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Blockchain Knowledge Awareness and Intention to Adopt a Technology for Zakat Transactions

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Abstract

Blockchain represented the second era of internet and has the potential in addressing various challenges towards strengthening the economy including Islamic finance. Zakat institutions, which are non-bank financial institutions, supplement bank operations in carrying out tasks for economic growth aimed at eradicating poverty, promoting social justice, and distributing revenue fairly. Although the immutability, security, and transparency of blockchain may entice Islamic financial institutions to adopt it for their operations, adoption, and behavioural intention of halal blockchain digital wallet in non-bank financial institutions like zakat institutions, are still unknown. Islamic non-bank financial institutions like zakat are under pressure due to the expanding deployment of blockchain technology today and the growing awareness of its potential. The purpose of this research is to examine the feasibility of using a survey instrument from pilot study to determine the level of blockchain knowledge awareness among zakat payers. The study employs a quantitative method using a survey questionnaire and a simple random sampling was administered among zakat payers to achieve the purpose. The questionnaires were distributed at random to zakat payers. The results show that internal consistency among the items was high. Majority of respondents were completely unaware of cryptocurrencies because they have never transacted with it before, and even though majority of the respondents had a fair amount of understanding about blockchain technology and cryptocurrencies, they had no experience carrying out bitcoin transactions. The instruments from this study can be utilised for future actual survey on a larger scale.

Keywords: Awareness, Blockchain Knowledge, Behavioural Intention, Technology Adoption, Zakat

Introduction

As a result of the globalisation of digital technology, there are no longer any geographical boundaries, allowing for a technological revolution. With the Industrial Revolution i4.0, digital industrial technology is on the increase, and this transition is bringing smart technology and smart appliances ever-closer to a fully digital society. Businesses worldwide profit from blockchain's rise, making it possible to embrace the 4th Industrial Revolution (Rossow, 2018).

As a result, it is referred to as the current trend of data automation and interchange in the development, implementation, and advancement of cutting-edge technologies in today's society. Industry 4.0 is predicted to benefit from blockchain technology because it can accomplish much more than just confirm and track records. Given its explosive growth and current low level of adoption among regular computer users, blockchain may soon become the foundation of an entire company or organisation.

Background of the Study

Blockchain technology is the basis in which cryptocurrencies for example bitcoins are built. Islamic non-bank financial institutions like zakat are under pressure due to the expanding deployment of blockchain technology today and the growing awareness of its potential. Blockchain technology in particular has generated interest among Muslim academics to question its status as halal due to technological advancements in the twenty-first century. The dispute over whether blockchain technology is permissible based on Shariah compliance varies among various Islamic scholars and between each state in Malaysia. These discrepancies in opinions can be related to knowledge of blockchain technology. Previous research demonstrates a favourable correlation between awareness and the desire to adopt new technology (Ku-Mahamud et al., 2019). The report by Habib (2019), which examines the possibilities of fintech application for Islamic Financial Institutions, provides evidence of the effort. The researchers' in-depth analysis revealed a variety of blockchain technologies that can be employed by Islamic financial organisations. They emphasised that while blockchain adoption in the financial sector was still in its early stages, it has already shown itself to be a game-changing innovation that will upend the global financial system (Abojeib & Habib, 2019). The study by Abojeib & Habib (2019) identified possible areas where artificial intelligence and the internet of things, as seen in digital wallets, might be improved. These developments could have an impact on how financial models in general and Islamic financial models in particular evolve. In connection with this, the blockchain is viewed as an innovation or enhancement that could hold the secret to Industry 4.0's cybersecurity risk management. A digital wallet or E-wallet refers to an alternative or e-wallet is an online instrument that allows people to perform electronic transactions and store their payment methods (debit and credit cards, loyalty programmes, and alternative methods) via an electronic device such as smartphone, tablet or computer (Alam et al., 2019). In this study, zakat digital wallet refers to shariah compliant in its activities such as collection of zakat which must be deposited in Islamic bank account or being invested in Shariah compliant instruments (Ahmed & Tarique, 2021). This study aims to explore knowledge awareness of the intention to use digital wallet among zakat payers.

Problem Statement

According to Rabbani et. al (2020), Shariah compliance blockchain was said to be the most challenging faced by Islamic FinTech organisations. The study suggested that Islamic Financial Institutions should collaborate with Islamic FinTech organisations to increase efficiency, transparency and customer satisfaction (Rabbani et al., 2020). Among the challenges highlighted is the unfamiliarity with blockchain technology (Salleh & Chowdhury, 2020). Even though blockchain technology is developing quickly, there are still some misconceptions about it. Although the immutability, security, and transparency of blockchain may entice Islamic financial institutions to adopt it for their operations, adoption and behavioural intentions of using new technology, such as a digital wallet in non-bank financial institutions

like zakat institutions, are still unknown. Zakat institutions, which are non-bank financial institutions, supplement bank operations in carrying out tasks for economic growth aimed at eradicating poverty, promoting social justice, and distributing revenue fairly. The level of expertise in blockchain and related technologies has reportedly reached the intermediate level within Malaysian blockchain groups (Ku-Mahamud et al., 2019). Users' awareness of cryptocurrencies was still in its infancy especially in developing countries. Some of the issues resulted from security concerns, unfinished features that were still under development, inadequate user knowledge of how to handle cryptocurrencies, and, unclear government regulatory framework policy (Zulhuda & Sayuti, 2017). In Malaysia, an estimated 1.0 million Malaysians or 3.1% of the country's total population own a cryptocurrency with 33% increase among active cryptocurrency owners in April 2020 (Encila, 2022). In addition, according to a survey published in 2019, 84 percent of Malaysians are aware of cryptocurrencies, and 46 percent of Malaysians expressed interest in investing in cryptocurrencies in the future. Even while awareness among Malaysians as a whole is rising, there hasn't been enough research done to determine the awareness among zakat payers.

Overview of Blockchain in Islamic Finance

As digital industrial technology i4.0 emerges, a fully digital society is becoming more and more attainable through the use of smart technologies and smart appliances. In his article "Data Driven Investor," May 20, 2018, Marko Vidrih lists a few advantages of blockchain technology. First, blockchain technology offers the advantage of improved contract procurement and management, resulting in better contract management and procurement (Vidrih, 2018). This is due to the fact that it establishes the present smart contract theory. In other words, it's an automated system that immediately sets up the necessary logistics, including payment, shipment, and a whole lot more. The goal of this is to streamline processes for everyone concerned. The blockchain records' capacity to associate a unique identifier with each transaction in industry 4.0 allows for better quality control and increased accountability. This will include higher standards of accountability and quality assurance into a single, unified digital record. Third, blockchain offers new scaling alternatives. For instance, previously, many manufacturers operated on the whim of a bank or other associated financial institution. These executives make the decisions about new project launches, cooperation agreements, and much more. The majority of this authority is taken from these entities by blockchain and given to the manufacturers directly. Blockchain has recently been in the headlines because of its association with the volatile bitcoin and other cryptocurrencies. In terms blockchain application in Islamic finance particularly banking are: (i) smart contract; (ii) cloud storage and, (iii) digital currencies (AIMS, 2022). Benefits of blockchain application for smart contract helps in the reduction, uncertainty and speculations when dealing with managing profit sharing agreements, agency agreements and partnership. Cloud storage benefits Islamic banking that it reduces all conflicts and helps customers maintain partnerships as shariah compliance blockchain uses cryptographic mathematic algorithm to provide access to information. Shariah compliance digital currencies that sustain security and different rewards to miners.

Behavioural Intention in Adopting Technology

There are differences in opinion among people when it comes to embracing new innovations like blockchain technology. There are evidently divergent opinions, which may be related to the understanding of blockchain technology. Before adopting a new technology, adult

learners will pass through six stages. For learners to accept a new technology, Russell (1996) identified six stages: awareness, learning the process, understanding the application of the process, familiarity and confidence, adaption to various contexts, and creative applications to new contexts (Russell, 1995, 1996; Toledo, 2005). According to Russell (1995), during these phases of technology learning, learners gain confidence in their ability to get past their anxiety and dissatisfaction. In relation to implementing a digital wallet for zakat, this study examines Russell's first suggested step which is awareness. Elements of the Unified Theory of Acceptance and Use of Technology (UTAUT) namely performance expectancy, effort expectancy, social influence, and facilitating condition were postulated to affect behavioural intentions to use a technology (Venkatesh, Morris, Davis, & Davis, 2003). Previous studies demonstrating UTAUT as the basis of theory were conducted for research using mobile banking (Jason et al., 2017; Giovanis et al., 2019; Irum, 2018; Raza et al., 2019; Sun et al., 2012); information systems (Ayaz & YanartaÅ, 2020; PC Lai, 2017; Venkatesh, Thong, & Xu, 2016); learning settings (Chao, 2019; Eutsler, 2016; Mtebe & Raisamo, 2014; Russell, 2009; Sattari et al., 2017; Straub, 2009). In other words, UTAUT has been extensively employed in research across the above range of topics. The UTAUT, or Unified Theory of Acceptance and Use of Technology, is a practical theory that may be used to improve predictions and explanations of how new technology is used or intended to be used. The focus of previous information technology study is on the factors that influence users' acceptance or rejection of new technologies. Accordingly, research in this field describes user opinion based on particular factors and constructs. Technology acceptance theories and models try to explain the knowledge level, acceptability level, and usage level of new technologies. In another study by Giovanis et. al (2018), applied UTAUT methodology and surveyed 513 non-users in Greece. Using partial least squares route approach, the effect of the extended UTAUT drivers on mobile banking adoption intentions was evaluated. The study found that expressing perceived risk and trust toward mobile banking usage, and potential users' inherent innovativeness were the leading determinants of mobile banking adoption intention (Giovanis et al., 2019).

The Basics of Blockchain Technology and Potential Influence in Managing Zakat

When computers first appeared, experts could never have envisaged the technical advancement we now experience in the twenty first century with the emergence of blockchain technology. An unknown person or persons using the pseudonym of Satoshi Nakamoto released a white paper in 2008 thus established a model for blockchain. In 2009, Nakamoto created bitcoin based on blockchain technology as public ledger for transaction. The bitcoin was in a form of cash which could be transacted peer-to-peer without the need for a central bank or other authority to operate or maintain the ledger. In this way that the bitcoin differ from physical cash (ICAEW, 2022). Exploration on the application of blockchain technology beyond a currency continued for financial and inter organisational transactions. In 2014, Blockchain 2.0 such as Ethereum was introduced by Vitalik Buterin. In 2013, he released an Ethereum Whitepaper, and a month later, he made the project's launch announcement at a Bitcoin talk forum (Wilson, 2018). In 2015, a platform for the cryptocurrency market called Ethereum was introduced. Ethereum's popularity fluctuated, but despite this, it was successful in the cryptocurrency market thanks to features like decentralisation, where each participant serves as both a server and a client, making the technology robust and secure while fending off hackers. Since then, various crypto currencies have become accessible, giving rise to crypto wallets, including Ethereum. The crypto wallet

differs from traditional one in that it is digital and does not consist of physical currencies. Wilson (2018) further explained that a cryptocurrency wallet, such as a digital wallet, solely interacts with a blockchain in order to carry out transactions utilising private addresses for security. The digital technology influenced the manner financial banking and non-financial banking sector functions for example, the development of reliable digital records in the financial applications areas for both financial and non-financial objectives was made possible by blockchain technology. Online payments, currency exchanges, and using a digital wallet to pay for goods and services are some examples of financial application domains. Examples of non-financial application domains are digital identity management, authentication and authorization, management of medical records, and digital content storage and delivery systems (Miloslavskaya et al., 2019). Another example is the application of new technologies that can be used to supervise the collection of payments utilising a widespread Bitcoin digital wallet for customers and retailers (Chen et al., 2017). With the humble beginning of blockchain technology, past literatures illustrated the use of blockchain technology to construct digital wallets was gaining momentum. Zakat institutions need to be aware of influence of digital technology leading to the shifting away from traditional payment methods and toward using digital wallets, particularly for the payment of zakat.

Awareness of Blockchain Based Digital Wallet and Its Potential for Managing Zakat

According to reports, the global blockchain market would be worth USD \$6.0 billion in 2021 and USD \$56.7 billion in 2026 (Research and Markets, 2021). This demonstrates a rise in interest in blockchain technology and the applications that fuel and support a thriving industry. Since mobile phone users nowadays are so accustomed to online banking, e-money, e-wallets (digital wallets), and e-payment at the touch of a screen without the actual currency in a wallet are proliferating. Muslim countries have different views on blockchain based technology for Islamic finance, as the permissibility differs in opinion and interpretation based on Shariah principles. Promising development and acceptance of fintech based on blockchain technology is evidenced in Saudi Arabia among the Muslim countries having a positive attitude on crypto assets. Another example is Dubai which has become the most active hubs of crypto-asset technologies (Alam et al., 2019). In 2018, Singapore launched Halal Decentralized Exchange (HalalDEX), a Shariah compliant crypto exchange. In 2019, The Securities Commission Malaysia proposed regulatory framework for the issuance of digital assets through initial coin offerings. The examples illustrate that blockchain technology is gaining wide interest in Islamic Finance. In the non-banking financial institution such as zakat, there is a lack of study on the awareness on the behavioral intention to use blockchain technology among zakat payers. Blockchain knowledge awareness in this study refers to knowledge of blockchain that complies with shariah and is halal, such as in a digital zakat wallet. The knowledge of the nature of blockchain empowers one to assure transparency of the transactions of the zakat fund or zakat collecting and distribution, in line with the objective to implement halal zakat digital wallet. Because every transaction would be documented, collection and distribution of zakat could be tracked easily giving information on how much each zakat recipient receives, preventing fraud. The protection of electronic money is provided through cryptographic mechanisms rather than a centralised repository or authority (Banafa, 2018; Kaur et al., 2020).

Sharma (2021) highlighted that cryptocurrency is the most widely used blockchain application. He emphasised that the technology underlying cryptocurrency is cryptography. A digital wallet, or cryptocurrency wallet, is typically made to secure and store user data while

facilitating financial transactions. Some of the tools that need to be protected are credentials, payment information, loyalty card information, and passwords. By preventing attempts to alter the ledger via cryptographic techniques, it is possible to prevent the act of manipulating blocks, forging transactions, and fraud. For the purpose of storing, trading, and/or using cryptocurrencies, some digital wallets have been designed. However, several alternative digital wallets incorporate all of the aforementioned elements along with other functions. Secret keys for digitally signing transactions for blockchain distributed ledgers are stored in a digital wallet (Hines, 2021). In order for future zakat payers and beneficiaries to completely adopt the suggested zakat digital wallet, they need be aware of the features and method described above, which form the foundation of blockchain technology.

Research Methodology

This pilot study employs a quantitative method to survey the awareness level of blockchain knowledge. A simple random sampling was administered among zakat payers to achieve the purpose of this study among zakat payers. Internal consistency, or how closely connected a group of things are to one another, is measured by Cronbach's alpha. It serves as a gauge of scale dependability. The awareness eleven items have a Cronbach's Alpha rating of 0.901, according to a reliability test. In most social scientific studies, Cronbach's alpha values of 0.7 or higher are acceptable; however, values over 0.6 are also allowed (Griethuijsen et al., 2015; Taber, 2018). The items in this study have a comparatively high level of internal consistency.

Table 2

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.901	.913	11

Following the pretest approach, a pilot study was carried out to assess the questionnaire's accuracy and clarity for the intended audience. To prevent participants from backing out and to encourage them to finish answering the questionnaire, the length of the pilot study that each respondent had to complete was taken into consideration. 30 zakat payers participated in the survey questionnaires' pilot test. The goal of the pilot survey (Creswell, 2014) is to determine how long it takes respondents to complete the questionnaire, determine whether respondents understand the instructions given on the questionnaire, determine whether respondents have a common understanding of the wording of the questions, and identify any ambiguous questions. ensure that the researcher and the respondents have a common understanding of the wording of the questions; identify the questions that the respondents might have trouble answering; look for any obvious omissions; establish the validity of the questions presented; establish the reliability of the questions; ensure that the questionnaire layout is simple and easy to use; This information will enable preliminary studies to determine the viability of the suggested analysis.

Results and Findings

Thirty zakat payers in the state of Penang participated in the pilot project. According to Table 3, there were 43.3 percent (13) female respondents and 56.7 percent (17) male respondents, broken down by age. Age-wise, 30.0 percent of respondents are between the ages of 40 and

49, 23.3 percent are between the ages of 30-39, 20 percent are between the ages of 50 and 59, and 13.3 percent are between the ages of 18 and 29 who are over 60.

Table 3

Profile

Item		Frequency	Percent
Gender	Female	13	43.3
	Male	17	56.7
	Total	30	100.0
Age	18-29 years old	4	13.3
	30-39 years old	7	23.3
	40-49 years old	9	30.0
	50-59 years old	6	20.0
	60 and above	4	13.3
	Total	30	100.0

Knowledge on Blockchain Technology and Cryptocurrency

According to Table 4, among zakat payers, 33.3 percent (10) say they have not heard or read much about cryptocurrencies like Bitcoin or Ethereum, 30 percent (9) say they have, 20 percent (6) have, and 16.7 percent (5) have only recently heard about it in this poll. Thirty respondents were surveyed, and seventy percent (21) did not hold any cryptocurrency while thirty percent (9) did.

Table 4

Knowledge on Blockchain Technology and Cryptocurrency

Item		Frequency	Percent
How much, if at all, have you heard or read about cryptocurrencies such as Bitcoin or Ethereum?	A lot	6	20.0
	Just hearing about it now in t	5	16.7
	Not much	10	33.3
	Some	9	30.0
	Total	30	100.0
Do you own cryptocurrency?	No	21	70.0
	Yes	9	30.0
	Total	30	100.0
Which of the following are reasons to own cryptocurrency?	As a growth investment	8	26.7
	As a store of value	5	16.7
	Do not own any cryptocurrency	14	46.7
	To hedge against traditional asset crash	2	6.7
	To hedge against traditional asset crash	2	6.7

	To support the development of blockchain	1	3.3
	Total	30	100.0
How likely are you to invest in cryptocurrency this year?	Not at all likely	8	26.7
	Not so likely	9	30.0
	Somewhat likely	9	30.0
	Very likely	4	13.3
	Total	30	100.0

When asked why they own a cryptocurrency, the respondents' responses indicated that they do so as a growth investment 26.7 percent (8), a store of value 16.7 percent (5), a lack of cryptocurrency ownership 46.7 percent (14), a hedge against the crash of traditional assets 6.7 percent (2), and to support the development of blockchain 3.3 percent (1). The likelihood that respondents will invest in cryptocurrencies this year is somewhat probable (30.0%), not so likely (30.0%), not at all likely (26.7%), and extremely likely (13.3%), according to the data (4).

Level of Awareness on the Knowledge of Blockchain Technology and Cryptocurrency

Table 5 reveals that the majority of respondents—50% (15)—are only marginally aware of blockchain technology and cryptocurrency, compared to the majority of respondents—53.3 percent (16) who are aware of both. The fact that the zakat digital wallet has no physical form is known to around 43.3 percent (13) of the respondents, and the possibility of using the digital wallet for zakat payment is known to about 53.3 percent (16) of the respondents. Only 11 of the respondents, or 36.7 percent, were aware of cryptocurrencies like Bitcoin, Ethereum, NXT, Omni, and waves.

Table 5

Level of Awareness

Item	Not at all aware	Slightly aware	Somewhat aware	Moderately aware	Extremely aware	Total
	(Percent (Frequency))					
1. I am aware of blockchain technology.	3.3% (1)	3.3% (1)	13.3% (4)	50% (15)	30% (9)	100% (30)
2. I am aware of cryptocurrency.	3.3% (1)	3.3% (1)	13.3% (4)	53.3% (16)	26.7% (8)	100% (30)
3. I am aware that zakat digital wallet has no tangible form.	6.7% (2)	16.7% (5)	13.3% (4)	43.3% (13)	20% (6)	100% (30)

4. I am aware of the potential use of digital wallet for zakat payment.	3.3% (1)	13.3% (4)	6.7% (2)	53.3% (16)	23.3% (7)	100% (30)
5. I am aware of cryptocurrency such as Bitcoin, Ethereum, NXT, Omni and waves.	6.7% (2)	13.3% (4)	10% (3)	33.3% (10)	36.7% (11)	100% (30)
6. I am aware cryptocurrency is a digital currency designed to work as a medium of exchange.	3.3% (1)	10% (3)	6.7% (2)	53.3% (16)	26.7% (8)	100% (30)
7. I am aware of cryptocurrency because I have transacted in crypto.	30% (9)	16.7% (5)	13.3% (4)	20% (6)	20% (6)	100% (30)
8. I am aware on how to purchase in cryptocurrency	16.7% (5)	20% (6)	13.3% (4)	33.3% (10)	16.7% (5)	100% (30)
9. It is possible to transact online using zakat digital wallet.	6.7% (2)	13.3% (4)	3.3% (1)	60% (18)	16.7% (5)	100% (30)
10. I am aware of blockchain technology that supports zakat digital wallet.	13.3% (4)	16.7% (5)	6.7% (2)	53.3% (16)	10% (3)	100% (30)
11. I am aware that blockchain is the technology that enables the existence of cryptocurrency.	13.3% (4)	10% (3)	6.7% (2)	40% (12)	30% (9)	100% (30)

Majority In contrast to the 30 percent (9) of respondents who are completely unaware of cryptocurrency since they have never transacted in it, 53.3 percent (16) of the respondents have a fair understanding that cryptocurrency is a digital currency intended to function as a means of exchange. 10 out of the respondents, or about 33.3%, had some knowledge about how to buy cryptocurrencies. The majority (60%) of respondents (18) are just slightly aware that utilising a zakat digital wallet, one can conduct online transactions. A majority of the respondents, 53.3 percent (16), have a fair understanding of the blockchain technology that underpins the zakat digital wallet, and 40% (12) are aware that blockchain is the technology that makes cryptocurrencies possible.

Conclusion

According to the data above, the majority of respondents said they do not know much about cryptocurrencies like Bitcoin and Ethereum or haven't heard of them, and they don't currently own any. Furthermore, the majority of respondents are somewhat and not very likely to

invest in cryptocurrencies. Majority of respondents had a fair amount of awareness of blockchain technology, cryptocurrencies, the fact that zakat digital wallets are not in physical forms, and the possibility of using digital wallets for zakat payments. The respondents have a fair amount of knowledge that, cryptocurrency is a digital currency intended to function as a medium of exchange; that it is possible to conduct online transactions using a zakat digital wallet; that blockchain technology supports zakat digital wallet; and that blockchain is the technology that makes it possible for cryptocurrency to exist. However, majority of respondents were completely unaware of cryptocurrencies because they have never transacted with it before. In conclusion, even while the respondents had a fair amount of understanding about blockchain technology and cryptocurrencies, majority of them had no experience carrying out bitcoin transactions.

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