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Article

Challenges of Collecting Zakat on Digital Assets: A Case Study of Selected States Kuala Lumpur, Selangor, and Perlis

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ABSTRACT - This paper aims to investigate the challenges associated with collecting Zakat on Bitcoin, one of the digital assets in Malaysia. The study is qualitative as interviews were conducted with Zakat officers, Chief Executive Officer of MAIPs Perlis, Muftis, Scholars, and experts. The study identifies key challenges. Firstly, limited knowledge among the general population complicates determining whether specific digital assets are Zakatable. Additionally, the study highlights that technological infrastructure deficiencies hinder the efficient management of digital assets for Zakat purposes. The findings also reveal that the challenge of credit risk arises from the unpredictable nature of digital asset prices, leading to uncertainties in when to liquidate digital assets (Bitcoin) after receiving Zakat. Note that regulatory uncertainty due to the absence of clear guidelines impacts the establishment of standardized procedures. The digital assets are unstable since they are not properly regulated by Bank Negara. It was discovered that the challenge is also related to security concerns related to cybersecurity risks, including hacking and unauthorized access, which pose significant threats to Zakat funds collected as digital assets. It is expected that the findings of this research will educate Muslims on Zakat's obligations to digital assets. It will also inform policymakers, regulators, and stakeholders, guiding future initiatives and policies to foster compliance, transparency, and security in collecting Zakat from digital asset holdings.

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INTRODUCTION

The digitalization era and the Internet of Things (IoT) transform useful substances into electronic forms. Financial institutions and markets have also adopted the digitalization of facilities and services to make them more accessible and easier for customers. These include digital forms of banking, financing, investment, money, wallets, and currency, amongst others. Having something in a digital form makes it easier to consider it as a digital asset in a comprehensive manner, such as digital multimedia, documents, and other electronic stuff (Dong, 2020). Furthermore, big data, digital commodities, and social media accounts are among the digital assets that have value in the digital era. Cryptocurrencies such as Bitcoin, Litecoin, Ripple, Stellar, and many more are among the most crucial digital assets that attract the attention of many people worldwide (Le Tran & Leirvik, 2020). Digital assets encompass clearly defined representations of value facilitated by advancements in cryptography and distributed ledger technology. Correspondingly, these assets

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are quantified in their respective units of account and can be exchanged directly between peers without the need for intermediaries. In essence, cryptocurrency aligns with the International Monetary Fund's digital asset classification, constituting a virtually existing and intangible form of asset (He, 2018).

Malaysia is among the nations that have officially acknowledged cryptocurrency as a digital asset through the issuance of the Capital Market and Services (Prescription of Securities) (Digital Currency and Digital Token) order in 2019 by the Securities Commission Malaysia (SC) as stated by (Hammond, 2021). However, it is essential to note that this directive specifically categorizes digital assets as digital currency or tokens, designating them as prescribed securities solely for securities laws. The definitions of these terms can be discovered in Regulation 2 of the Capital Market and Services (Prescription of Securities) (Digital Currency and Digital Token) order from 2019. In this order, "Digital currency means a digital representation of value that is recorded on a distributed digital ledger, whether cryptographically secured or otherwise, that functions as a medium of exchange and is interchangeable with any money, including through the crediting or debiting of an account; and 'Digital token means a digital representation that is recorded on a distributed digital ledger whether cryptographically secured or otherwise." In addition, for cryptocurrency to be legally recognized as digital assets, it must be issued by a legally registered Digital Asset Exchange.

Innovation based on technology closely related to the financial sector has now created a new currency-based system. In addition to paper currency, society is shifting towards digital currencies such as e-money and cryptocurrencies (Azela et al., 2023). The term "crypto" in cryptocurrency is derived from the encryption or cryptography used to build the instrument, which is then included in a blockchain database. The term "currency" refers to its acceptance among its users as a medium of exchange (Abu-Bakar, 2018). In addition, cryptocurrency is a blockchain-based technology that uses digital, electronic, or virtual money, which is like real money but does not have a physical form. Thus, using blockchain technology, all transactions will become very transparent, and all existing data will be related to one another, with each existing data having one user within the scope of the cryptocurrency system.

As defined by the European Central Bank, virtual currency is described as "a digital representation of money that is neither issued by a central bank nor a public authority, nor is it necessarily associated with fiat money or currency but is accepted as a means of payment by natural or legal persons and can be transferred, stored, or traded electronically" (Mikołajewicz-Woźniak & Scheibe, 2015). Notable examples of these virtual currencies include Bitcoin, Litecoin, Ethereum, Ripple, and Stellar, among others.

Bitcoin is the most popular and common. Nakamoto defined Bitcoin as "a purely peer-to-peer version of electronic cash that would allow online payments to be sent directly from one party to another without going to a financial institution" (Rahardja et al., 2021). It is a decentralized virtual currency with no central issuing authority. Once a Bitcoin is mined, it can be sold, used as payment for retail purchases, or held as an investment to be traded later. Nakamoto designed Bitcoin to ultimately create 21 million Bitcoins as rewards for solving mathematical algorithms, which is crucial to maintaining the Bitcoin ledger for its mining (Srivastava, 2019). Since its inception, Bitcoin has sparked widespread interest around the world. However, it concerned Muslims whether they should pay their Zakat on Bitcoin, as many Muslims are involved in trading and investing in this new financial technology around the globe. Despite the considerable fluctuations in the price and low liquidity of Bitcoin, coupled with its lack of physical presence and government support, the trend of investing in Bitcoin is growing, as mentioned in a study by Lavere (2019). Even prior to official regulation by the Malaysian government, local investors were involved in Bitcoin investments. Notably, Bitcoin has gained recognition as a Zakatable asset among Muslims due to its profit-generating nature. Scholars, such as South African Shafie Scholar and jurist Shaikh Taha Karaan, classify Bitcoin as *Mal* (property) based on its widespread acceptance. The absence of formal regulations does not hinder Bitcoin from being considered

property. This viewpoint is also endorsed by Darul Uloom's Zakaria, who affirmed Bitcoin's classification as *Mal* (property) and its potential use as a currency as indicated by Mahomed and Mohamad (2017). The main objective of this research is to examine the challenges of collecting Zakat on Bitcoin in Malaysia.

LITERATURE REVIEW

Bitcoin from the Shariah Perspective

Numerous studies have explored the varying perspectives within the Muslim community regarding the permissibility and restrictions associated with the use of Bitcoin since its inception. Similarly, certain Muslim scholars have endorsed its acceptability under Islamic law and have advocated for the engagement of the Muslim community in transactions involving Bitcoin. This is as evidenced by a report from Blossom Finance, an Indonesian fintech startup with insights from their internal Shariah Advisor, Mufti Muhammad Abu Bakar, and others like Mufti Faraz Adam, an Islamic finance and fintech advisor based in the UK and the executive director of the Global Shariah Advisory firm Amanah (Abu-Bakar, 2018).

Diverse opinions among Islamic scholars and authorities exist regarding the permissibility of Bitcoin in accordance with Islamic law. Opponents of its use argue that it deviates from the characteristic of money in Shariah rulings, contending that it does not meet the criteria of a legitimate currency within Islamic law. The objections to Bitcoin can be categorized into four areas: Its speculative nature, religious considerations, regulatory constraints, and reported negative impacts. In the first category, scholars advocate against Bitcoin's use in Muslim communities due to its speculative nature. They asserted that many users engage with it as a form of speculative investment, akin to gambling, citing concerns about Bitcoin's volatility and the absence of regulatory oversight leading to uncertainty (Adam, 2017; Adzimatinur et al., 2021; Aliyu et al., 2020; Bakar et al., 2017; Fatarib & Sali, 2020).

In addition, research conducted by Shetewy et al. (2019) and Mnif and Jarboui (2020) explicitly disapproved of the use of Bitcoin, citing reasons such as conflicting with the traditional beliefs of the respective communities. Furthermore, scholars like Hasbi and Mahzam (2018) and Franciska Mifanyira and Kusumawardhani (2020) prohibited the utilization of Bitcoin based on the constraints imposed by federal authorities, specifically the government.

On the contrary, scholars such as Oziev and Yandiev (2017), Onagun and Abdullah (2018), Yuneline (2019), and Nugroho (2021) contended that Bitcoin fulfills all the criteria of money within an Islamic context, akin to the conventional currency. They argued that similar to widely accepted forms of currency, Bitcoin is recognized by a community and treated as a valuable asset.

Moreover, Elgari asserted that Bitcoin qualifies as a form of money due to its extensive adoption and familiarity among people. He regarded it as an evolutionary progression from primitive exchange mediums like stones, salt, and animals to more traditional forms such as gold, silver, and paper money (Elgari, 2021).

Furthermore, Dato Dr. Mohd Bakar, Chairperson of the Shariah Advisory Council of Bank Negara Malaysia (BNM), argued that cryptocurrency and digital currency are generally permissible under Shariah law unless specifically prohibited by local regulations. He emphasized that deeming a currency illegal solely based on price fluctuations is unreasonable, citing the volatility experienced by fiat currency without resulting in their prohibition. In addition, Bakar encouraged the use of cryptocurrencies, highlighting their secure transactions and potential benefits, including combating money laundering (Abubakar et al., 2018).

It is argued that the widespread acceptance of cryptocurrencies by many global industries and businesses and listing on exchange platforms justifies their acceptance by Muslim communities according to Islamic principles to avoid being left behind in technological advancements (Yusof et al., 2021). Moreover, some scholars, including Saleh et al. (2020) and Taghdiri (2020), acknowledged concerns expressed by others but emphasized that these issues, such as volatility

and speculative nature, are not exclusive to cryptocurrencies and do not invalidate their status as a currency within Islamic principles.

According to Oziev and Yandiev (2017), no clear evidence indicates that Bitcoin contradicts Islamic principles. The fact that the price of Bitcoin has skyrocketed in recent months by hitting new heights, for example, 20k USD for one Bitcoin as of 17th December 2017, is not an indication of its impermissibility from the Islamic point of view. If anything, it is just a sign of an increase in the high demand for Bitcoins. Abu-Bakar (2018) shared a similar view, asserting that blockchain technology associated with cryptocurrencies can aid in combating money laundering. He disagreed with categorically forbidding cryptocurrencies under Shariah due to their fluctuating value, drawing a parallel with the fluctuation of fiat money values, which is not deemed forbidden.

Islamic legal criterion of property *(Mal)*

In Shariah, the basic requirement for a counter value or consideration is that it has the status of *Mal*, which means property. As a result, prior to delving into the status of cryptocurrencies in Shariah, the concept of *Mal* in Shariah must be defined. The Quran and the Sunnah of the Prophet Muhammad (peace be upon him) do not clearly define *Mal*. As a result, jurists and scholars differ slightly in their definitions of *Mal*.

According to some scholars, *Mal* is only used for corporeal (*ayn*) or tangible things. Other legal scholars believe that *Mal* encompasses both tangible and intangible objects. This is with the assumption that the item is both valuable and desirable, and in this case, Shaykh Zuhayli categorised scholars as Hanafi scholars and majority of scholars.

Definition of *Mal* according to Hanafi scholars

According to Ibn Nujaim, *"Mal is something desirable that can be saved for a rainy day."* It is considered harmful when all or a group of people accept and act as if something is terrible (Ibn Nujaym, 1997). Another great jurist, Ibn Abidin al-Shami, uses the exact definition of *Mal*. He quoted another jurist who mentioned, *"Mal is something other than humans that are created for the benefit of humans and can be stored and used when needed"* (Ibn Abidin, 2009).

Furthermore, the famous Hanafi jurist Al-Haskafi defined *"Mal as a tangible thing or corporeal thing which is desirable and consumable"* (Al-Haskafi, 2000). Similarly, Shaykh Zarqa explained the Hanafi Jurist's perspective on the definition of *Mal* (Al-Zarqa, 1998). He claimed, *"Every tangible thing that has monetary value among people is Mal."*

According to Hanafi scholars, *Mal* is limited to material and tangible things, as evidenced by these definitions. Intangible rights and benefits, on the other hand, are not considered *Mal*.

Definition of *Mal* according to the majority of scholars

Most jurists and scholars (including Maliki, Shafi, and Hanbali scholars) believe *Mal* is not limited to physical objects. Most believe *Mal* includes intangibles, benefits, and rights under certain conditions.

According to Shakyh Zuhayli, most scholars believe that *Mal* refers to anything that has value and should be compensated if destroyed. Similarly, Al-Suyuti quotes Imam Shafi's definition of *Mal "as something that has value, is used as consideration in trade, must be compensated for if destroyed, and that people do not act as if it is a valueless thing"* (Al-Suyuti, 1983).

In conclusion, most scholars believe *Mal* is not limited to tangible objects and can be intangible if the abovementioned conditions are met.

Contemporary scholars' view on *Mal* in Islam

According to contemporary Hanafi scholar Shaykh Taqi Usmani, it is considered *Mal* if non-tangible things such as rights and benefits become valuable according to custom. He claimed that prevalent business customs (*urf*) are critical in determining the benefits and rights (*Huquq* and *manafih*) as *Mal* (Usmani, 2015). Similarly, a contemporary jurist, Shaykh Khalid Saifullah Rahmani,

contended that tangibility is unnecessary for classifying something as *Mal.* He highlighted that storability is the essential condition for the *Mal* criterion. Only tangible things could be stored at the time of previous jurists. It was not anticipated then that intangibles such as benefits and rights could be stored and protected. He goes on to express that if something has the following required characteristics can be classified as mal:

a) It is potentially harmful.
b) It is permissible and legal according to Shariah *(mutaqawwam*).
c) It can be owned and possessed.
d) It has some applications and advantages.

Moreover, if custom classifies and treats something as *Mal,* it is automatically classified as *Mal* (Rahmani, 2010). Various scholars' definitions support these characteristics. The second characteristic is self-evident and does not require justification. Suppose something has no use or benefit. Therefore, no one will use it as a *Mal* or valuable thing. As a result, the first and third conditions must be explained briefly.

Mutaqawwam

This is a fundamental requirement for labeling something as *Mal. Mutaqawwam* is a Shariah-compliant term for something permissible. The *mutaqawwam* is defined as "something that is stored or present and permissible to use" by Shaykh Zuhayli. As a result, if something is not saved or present, it is not considered *Mal.*

Customary practice (*urf*)

When Shariah texts do not provide explicit judgment, *urf* is regarded as an essential source of the ruling. Jurists believe that what is derived from *urf* is equivalent to what is derived from the texts. Shariah texts must clearly define the criteria for classifying something as *Mal.* As a result, scholars have emphasized the importance of custom in labeling something as *Mal.*

All four schools of Islamic law agree that if something becomes valuable due to human custom and acceptance, it is considered *Mal.*

Concept of Bitcoin as *Mal* in Shariah

Rather than preventing Bitcoin from being used as money, its decentralized nature sets it apart from conventional currencies (Ali et al., 2014). Furthermore, cryptocurrency (Bitcoin) satisfies many of the characteristics of money, including durability, fungibility, portability, recognizability, and storage unit, as it is based on mathematical properties rather than an authorized body. This includes the central bank or physical properties (gold or silver). As a result, since they are willing to accept it as a payment method, user's trust and adoption drive cryptocurrency (bitcoin) value (Adam, 2018).

One of the essential criteria for *al-Mal* is that the item/goods be Shariah-compliant (Islam, 1999). In this regard, cryptocurrency is like other currencies in the sense that it is not derived from criminal elements or is harmful to anyone. Cryptocurrency, like other currencies, can be spent on righteous purposes, such as paying Zakat, which can also be spent on righteous purposes.

As a result, the criteria or requirements established by classical and contemporary scholars to constitute *al-Mal* in cryptocurrency must be present (Bitcoin). Based on the discussion above, cryptocurrency (Bitcoin) meets most of the criteria and other requirements for being considered as *al-Mal* from a Shariah standpoint. As a result, cryptocurrency (Bitcoin) can be used as a means of exchange for Muslims and others.

Zakat on Bitcoin

There is a debate among different scholars about Zakat and Bitcoin. Many scholars believe Bitcoin is considered *Mal* in Shariah, and Zakat is a must on Bitcoin. Scholars such as Adam stated that "any cryptocurrency or token purchased for reselling is always Zakatable (Adam, 2022). Similarly,

the Zakat Foundation of America (ZFA) issued a resolution on the Zakat obligation on cryptocurrency. It stated that "cryptocurrencies are Zakat-eligible wealth on which Zakat is due if its value reaches the Zakat on money threshold *(nisab)* and one has possession of it at its *nisab* for a lunar year *(hawl).*" According to the ZFA resolution, cryptocurrency is Zakatable due to its nature as currency, which has value, acceptance, and the characteristics of money. As a result, the ZFA considers Zakat to be due on cryptocurrency rather than an asset (America, 2022).

In addition, Darul Uloom Zakariya, a South African Islamic seminary, has issued a fatwa on the Shariah permissibility of cryptocurrencies to be used as *Mal* or wealth (Abu-Bakar, 2018). However, the fatwa disagrees that cryptocurrencies qualify as a currency unless recognized by a central or government-authorized body. As such, the Islamic legal criteria for money are as follows:

a) Treated as a valuable thing among the people.
b) Accepted as a medium of exchange by all or a substantial group of people.
c) It is a measure of value.
d) Serves as a unit of accounts (Abu-Bakar, 2018).

The scholar Abu Bakar concluded that Bitcoins as a cryptocurrency are permissible from the Shariah point of view. This endorsement is based on the recognition of cryptocurrency as valuable and widely embraced globally. However, he emphasized certain conditions, such as refraining from using cryptocurrency in jurisdictions where it is prohibited. Permissibility is contingent on regulatory acceptance of cryptocurrencies as a financial asset or alternative currency in a given jurisdiction. Additionally, Abu Bakar deemed it permissible in jurisdictions where regulators remain silent on the matter. However, individuals must be willing to assume associated risks when engaging in crypto asset transactions (Muneeza et al., 2022).

Furthermore, in 2020, the Perlis fatwa committee officially announced that Zakat could be levied on Bitcoin if it meets the *haul* and *nisab* (Zakat threshold) requirements for commodity classification (Abdul Rahman, 2020). The calculation for Zakat on Bitcoins is as provided in the following formula:

$$\left[\begin{array}{c}(\text{Lowest Value of Bitcoin Units in One Year} \times \text{Number of Bitcoins Units}) \\ + \text{Profit on Trading Results During the year}\end{array}\right] \times 2.5\%$$

The formula provided by the Perlis Fatwa Committee considers calculating Zakat on crypto asset holdings as wealth and Zakat on income as any profit gained from trading throughout the year. According to Perlis, Bitcoin ownership is lawful and can be recognized as property value due to Bitcoin's multi-function and benefit character. Meanwhile, the fatwa issued by the state fatwa committees of Perak and Selangor in August 2021 is more general in its permissibility of crypto as *Mal.* This is as opposed to the fatwa issued by the state committee of Perlis in December 2018, which only focused on crypto issued and transacted via registered and licensed Digital Asset Exchanged (DAX) operators with the SC of Malaysia (Kamis et al., 2022).

According to all fatwas and opinions, Zakat on Bitcoin must be paid in the same way that Zakat on other acceptable wealth is. Zakat must be paid when the *nisab* (Zakat threshold) is reached, as well as on the anniversary of the wealth's possession.

In conclusion, Bitcoin is subject to Zakat. This is admitting that Bitcoin trading generates a profit for its owners. Since it meets the growth criteria, it is a Zakatable asset *(al-nam).* Aside from that, its value and features have classified it as a commodity or financial asset. As a result, trading in such a product that can generate a profit qualifies it for Zakat.

METHODOLOGY

The study aims to examine the challenges of collecting Zakat on Bitcoin. The research design used for this study is qualitative in nature. The qualitative research design explores and understands the challenges of collecting Zakat on Bitcoin. Consequently, the data collection method employed in

this research is semi-structured interviews. This design allows for in-depth exploration of the subject matter, providing a nuanced understanding of the challenges faced in collecting Zakat on Bitcoin. Due to a lack of literature on the subject, current issues in this respect were recognized, and semi-structured interviews with experts, scholars, Zakat officers such as PPZ Wilayah Persektuan Kuala Lumpur, Chief Executive Officer of Perlis Islamic Religious Council and Malay customs, and the Mufti of Wilayah Persektuan Kuala Lumpur were conducted. A semi-structured interview is a conversational exchange in which the interviewer probes the subject to obtain information. In addition, semi-structured interviews take a conversational turn even though the interviewer has prepared a list of predetermined questions, allowing participants to discuss topics that are crucial to them. The interviews were used to gather information and insight for this research since they were conducted to understand the obstacles of collecting Zakat on Bitcoin.

The sampling method used in this study is purposive sampling. Purposive sampling involves selecting a sample based on specific characteristics (Lunenburg & Irby, 2008). Note that the sample for this study was selected based on their expertise, relevance to the research topic, and their direct involvement or knowledge in the field under investigation. In this case, experts, scholars, and Zakat officers directly working with relevant organizations were intentionally selected to participate in the semi-structured interviews. This method ensures that the respondents possess the necessary knowledge and experience to provide valuable insights into the challenges of collecting Zakat on Bitcoin.

Table 1: Participants demographics

An officer in the Zakat Collection Center of PPZ Kuala Lumpur Wilayah Persekutuan.	1
Mufti of Wilayah Persekutan and Professor at the University of Malaya	2
CEO of MAIPs, Perlis	3
Director- Zakat, Sadaqah and Waqf Division (ZAWAF).	4
Professor at the IIUM Institute of Islamic Banking and Finance (IIBF).	5
Associate Dean/Director for INCEIF's Executive Education and E-Learning and the Chairman of the Shariah Board of HSBC Amanah Malaysia serves on a number of Shariah boards internationally.	6

The qualitative interview involves interactions between the researchers and the respondents, including a topic and in-depth discussion about something to reach the presented research objective. The respondents, such as Zakat officers, muftis, scholars, and experts, were selected based on their expertise and experience in the field, making them suitable participants for the interviews. Correspondingly, their roles and direct involvement in relevant organizations or scholarly pursuits make them well-positioned to provide comprehensive and informed perspectives on the challenges associated with collecting Zakat on Bitcoin. The suitability of these respondents is based on their ability to contribute valuable insights and information that align with the research questions. Moreover, their expertise ensures that the information gathered through the interviews is relevant and credible and enhances the overall quality of the qualitative analysis conducted in this study.

Furthermore, thematic analysis was employed to analyze the transcribed data from the interviews. This approach allows for a systematic examination of respondents' answers, facilitating the identification of common themes and patterns that contribute to a comprehensive understanding of the challenges of collecting Zakat on Bitcoin.

RESULT AND DISCUSSIONS

The research findings underscore the considerable challenges associated with collecting Zakat on Bitcoin, one of the digital assets in Malaysia. The research conducted the coding process manually from the interview transcripts. Similar themes are identified from interviews in Table 2:

Table 2: Interview Themes

Themes	Respondent
Limited knowledge of digital assets	Respondents 1, 4 and 5
Technology insufficient	Respondents 1 and 5
Credit risk	Respondents 1,2,3,4,5 and 6
Regulatory uncertainty	Respondents 2, 4 and 5, 6
Debate about digital assets for Zakat	Respondent 3
Valuation complexity	Respondents 4 and 5
Security concerns	Respondent 4

Limited Knowledge

The first challenge identified was limited knowledge of digital assets among the general population of Malaysia. As one of the respondents mentioned,

> *The challenge is about knowledge; not many of us really get into the knowledge of knowing about digital assets very well. They have limited knowledge about digital assets, let's say when a customer comes and asks us for a digital asset. There is limited knowledge, meaning whether we can consider Bitcoin; there are quite a lot of coins in the market. Recently, we have had 16,000 types of coin that are being traded in the digital asset market or digital asset exchange. So, for us to determine whether the Bitcoin is permissible. In general, Bitcoin is permissible, but when a person comes and says I have this type of Bitcoin and this type of Bitcoin registered under this type of company, the limited knowledge cannot determine whether the Bitcoin is okay. The underlying contract is okay or not for a person to trade that particular coin and for us to take Zakat. There is some knowledge barrier, and that is the first challenge.* (Respondent 1)

Determining whether a specific type of cryptocurrency is permissible for the Zakat calculation is challenging due to limited knowledge. This lack of understanding complicates the process of accepting Zakat in the form of certain cryptocurrencies, as interviewees expressed concerns about their ability to confidently determine whether a particular type of cryptocurrency adheres to Zakat regulations. In addition, Respondent 4 mentioned that "lack of knowledge and public awareness about Zakat obligations on Bitcoin affects voluntary compliance and understanding." (Respondent 4)

Furthermore, Respondent 5 opined that,

> *There is a need for educational programs and outreach to inform the public about the inclusion of digital assets in Zakat. Lack of knowledge and awareness among Muslim community impact the willingness to contribute Zakat in the form of Bitcoin.* (Respondent 5)

Moreover, previous studies conducted by Muhsin nor Paizin in which he surveyed the knowledge of Zakat obligation on cryptocurrency among people. The study highlighted that 100% of participants were aware of Zakat, and the majority of 85.47% responded that they paid Zakat to the state's Zakat institution. Knowing about the obligation of Zakat is one thing, but knowing that cryptocurrency needs to be Zakat is crucial. The study findings suggested that 78.27 % do not know cryptocurrency is Zakatable while 11.6% do not. Only a small portion of 11.12 percent are aware of it. Therefore, Zakat collectors must collaborate with crypto platforms to raise awareness

and educate Muslim users regarding the obligation of paying Zakat in cryptocurrency. Hence, there is a need to raise public knowledge of Bitcoin as well as enhance technical literacy (Paizin, 2021).

In sum, the findings underscore the necessity for public awareness campaigns and enhanced technical literacy to bridge the existing knowledge gap. Addressing these challenges and implementing educational initiatives could lead to increased Zakat compliance, a better understanding of cryptocurrency obligations, and the overall empowerment of a more informed Muslim community.

Technological Infrastructure Deficiencies

The interview theme of technology infrastructure was identified as two respondents opined similar views (Respondents 1 and 5);

> *Zakat institutions have insufficient technology for them to prepare to receive the Zakat in the form of technology and also the administration part whereby they are talking about accounting and auditing how to put, where to put the Bitcoin and if they receive in the form of Bitcoin, how long they are going to hold the Bitcoin before they liquidate the Bitcoin cash and whatnot.*

This technological deficiency is not merely an operational challenge but also poses a risk to the integrity of Zakat's collection from digital assets. Therefore, the research advocates for a proactive approach to develop a comprehensive technological framework encompassing secure storage solutions, advanced accounting protocols, and robust auditing mechanisms. This technological fortification is essential to overcome existing infrastructure shortcomings and ensure the secure, efficient, and transparent collection of Zakat from digital assets.

Credit Risk

The research highlights credit risk as a major concern stemming from the inherently unpredictable nature of Bitcoin prices.

> *We are facing with the credit risk. We have a problem when we receive the Zakat in Bitcoin. Let's say we receive it today; when will we liquidate the bitcoin? Tomorrow morning, the next day, or the next two days, or do we need to wait until the Bitcoin price goes up, or what will happen when the price goes down? That is the challenge; if the price goes down, we have to compensate for the loss. The loss for the Bitcoin in value of Bitcoin if it goes up, we will be happy because the Zakat money will be a lot more, but what will happen if it is the Zakat money Bitcoin? If the value goes down and the price goes down, we have to pay the losses, and we also have to take responsibility and take the risk, and these are the main challenges that we are having right now for us to implement Zakat on Bitcoin.* (Respondent 1)

> *Digital asset is not just a liquid like a fiat money. It cannot be liquid easily because it still needs time. It is just not a stable asset, and all these challenges seriously, I mean, give us an impact. It is not easy for us to manage; it is not stable, yet the uncertainty of the value decrease of value.* (Respondent 2)

> *The value of cryptocurrency is unpredictable.* (Respondent 3)

> *The volatility of Bitcoin prices poses a risk for both the Zakat payer and the Zakat recipient. If the value of Bitcoin decreases significantly after collection, it may affect the intended impact of the Zakat distribution.* (Respondents 4, 5, and 6)

Previous research also discusses extreme volatility, which makes it difficult for Bitcoin to be accepted as a payment and measurement tool. Bitcoin is also irrelevant to use as a measure of

value as the calculation method is highly complex. Other than that, Bitcoin is unsuitable as a value storage tool since cybercriminals often target Bitcoin wallet virtual securities, which can lose liquidity and be vulnerable to hyperinflation. Notably, Bitcoin currency has the same price fluctuation risk as other currencies. Stability is the main issue here. Considering the history of Bitcoin, which is still considered new, this currency has faced the problem of price fluctuation (Grant & Hogan, 2015). Furthermore, the high volatility of the Bitcoin exchange rate makes it inappropriate to preserve its value since it will cause purchasing power to decline rapidly (Segendorf, 2014).

In addition, the market forces of supply and demand determine the price of Bitcoin, which means that various factors can greatly affect the price. The public's interest in and demand for Bitcoin significantly increased in 2018, which raised its price to a high level. Several factors, including increased media attention, a rise in the acceptance of Bitcoin as a valid form of payment, and the possibility of large returns on investment, may have contributed to the surge in demand. As stated in the statement, the price of Bitcoin was initially set as USD65. Although it can fluctuate quickly, at the time of writing, the price of Bitcoin is revealed to be USD6,281.76, equal to RM26,340 (Tarmizi, 2018). This demonstrates how the price of Bitcoin can change considerably in a short amount of time; hence, investors should exercise caution when purchasing it.

In sum, the respondent's opinions shed light on the significant challenge associated with the inherent volatility of Bitcoin. Respondents emphasized the uncertainty in determining when to liquidate Bitcoin after receiving Zakat, raising concerns about potential losses if the Bitcoin's value decreases.

Previous research supported these concerns, emphasizing that extreme volatility renders Bitcoin unsuitable as a payment and measurement tool. The high complexity of Bitcoin's calculation method and its vulnerability to cyber criminals and potential hyperinflation challenge its role as a value storage tool. The study revealed that Bitcoin's price fluctuation is influenced by various factors, such as media coverage and supply and demand market forces, hindering its recognition as a legal tender in Islam. The study also highlighted how the price of Bitcoin can change significantly in a short period, reinforcing the need for caution among potential investors. Despite increased interest and acceptance in 2018, the research suggested that Bitcoin's unstable value has prevented it from gaining recognition as a valid form of payment in Islamic finance. Accordingly, the findings from both respondents' opinions and previous research coverage highlighted the complexities and risks associated with implementing Zakat on Bitcoin. This is particularly due to the cryptocurrency's inherent volatility and its impact on the intended impact of Zakat distribution.

Regulatory Uncertainty

Through interviews with Zakat officers and experts, the research findings uncovered substantial challenges arising from the absence of proper regulatory frameworks for digital assets. As interviewees mentioned:

> *It is not properly regulated by the Bank Negara because in Malaysia only Bank Negara are making recreation on any of digital asset.* (Respondent 2)

> *Cryptocurrency regulations are still evolving globally, and there is regulatory uncertainty regarding the classification and treatment of Bitcoin for Zakat purposes. Lack of clear guidelines from authorities can hinder the establishment of standardized procedures.* (Respondents 4 and 6)

> *Evolving cryptocurrency regulations might lack specific protocols for Zakat collection and distribution, causing uncertainty.* (Respondent 5)

The regulatory landscape for cryptocurrencies is evolving, and the lack of clear guidelines poses a significant challenge for Zakat authorities seeking to establish a robust legal framework for Bitcoin Zakat collection. The interviewees emphasized that the absence of established legal mechanisms for imposing Zakat on Bitcoin in Malaysia further complicates the regulatory landscape. Hence, clear legal frameworks are essential for ensuring compliance and legitimacy in Zakat collection. The interviewees expressed concerns about the lack of specific regulations governing Bitcoin-based Zakat, which makes it challenging to enforce and ensure the lawful collection of Zakat in Bitcoin.

The study findings revealed significant challenges stemming from the absence of proper regulatory frameworks for digital assets in Malaysia. Experts highlighted the regulatory uncertainty caused by the lack of clear guidelines from BNM.

To address this, the study advocates for active engagement with regulators to establish clear policies and legal mechanisms governing Zakat on digital assets. This engagement is crucial for regulatory compliance and creating an environment where Zakat institutions can operate with confidence and certainty. The regulatory landscape, therefore, plays a pivotal role in shaping the framework for Zakat collection from digital assets, necessitating collaboration between Islamic financial institutions and regulatory bodies to foster a supportive and clear legal environment.

Ongoing Debate on Zakat on Bitcoin

As the respondent mentioned that,

> *There is a debate about whether digital assets should be subject to Zakat, which is a form of religious taxation. However, if the government decides it is obligatory, the debate is settled. This principle prioritizes obedience to the government over personal religious interpretations.* (Respondent 3)

The findings highlight the need for clear and supportive government policies to ensure the smooth integration of Bitcoin Zakat collection into broader Zakat regulations. This dynamic underlines a recognition among stakeholders that prioritizing government regulations over individual interpretations may be essential for effectively implementing Zakat collection for cryptocurrencies.

Valuation Complexity

According to Respondent 4,

> *…determining the value of Bitcoin for Zakat calculation purposes can be challenging due to its volatility. The value of cryptocurrencies can fluctuate significantly, making it difficult to assess the accurate Zakat amount owned.*

Similarly, Respondent 5, in the interview, proposed the same opinion and mentions

> *…determining Bitcoin's value for Zakat purposes is challenging due to its highly volatile nature, lacking a consistent valuation method.*

As mentioned earlier, Bitcoin's price is highly volatile, making it challenging to calculate Zakat on Bitcoin. Based on the insights gathered from interviews, it is evident that determining the value of Bitcoin for Zakat calculation poses a significant challenge. Both experts highlighted the inherent volatility of Bitcoin as a major obstacle in accurately assessing its value for Zakat purposes.

In sum, the consensus from both experts underscores the intricate nature of assessing Bitcoin's value for Zakat calculations, primarily due to the cryptocurrency's volatility and the

absence of a consistent valuation methodology. This volatility introduces uncertainty and makes it challenging to arrive at a precise Zakat amount for Bitcoin holdings.

Security Concerns

According to a 2020 report by "Chainalysis," a blockchain analytic firm, it was revealed that cryptocurrency scammers raked in $4.3 billion worth of digital money in 2019, more than triple 2018's haul. Cybersecurity has become an essential and crucial topic that significantly impacts present-day societies, given the need to provide safe and secure access to the internet (O'connell et al., 2012). Nowadays, it is not easy to imagine that people, governments, or other entities in modern societies can work properly and do their daily tasks without relying on a computer connected to a stable and secure internet. Hence, the internet has become an integral and indispensable part of our human lives. The unregulated and anonymous nature of cryptocurrencies plays a major role in the huge increase in the number of criminal activities associated with cryptocurrencies (Bray, 2016). Thus, cryptocurrencies are now considered both a tool and a target for criminals who commit various cybercrimes. Since the establishment of cryptocurrency, many cyber-attacks have been performed against either individuals or exchanges. According to Respondent 4;

> *Cryptocurrencies are associated with cybersecurity risks. Ensuring the security of Zakat funds collected in the form of Bitcoin is crucial to prevent hacking or unauthorized access.* (Respondent 4)

Examples of cybersecurity attacks can be provided, such as the cyber-hacking that occurred to the Japanese-based exchange "Mt Gox," which led the company to file for bankruptcy. Around 473 million U.S. dollars (around 850 Bitcoin) was stolen from the company's digital vaults.

The previous study has discussed the legal issues facing cryptocurrencies and the need for a workable framework to be adopted and implemented by countries worldwide. Moreover, criminal activities using cryptocurrencies are one of the challenges that government agencies and law-enforcement bodies face. The unique nature of cryptocurrencies plays a major role in intercepting criminals' attempts to attack due to their unique features, such as their anonymous nature and decentralization. Thus, cybersecurity is a crime that poses a considerable threat to all crypto investors and exchanges alike. The lack of a legal framework that defines cryptocurrency and decides the lawful and unlawful uses of cryptocurrencies is the main weak point in the legislation of most countries. This reflects on all the other legal issues associated with the legal issue and greatly influences legislators, including the volatility that these assets hold and the role of law in affecting their value and stability.

The study highlights the pressing cybersecurity risks associated with cryptocurrencies, particularly in the context of securing Zakat funds collected in the form of Bitcoin. The imperative to prevent hacking or unauthorized access to these funds is paramount, given the vulnerabilities inherent in the unregulated and anonymous nature of cryptocurrencies. Cybersecurity has emerged as a critical concern, impacting contemporary societies relying on secure internet access for various activities.

In sum, the analysis reveals several challenges in integrating Bitcoin into the Zakat system in Malaysia. These challenges include a lack of knowledge among the general population and Zakat collectors, technological infrastructure deficiencies, credit risk due to the volatile nature of cryptocurrency prices, regulatory uncertainty, legal challenges, ongoing debates on Zakat for Bitcoin, valuation complexity, and security concerns related to cybersecurity risks. Hence, successful integration requires addressing these challenges through public awareness campaigns, technological advancements, regulatory clarity, and enhanced security measures. Moreover, collaboration between religious authorities, government bodies, and technology experts is essential

for creating a framework that ensures compliance, transparency, and the security of Zakat funds in digital assets.

CONCLUSION

In summary, the research findings underscore the multi-faceted challenges associated with integrating digital assets into the Zakat system in Malaysia. The identified challenges span limited knowledge among the general population and Zakat collectors, technological infrastructure deficiencies, credit risk due to cryptocurrency price volatility, regulatory uncertainty, ongoing debates on Zakat for Bitcoin, valuation complexity, and security concerns related to cybersecurity risks. The limited knowledge about digital assets poses a fundamental barrier to effectively implementing Zakat collection from such assets. Other than that, the lack of awareness and understanding among Zakat collectors and the general Muslim community hinders voluntary compliance and contribution to Zakat in the form of Bitcoin. Notably, addressing this knowledge gap requires comprehensive educational programs and outreach initiatives to raise awareness and enhance technical literacy. Technological infrastructure deficiencies represent another significant challenge, with Zakat institutions lacking the necessary technology to securely receive, store, and manage digital assets. Hence, a proactive approach to developing a robust technological framework is crucial to overcome operational challenges and ensure the integrity of Zakat's collection from digital assets. Credit risk emerges as a major concern due to the unpredictable nature of Bitcoin prices. The volatility of Bitcoin poses challenges in determining when to liquidate Bitcoin after receiving Zakat, raising concerns about potential losses and uncertainties in achieving the intended impact of Zakat distribution. Regulatory uncertainty adds another layer of complexity as the absence of clear guidelines from regulatory authorities, particularly BNM, complicates establishing standardized procedures for Zakat collection from digital assets. Engaging with regulators is essential to develop clear policies and legal mechanisms governing Zakat on Bitcoin.

Ongoing debates on Zakat for Bitcoin highlight the delicate balance between personal religious interpretations and regulatory frameworks. Therefore, clear and supportive government policies are deemed essential for the seamless integration of Bitcoin Zakat collection into broader Zakat regulations. Valuation complexity arises from the highly volatile nature of Bitcoin, making it challenging to accurately assess its value for Zakat calculation purposes. This volatility introduces uncertainty and makes it difficult to arrive at a precise Zakat amount for Bitcoin holdings. Security concerns related to cybersecurity risks, highlighted by the surge in cryptocurrency-related scams, emphasize the need for robust measures to ensure the security of Zakat funds collected in the form of Bitcoin. In conclusion, the study highlighted the intricate challenges associated with incorporating Bitcoin into the Zakat system in Malaysia. From limited knowledge among the general population to technological infrastructure deficiencies, credit risks, regulatory uncertainties, ongoing debates on Zakat for Bitcoin, valuation complexities, and security concerns, these challenges underscore the complexity of integrating digital assets into traditional religious practices. Addressing these issues requires a multi-faceted approach encompassing educational initiatives, technological advancements, risk management strategies, regulatory frameworks, legal considerations, alternative valuation methods, and robust cybersecurity measures.

Future research should focus on bridging the identified gaps and exploring potential solutions. In-depth studies can be conducted to design and assess the effectiveness of educational programs, aiming to enhance knowledge and awareness among both the general population and Zakat collectors concerning digital assets and the specific Zakat obligations related to them. Moreover, research endeavors can explore technological advancements to propose solutions that enhance the capabilities of Zakat institutions in securely managing and liquidating digital assets. This includes the development of secure storage solutions, advanced accounting protocols, and robust auditing mechanisms. Research efforts should also be directed toward investigating risk management strategies to address credit risks associated with the volatile nature of Bitcoin prices.

Additionally, scholars can delve into the development of clear and comprehensive regulatory frameworks for digital assets in collaboration with regulatory bodies like BNM. Assessing the impact of regulatory clarity on Zakat collection and compliance will be crucial for shaping the legal landscape. Further studies should explore the legal and ethical considerations surrounding Zakat collection from digital assets and propose alternative valuation methods considering the inherent volatility of cryptocurrencies. Lastly, cybersecurity measures to safeguard Zakat funds collected in the form of Bitcoin deserve focused attention. Hence, future research can investigate and recommend robust measures encompassing the adoption of secure technologies and practices to prevent hacking or unauthorized access. These future research directions aim to contribute to developing a comprehensive and sustainable framework for Zakat collection from digital assets in Malaysia. While this study provides valuable insights, it is imperative to acknowledge certain limitations. The reliance on qualitative data from interviews with Zakat officers and experts may limit the generalizability of findings. Future research could complement these insights with quantitative data through surveys to capture broader perspectives. Additionally, the study is specific to the Malaysian context Therefore, findings may not be universally applicable. Comparative studies across jurisdictions and a longitudinal approach could offer a more nuanced understanding of these challenges over time. The research also primarily focuses on challenges and does not extensively explore potential solutions. Moreover, future research could delve deeper into proposing and evaluating practical strategies. Lastly, the study predominantly captures the perspectives of Zakat officers and experts, and the inclusion of a wider range of stakeholders could provide a more holistic understanding of the challenges and potential solutions.

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REFERENCES

Abdul Rahman, D. A. (2020, February 17). Perlis kenakan zakat ke atas bitcoin. *Berita Harian.* https://www.bharian.com.my/berita/nasional/2020/02/656350/perlis-kenakan-zakat-ke-atas-bitcoin

Abu-Bakar, M. M. (2018). Shariah analysis of bitcoin, cryptocurrency, and blockchain. *Shariah Analysis in Light of Fatwas and Scholars' Opinions*, 14-19. https://islamicbankers.me/wp-content/uploads/2019/02/2017-shariah-analysis-of-bitcoin-cryptocurrency-blockchain.pdf

Abubakar, Y. S., Ogunbado, A. F., & Saidi, M. A. (2018). Bitcoin and its legality from Shariah point of view. *SEISENSE Journal of Management, 1*(4), 13-21. https://doi.org/10.33215/sjom.v1i4.32

Adam, F. (2018). The Shariah factor in cryptocurrencies and tokens. *Shariyah Review Bureau.* https://shariyah.net/wp-content/uploads/2021/05/The-Shariah-factor-in-Cryptocurrencies-and-Tokens.pdf

Adam, F. (2022). Zakat on Cryptocurrencies.

Adam. F. (2017). Bitcoin: Shariah compliant. *Amanah Finance Consultancy, 2017*, 1-54. https://afinanceorg.wordpress.com/wp-content/uploads/2017/08/research-paper-on-bitcoin-mufti-faraz-adam.pdf

Adzimatinur, F., Manalu, V., & Rahimi, F. (2021). The Sharia compliance of gold-backed-cryptocurrency: Analysis of volatility and risk. In Hindriana, A. F., Ku Mahamud, K. R., Rahim, R., Akhmaddhian, S., & Supartono, T. *UNISET 2020*. EAI. http://dx.doi.org/10.4108/eai.12-12-2020.2304995

Al-Haskafi, M. (2000). *Al-Durr Al-Mukhtar with Hashiyat Ibn Abideen*, vol. 4. Dar Al-Fikr, Lebanon.

Al-Suyuti, J. a.-D. (1983). *Al-Ashbah wa al-Naza'ir*. Beirut: Dar Ihya'al-Kutub al-'Arabi 'Isa al-Babi al-Halabi Shirkah.

Al-Zarqa, M. (1998). *Syarh al-Qawā 'id al-Fiqhiyyah*. Damsyiq: Dār al-Qalam.

Ali, R., Barrdear, J., Clews, R., & Southgate, J. (2014). The economics of digital currencies. *Bank of England Quarterly Bulletin, Q3*. https://ssrn.com/abstract=2499418

Aliyu, A., Abu Bakar, K., Matsuda, G., Darwish, T. S., Abdullah, A. H., Ismail, A. S., Yusof, A. F., Mohamad, M. M., Idris, M. Y., & Ismail, Z. (2020). Review of some existing shariah-compliant cryptocurrency. *Journal of Contempory Islamic Studies, 6*(1), 22-43. https://ir.uitm.edu.my/id/eprint/42954

America, Z. F. O. (2022). *How to calculate zakat on cryptocurrency*. https://www.zakat.org/calculate-zakat-cryptocurrency

Azela, S. H. N., Rahman, A., & Noh, M. S. M. (2023). Konsep mata wang menurut Syariah dan hubungannya dengan mata wang kripto. *Journal of Muamalat and Islamic Finance Research, 20*(1), 79-95. https://doi.org/10.33102/jmifr.496

Bakar, N. A., Rosbi, S., & Uzaki, K. (2017). Cryptocurrency framework diagnostics from Islamic finance perspective: A new insight of Bitcoin system transaction. *International Journal of Management Science and Business Administration, 4*(1), 19-28. https://doi.org/10.18775/ijmsba.1849-5664-5419.2014.41.1003

Bray, J. (2016). *Anonymity, Cybercrime and the Connection to Cryptocurrency*. Eastern Kentucky University. https://www.proquest.com/dissertations-theses/anonymity-cybercrime-connection-cryptocurrency/docview/1824689023/se-2

Srivastava, G., Dhar, S., Dwivedi, A.D., & Crichigno, J. (2019). *Blockchain Education*. IEEE Canadian Conference of Electrical and Computer Engineering (CCECE), Edmonton, AB, Canada, 1-5. https://doi.org/10.1109/CCECE.2019.8861828

Dong, X. (2020, February 10). *Know your tokens: Defining "digital assets"*. Techerati. https://www.techerati.com/features-hub/know-your-tokens-defining-digital-assets-btw20-blockchain-technology-world-2020/

Elgari, M. (2021). *Cryptocurrencies, Digital Crypto-Currencies Symposium*. Kingdom of Saudi Arabia, Jeddah.

Mnif, E. & Jarboui, A. (2020). Islamic view towards Bitcoin. *European Journal of Islamic Finance. 2nd special issue for EJIF workshop.* https://doi.org/10.13135/2421-2172/3845

Fatarib, H., & Sali, M. A. (2020). Cryptocurrency and digital money in Islamic law: Is it legal? Jurisdictie: *Jurnal Hukum dan Syariah, 11*(2), 237-261. https://doi.org/https://doi.org/10.18860/j.v11i2.8687

Franciska Mifanyira, S., & Kusumawardhani, S. C. (2020). The liability of cryptocurrency exchanger under Indonesian and Malaysian Anti-money Laundering and Terrorism Financing Act. *In Proceedings of the International Law Conference (iN-LAC 2018)-Law, Technology and the Imperative of Change in the 21st Centur*, 345-350. https://www.scitepress.org/PublishedPapers/2018/100491/100491.pdf

Grant, G., & Hogan, R. (2015). Bitcoin: Risks and controls. *Journal of Corporate Accounting & Finance, 26*(5), 29-35. https://doi.org/10.1002/jcaf.22060

Hammond, T. E. a. S. (2021). *Compendium – Cryptocurrency regulations by country*. In Thomson Reuters (Ed.). https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf

Hasbi, A. H., & Mahzam, R. (2018). Cryptocurrencies: Potential for terror financing. *RSIS Commentary, 75*, 1-3. https://www.rsis.edu.sg/wp-content/uploads/2018/04/CO18075.pdf

He, D. (2018). Central Bank Monetary Policy in the Age of Cryptocurrencies. *IMF F&D Magazine, 55*(2). https://www.imf.org/en/Publications/fandd/issues/2018/06/central-bank-monetary-policy-and-cryptocurrencies-he

Ibn Abidin, A. (2009). *Fatawa Shami. Damascus*. Dar al-Kutub al-Ilmiyyah.

Ibn Nujaym, Z. (1997). *al-Bahr al-Ra'iq Sharh Kanz al-Daqa'iq*. Dar al-Kutub al-'Ilmiyyah.
Islam, M. W. (1999). Al-Mal: The concept of property in Islamic legal thought. *Arab Law Quarterly, 14*(4), 361-368. http://www.jstor.org/stable/3382152?origin=JSTOR-pdf
Kamis, N. S., Mohd Isa, M., & Md Noor, N. S. (2022). Can Muslim inherit bitcoin? Discovering the continuity of digital asset in Perlis. *International Journal of Islamic Business (IJIB), 7*(2), 44-51. https://doi.org/10.32890/ijib2022.7.2.3
Lavere, M. (2019). Study finds 94% of endowments are investing in cryptocurrency. *Ethereum World News (EWN).* https://ethereumworldnews.com/study-finds-94-of-endowments-are-investing-in-cryptocurrency/
Le Tran, V., & Leirvik, T. (2020). Efficiency in the markets of crypto-currencies. *Finance Research Letters, 35*, 101382. https://doi.org/10.1016/j.frl.2019.101382
Lunenburg, F. C., & Irby, B. J. (2008). *Writing a successful thesis or dissertation: Tips and strategies for students in the social and behavioral sciences*. Corwin press.
Mikołajewicz-Woźniak, A., & Scheibe, A. (2015). Virtual currency schemes–the future of financial services. *Foresight, 17*(4), 365-377. https://doi.org/10.1108/FS-04-2014-0021
Mahomed, Z., & Mohamad, S. (2018). Crypto mania: The Shariah verdict. *CIAWM Bulletin, 3*, 33-36.
Muneeza, A., Bin-Nashwan, S. A., Moshin, M. I. A., Mohamed, I., & Al-Saadi, A. (2022). Zakat payment from cryptocurrencies and crypto assets. *International Journal of Islamic and Middle Eastern Finance and Management, 16*(3), 482-497. https://doi.org/10.1108/IMEFM-12-2021-0487
Nugroho, B. A. (2021). Spillovers and bivariate portfolios of gold-backed cryptocurrencies and gold during the COVID-19 outbreak. *Journal of Islamic Accounting and Business Research, 12*(7), 1055-1076. https://doi.org/10.1108/JIABR-10-2020-0328
O'connell, M. E., Arimatsu, L., & Wilmshurst, E. (2012). Cyber security and international law. International Law Meeting Summary, Chatham House.
Onagun, A. I., & Abdullah, H. (2018). The Genesis of Cryptocurrency in Islamic Economics: Shariah Analysis of HLC Tokens.
Oziev, G., & Yandiev, M. (2017). Cryptocurrency from Shari'ah perspective. *SSRN, 3101981*. https://doi.org/10.2139/ssrn.3101981
Paizin, M. N. (2021). Community views about zakat on cryptocurrencies. Al Qalam. *Jurnal Ilmiah Keagamaan dan Kemasyarakatan, 15*(2), 146-165. https://doi.org/10.35931/aq.v15i2.724
Rahardja, U., Aini, Q., Harahap, E. P., & Raihan, R. (2021). Good, bad and dark bitcoin: A systematic literature review. *Aptisi Transactions on Technopreneurship (ATT), 3*(2), 115-119. https://doi.org/10.34306/att.v3i2.175
Rahmani, K. S. (2010). *Jadeed Fiqhi Masail*. Zam Zam Publishers.
Saleh, A., Ibrahim, A. A., Noordin, M. F., & Mohd Mohadis, H. (2020). Islamic approach toward purification of transaction with cryptocurrency. *Journal of Theoretical and Applied Information Technology, 98*(6), 1050-1067. https://www.jatit.org/volumes/ninetyeight6.php
Segendorf, B. (2014). What is bitcoin? *Sveriges Riksbank Economic Review, 2014*(2), 2-71. https://archive.riksbank.se/Documents/Rapporter/POV/2014/2014_2/rap_pov_artikel_4_1400918_eng.pdf
Shetewy, N., Aitlaadam, J., & Jiang, L. J. (2019). Challenges of the bitcoin in the Arabic countries. *Journal of Economics and Sustainable Development, 10,* 154-159. https://doi.org/10.7176/JESD/10-6-18
Taghdiri, A. (2020). Assessing the compatibility of cryptocurrencies and Islamic law. *Intell. Prop. & Tech. LJ*, 25, 63-79.
Tarmizi, L. (2018). Bayan linnas siri Ke-153: Hukum penggunaan mata wang bitcoin. *Mufti of federal territory's office.* https://muftiwp.gov.my/artikel/bayan-linnas/2773-bayan-linnas-153-hukum-penggunaan-mata-wangbitcoin.
Usmani, M. T. (2015). *Fiqh al-Buyu. Damascus*. Syria: Dar al-Qalam.

Yuneline, M. H. (2019). Analysis of cryptocurrency's characteristics in four perspectives. *Journal of Asian Business and Economic Studies, 26*(2), 206-219. https://doi.org/10.1108/JABES-12-2018-0107

Yusof, M. F., Rasid, L. A., & Masri, R. (2021). Implementation of zakat payment platform for cryptocurrencies. *AZKA International Journal of Zakat & Social Finance*, 17-31. https://azjaf.zakat.com.my/index.php/azjaf/article/view/41