Digital Currency for Payments

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Abstract

This qualitative research aimed to collect users' opinions on the use of digital currency for the payment of goods and services. A narrative synthesis was employed. Moreover, a document collection and literature review related to digital currency were conducted as a supplemental source of information for a detailed explanation. Thus, documentary method and content analysis via systematic review were used to analyse the data. This study focused on a discussion of three major types of digital currencies: central bank-issued cash, Bitcoin, and privately issued digital currencies. The results indicated that the use of digital currencies in Thailand became popular. Bitcoin was one of the first cryptocurrencies to become known to the public, primarily operating based on computer systems and the Internet. Many countries have invented their own digital currency to spend and ensure the stability of money, leading to more easily controlled systems. However, if the government can manage to solve the problem of payment for goods and services through digital currency, namely by encouraging, preparing and pushing for its use, as well as promoting the knowledge and understanding of digital currency, tax-reduced or tax-free cryptocurrency and pushing to use digital currency, the economy and the movement of the trading economy will be even more affected by the government's management mentioned above.

Keywords: use of digital currency; digital currency; fluctuation of bitcoin's price; payment for goods and services and other transactions

1. Introduction

Globalisation has entered a new stage of development. Moreover, the advancement of information and communication technologies (ICT), the spread of the Internet, as well as mobile communications, have all played a role. The computer and newly generated ICTs are the main technological attributes of the current stages of globalisation, uniting the world into a single communication system, creating an integrated financial and information space. In addition, the economy is primed for new and emerging forms of consumption. This is the result of a convergence of technological, economic, and sociocultural phenomena that is currently changing traditional forms of commercial exchange (Limna, Kraiwanit, & Siripipatthanakul, 2022). Similarly, modern technology is continually evolving. Over numerous eras, the world has changed. The Internet and computer operating systems have been invented using novel and innovative concepts. One of the innovations in the development of computer systems and the Internet is the use of digital currency, known as "Bitcoin". The first digital currency to be invented and offered as an electronic and encrypted payment system was Bitcoin, which was developed by a developer using the alias "Satoshi Nakamoto". Cryptocurrency is the most widely used currency on the Internet. It arises from

the introduction of a limited number of mathematical mechanisms that require a computer to decode them to extract the money in the form of cryptocurrency. The evolution of spending from past to present includes money, coin, credit card, e-currency and cryptocurrencies, which each have clear features and differences, such as easy and fast transactions, low costs and no financial restrictions, as well as a high level of safety and privacy and inflation risk protection, in addition to the ability to transfer money worldwide 24 hours a day with no time limits or restrictions. In addition, the most popular type of currency to use in paying for goods and services today is the digital form, which refers to a currency legally registered in accordance with international principles. This is why people around the world can use it without restrictions (SBN, 2018). Furthermore, the unstable value of digital currency means it is not yet supported by a central bank for legal settlement and not used as a unit to price things, but if it is a central bank digital currency (CBDC), it will have all the properties of money because it has a definite value and can be legally substituted for local currency. Today, the number of digital currencies online has increased. Bitcoin was the world's first digital currency built on blockchain, a technology used to verify any Bitcoin-related transaction (Paripunyapat & Kraiwanit, 2018). The heart of Bitcoin is "Decentralisation," without the intermediary control or oversight of any government or bank. Bitcoin currently has the highest value and market share in the cryptocurrency market with huge daily trading volumes (Fillgoods, 2021).

Based on the increasing trend of using digital currencies to pay for goods and services, one report noted that 10.2% of the Thai population held digital currency, while the global average was at 20.1%. In addition to having the largest percentage of crypto (Digital Currency) holders in the world, Statista Digital Economy Compass (2022) has estimated that 4 million Thais own digital currencies, while 5.65 million possess non-fungible tokens (NFTs), and their share of crypto holdings is more than double the global average. The countries with the most crypto holders after Thailand are Nigeria, the Philippines, South Africa and Turkey, and most of those who have started investing in cryptocurrencies are males between the ages of 16 to 44 years old (TODAY Bizview, 2022). This reflects the users' confidence in digital currencies as well as their use of money that is likely to expand into the world's major currencies. The use of digital currencies is in line with the direction of the environment, which is moving towards the digital age. From 2009 to 2012, some cryptocurrencies began to be used but were not very popular, with an increasing trend in the number of cryptocurrency transactions in the year 2013 due to the global economic situation. During 2013, governments, particularly in the United States, Europe, Japan and China, aimed to end debt problems, public budget deficits, economic stagnation and financial crises. These problems would exacerbate the devaluation of competition and trade barriers, affecting the global financial climate and pushing the economic system to the verge of uncertainty. As a result, people began increasingly turning to cryptocurrencies (Fongthiwong & Chancharoenchai, 2019).

The development of a digital currency requires blockchain technology to track the movement of money, even without intermediaries, but can prevent counterfeiting. It makes payments and money transfers only within the network, which is great in terms of convenience, speed, low cost, and security. However, most central banks have yet to certify that cryptocurrencies issued by private agencies can be used to settle payment legally. Blockchain technology has the potential to enhance the efficiency of the Thai payment system but implementing it will take time due to having to test its capabilities and further study its impact. Testing the performance and managing the volatility of cryptocurrencies is a priority for the world's banks if the digital currency does not pose a risk to the stability of the financial system and the use of digital currency in a country's payments can be ensured (Chunhachinda, 2018). Hence, the development of future cryptocurrencies is important, leading to the emergence of many other types. As a

result, developers have noted the opportunity and importance of choosing a digital currency as a convenient, fast and inflation-proof money transfer channel, so new forms have been developed and there has been more investment in cryptocurrencies. Moreover, opinions and suggestions from people who are interested in cryptocurrencies and users are very important in the development and design of new currencies. Therefore, it is critical to study payments in digital currency by examining the history and importance of choosing a digital currency in Thailand, as well as listening to opinions and proposals from digital currency users in regard to paying for goods and services to benefit the further development of the digital currency system. This study aims to collect users' opinions on the use of digital currency for the payment of goods and services

2. Literature Review

Bitcoin, like any other digital currency, is merely a virtual currency or a medium for conducting digital transactions. The global interest in bitcoins has recently increased. As a result, it is critical to comprehend the fundamentals of this and all other types of virtual currencies. Bitcoin and its alternatives are all based on encrypted cryptographic algorithms. This decentralises the currency and gives the user ownership. These can be obtained via an online exchange or a Bitcoin ATM. A distinguishing feature of bitcoin is that it can reduce the likelihood of fraud and identity theft, making it a safe way to store money. Bitcoins enable online purchases of goods and services as well as money transfers (Gupta, 2017). There are other digital currencies Ethereum is an open-source, public blockchain-based platform for decentralised applications (dApps). Ripple is a real-time gross settlement system, currency exchange, and remittance network designed to facilitate cross-border payments (Shoeb, 2018). Table 1 shows the differences between cash, bitcoin, and other digital currencies, Ether or Ripple.

Table 1. The Differences between Cash, Bitcoin, and Other Digital Currencies *(Constructed by Authors)*

	Cash	**Bitcoin**	**Other Digital Currencies (Ether / Ripple)**
1. Controlled by	Central Bank	Private Sector	Private Sector
2. The ability to pay for goods and services	Yes	Yes	Yes
3. The ability to pay debt	Yes	No	No
4. Legal acceptance	Yes	No	No
5. Electronic payment	Yes	Yes	Yes
6. Risk and variance	Low	High	High
7. Self-worth	Yes	No	No
8. Transactions through the system using an intermediary	Yes	No	No
9. Cost of payment	Increase	Decrease	Decrease
10. Confidence in holding of money	High	Low	Low
11. Asset as reserve	Yes	No	No

People can exchange value without the use of intermediaries with Bitcoin, giving them greater control over their funds and lower fees. It is faster, less expensive, more secure, and unchangeable. Moreover, banks control cash, whereas bitcoin has owners. The underlying technology of bitcoin, blockchain, is what will make or break it. A distributed network of thousands of computers uses cryptographic techniques to create a permanent, public record of every single Bitcoin transaction that has

ever occurred. This record will be extremely useful for a variety of purposes other than tracking payments. Unlike cash, there is no way to duplicate a bitcoin. In addition, while there is no true way to track cash, Bitcoin can be used anywhere in the world without the need for a conversion. It is regarded as equivalent to gold and combines the best of cash and gold while offering an open market and no restrictions imposed by banks or governments (Gupta, 2017).

Characteristics and Differences in Spending Sources between Traditional and Digital Currency

Throughout history, there have been financial transactions where tangible assets have been used as a medium of exchange for the purchase of goods and services in the form of coins and banknotes produced by the central bank of the state. However, there have also been disadvantages associated with these forms, such as when, while exchanging goods of high value, it is still necessary to spend a lot of cash on goods, which can cause inconvenience in trading. Subsequently, types of payment were developed in electronic or digital forms, such as money transfers via the Internet, mobile banking, credit and debit cards, and electronic wallets (e-wallets). The advantages of electronic payments are that they are convenient and quick to receive and pay regardless of time or place, and can also reduce the cost of managing cash. However, financial institutions are still required to supervise these financial transactions. On the other hand, if there is a problem with the centralised system, financial transactions will be disrupted, causing a large impact on the economy. However, if there is no centralization in the system, the cost of payment will be reduced as well. This has led to the development of "cryptocurrency", which is a transaction through a system without a financial intermediary that is able to automate transactions, eliminating complex processes. However, since no banknotes or coins can identify where the money is, to prevent erroneous duplicate payments, a digital technology like blockchain is needed that keeps track of all transaction accounts and knows where the digital currencies are, as well as who owns them.

There are two types of CBDC: (1) a whole CBDC is a transaction between financial institutions using distributed ledger technology. In addition to exchanging data, transactions can also be made directly with each other; (2) a retail CBDC is employed in the retail transactions of businesses and citizens, which will give citizens greater access to digital forms of money issued by the central bank. It is also gaining attention from the public due to the current trend for digital currency. The two central bank-issued digital currencies caught the attention of the central banks of different countries, which also made them recognize the opportunity to create cross-border transaction channels. However, the Bank of Thailand has a plan to pilot a retail CBDC trial for a limited number of people in the fourth quarter of 2022 (Kapilkarn, 2022).

Differences in Holding Money between Traditional Currency and Digital Currency

Tiantammachat (2018) stated that the influence on people's decisions to accept digital money in Bangkok comes from a variety of factors, including confidence in social influence, ease of use, benefits, facilities, and value. The reason for deciding to adopt cryptocurrencies in terms of ease of use is that people believe that it is easy to learn to trade cryptocurrencies and to have the skills to do so. They think that exchanging cryptocurrencies will be easy in terms of experience and usage and believe that it can be useful in life, as well as that it will increase the chances of receiving better financial returns.

People currently use cash based on the belief that banknotes or coins can be a legal medium of debt settlement, and if more instability in value can be maintained that affects the trading of goods and

services, cryptocurrencies will be increasingly officially accepted internationally. Therefore, digital currencies that are cryptocurrencies, such as Bitcoin, are different from traditional ones issued by the central government because they do not have collateral, the exchange rate depends on a market with a high variance, they are designed to replace traditional currency and most of them do not have legal support for payments. In addition, the "digital baht" is different from some cryptocurrencies that have a value fixation mechanism against the base currency or other assets to create less volatility, or stable coins, where the holder may not be able to be sure that the assets used to fix the valuation actually exists and who will certify them (Chucherd, 2021).

The Differences between e-Money and Digital Currency

"Electronic money" was defined by the Bank of Thailand as the value of money stored in a computer chip placed in a plastic card, or an electronic form such as a mobile phone or money in the Internet network, using electronic money or electronic wallet (e-money or e-wallet), which is a financial service where people pay money to the service provider in advance, the value of money is recorded, and the service provider is responsible for the e-money, the balance of which is recorded in various media and also belongs to the service user, with the monetary value unchanged (Hongwattanakul & Boonthathip, 2014). In Thailand, e-money has evolved to be more convenient, efficient, and more secure, meaning it is steadily gaining popularity. The growth rate has continued to increase both in terms of transaction volume and spending value. In addition, financial transactions via Internet banking and mobile banking have also increased significantly in both the quantity and value of their spending. This reflects the development of patterns and behaviours in spending money while shopping, which tend to shift towards a cashless society more clearly. Mobile banking in particular is still a highly growing channel and may become an important payment form in Thailand because it makes financial transactions convenient and fast. In addition, financial service providers have developed applications to be easier to use and more secure (Linhavess, 2014). A digital currency, on the other hand, is a virtual currency created by computer and mathematical mechanisms that allows payments, transfers and exchanges to be made only within the network. The use of digital currency is a rapid technological change that has resulted in a large number of new financial innovations and has also affected the regulatory sensitivity and stability of countries' financial systems. Currently, some central banks are considering adopting a CBDC. However, this digital currency is not recognized by a central bank or legally, is non-payable and has no value of its own. In addition, it has been found that most people still lack knowledge and understanding of digital currency to a large extent. Therefore, financial service providers and regulators, especially the Bank of Thailand and related agencies, must promote, provide information and create more accurate awareness about digital currency. At the same time, financial service users need to prepare themselves in terms of financial management knowledge, technology and information in order to make the most of financial innovations with minimal risk (Srichart, 2013).

Differences in Online Payments between Digital Baht and Traditional PromptPay

Today, Thailand has a PromptPay system for people with bank accounts, allowing them to make payments or transfers without paying any fees. In the future, digital baht will be used to make payments instead of cash (Moenjak, Kongprajya, & Monchaitrakul, 2020; Sagarik, 2021). According to Kanoklertwong (2021) and Peters, Green, and Yang (2022), digital currencies can be used in trading, exchanging goods and services and transferring to each other, as well as in exchange for real currency used in the economy. This makes them look like virtual currencies that do not require reserve assets due

to their value depending on the sentiment and agreement of users in the market, so there is a risk and credibility in the value of the currency. Currently, CBDCs are starting to gain more trust, such as China's upcoming digital yuan, as well as the digital baht that the Bank of Thailand will test in 2022. Ultimately, when tourists come to Thailand, they will not be able to use PromptPay to transfer money or make payments as they will not be able open a bank account in Thailand, but if there is a digital currency system, it will allow tourists to put money in their e-wallets, and if merchants in Thailand will accept payments through their e-wallets, then when they travel in Thailand, they will not need to exchange cash. They only need to have an e-wallet that will allow them to spend in Thailand. Therefore, in the future, instead of the e-wallet system that has to be tied to a bank account or has to have money added into the system account first, we may have digital baht deposited, which may be used to store other cryptocurrencies abroad, such as digital yuan or other stable coins issued by non-central banks. It may also allow users to choose which currency to use for payment, depending on what kind of digital currencies are accepted by the payment merchant.

Opinions on the Use of Digital Currency for the Payment of Goods and Services

Based on a review of the relevant literature, there have been studies on opinions regarding the use of digital currencies for the payment of goods and services, which can be summarised as follows.

Fongthiwong and Chancharoenchai (2019) stated that in terms of the behaviour of Thai people using digital currency in various fields, the majority utilised it for investment, accounting for 43.2%, to invest in trading at 39.5%, in initial coin offerings (ICOs) at 6.2%, and in creating and developing blockchain projects at 2.3%, to purchase everyday products at 7.1%, and for other purposes at 1.7% (as shown in Fig. 1). Most (88.9%) used digital currencies for speculative purposes, reflecting the volatility of cryptocurrencies, which may not be beneficial for either consumer or commercial exchange purposes.

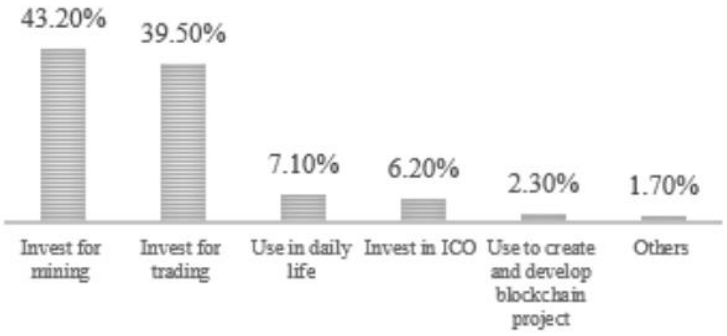

Figure 1. Digital Currency Usage Behaviour of Thai People *(Chancharoenchai, 2019)*

3. Methods and Materials

The qualitative research method includes four primary research steps: research design, data collection, data analysis, and report writing. Content analysis is a versatile data analysis technique used in qualitative systematic reviews to describe specific phenomena in a systematic and objective manner and to draw valid conclusions from verbal, visual, or written data (Limna & Kraiwanit, 2022). Texts are

frequently used as a starting point for qualitative content analysis. The goal is to condense a large amount of text into a clear and concise summary of key findings. In addition, a common starting point for qualitative content analysis is to transform a large amount of text into a highly organised and concise summary of key findings (Siripipatthanakul et al., 2022). As a result, the researchers conducted a systematic documentary review. Also, a content analysis was used to analyse and interpret Bitcoin as the base currency because of its value, popularity, and market share factors, as well as the comparison of differences in the historical use of cryptocurrencies compared to today's form, in addition to the development of the current financial system and the modernization of current financial technology. The problems associated with the growth of the financial system, as well as the suggestions of business entrepreneurs in relation to using the digital money system as a guideline for the development of the digital currency system in the future, based on the principle of concordance between cause and effect that describes the condition of a problem as it actually is, are also included.

4. Results

Based on an examination of digital currencies and the choice of digital currencies in Thailand, the results can be summarised as follows.

Thailand started using banknotes in its economy in 1961. Later, in 1995, it started the service of the BAHTNET system, which was a high-value e-money transfer network, connecting the Bank of Thailand with its users, most of which were commercial banks. Later in 2015, PromptPay, a money transfer and receipt service, began to be developed. This made financial transactions more convenient and easier, as it only involved linking a bank account with a proxy ID. It was widely popular and allowed the fast transfer of money without fees, which could be used in the country. Later in 2017, the quick response (QR) code payment was introduced. It could be used for both domestic and cross-border transactions and became extremely popular. In the development of digital currency or Bitcoin, there has been a parallel advancement of the banknote system as well. By the time Bitcoin got its start in 2009, it was known only to some online users, until the Federal Bureau of Investigation (FBI) shut down the website "Silk Road", which sold drugs and accepted crime-related financial transactions, as well as confiscating up to 26,000 Bitcoins, causing damage of more than 3.6 million dollars (approximately 115 million baht). Bitcoin, the digital currency of the world, began to be widely known for the first time.

Cryptocurrency investments began to be introduced as Bitcoin or virtual currency. Bitcoin was one of the first cryptocurrencies known through investments and programmatic work mainly on computer systems and the Internet, which had its transactions recorded in ledgers on the public Internet network. Later in 2009, cryptocurrencies became more popular and accepted as money, in addition to the growth of online businesses that accepted cryptocurrencies in exchange for purchases, which encouraged people to use them as they were more convenient and faster. In addition, the value of Bitcoin and various cryptocurrencies is high compared to the Thai baht due to their reference to foreign currencies. However, the value of cryptocurrencies is unstable, causing risk and currency volatility, as well as a lack of stability in holdings, making investors hesitant about using them. In Thailand, users are concerned about the potential risks. Bitcoin is not used much in Thailand, but some countries have widely accepted and begun to utilise digital currencies, including the United States, Canada, Australia, Germany, France, United Kingdom, Hong Kong, EU, and Malaysia, etc. There are also nine countries that have banned cryptocurrencies, including Egypt, Iraq, Qatar, Oman, Morocco, Algeria, Bangladesh and China, because

they can be used illegally and can damage the stability of a country's financial system. But at the same time, many governments are looking at ways to regulate and control cryptocurrencies.

In Thailand, a digital currency, according to the Investopedia dictionary 2022, is a currency that exists only in digital or electronic form. It is a virtual currency created by cryptographic technology. The digital currency is defined under the control of The Royal Decree on Digital Asset Business Operation B.E. 2561 (2018). The intent of this decree is to enact or regulate the implementation of cryptocurrencies as a fundraising tool through digital token offerings to the public or as a medium to exchange and to be traded in cryptocurrency and digital token exchange centres, which allow business or economic operations which may affect financial stability as well as the national economy and the public at large, in order to have laws regulating and controlling business operations or activities related to digital assets. Thailand still does not accept digital currencies or crypto currencies as legal settlements; however, it does not prohibit or consider any business activity related to digital currencies or cryptocurrencies illegal, but rather rigorously regulates them. The Bank of Thailand is considering issuing a digital baht similar to China's digital yuan.

In addition to the change in the currency system in Thailand, its use has also changed. At present, people are interested in and use payment systems and financial transactions via mobile payments, which are a source of money that users must choose and apply for by linking to a mobile phone to deduct money when making transactions, such as bank accounts, credit cards or e-money. This includes the bank's mobile banking service (to transfer money or payment for goods and services) and mPay and True Money services, which are e-money service providers via mobile phones. In addition, there are different types of technologies used to connect the data relating to mobile payment services, such as sending short message services (SMSs) via mobile phone networks, or a wireless application protocol (WAP) or hypertext transfer protocol (HTTP) via the Internet network or radio frequency identification (RFID) technology, which use a short-range radio receiver to transmit data to a chip or smart card in a mobile phone. The problems arising from changes in payment systems and precautions for using mobile payment services are that using mobile payments requires setting a personal identification number (PIN)/password, which may be easy to guess. Users must keep the user ID and password secret and change the password continuously. Electronic transaction formats are always evolving, so it is wise to study the transaction formats and security methods offered by the service provider before deciding to use a service. The opinions of digital currency users on paying for goods and services are as follows:

1. Thailand is a country with various developing systems. More technology is being adopted, a great number of digital currencies have been released and more new ones will be developed, making it easy for anyone to create one. However, Thai people see digital currency as a novelty that will be unstable and unreliable in the future, although there may be a widespread adoption around the world. In the future, it could be the world's major currency and affect other types.

2. Thailand is not ready to use cryptocurrencies because people still lack knowledge and understanding of digital currencies and are not ready to enter a fully cashless society until people become accustomed to using it and are not discouraged from developing technology systems.

3. Cryptocurrencies should not be taxed. Digital currencies are subject to 15% tax on withdrawal, which is inappropriate as other forms of investment in Thailand are not taxed, such as stock markets and golds.

4. It is very risky to invest in digital currencies in terms of both trading and mining. Investors who are interested should examine the information thoroughly and study risk laws before investing. Governments should step in to properly manage a digital currency in order to build its credibility.

5. The public has little awareness of digital currencies and such individuals do not hope to monetize digital currencies in case they will negatively affect the credibility of the currency. Governments should expedite preparations to enact legislation to support the legalisation of digital currencies.

6. In order to drive the adoption of digital currencies, once their regulation is legal, there should be a tax deduction or tax-free approach to attract more people to invest in digital currencies.

5. Discussion

Although digital currencies have their advantages and are increasingly popular among consumers, investors, businesses, and financial institutions in some countries, they lack the features of currencies like fiat money, such as in the lack of control over transactions. In addition, the majority of users of cryptocurrencies employ them for speculative purposes, including US Treasury bills, financial instruments, common stocks, and cryptocurrencies. Longer withdrawal periods expose holders to purchasing power risks, causing fluctuations in expected returns. The longer the withdrawal period, the more unsuitable for investment (Huizinga & Mishkin, 1984). In addition, the level of creditworthiness of the invested securities also affects the volatility of expected returns (Blume et al., 1991). For this reason, this study recognized the importance of opinions on the opportunity to use cryptocurrencies in the trading of goods and services, especially in the case of Thailand, where its application is still limited. The research data can be used to develop and promote the use of digital currency in the globalisation of the financial system. Furthermore, according to a study on the importance of issues related to digital currencies, the majority of people have high-priority and important concerns about the risk of digital currency compared to other issues, especially the instability of price, which continues to affect the credibility of digital currency. If there is a low level of credibility, the risk is high, which affects the investment decisions of those who use digital currency for speculation. This is consistent with the findings of Blume et al. (1991), which describe how the level of bond credit affects the volatility of returns. In other words, the yields on low credit ratings are more volatile than those on high credit ratings. As with digital currency, if there is a low level of credibility, the returns will be highly volatile and the level of risk will increase, affecting the decisions of digital currency users accordingly.

6. Suggestions

Digital currency development in Thailand is new as people still have little knowledge and access to information on how to use it and it has not yet been legally defined and managed in Thailand, causing people to have fears about the risks of investing and the volatility of such currency. Thus, governments should promote knowledge, understanding and training for people to access digital currency investment information and point out the benefits of future technological developments as well as reducing the tax on digital currency to attract more people to invest. In the near future, many countries will be accepting more cryptocurrencies, including through the continuous development of a country’s payment system

strategy to cover an interconnected payment infrastructure, as well as promoting payment innovations and services, in addition to the access to and use of payment services, governance, risk management and payment information development. Therefore, if Thailand wants to develop and facilitate business dealings, it is necessary to accelerate the legalisation of the management of the digital currency system as in other countries. However, the approaches to developing and promoting the use of digital currency services for different groups of people vary depending on a number of factors. Therefore, in order to advance and promote knowledge about digital currency, a sample should be grouped according to age to evaluate the appropriateness and clarity of opinions and guidelines to encourage knowledge, skills, and the understanding of currencies for the country to catch up with other nations in the future.

7. Further Study

This study employed a systematic review. Regarding users' opinions on the use of digital currency for the payment of goods and services, it is recommended that future research utilise quantitative methods, such as questionnaires or surveys. Moreover, qualitative methods, such as interviews or focus group discussions, could provide a clear picture of the results of an insight study.

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