek assistance from their social circle. Ethical concerns, such as obtaining informed consent, maintaining participant anonymity, and collecting relevant data only, were addressed in the survey process. Careful communication ensured participants' clear understanding of the presented information.

In this research, the Statistical Package for Social Science (SPSS) application was employed for data analysis, specifically to test the three hypotheses. The analyses include demographic analysis, reliability test, normality test, descriptive analysis, and regression analysis.

The demographic profile of collected data is scrutinized to ensure relevance to the research. Correlations between participant demographics and analysis results were explored. A reliability test, using Cronbach's Alpha was conducted to assess the internal consistency of the survey questions. A Cronbach's Alpha value of at least 0.7 for all variables is set as the threshold for data reliability. The normality of data was examined through Skewness and Kurtosis tests. Skewness values within -2 to 2 and Kurtosis values within -7 to 7 are deemed acceptable. The Shapiro-Wilk test will further verify data distribution. Descriptive analysis is employed to summarize data systematically, facilitating a clearer understanding of the dataset (Kaur et al., 2018). The Kolmogorov-Smirnov test will be used to examine data distribution. Regression analysis was performed to estimate the relationship between dependent and independent variables, addressing the research objectives. The pilot test, an initial smaller-scale study, is crucial for validating research protocols, instruments, and sample recruitment strategies (Stewart, 2004). It aids in identifying and rectifying potential issues before the main study, enhancing research feasibility (Benger et al., 2016). The online survey instrument was subjected to a pilot test with 25 participants. Three methods were used for reliability and validity: Cronbach's Alpha, skewness and kurtosis tests, and the Shapiro-Wilk test for data distribution. Table 1 presents the pilot test results, indicating Cronbach Alpha values exceeding 0.7 for all variables, ensuring internal consistency. Skewness and kurtosis values fall within acceptable ranges, signifying data normality. The Shapiro-Wilk test corroborates normal data distribution.

Table 1. Reliability and Normality Test for Pilot Test

Variables	Items	Cronbach Alpha value	skewness	Kurtosis	Shapiro-Wilk
Financial literacy	FL1	0.815	-0.189	-0.971	<0.001
	FL2		0.345	-0.527	<0.001
	FL3		-0.410	-0.680	<0.001
	FL4		-0.378	0.464	0.003

	FL5		-0.409	0.902	<0.001
Perceived Usefulness (PU)	PU1	0.900	0.171	-0.440	0.039
	PU2		0.296	-0.924	0.014
	PU3		0.084	-0.098	0.014
	PU4		0.151	-0.894	0.300
	PU5		0.560	0.714	0.008
Perceived Ease of Use (PEOU)	PEOU1	0.879	-0.572	0.864	0.007
	PEOU2		0.341	-0.345	0.025
	PEOU3		0.313	-1.047	0.009
	PEOU4		0.261	-0.542	0.048
	PEOU5		-0.225	-1.101	0.006
Willingness to adopt (WA)	WA1	0.940	0.027	-0.869	0.051
	WA2		-0.060	-0.829	0.035
	WA3		-0.163	-1.309	0.003
	WA4		0.606	-0.942	<0.001
	WA5		0.856	-0.588	<0.001

(Source: Authors' creation)

Analysis and Discussion

Table 2. Demographic Profile Figures

Variables	Categories	Frequencies	Percentage
Gender	Male	53	51%
	Female	51	49%
Race	Malay	31	29.8%
	Chinese	51	49%
	Indian	18	17.3%
	Others	4	3.9%
Age group	21-30s	77	74%
	31- 40s	12	11.5%
	41-50s	10	9.6%
	51-60s	4	3.8%
	60 and above	1	1%
Marital Status	Single	80	76.9%
	Married	24	23.1%
	Others	-	-
Employment status	Unemployed	50	48.1%
	Employed (Full time)	14	22.1%
	Employed (part-time)	23	13.5%
	Self-employed	2	1.9%
	Others	15	14.4%

(Source: Authors' creation)

Table 2 provides an overview of the demographic characteristics of the 104 respondents who participated in the survey. It is evident from the table that the majority of respondents are male, comprising 51% of the total, while female respondents account for 49%. However, the ratio of male to female respondents is nearly identical at 1.04:1, which depicts the gender distribution. The nearly equal distribution of male and female respondents at 51% and 49% respectively indicates a balanced representation in the survey sample. This ensures a more comprehensive understanding of perspectives across genders, fostering inclusivity in the study.

In terms of racial composition, the largest ethnic group among the respondents is Chinese, accounting for 49% of the sample. This is followed by Malay respondents, representing 29.8% of the sample, and Indian respondents, constituting 17.3%. Additionally, there are four respondents from other ethnicities, including Arabic, Sri Lankan, Dusun, and Syrian, each contributing one response, totalling 3.9% of the ethnic group. The majority representation of Chinese respondents at 49% reflects the ethnic diversity within the surveyed population, considering the predominant ethnic group in the region where the survey was conducted. The inclusion of Malay and Indian respondents, alongside other ethnicities, provides a broader representation of the community and ensures diverse perspectives are captured.

Regarding age distribution, the majority of respondents fall within the 21-30 age group, comprising 74% of the total respondents. This is followed by the 31-40 age group, representing 11.5% of the sample, and the 41-50 age group, accounting for 9.6% of respondents. The concentration of respondents within the 21-30 age group at 74% reflects the demographic trends of a younger population engaging with the subject matter. This age group is often more tech-savvy and open to adopting new technologies such as cryptocurrencies, aligning with the study's focus on cryptocurrency adoption.

Examining marital status, the majority of respondents are single, consistent with the predominant age group of 21-30 years old. The predominance of single respondents at 76.9% among the 21-30 age group is consistent with societal trends where individuals in this age bracket are more likely to be unmarried. Single respondents make up 76.9% of the total, while married respondents account for 23.1%. This demographic insight aids in understanding the preferences and behaviours of young, single individuals regarding cryptocurrency adoption.

Regarding employment status, the majority of respondents are unemployed, comprising 48.1% of the total participants. This is followed by respondents with full-time employment, representing 22.1% of the sample, and those with part-time employment, constituting 13.5%. Self-employed respondents account for two individuals, while the "Others" category includes students, interns, and retired individuals. The high percentage of unemployed respondents at 48.1% suggests a significant portion of the surveyed population may have different financial constraints or opportunities influencing their attitudes towards cryptocurrency adoption. Furthermore, the distribution of employment status across age groups provides insights into how employment status may impact cryptocurrency adoption behaviour within different age demographics.

Further analysis of employment status by age group reveals that the majority of unemployed respondents are aged 21-30, comprising 96% of this group. Similarly, most part-time employed respondents fall within the 21-30 age group, accounting for 92.86%. Fully employed respondents are distributed across the 31-40 and 41-50 age groups, with ten respondents each. The high percentage of unemployed respondents at 48.1% suggests a significant portion of the surveyed population may have different financial constraints or opportunities influencing their attitudes towards cryptocurrency adoption. Furthermore, the distribution of employment status across age groups provides insights into how employment status may impact cryptocurrency adoption behaviour within different age demographics.

Table 3. Regression Model Summary

Model summary								
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**			
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.706ᵃ	.498	.483	.71376	.498	33.041	3	100	.000
a. Predictors: (Constant), Perceived ease of use, Financial Literacy, Perceived Usefulness								
b. Dependent Variable: Willingness to adopt								

(Source: Authors' creation)

Table 3 outlines the summary of regression model of this research. The R-value, or correlation coefficient, is a fundamental statistic that indicates the strength and direction of the linear relationship between two variables. In our analysis, an R-value of 0.706 obtained from SPSS indicates a positive correlation between the independent and dependent variables. This means that as one variable increases, the other tends to increase as well, and vice versa. Ratner (2009) suggests that a correlation coefficient of 0.7 represents a strong positive linear relationship, further emphasizing the significance of our findings.

Moving on to the R-squared value, which represents the coefficient of determination, it quantifies the proportion of variance in the dependent variable that is predictable from the independent variables. In our study, the R-squared value of 0.498 suggests that approximately 49.8% of the variance in the dependent variable (Willingness to adopt) can be explained by the independent variables (Financial literacy, Perceived Usefulness, and Perceived Ease of Use). This indicates a moderate level of explanatory power, as nearly half of the variability in the dependent variable is accounted for by the independent variables. Ozili (2023) notes that R-squared values between 0.10 and 0.50 can be considered acceptable if most of the explanatory variables are statistically significant, supporting the validity of our results.

Examining the correlation between each independent variable and the dependent variable further strengthens our findings. From Table 4, it is evident that Financial Literacy exhibits the lowest correlation (0.145) with Willingness to Adopt, suggesting a weak relationship. Conversely, both Perceived Usefulness and Perceived Ease of Use demonstrate strong correlations (≥0.60) with Willingness to Adopt, indicating robust relationships. This corroborates the R-squared value obtained, as two out of three independent variables show statistical significance with the dependent variable, reinforcing the validity and reliability of our analysis.

Table 4. Correlation Table Between Dependent and Independent Variables

		Willingness to adopt	Financial Literacy	Perceived Usefulness	Perceived ease of use
Pearson Correlation	Willingness to adopt	1.000	.145	.612	.666
	Financial Literacy	.145	1.000	.092	.047
	Perceived Usefulness	.612	.092	1.000	.689
	Perceived ease of use	.666	.047	.689	1.000
Sig. (1-tailed)	Willingness to adopt	.	.071	.000	.000
	Financial Literacy	.071	.	.176	.319
	Perceived Usefulness	.000	.176	.	.000
	Perceived ease of use	.000	.319	.000	.

Table 5. Beta Coefficient Summary

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.029	.475		.061	.952		

Financial Literacy	.144	.105	.098	1.371	.174	.991	1.009
Perceived Usefulness	.307	.107	.280	2.858	.005	.522	1.915
Perceived ease of use	.495	.103	.469	4.793	.000	.525	1.903

a. Dependent Variable: Willingness to adopt

(Source: Authors' creation)

Table 5 presents the standard beta coefficients and p-values of the variables. Standardized coefficients, also known as beta weights, are utilized to assess the extent of impact the independent variables have on the dependent variable. These coefficients indicate the predicted amount of standard deviation in the dependent variable for each change of standard deviation in the independent variables, while controlling for other variables (Nieminen, 2022).

The value of the standardized beta coefficient can reveal whether the independent variables are positively or negatively related to the dependent variable. A positive value suggests a positive relationship, while a negative value suggests a negative relationship. Additionally, the magnitude of the standardized beta coefficient indicates the strength of the relationship between the independent and dependent variables.

Upon examination of the standardized beta coefficients, it is observed that all independent variables have positive values, indicating positive relationships with the dependent variable. However, the independent variable of Financial Literacy emerges as the weakest and least statistically significant predictor of Willingness to adopt. Conversely, the independent variables of Perceived Usefulness and Perceived Ease of Use exhibit positive and statistically significant effects on the dependent variable. This analysis underscores that Financial Literacy is a weak predictor for Willingness to adopt compared to Perceived Usefulness and Perceived Ease of Use.

Moving on to the significance values, or p-values, these serve as statistical tools to test the null hypothesis of a research study. With a confidence interval set at 95% (alpha value of 0.05), the null hypothesis is rejected if the coefficient has a p-value of 0.05 or less. The null hypothesis posits that there is no relationship between the two variables. A p-value of 0.05 or less indicates a linear relationship between the variables.

Upon examination of the p-values from Table 6, it is evident that the p-value for the independent variable of Financial Literacy exceeds 0.05. Consequently, the null hypothesis is accepted, suggesting no relationship between Financial Literacy and Willingness to adopt. Conversely, the independent variables of Perceived Usefulness and Perceived Ease of Use have p-values of 0.05 or less, leading to the rejection of the null hypothesis and indicating a relationship between these variables and Willingness to adopt.

Table 6. Hypothesis Summary

Hypothesis	Beta	Pearson Correlation	P-value	Result
H1: There is a relationship between the perceived usefulness of cryptocurrencies as a means of exchange and the willingness to adopt cryptocurrencies as a means of exchange.	0.144	0.145	0.174	Rejected
H2: There is a relationship between the perceived ease of use of cryptocurrencies as a means of exchange and the willingness to adopt cryptocurrencies as a means of exchange.	0.307	0.612	0.005	Accepted

H3: There is a relationship between the financial literacy of an individual and the willingness to adopt cryptocurrencies as a means of exchange.	0.495	0.666	>0.001	Accepted

Upon conducting descriptive analysis, it is evident that the Financial Literacy variable has the highest mean of 4, with the lowest standard deviation of 0.67349, indicating a concentration of responses around the mean. However, despite this concentration, the Pearson correlation value between Financial Literacy and the dependent variable, Willingness to adopt, is weak at 0.145. Moreover, the standardized beta coefficient suggests that Financial Literacy is not statistically significant in its correlation with the dependent variable. With a p-value exceeding 0.05 (0.98), the null hypothesis is accepted, indicating no linear relationship between Financial Literacy and the willingness to adopt cryptocurrencies as a means of exchange.

While Financial Literacy has been linked to various financial behaviours and decisions, its role in cryptocurrency adoption remains debated in academic circles. While some studies, such as Zhao & Zhang (2021), suggest a positive association between financial literacy and cryptocurrency investment, others, like Foley et al. (2019), indicate a negative correlation with risky assets like cryptocurrencies. This study's findings diverge from previous research (see Lusardi, 2019; Fujiki, 2020; Zhao & Zhang, 2021; Panos et al., 2020; Albayati et al., 2020; Ku-Mahamud et al., 2019; Ayedh et al., 2021) suggesting that the relationship between Financial Literacy and cryptocurrency adoption is complex and subject to various individual perceptions and biases. This finding is consistent with the observations made by Fujiki (2020) and Alomari & Abdullah (2023), indicating that respondents often exhibit elevated perceived levels of financial literacy and display overconfidence in their financial knowledge and abilities.

Descriptive statistics reveal that the average means for items assessing Perceived Usefulness are 2.9654, with a standard deviation of 0.9712, indicating a spread of responses. The Pearson correlation value between Perceived Usefulness and Willingness to adopt is high at 0.612, suggesting a strong positive correlation. With a p-value of 0.005, the null hypothesis is rejected, indicating a linear relationship between Perceived Usefulness and cryptocurrency adoption. Despite respondents' slightly inclined perception that using cryptocurrencies as a means of exchange may not be as useful as other available means, there remains a significant association between Perceived Usefulness and adoption. The perceived value of new financial technology plays a pivotal role in persuading potential users to adopt it. Prospective users need to believe that financial technology offers sufficient utility and can enhance their tasks compared to traditional methods (Daud et al., 2018). This study uncovered a significant correlation between respondents' perception of cryptocurrencies' usefulness as a medium of exchange and their inclination to embrace them. This finding is consistent with prior research, including studies by Baur et al. (2015), Nadeem et al. (2021), Namahoot & Rattanawiboonsom (2022), Riquelme & Rios (2010), Adnan et al. (2022), Arias-Oliva et al. (2019), Alaklabi & Kang (2021), Chen et al. (2022), Olowolayemo et al. (2023), and Alomari & Abdullah (2023). This further underscores the importance of prospective users' perceptions in the adoption of any financial technology, including cryptocurrencies, as a medium of exchange.

The descriptive statistical analysis reveals that for all items assessed for Perceived Ease of Use, the average means are 2.9731, with a standard deviation of 0.99242. This suggests that the respondents' results are dispersed and not closely clustered around the mean. Furthermore, upon closer examination of the Pearson Correlation, it is evident that Perceived Ease of Use exhibits the highest correlation value of 0.666 among all independent variables examined in this study. The obtained p-value for Perceived Ease of Use is >0.001, leading to the rejection of the null hypothesis and indicating a linear relationship between perceived ease of use and the willingness to adopt cryptocurrencies as a medium of exchange. The means for all items tested for Perceived Ease of Use fall between 2.73 and 3.22. This may suggest that similar to the independent variable of Perceived Usefulness, respondents may not find it easy to use cryptocurrencies as a medium of exchange. The discussion of the Perceived Ease of Use of new technology often goes hand in hand with the perceived usefulness of the technology. Scholarly works frequently link the perceived usefulness of technology with perceived ease of use, as individuals typically need to perceive the new technology as easy to adopt to consider it useful (Davis, 1989). This study's findings align with previous research, including works by Baur et al. (2015), Nadeem et al. (2021), Namahoot & Rattanawiboonsom

(2022), Riquelme & Rios (2010), Adnan et al. (2022), Arias-Oliva et al. (2019), Alaklabi & Kang (2021), Chen et al. (2022), Olowolayemo et al. (2023), and Alomari & Abdullah (2023).

Conclusion

This research aims to investigate the perspectives of the population residing in the Klang Valley regarding the adoption of cryptocurrency as a means of exchange. The research findings suggest that in the Klang Valley, there is no significant correlation between financial literacy and the willingness of individuals to adopt cryptocurrencies for transactions. Despite respondents' confidence in their financial literacy, the study did not find a clear link between this and their readiness to embrace cryptocurrencies. However, further investigation is necessary to accurately gauge the impact of financial literacy on cryptocurrency adoption, as respondents may have biased their self-assessment of financial literacy. On the other hand, the study did find a noteworthy positive relationship between the perceived usefulness of cryptocurrencies and the willingness to adopt them. Despite this, respondents expressed scepticism about cryptocurrencies' ability to replace traditional forms of exchange. Similarly, while there was a significant correlation between perceived ease of use and adoption willingness, respondents still found cryptocurrencies somewhat challenging to utilize. Overall, the average willingness of Klang Valley respondents to adopt cryptocurrencies was moderate, indicating a reluctance to fully commit to them as a primary means of exchange. However, there is potential for persuasion or education to increase adoption, as respondents were more open to using cryptocurrencies as an alternative currency for daily transactions. Understanding these attitudes and preferences is vital for developing strategies to encourage cryptocurrency adoption in the Klang Valley.

The research findings reveal that despite respondents' confidence in their financial literacy, there was no significant correlation found between financial literacy and willingness to adopt cryptocurrencies. This highlights the need for targeted efforts to improve financial literacy in areas directly related to cryptocurrencies. Moreover, the study emphasizes the crucial role of perceived usefulness and ease of use in influencing cryptocurrency adoption. While respondents acknowledged some utility in cryptocurrencies, they also perceived them as challenging to use. Hence, there is a clear opportunity to enhance the user experience and demonstrate the practical benefits of cryptocurrencies to boost adoption rates. Overall, the findings suggest a nuanced perspective among Klang Valley respondents regarding cryptocurrency adoption. While there is some reluctance to embrace cryptocurrencies fully, there is also a willingness to explore their utility as an alternative form of currency for daily transactions. This underscores the importance of targeted educational campaigns and initiatives to address specific concerns or barriers to adoption.

In light of these findings, policymakers, industry stakeholders, and developers should prioritize educational initiatives to increase public awareness and understanding of cryptocurrencies. Additionally, focusing on enhancing user experience and incentivizing adoption through discounts or rewards can further encourage cryptocurrency adoption among both consumers and merchants.

One notable limitation is the small sample size utilized in this study. The researcher recognizes that this sample may not fully capture the sentiments of the broader population regarding cryptocurrency adoption as a means of exchange. To address this limitation in future research, it is recommended to employ a larger and more diverse sample.

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Data availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. However, due to ethical, privacy, and security concerns, certain data cannot be shared publicly.

Author Contribution Statement

The corresponding author, Nadisah Zakaria was responsible for conceptualizing the study, finalizing the draft, and submitting the article to the journal. The co-authors made significant contributions to the research and writing of the article. Chong Zhao Hern is responsible in data collection and data analysis, Kamilah Kamaludin is responsible to write introduction, literature review and Foo Siong Min is responsible in writing methodology and analysis. Ainin Sulaiman is responsible to write the conclusion and reviewing the analysis. The authors also share responsibility and accountability for the results presented in the published research.

Disclosure Statement

No potential conflict of interest was reported by the author (s).

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