



A Conceptual Framework of the Blockchain Technology Adoption for Zakat Institution in Indonesia

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Abstract

The adoption of blockchain technologies necessitates the consideration of a wide range of factors far beyond the technology focus of most current research. Blockchain technology's ability to record transactions on distributed ledgers opens new possibilities for zakat institutions to improve transparency, prevent fraud, and build trust in the public sector. Even though academic research on blockchain technology is still in its infancy, most academics focus on the technology itself and overlook the zakat institutions adopting it. This paper drew on a comprehensive literature review to propose a conceptual framework for blockchain technology adoption. Zakat institutions can use the proposed framework as a reference point for adopting blockchain applications and for scholars to expand, refine and evaluate research into blockchain technology.

Keywords: blockchain technology; adoption; zakat, TAM

1. Introduction

Many believe that the recent appearance of blockchain technology represents the beginning of a major shift in the way organizations are structured and how they conduct business, as noted by Behnke & Janssen (2020). However, blockchain adoption for zakat institutions has yet to be studied in academic literature. Due to the difficulties early adopters have faced with



the new blockchain technology - which is still in its evolutionary stage - technical experts and researchers are now debating the merits of the technology.

A blockchain can be described as a series of blocks that record data in hash functions with a timestamp and a link to the previous block, as noted by Crosby et al. (2016). Using a "distributed ledger," the data is spread out across a network of computers. This prevents cybercriminals from exploiting centralized points of vulnerability. Tokens that can be transferred between parties without needing a trusted third party or intermediary or for the automatic execution of "smart contracts" when specific conditions are met are some of the uses of blockchain technology, as noted by Marsal-Llacuna (2018).

The use of blockchain is growing across industry sectors, including Zakat. Desto FinTech, a renowned company based in the US, introduced the i-Zakat service, the leading global company to manage zakat companies, as Ahmed & Zakaria (2021) noted. It also supports the management system attractively powered by blockchains that strictly adopt transparency, efficiency, and sustainability principles. In addition, I-Zakat prevents potential misuse, misallocation, loss, theft and other contributing factors to the lost fund and reduces the cost of operating a continuous work scheme that can last for generations. I-Zakat also reduces the cost of collecting funds, as Ahmed & Zakaria (2021) noted.

In Indonesia, zakat is administered by two institutions: the National Zakat Amil Agency, abbreviated as BAZNAS, and the National Amil Zakat Institution, abbreviated as LAZ. BAZNAS manages Zakat nationally and is formed by the government, whereas the community forms LAZ, which is tasked with collecting, disbursing, and utilizing Zakat. To aid in the collection of Zakat, BAZNAS established the Zakat Collection Unit, abbreviated as UPZ, as noted by Andayani, Hanum & Zaenal (2019). BAZNAS is not implementing blockchain technology in their management system as there are no regulations from the government to support cryptocurrency.

2. Gap analysis

As a country with the largest Muslim population in the world, Indonesia is still overwhelmed by the problem of poverty, which is now a big problem in Indonesia. Zakat is proven effective in reducing or eradicating poverty, with prominent examples from the era of the Second Caliph of Islam, Hazrat Umar bin Khattab (R.A), and of Umar bin Abdul Aziz, who was the First Caliph of Islam only for over one year (99-101H) as noted by Hidayati & Tohirin (2010). The amount of Zakat funds collected is still far from the potential amount. So that the amount of funds distributed automatically to eight Asnaf (Mustahiq) needs to be optimized. Many factors cause funds disbursed to BAZNAS not to the maximum. One of them is the distrust of the Muzakki towards Zakat institutions, as reported by BAZNAS (2017).

With its capability to trace transactions, Blockchain Technology can provide transparency to its users, which can be a possible solution to overcome distrust of Zakat Institution (BAZNAS). Besides that, implementing blockchain technology into zakat management can reduce the potential misconduct from zakat authority.

There are numerous scholarly articles about the conceptualization of blockchain-based zakat, for example, Zulfikri, Kassim & Hassan (2021) and Rejeb (2020). However, there are still limited studies regarding adopting blockchain technology for zakat institutions. Hence, this study proposes a framework research model to analyze the acceptance of blockchain technology for zakat institutions using the Technology Acceptance Model (TAM) by adding external constructs, namely trust, regulatory support and shariah compliance in the context of Islamic philanthropy, especially zakat.

3. Literature review

3.1 The Technology Acceptance Model (TAM)

Davis developed the technology acceptance model (TAM) based on the Theory of Reasoned Action (TRA) in 1989 (Davis, 1989). The authors believed that people's behavioral intention to use new technology (actual system use) is determined by their perceived usefulness and ease of use. Meanwhile, perceived ease of use influences perceived usefulness, and both perceived usefulness and perceived ease of use are influenced by various external variables.

TAM is a prominent and modest theoretical model of technology use. Explanatory capacity and ease of comprehension make it the most extensively utilized model in various disciplines. Venkatesh and Davis expanded TAM to TAM2 in 2000, adding social influence processes, cognitive instrumental processes, and a detailed account of the key forces underlying judgments of

perceived usefulness and behavioural intention (Venkatesh et al., 2003) later identified and discussed eight models of behavioural intention to use information technology and proposed the Unified Theory of Acceptance and Use of Technology (UTAUT). And in 2008, Venkatesh and Bala proposed TAM3, which was based on TAM2 but included the effects of trust and perceived risk on system use (Venkatesh et al., 2003).

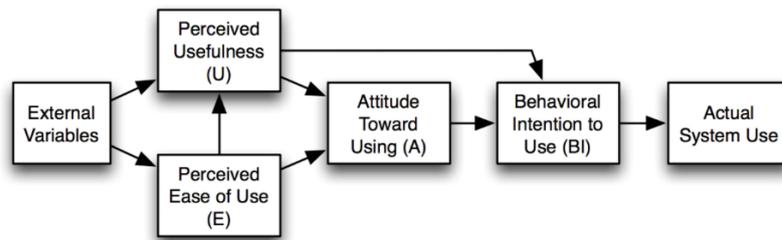


Figure 1. Technology acceptance model (TAM)
Source: Author's elaboration on (Venkatesh et al., 2003)

Comparing the TAM model with the other models (TAM, TAM2, UTAUT and TAM3), TAM is more versatile than the other models, which contain stricter definitions of external variables and are better suited to the study of specific information technologies, such as UTAUT and TAM3. Most of the time, TAM is used in the following three types of research: task-related systems, e-commerce systems, and hedonic systems, as noted by Hsiao & Yang (2011). TAM Model has also been used in zakat management study. For example, Roziq, Wijayanti & Irmadariyani (2020) measured the acceptance of the SIMBA application. This research uses a qualitative study using a case study approach. Meanwhile, Purwanto, Sulthon & Wafirah (2021) used the TAM model to measure the behaviour intention to use online Zakat. Santoso et al. (2020) studied muzakki intention to use blockchain in zakat management using the TAM model. This study uses TAM as the model for study acceptance of zakat institutions toward Blockchain technology.

TAM (Technology Acceptance Model) variables such as perceived ease of use and perceived usefulness can be used to gain a deeper understanding of the customer's desire to adopt new technology, as noted by Venkatesh et al. (2003). Several studies and researchers have found the TAM useful in measuring technology acceptance. Good decision-making tools for a system's deployment are essential. When it comes to embracing blockchain technology, there is no one-size-fits-all solution. TAM must be integrated with other important constructs when considering a current model compatible with blockchain.

On the other hand, Blockchain technology is a relatively new and complex technology in both adoption and development. Adopting blockchain technology is influenced by various factors, both directly and indirectly. According to Albayati et al. (2020), five external constructs play a direct and indirect role in adopting blockchain technology: Trust, Regulatory support, Experience, Social Influence and Design. This study will choose Trust and Regulatory Support to develop the research framework as it is more correlated to adopting blockchain technology for zakat institutions in Indonesia. The new proposed model can be counted as a new contribution to the previous researcher and add a new perspective that engages new factors in the world of adoption technology for zakat institutions in Indonesia.

3.2 TAM and Islamic Finance

The technology acceptance model (TAM) has been widely used in studying Islamic finance. Shaikh et al. (2020) examine the determinants that influence bank users' acceptance of Islamic financial technology (FinTech) services by extending the technology acceptance model in the Malaysian context. This study adds consumer innovativeness and self-efficacy to the framework of TAM. Usman et al. (2022) proposes an extended model of TAM by including Shariah compliance, knowledge of Shariah compliance and confidence in Shariah compliance. This study aims to investigate the satisfaction of e-banking in Indonesian Islamic Banking.

Another study by Usman et al. (2022) proposes an extended TAM model in using financial technology (Fintech) in Islamic philanthropy by adding trust, image and religiosity to TAM conceptual framework. This study supports the theory of reasoned action and the TAM. The relationship between perceived ease of use and perceived usefulness with TAM is determined by trust and religiosity. Shaikh et al. (2020) examine the determinants that influence bank users' acceptance of Islamic financial



technology (FinTech) services by adding a new variable of consumer innovativeness into the TAM model in the Malaysian context. This study reveals that Islamic FinTech's service acceptance is determined by perceived ease of use, usefulness, and consumer innovativeness.

From previous studies, there are very few studies about the TAM model for blockchain technology for Zakat institutions. Therefore, this study proposes a framework research model to analyze the acceptance of blockchain technology for zakat institutions using the Technology Acceptance Model (TAM) by adding external constructs, namely trust, regulatory support and shariah compliance in the context of Islamic philanthropy, especially zakat.

4. Methodology

This study is qualitative in nature. It utilized an extensive review of the literature to identify and analyse the relevant studies to propose the conceptual model. The systematic review of the literature proposes new ideas, the discovery of new alternatives, and the development of new hypotheses and research proposals, as noted by Manning (2010).

To perform a systematic literature review, this study examines recent publications on blockchain technology, technology adoption, Fintech adoption, TAM, and Zakat. The article search targeted any scholarly publications. The search uses the university's library database, Google Scholar, and Emerald Insight database for relevant, mainly peer-reviewed articles, using appropriate filters and keywords. From 2015 to the present, the paper focuses on blockchain technology adoption, TAM, Fintech Adoption and zakat. The analytic result of this literature review produces a conceptual framework.

5. Results and discussion

5.1 TAM Core Construct

1. Attitude

Attitude refers to the user's positive or negative feelings toward the new technology as noted by Davis (1989). The theory of reasoned action (TRA) led researchers to find the actual behaviour, the user belief system described as an attitude toward using and exploring things such as a technology system. Behavioural intentions are formed by considering an individual's attitudes toward each of the options in a situation, and it appears that the attitude comparable choice procedure does not reflect the construction of an individual's estimates of whether they would conduct many behaviours as noted by Sheppard (1988). To maintain strong attitude-behaviour correlations, Ajzen (2012) identified a high correlation between predictors and fixed criteria. It has been shown that there is a strong association between attitude and behavioural intention, supported by other research results. It can be concluded that Attitude positively impacts behavioural toward blockchain technology.

2. Perceived of usefulness (PU)

Perceived usefulness is the degree to which a person believes that using a particular technology or system can enhance his/her job performance as noted by Davis (1989). There is a large volume of published studies describing the role of perceived usefulness on usage intention. For instance, Hanudin (2007) discovered that PU is a critical indicator of Malaysians' desire to use mobile credit cards. Blockchain is currently being used in a wide range of industries. If the users believe that blockchain is beneficial to them and can improve their productivity, they are more likely to embrace the technology. Hence, it can be concluded that Perceived usefulness positively impacts attitudes toward blockchain technology.

3. Perceived Ease of Use (PEoU)

Perceived ease of use is "the degree to which a person believes that using technology will be free from effort" as noted by Davis (1989). Perceived ease of use refers to the degree the literature shows that perceived ease of use has a positive effect on perceived usefulness. Kallanmarthodi & Vaithyanathan (2012) argued that PEOU measures an individual's subjective opinion of how easy it is to use a given system. The more user-friendly a system is, the more likely it is that a person will find it beneficial in the future. The easier it is to use blockchain, the more the users perceive it as useful, and therefore the more positive their attitudes towards using blockchain become. Therefore,



it can be concluded that Perceived ease of use has a positive impact on attitude toward blockchain technology and Perceived ease of use has a positive impact on perceived of usefulness toward blockchain technology.

5.2 TAM External Construct

1. Trust

Over the past decade, blockchain has been a major player in the worldwide market and threatens traditional businesses' long-term viability. It is known as a trustful technology, as Albayati, Kim & Rho (2020) noted. Trust refers to consumers' comfort, confidence, and security level when using technologies, according to McCloskey (2006). Trust, security, and privacy are all elements that influence people's willingness to use technology in some way, as stated by Matemba & Li (2018). Trust in a company's products and services can considerably impact the amount of time people spend on the Internet, according to Keen (1997).

In blockchain technology, the first axiomatic issue from the user's perspective is the legality, followed by contextual variables such as the social effect, technology design, and user experiences, as Wunsche (2016) noted. Additionally, trust and risk must be considered. Customers are particularly concerned about blockchain technology's potential for risk. To avoid this, the technology must have sufficient trust in the market to continue moving forward. Protection against negative acts that can be anticipated in advance might provide better protection and monitoring of customer activities to improve their trust. According to Mayer, Davis & Schoorman (1995), trust is also known as customer preparation toward the service provider.

This study's most important finding is that trust significantly influences customer behaviour. When customers have confidence in a provider, they are more likely to switch from one technology or service to another. There was a need for more confidence in blockchain technology until recently. There is a widespread belief that the dangers exceed the rewards, as noted by Wunsche (2016). Another common misconception is that blockchain is difficult to use and maintain. To encourage trust chains, blockchain-based consensus protocols such as proof of stake (PoS) could be used to build trust. The IBM Hyperledger platform is specifically developed for blockchain applications and features a collaborative management system that ensures data confidentiality and user confidence, as Demirkan and p (2020) noted. Hence it can be concluded that Trust has a positive impact on perceived ease of use toward blockchain technology, and Trust has a positive attitude towards the use of blockchain technology.

2. Regulatory Support

Regulatory framework and government support refer to regulatory frameworks established by the government to monitor and ensure that service providers and consumers of technology perform their commitments and prevent infractions, as noted by Albayati (2020). To deal with e-business, monitor service quality, and authorize and deploy new technologies in the country under the control of the government, regulations are essential, according to Peters & Panayi (2016). These regulations ensure that everything goes off without a hitch and that everyone gets treated fairly. The same holds for blockchain technology and cryptocurrencies regarding client behaviour. Regulators are required to prevent or reduce ambiguity from the regulations, as Wunsche (2016) noted. Regulations and instructions issued by the government can impact customers' trust in the technology and their willingness to use it safely. Cryptocurrency growth is beset by numerous issues, such as a need for more government regulation and regulations, as noted by Lu (2018). Policies, laws, and regulations are critical to identifying who is authentic and who is authorized in a blockchain implementation protocol, according to Viriyasitavat & Hoonsopon (2019). According to previous research, this study hypothesised that regulatory support and trust are directly related. Because clients are more trusting of new technology when regulated by the government, the risk is reduced. Therefore, it can be concluded that Regulatory Support positively impacts trust toward the attitude to use blockchain technology.

3. Shariah Compliance

Muslim life is guided by Shariah, which can be referred to as "the way or path" because it includes Islamic norms, concepts, and parameters as noted by Kasim (2012). As the Muslim population and awareness of Shariah compliance grow, it is imperative for businesses to adhere to Shariah principles to meet the needs of their customers according to suhaimi (2008). With Shariah compliance, Muslims can carry out their religious obligations with banks and financial institutions while still adhering to their faith according to Kassim (2012). Blockchain technology can be called shariah compliance if it conforms to Sharia Law: Share Profit and loss, does not include prohibited

business (alcohol, pork, drug, etc.) does not deal with interest on lending and borrowing as noted by Abdulgani & Suhaimi (2014). Kaakeh, Hassan & Almazor (2019) found Shariah compliance affects attitude directly and intention indirectly mediated by the attitude towards Islamic banking. Hence, it can be concluded that Shariah Compliance with Blockchain Technology has a positive influence on the attitudes of zakat institutions towards Blockchain technology and Shariah Compliance with Blockchain Technology has a positive influence on the behavioural intention of zakat institutions to use blockchain technology.

6. Conceptual research framework

Based on the literature review in the previous section, the research model is then shown in figure 2. The model postulates that the TAM model is used to measure the level of acceptance of Zakat institutions towards Blockchain technology. The framework model developed from the basic constructs of TAM theory and the external constructs is Regulatory Support, Trust and Sharia compliance.

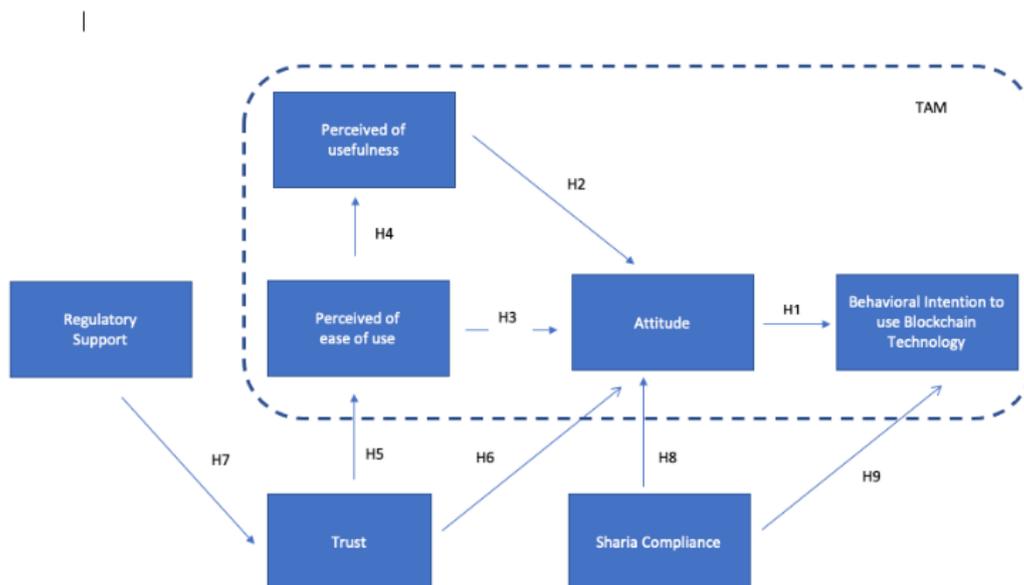


Figure 2. Proposed research framework

Source: Author's elaboration on (Venkatesh et al., 2003)

7. Conclusion, implications, and future research

The purpose of this paper is to propose a research model of blockchain technology acceptance for the Zakat institution. The research model is extended from the basic TAM theory by adding external constructs, namely regulatory support, trust and Sharia compliance which are from a review of the relevant past studies. This paper has several implications for theory and practice.

The theoretical implication of this paper is this study provides theoretical advice for advancing blockchain technology by conducting an early empirical investigation to analyse key technical elements. The Blockchain has been praised as a technology that can efficiently protect privacy. Various studies in the literature on blockchain adoption focus on supply chain users' adoption behaviour. However, few studies examine the effects of blockchain's technical features on user acceptance, especially



in zakat institutions. This study fills this gap in the literature by exploring the relationship between blockchain's technical features and the patterns of adoption behaviour by users, which are zakat institutions.

Another contribution is this study introduces trust, regulatory support and Sharia compliance that affect zakat institution acceptance. Unlike previous studies on blockchain adoption, which focus on users as an individual, this study uses zakat institutions as the users. The practical implication is other researchers and zakat institutions can utilize the information about the influencing factors to accept blockchain technology. This, in turn, would make the zakat institution management and government implement blockchain-based zakat.

However, this study is limited to three constructs in modified TAM concerning adopting blockchain technology and zakat, which can be expanded to different contexts. Because of this, future research could expand our model by incorporating more constructs. This paper is conceptual; therefore, empirical evidence needs to be provided.

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