

DIGITAL LITERACY FOR COMMUNITY READINESS IN THE USE OF BLOCKCHAIN TECHNOLOGY FOR ZAKAT PAYMENTS

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ABSTRACT

Islamic financial products with the potential to alleviate poverty include waqf funds, sadaqah, infaq, and zakat. However, a lack of popularity and a number of managerial issues have prevented zakat, infaq, sadaqah, and waqf money from being administered as well as they could have. Zakat management organizations must adjust to the most recent technology developments in light of these problems. By applying the Technology Readiness Index (TRI) methodology, this study seeks to investigate the preparedness of the Muslim community for the use of blockchain technology for zakat payments. The study population consists of Muslims who have a personal income that reaches the nisab (equivalent to 85 grams of gold within a year) and possess good digital literacy. Purposive sampling was used to choose the 100 respondents who make up the target sample, which was established based on statistical power analysis to guarantee accurate results. Questionnaires were used for data collection, and basic linear regression was used for data analysis. The study's findings show that the community's willingness to use blockchain technology for zakat payments is strongly influenced by digital literacy.

Keywords: Digital Literacy, Blockchain Technology, Zakat Payment

INTRODUCTION

Poverty is still a major socioeconomic problem in many nations, including Indonesia. Uneven income distribution and growth, which exhibit comparatively high rates but provide fewer advantages for the populace, are also intimately linked to this problem (Nurzaman, 2016). Thus, the level of a nation's progress is reflected in its poverty rate, poverty gap index (P1), and poverty severity index (P2).

Table 1. Number of Poor Population, Poverty Index, and Gini Ratio

Years	Poor People	Percentage	Poverty Gap Index	Poverty Severity Index	Gini Ratio
	(million)	(%)	(P1)	(P2)	
March 2018	25.95	9.82	1.71	0.44	0.389
September 2018	25.67	9.66	1.63	0.41	0.384
March 2019	25.14	9.41	1.55	0.37	0.382
September 2019	24.79	9.22	1.50	0.36	0.380
March 2020	26.42	9.78	1.61	0.38	0.381
September 2020	27.55	10.19	1.75	0.47	0.385
March 2021	27.54	10.14	1.71	0.42	0.384
September 2021	26.50	9.71	1.67	0.42	0.381
March 2022	26.16	9.54	1.59	0.40	0.384
September 2022	26.36	9.57	1.56	0.38	0.381

Source: BPS (2024)

The average annual decline in all measures in Table 1 indicates that the Indonesian government has successfully reduced poverty. In particular, the decline in the number of

impoverished individuals and the poverty index suggests a decrease in the population living in poverty. Although the figures were quite high from 2020 to March 2021 due to the COVID-19 pandemic, which caused many companies to halt production activities following the government's restrictions on public activities, the numbers started to decrease again by September 2021. Both in urban and rural regions, the Poverty Gap Index (P1) declined, suggesting that the circumstances of the impoverished have improved. In a similar vein, the Poverty Severity Index (P2) fell in both urban and rural regions, indicating a narrowing of the disparity in spending between the impoverished in these locations. Reduced overall inequity is seen in the declining Gini ratio. Poverty is still a major problem in Indonesia, despite declining poverty indicators (Rashid, 2018).

Under this situation, Islamic financial products such as waqf funds, sadaqah, infaq, and zakat may be able to help with poverty. Zakat funds, as an Islamic financial tool, have been shown in numerous studies (Adnan, Roselam, Hamat, & Furqani, 2021; Sari, Beik, & Rindayati, 2019) to be able to lower the number and proportion of low-income families as well as the poverty gap index (P1) and the poverty severity index (P2). Professional zakat management, or productive management and investment, is the secret to using zakat effectively. Prior research has observed that certain nations have successfully leveraged their zakat potential to mitigate their socio-economic challenges (Kasri, 2017; Medias, 2017). The concept of zakat also aligns with the Sustainable Development Goals (SDGs), particularly in terms of economics, which include providing decent work and inclusive and sustainable growth (goal 8); infrastructure, innovation, and industrial development (goal 9); and reducing economic disparities (goal 10) (Rokhlinasari & Widagdo, 2023).

However, because of their lack of popularity and a number of managerial problems, zakat funds an Islamic financial instrument have not been administered as well as they could have. It is clear from the ZIS (zakat, infaq, sadaqah) receipts results that these receipts have grown annually. Nevertheless, the growth is fluctuating with a downward trend (see Figure 1).

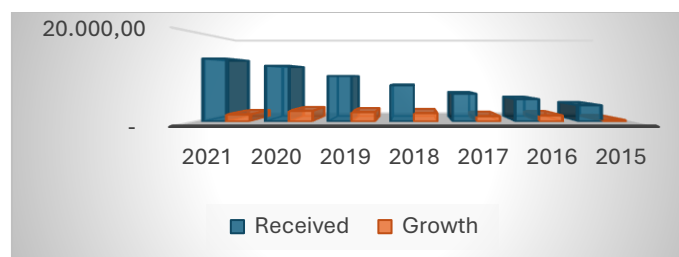


Figure 1. ZIS Funds Receipts
Source: Baznas (2024)

Inadequate supportive regulations, a lack of political will, muzakkis' (zakat payers') mistrust of Public and Private Zakat Management Organizations (OPZ), and internal issues like inadequate accountability, transparency, and managerial concerns are the main problems with managing zakat funds (Hoque, Khan, & Mohammad, 2015). These problems considerably increase the discrepancy between zakat potential and actual realization. To maximize zakat's advantages for the general public interest, effective zakat fund administration is essential. As such, zakat must be managed in a responsible, open, and professional manner.

With the existing challenges, the receipts of ZIS (zakat, infaq, sadaqah) should indeed be following technological advancements. This is supported by initiatives such as the digital zakat payment agenda implemented by Baznas since 2016. Managing zakat funds through blockchain technology or creating funding platforms via blockchain systems could be considered for innovating ZIS fund collection. Improving the effectiveness of Indonesia's digital zakat fund management (collecting and administration) depends on this issue.

Blockchain technology makes it possible for OPZ (Zakat Management Organizations) to more efficiently and transparently gather and apply zakat monies for designated goals, letting stakeholders keep an eye on the funds' efficacy. The process of allocating zakat monies, enabling beneficiaries more precisely and optimally, is the crucial component of blockchain-based zakat fund administration (Shariff, Hazlina, Jusoh, & Jusoff, 2014).

Blockchain is a form of financial technology (Fintech) currently widely discussed for its success in implementing cryptocurrencies. The goal of blockchain is to provide trust and transparency for transactions and data exchange via an immutable, decentralized network structure (Casino, Dasaklis, & Patsakis, 2019).

Due to its potential to improve the openness of charity giving and the clarity of the relationship between charitable giving and project outcomes, blockchain technology has become a new transaction medium in zakat organizations (Cole, Stevenson, & Aitken, 2020). The trend of using cryptocurrencies is indirectly starting to impact the religious practices of Muslims. For instance, as reported by Zipmex.com, Global Sadaqah currently uses Bitcoin for zakat and sadaqah payments in Malaysia. Moreover, a mosque in London, UK, has started accepting Bitcoin and Ethereum as valid transaction tools for zakat and sadaqah purposes.

The use of fintech indeed faces pros and cons. For example, the use of e-money is considered usury when its amount does not match after the transaction (Utomo, 2020). Additionally, pros and cons regarding the use of cryptocurrencies often occur among various societal layers and religious experts. The legality of these assets is still questioned in Indonesia, and their fluctuating value continues to be criticized, leaving debates about these coins unresolved (Azizah & Irfan, 2020). For zakat institutions, the primary challenge in adopting Blockchain technology lies in adhering to Sharia principles (Saleh, Avdoshin, & Dzhonov, 2019).

Apart from the pros and cons surrounding fintech use, the interest among Indonesian citizens in using fintech differs from that in developed countries (Affan & Ustman, 2022). Fintech in developed countries can easily connect people with banks, whereas in Indonesia, a developing country, fintech designers need to rely on assessments based on customer needs and desires (Buckley & Webster, 2016). There are various obstacles to overcome when implementing new technologies. It is imperative to comprehend the extent of preparedness for embracing novel technologies, and one way to gauge this preparedness is by utilizing the Technology Readiness Index (TRI) (Oktadini et al., 2022). Digital literacy has a big impact on the community's readiness to use blockchain technology for zakat payments. The capacity to use and interact with features found in applications on information technology devices is referred to as digital literacy (Huda, Pratiwi, Munandar, Tinggi, & Bima, 2023). The broader the digital literacy mastered, the more prepared the community will be in using blockchain technology for their financial transactions, including zakat payments. Based on these problems, this paper uses the technology readiness index (TRI) approach to investigate further how digital literacy affects Muslim communities' preparedness for using blockchain technology for zakat payments.

LITERATURE REVIEW

Digital Literacy

Digital literacy is the competence mastered by an individual in using technology and digital tools according to their needs (Techataweewan in Tiffani, 2023). Digital literacy requires skills in understanding, analyzing, evaluating, and assessing all information obtained using digital technology (Tiffani, 2023).

Zakat

Zakat signifies progress, expansion, or cleansing. Zakat is defined by Sharia as the act of distributing a portion of one's wealth to those who qualify for it (mustahiq) in accordance with the guidelines and requirements established by Islamic law (Wibisono, 2015).

Eight categories are qualified to obtain zakat (mustahiq). The eight classes mentioned in Surah Al-Tawbah, verse 60, are as follows: the needy, the impoverished, zakat administrators, those whose hearts are to be reconciled and converted to Islam (mualaf), those who are in debt, those who are traveling in the name of Allah (fi sabilillah), and wayfarers. The individual required to pay zakat, known as the muzakki, has two options for distributing it: either directly to the mustahiq or through zakat collection organizations or agencies (amil zakat). Zakat payment is made through a highly religious procedure; one can use digital payment options or visit the zakat collection institution/agency directly. In order to increase the quantity of zakat obtained from muzakki, zakat collection institutions and agencies are now primarily focused on the use of technology in zakat transactions (Mahri, Hermawan, & Ahmad, 2023).

Blockchain

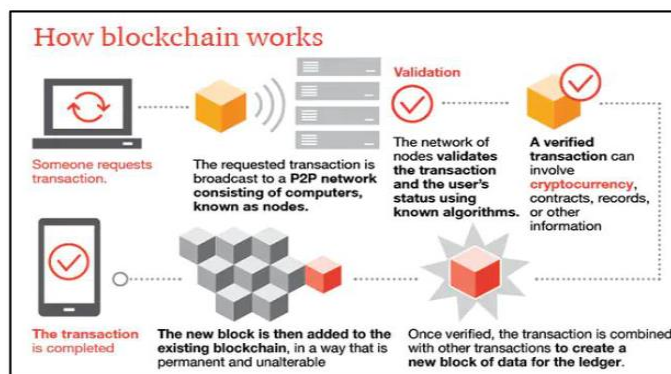


Figure 2. Illustration of the General Concept of Blockchain

Source: Khatiman et al (2021)

Figure 2 illustrates the general operation of blockchain (Khatiman, Ismail, & Yahya, 2021). When a user initiates a transaction, whether it involves asset transfer, record changes, or other information, the transaction is broadcasted to the network where the user is connected. Once received, a group of validator nodes evaluates whether the transaction is valid before incorporating it into a new block. This ultimately leads to the validation of the blockchain transaction.

One crucial aspect highlighted in Figure 1 is blockchain security, emphasizing the validation and verification process. Each transaction in the blockchain undergoes verification and validation stages by interconnected nodes in the blockchain network. Security in blockchain technology, utilizing encryption, is crucial to prevent unauthorized access to sensitive information or data manipulation. For instance, each participant in the network possesses a unique cryptographic key known as a “hash” (Lemieux, 2019) to maintain their anonymity.

The decentralized nature of blockchain distinguishes it from traditional centralized systems. Blockchain provides a distributed ledger that enables every network user to have a copy of transactions. This makes every transaction transparent and visible to all users. Additionally, it facilitates data sharing processes without compromising data security and user privacy. As a result, compared to centralized systems, blockchain is more reliable, especially when designing systems involving real assets. Blockchain excels in security, resistance to tampering, transparency, traceability, connectivity, and cost efficiency (Khatiman et al., 2021).

Technology Readiness Index (TRI)

The initial version of the Technology Readiness Index (TRI) was created in 2000 (Parasuraman, 2000). The term “readiness level” describes a person’s propensity to use technology to accomplish daily and professional goals. Conversely, TRI functions as a

gauge to assess people' readiness to embrace novel technologies. Users' comfort level, innovativeness, insecurity, and optimism are the four variables that determine their level of preparedness to accept new technology (Parasuraman, 2000). Optimism and inventiveness are two of these qualities that motivate people to be prepared to use technology, whereas discomfort and insecurity impede preparation (Mahri et al., 2023). Moreover, these four aspects vary relatively, indicating that each individual possesses a unique combination of acceptance characteristics towards technology. These concepts sometimes lead to paradoxical situations in society where strong motivation is triggered by strong obstacles as well (Parasuraman, 2000). As for the TRI, three categories include (Oktadini et al., 2022):

Table 2. Categories of TRI

Categories	Scale of TRI
<i>Low Technology Readiness</i>	$TRI \geq 2.89$
<i>Medium Technology Readiness</i>	$2.90 \leq TRI \leq 3.51$
<i>High Technology Readiness</i>	$TRI \geq 3.51$

Source: Oktadini et al (2022)

METHODS

The research design

This study employed a quantitative associative research design methodology to examine the role that digital literacy plays in enhancing public readiness for the adoption of blockchain technology in zakat payments. The target population consists of Muslim men and women with personal income that meets the nisab threshold, according to the Chairman of BAZNAS Decree Number 1 of 2024 regarding the Nisab Value of Income and Services Zakat for 2024. The nisab for income zakat is equivalent to 85 grams of gold per year or approximately IDR 82,312,725 per year, or IDR 6,859,394 per month, as well as having good digital literacy. The target sample size is 200 respondents, determined based on statistical power analysis to ensure accurate and generalizable.

The data collection

The study tool asks a series of written, well-structured, and articulated questions of respondents before recording their responses to collect primary data (Sekaran & Bougie, 2017). In this study, the weighing scale is a Likert scale. An individual or group's attitudes, views, and perceptions on social phenomena can be measured using the Likert scale (Djaali, 2018). The weighting scale used is a 5-point Likert scale because it is easy to answer and has good reliability, validity, and discrimination power (Budiaji, 2013).

Research variables

Operationalization of Variables is a crucial step in developing research instruments. In this study, the variables described are digital literacy and the index of community readiness to adopt blockchain technology for zakat payments. Digital literacy variable refers to the proficiency mastered by an individual in using technology and digital tools according to their needs (Techataweewan in Tiffani, 2023). Indicators of digital literacy include the ability to use information technology (smartphones), internet network conditions, ability to use financial applications, and understanding of user interface displays in financial applications (Tiffani, 2023)

The index of community readiness comprises 4 dimensions, including optimism (Ajwang, Abila, & Tejero-Dakay, 2021; Alharbi & Sohaib, 2021; Parasuraman, 2000), innovation dimension (Ali, Khalid, Javed, & Islam, 2021; Amilia, Dewi, Puspita, Hendrawan, & Putra, 2020; Parasuraman, 2000; Soebardi, 2020), discomfort dimension (Adhitama, Wijayanto, & Kusumawardani, 2022; Ariani, Napitupulu, Jati, Kadar, & Syafrullah, 2018; Ariani et al., 2018; Faizani & Indriyanti, 2021; Ismail & Wahid, 2020; Parasuraman, 2000), and security dimension (Nugroho & Andryzal Fajar, 2017; Nurdiansyah & Jayanto, 2021; Panday,

Wibowo, & Mardiah, 2019; Nugroho & Andryzal Fajar; Parasuraman, 2000; Pradipta & Resen, 2019).

Data Analysis

The contribution of digital literacy to improving community readiness to use blockchain technology in zakat payments will be investigated through the application of linear regression in the data analysis. There will be multiple phases to the analysis. To evaluate a hypothesis, one looks at the digital literacy importance level. It has been demonstrated that digital literacy significantly affects society's readiness to accept blockchain technology for zakat payments if the significance is less than 0.05.

RESULTS

The Results of Data Analysis

The following findings are based on the data analysis conducted to determine the impact of digital literacy on the community's preparedness to accept blockchain technology for zakat payments.

Table 3. Results of Statistical Data Analysis

Explanation	Value
Constant	2,698
Regression Coefficient	0,772
Coefficient Determination (R^2)	0,637
Significance of t-test	0,000

Source: Processed Data (2024)

The systematic writing of results and discussion must refer to the research objectives and Based on the statistical data processing in Table 3, the linear regression equation can be formulated (1) as follows

$$Y = 2,698 + 0,772X \quad (1)$$

Explanation:

Y = Readiness of the community to use blockchain technology

X = digital literacy

The above linear regression equation's constant value of 2.698 indicates the community's baseline preparedness to employ blockchain technology for zakat payments in the absence of the impact of digital literacy. The community's readiness to employ blockchain technology for zakat payments increases by 0.772 for every point increase in digital literacy, according to the regression coefficient of 0.772 for digital literacy.

With a significance value of 0.000, or less than 0.05, digital literacy is found to have a substantial impact on the community's preparedness to adopt blockchain technology for zakat payments, according to the research findings. The community's readiness to employ blockchain technology for zakat payments is influenced by digital literacy by 63.7%, according to the coefficient of determination for digital literacy, which is 0.637. The remaining 36.3%, however, shows the impact of additional variables not covered in this investigation.

Digital literacy has a significant influence on the readiness of society to use blockchain technology for zakat payments" means that individuals' proficiency in using digital technologies significantly impacts their preparedness or willingness to adopt blockchain technology for making zakat payments. Higher levels of digital literacy are associated with a greater readiness among individuals to embrace blockchain solutions for zakat transactions, potentially due to better understanding, comfort, and capability in utilizing

digital tools effectively and securely. This readiness is crucial as it facilitates the adoption of innovative financial technologies like blockchain within the context of religious obligations such as zakat.

CONCLUSION

An important factor influencing the community's preparedness to employ blockchain technology for zakat payments is digital literacy. The more digitally literate the community is, the more prepared they are to adopt blockchain technology for zakat payments. The use of a specific sample, such as involving individuals with high levels of digital literacy or from a specific geographic area, may affect the representation of the broader population. Research limitations are: the use of questionnaire methods for data collection may limit a deep understanding of contextual factors that could influence community readiness in using blockchain technology for zakat payments. This study may not consider all factors that could affect community readiness in adopting blockchain technology, such as broader social, cultural, or economic aspects. Moreover, definitions of digital literacy or the concept of community readiness to use blockchain may vary, which could influence the interpretation and generalization of the research findings. Suggestions for future researchers include using a mixed-methods approach that incorporates not only questionnaires but also in-depth interviews or observations to gain a deeper understanding of contextual factors influencing community readiness in adopting blockchain technology for zakat payments. Additionally, clarifying the definitions of digital literacy and community readiness for blockchain use in greater detail, while considering possible variations in interpretation, can support more accurate interpretation and better generalization of research findings.

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