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ADDRESSING ACCOUNTABILITY AND TRANSPARENCY CHALLENGES IN WAQF MANAGEMENT USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

This study identifies how blockchain technology can address accountability and transparency challenges in waqf management system by using institutional theory and Islamic institutional logic. An interpretative qualitative research approach is employed, with case studies of Malaysian public university waqf administrators, and data analysis is performed using open, axial, and selective coding. The findings suggest that in terms of coercive isomorphism there are two transparency challenges related to blockchain solutions in the waqf management system: 1) errors in the issuance of receipts (process), which are expected to be overcome by blockchain solutions in the form of individual network technology and ID identifiers; and 2) difficulties in waqf distribution (process), which are predicted to be solved by blockchain solutions in the form of controlling tools, public ledgers, and obtaining waqf distribution data. In normative isomorphism, there are two accountability challenges with blockchain solutions in the waqf management system: 1) difficulties in controlling waqf activities (process), which are expected to be overcome by blockchain solutions which allow internal control; and 2) decisions on waqf distribution (output), which should be solved by blockchain solutions which allow awareness among stakeholders of waqf distribution. In mimetic isomorphism, there is one accountability challenge in the process which has blockchain solutions in the waqf management system, namely system integration, which is predicted to be overcome by a blockchain solution related to traceability. The contributions of the study include extending institutional theory and Islamic institutional logic, and providing blockchain best practices for waqf institutions in addressing accountability and transparency challenges.

Keywords: Blockchain, Accountability, Transparency, Waqf, System.
JEL classification: O32; O33.

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I. INTRODUCTION

Previous studies indicate that there are accountability and transparency challenges facing waqf institutions at the international and national level (Ahmad Ayedh, Kamarubahrin, & Khairi, 2019; Ahmed, Mustafa, & Ogunbado, 2015; Johan, Yusof, & Omar, 2016; Mansor, Jamil, & Bahari, 2017; Shamsuddin, Ahmad, & Ab Manan, 2016; Wahid & Sein, 2013). Ahmed et al. (2015) report that the respondents in their study did not trust the Islamic religious bodies in Uganda due to the lack of accountability and transparency among their leaders. Johan et al. (2016) state that there is a demand to examine the challenges faced by public universities in Malaysia in managing waqf in terms of transparency. In addition, Mansor et al. (2017) report that waqf institutions in Malaysia also face the risk of poor governance and accountability. Although waqf has been practised in Malaysia since 1887, there has been a lack of accountability practices, such as mismanagement (Ahmad Ayedh et al., 2019).

Added accountability and transparency features in a system often lead to better integration of information (Mancini & Lamboglia, 2017), corporate governance (Ramírez & Tejada, 2018) and less corruption (Brusca, Manes Rossi, & Aversano, 2018). Mistry (2012), Wahid and Sein (2013), and Al-Shbail & Aman (2018) highlight that accountability and transparency have improved with the use of technology in India, Indonesia, and Jordan. Some researchers have also highlighted that the use of technology in waqf management could improve accountability (Abdulbaqi Ameen & Ahmad, 2011; Halachmi & Greiling, 2013; Rizal Batubara, Ubacht, & Janssen, 2019) and transparency (Abdulbaqi Ameen & Ahmad, 2011; Everett, Neu, & Rahaman, 2007; Halachmi & Greiling, 2013; Rizal Batubara et al., 2019). However, it has been argued that studies on mechanisms to address accountability and transparency challenges with technology, especially the blockchain, remain limited. Research on the emergence of blockchain technology began in 2016, but has been limited to non-Islamic sectors. As such, little is known about how such technology could improve accountability and transparency in waqf management.

Researchers have also found that the waqf issue has been widely discussed in the scope of State Islamic Religious Councils (SIRCs) in Malaysia, but with less focus on waqf issues in public universities. Although waqf in public universities was initiated by the Malaysian Ministry of Higher Education in 2016, discussion of its implementation was halted in the same year and estimated within six years no more studies have been done and there is a need to revisit as of today. Therefore, this study aims to identify a framework for how blockchain technology could address the accountability and transparency challenges in the waqf management system (process) of Malaysian public universities.

In line with the perspectives above, the research questions addressed in this study are as follows: 1) What are the challenges to enhancing accountability and transparency in waqf management in public universities?; 2) Why do such challenges exist?; and 3) How can blockchain technology address these challenges? The article is organised as follows. Section II presents the literature review, while Section III focuses on the methodology employed. Section IV presents the findings and discussion, and finally Section V concludes the study by discussing the anticipated theoretical and practical contributions.

II. LITERATURE REVIEW

2.1. Waqf Management System

Generally speaking, the waqf management system concerns stakeholders' involvement or public participation in waqf, could be referred to as the mobilisation, participation, and involvement of stakeholders (Rashid, 2018). Janom, Izham, Mansor, Syed Aris, Kamal Bashah, & Arshad (2019) believe that the waqf management system revolves around waqf information management, specifically in relation to the stakeholders. The success of the information system depends on various socially constructed factors, which are subject to the views of the stakeholders, such as the government, waqf board, public, Allah Glorious To Him (GTH), *al-waqif* (waqf giver), *mutawalli* (waqf administrator) and *mawquf alaihi* (beneficiaries). Moreover, the waqf institution's governance will only be considered successful if it succeeds in to fulfilling its duties with accountability through transparency in its operations, in addition to waqf reporting. It has also been agreed that the values created for waqf institutions include activities (sustainable waqf activities to achieve specific waqf objectives for information strategies), relationships (interaction with external environments) and interactions with stakeholders.

Theoretically, waqf has three pillars: irrevocability, perpetuity and inalienability. Irrevocability refers to any transfer of property to a waqf has to be irrevocable, any rights obtained by the *al-waqif* (waqf giver), would need to be a fiduciary nature and typically reserved the foundation document itself, *al-waqif* gave trust to the trustee (*mutawalli)* through official documents; perpetuity refers to an indefinite period of waqf; while inalienability concerns the exchange of property of equal value, or alternatively transactions that have been authorised by a judge or *qadi*, or otherwise lawfully authorised (KPTM, 2016; Stibbard, Russell, & Bromley, 2012). Furthermore, KPTM (2016) states that there are three main stakeholders involved in waqf implementation in public universities in Malaysia: the *al-waqif* (waqf giver), *mutawalli* (waqf administrator) and *mawquf alaihi* (beneficiary).

KPTM (2016) also reported that sole waqf trustees, or *mutawalli*, of the State Islamic Religious Council (SIRC) in their respective states and public universities must obtain SIRC permission to be waqf administrators. As the waqf administrator, the public university is authorised by SIRC to collect, use, manage, invest, expand and distribute waqf returns based on the Memorandum of Agreement agreed between SIRC and the public university (KPTM, 2016). Public universities must use all their expertise, tools and strategies to ensure the growth of *Shariah*-compliant waqf (KPTM, 2016). The beneficiaries or *mawquf alaihi* who receive the waqf returns in the form of scholarships and research grants can be either Muslim or non-Muslim students (Abdullah, 2020; KPTM, 2016; Shaharuddin, 2020). It can be seen that public universities as waqf administrators need to act with full accountability and transparency to stakeholders in order to encourage more waqf. Shaharuddin (2020) also mentions that the *mutawalli* (waqf administrator) needs to exercise transparent governance to encourage more *al-waqifs* (waqf givers).

2.2. Blockchain Technology

Blockchain is essentially a distributed database of records, or a public ledger of all transactions or digital events that have been executed and shared among participating parties (Zikratov, Kuzmin, Akimenko, Niculichev, & Yalansky, 2017). According to Rizal Batubara et al. (2019), blockchain is chosen as a solution because of its numerous benefits, such as records in the form of certificates, transaction records, and digital ID. Blockchains cannot easily be manipulated and can prevent double spending or certain transactions. Blockchain technology is also believed to provide transparent, reliable and real-time accounting information (Galen et al., 2018; Wu, Xiong, & Li, 2019; Yu, Lin, & Tang, 2018). It typically involves distributing ledgers and performing audits automatically to increase accountability and transparency (Bitfury, 2016; Deloitte, 2016b; Herlihy & Moir, 2016). Schmitz and Leoni (2019) report that the data immutability of blockchains can be updated and adjusted by participants in the system as one of the keys for accountability based on article publications (Dai & Vasarhelyi, 2017; Fiammetta, 2017; Wang & Kogan, 2018; Yermack, 2017) and reports (CPA, 2017; Deloitte, 2016a; KPMG, 2016). PWC (2016) and Deloitte (2020) report that blockchain technology could improve processes in the future, especially those involving practices with customers, competitors, suppliers, governments and regulatory agencies.

There have been numerous studies on blockchain application in non-Islamic sectors, but relatively few works on Islamic sectors, such as Islamic banking (Lacasse, Lambert, & Nida, 2018); *halal* management (Beik, Zaenal, & Rizkiningsih, 2019); Islamic finance (Alidin, Ali-Wosabi, & Yusoff, 2019; Chong, 2021; Elasrag, 2019; Oseni & Ali, 2019; Razak, Omar, Samsulbahri, Gazali, & Ishak, 2020); *sukuk* (Mounira, 2020), and *zakat* (Munshi, 2020). Research has also been conducted on blockchain application in relation to waqf, but this is also limited, especially with regard to discussion on how blockchain can address accountability and transparency challenges (see, for instance, Zulaikha & Arif Rusmita (2018), Rashid (2018), Lacasse et al. (2018), Azganin (2019), Gazali & Che Ismail (2019), Razak et al. (2020), and Ali & Markom (2020)). In relation to blockchain regulation, the World Bank Group (2019) reported that there is no regulatory framework to ensure the transparency and integrity of waqf financial fundraising. However, digital economy applications such as e-wallets and blockchain technology have been suggested as solutions to addressing the multiple transparency and trust issues. Furthermore, Oseni and Ali (2019) state that there is no issue from the *shariah* perspective to use technology in waqf development, since *Fiqh Al-Muamalat* (Islamic commercial law) allows it unless its prohibition is proven.

2.3. Challenges to the Waqf Management System and the Potential for Blockchain Solutions

In this sub-section, the literature on the challenges and potential solutions using blockchain is reviewed. It was found that there are four challenges related to accountability and transparency in the waqf management system: human error, governance issues in waqf distribution, limited stakeholder roles, and the lack of system integration.

2.3.1. Human Error

Some studies have found that in practice administrative errors are made and waqf assets miscounted (Yaacob & Nahar, 2017; Faccia & Mosteanu, 2019). It has also been claimed that current accounting system practices continue to provide room for errors that can lead to financial fraud (Faccia & Mosteanu 2019). Therefore, there is a challenge of transparency in the current system that refers to intentional and unintentional human error; for example, malpractice and negligence. As the current system is usually centralised, this can lead to human interference from various sources.

Blockchain technology combines decentralisation and no interference due to its transparent system structure ; therefore, it could minimise the risk of human error and fraud (Fischer, 2018; Hambiralovic & Karlsson, 2018). The technology allows transaction histories to be updated in real-time; consequently, it can be trusted to minimise human error by screening information from various sources (Deloitte, 2016b, 2016a) and providing reliable updates (Demirkan, Demirkan, & McKee, 2020). Furthermore, Beik et al. (2019) state that anyone can see all the financial transactions made on the network in real-time, thus offering a secure and transparent charity model. Chong (2021) states that modifying one block will change the hash or unique identifiers of all past transactions (blocks) and their cryptographic validation. Therefore, inspection of transactions can be made together through the network and errors prevented from occurring.

2.3.2. Governance Issues in Waqf Distribution

A number of governance issues have been found in relation to waqf distribution in Muslim countries, such as the illegal use of waqf funds, poor documentation, and communication problems. Afifuddin and Siti-Nabiha (2010) state that there is evidence of inefficient management and illegal use of waqf funds related to the governance and accountability of waqf institutions. Babacan (2011) reports the existence of irregular or uncertain decisions made by the *mutawalli* in waqf distribution in Turkey, causing the waqf distribution to be excessive or reduced to *mawquf alaihi*. In Malaysia, SIRC is the dominant stakeholder and can be influenced or itself influence the decisions of waqf institutions (Hamdan, Osman & Rashid, 2019). As such, its involvement in the waqf management system needs to be considered to ensure the accountability and transparency of public universities as waqf administrators, especially in making distribution decisions.

Mounira (2020) states that there are issues regarding waqf documents in Islamic countries, such as delays, poor communication, damage and falsification of documents, and that blockchain technology can be used to prevent such document fraud and interference with the system. Such technology can easily open up data sharing facilities between different humanitarian agencies at low cost, while protecting information (Galen et al., 2018; Rugeviciute & Mehrpouya, 2019). Chong (2021) states that the blockchain operates in peer-to-peer networks with a decentralised validation performed by the nodes within the network of computers. Chong also explains that all information and transactions are systematically recorded through the cryptographic process in a public database, which allows all stakeholders to participate in and contribute to validating all

newly-added information, whilst preventing old information from being removed or altered.

2.3.3. Limited Stakeholder Roles

In relation to accountability and transparency, *al-waqifs* and *mawquf alaihi* have been identified as the stakeholders in waqf institutions in Indonesia (Ihsan, 2007). Haneef (2016) reports that one of the challenges to implementing waqf in public universities is the institutional support from all stakeholders, such as SIRC, to obtain *mutawalli* status. This indicates that trust is given by the sole waqf trustee or sole *mutawalli* (SIRC) in their respective roles to the public university to be the *mutawalli* (KPTM, 2016) or to obtain the status of *nazir*, *mutawalli* or *qayyim* (JAWHAR, 2018) to administer the university's waqf with full accountability and transparency.

Theoretically, all stakeholders should have access to financial information through disclosure statements and reports. Furthermore, performance appraisal is critical to internal and external accountability, which may involve four levels of participation (public hearings, public engagement, public decisions and public initiatives); codes of conduct from the government or regulators (normative views) for self-regulation; and social audit through dialogue with stakeholders (Ihsan & Septriani, 2016). Other units also need to be involved in the public university waqf management system to provide awareness, proper understanding of waqf and access to waqf financial information (Haneef, 2016; Ihsan & Septriani, 2016).

The involvement of stakeholders is vital to maintain internal and external accountability (Alomair, 2018; Ihsan & Septriani, 2016) and has been documented in many studies such as Arshad & Mohd Zain (2017), Siswantoro, Rosdiana, & Fathurahman (2018), Astuti, Basri, & Tanjung (2019), and Ahmad & Rusdianto, (2020). The government evaluation dimension (periodic reports and visits) and *Shariah* audit compliance dimension represent the accountability logic for waqf institutions (Siswantoro et al. 2018). *Al-waqifs* (waqf givers) are stakeholders who have mutual power-dependence, and can be influenced or influence the decisions of the waqf institution (Hamdan et al., 2019). Beneficiaries, on the other hand, are stakeholders who have no influence on the waqf institution, but are influenced by its actions, also referred to as firm dominance (Hamdan et al., 2019). This suggests that the involvement of waqf givers and beneficiaries in the university waqf management system is essential for maintaining accountability and transparency, as highlighted by Ihsan (2007), Ihsan and Septriani (2016) and Arshad et al. (2018). Moreover, Hamdan et al. (2019) report that regulators and auditors are the dominant stakeholders who have influence but do not depend on waqf institutions. Hussin and Abdul Rashid (2017) also report that working with stakeholders is one of the improvements in waqf management in public universities in Malaysia.

Schmitz and Leoni (2019) propose that the immutability of data which is allowed to be updated and adjusted by participants in the system is key to accountability. Mosteanu and Faccia (2020) further state that that blockchain technology has a decentralisation feature that allows lawyers, auditors, accountants and any parties involved to verify the data and information. Mounira (2020) also explains that blockchain technology can help to store documents, support data in them and connect waqf institutions with beneficiaries.

2.3.4. Lack of System Integration

Studies generally have found the lack of a comprehensive system for waqf institutions (Noordin et al., 2017; Astuti et al., 2019). Khamis and Che Mohd Salleh (2018) report that one waqf institution in Malaysia faced challenges in documenting the collection of cash waqf as its sources could not be traced, thus limiting the effectiveness of record keeping for cash waqf activities. Abd Jalil et al. (2019) explain that the sufficient information of waqf givers is one of the most important factors indicating poor accountability. Ahmad Ayedh et al. (2019) also state that the lack of accountability practice is associated with a decline in accountability to stakeholders in terms of governance, projects, waqf recipients, and events listed on websites. Furthermore, information on waqf projects and activities available that is not updated; the absence of non-financial information, such as the objectives of waqf institutions; and annual reports in Kedah and Melaka, are also cited as challenges (Ahmad Ayedh et al., 2019).

Furthermore, due to the lack of statistics on waqf financial documents, the lack of accountability and transparency in Kelantan has also been reported (Ahmad Ayedh et al., 2019). Ahmad Ayedh et al. also state that Melaka, Sabah and the Federal Territories did not give project information, waqf recipient information or event details. Abdullah (2020) argues that accountability and transparency with regard to the lack of information related to large investments are issues that occur in managing waqf property in Malaysia, such as the lack of records and systematic information. In Indonesia, Astuti et al. (2019) indicate many problems in the application of accountability in the waqf sector, including non-integrated systems and non-transparency of *nazir*.

According to Tsai, Blower, Zhu, and Yu (2016), when blockchain is used, it needs to be initially integrated with existing processes. In terms of financial reporting, blockchain uses a distributed system by providing transparent and open access, and immutable storage of evidence (McCallig, Robb, & Rohde, 2019). This is also discussed by Ismailisufi, Popovic, Gligoric, Radonjic, and Sandi (2020), who add that blockchain technology was initially applied to keep track of financial transactions. Elghaish, Abrishami, and Hosseini (2020) state that all participants have an equal opportunity to track financial transactions regardless of their geographical location.

2.5. Theoretical Framework

2.5.1. Institutional Theory, Islamic Institutional Logic and Accountability, and Transparency from the Islamic Perspective

This study examines the lens of institutional theory and institutional logics to understand the challenges of accountability and transparency in waqf management, and how blockchain technology could overcome these. Institutional theory focuses on external homogeneity factors, including coercive or regulative, normative and mimetic or cultural-cognitive isomorphisms (DiMaggio & Powell, 1983; Scott, 2008). Coercive isomorphism stems from political influence and legitimacy and demonstrates an organisation's responses to meet regulations, laws and standards set by the authorities (DiMaggio & Powell, 1983). Regulation is related to regulatory activities, monitoring, restrictions and enforcement by the

authorities (Scott, 2008). Normative isomorphism is related to professionalism or unions, which determine the conditions, methods, understanding, and validation of their employment autonomously (DiMaggio & Powell, 1983). Moreover, the normative elements are related to a prescriptive, evaluative, and obligatory into social life, such as registration, certification and accreditation (Scott, 2008).

On the other hand, mimetic isomorphism, resulting from a general reaction to uncertainty about something, leads to imitation through employee transfer, or explicitly by organisations such as consulting firms or trade associations (DiMaggio & Powell, 1983). A cultural-cognitive element exists when it is related to exposure through media, training programmes, and types of social logics by sharing concepts that shape real social traits (Scott, 2008).

Hinings et al. (2018) suggest including institutional logic in the study of digital transformation in the future. This is because it involves multiple actors in the ecosystem who play different roles in the process of creating novel system innovations. According to Friedland and Alford (1991), institutional logic refers to the market, government, economy, family system and religious factors that explore the interrelationships between individuals, organisations, and society. Thornton and Ocasio (2008) view society as an inter-institutional system that allows sources of heterogenetic factors (multiple sources) rather than homogenous ones; therefore, the institutional logics approach views any context as potentially influenced by contending logics of different societal factors. Furthermore, according to Abu Talib, Abdul Latiff, and Aman (2020), the interplay between institutional theory and the implications of religious (Islamic) institutional logic provides an approach to understanding the accounting and reporting of waqf institutions.

In understanding accounting and reporting from an Islamic perspective, according to Abu-Tapanjeh (2009) the basic concept of Islamic accountability is to believe that all resources provided to individuals in the form of trust, disclosure of true financial facts and accurate information should be freely available to customers, as well as providing them with sufficient information necessary to make accurate financial decisions. In addition, according to JAWHAR (2018), accounting in Islam is the procedure of how the trustee manifests accountability to the stakeholders as accountability to Allah GTH based on *Shariah* law, legislation, rules and accounting standards. Accountability can produce true and fair disclosure and transparency, and the main accountability is to Allah GTH (Abu-Tapanjeh, 2009). Abu-Tapanjeh (2009) and Taufiq (2015) highlight that accountability and transparency are interrelated, as transparency is a prerequisite for the implementation of accountability. Siswantoro et al. (2018) identify the *Shariah* audit compliance dimension as one of five dimensions in accountability logic.

Furthermore, Sulaiman et al. (2009), Ihsan and Hj. Mohamed Ibrahim (2011), Ramli et al. (2014), and Basri et al. (2016) found that accountability from an Islamic perspective refers to the concept of trust and *Khalifah* of Allah (servant to Allah GTH). According to Sulaiman et al. (2009), this horizontal accountability is a relationship with human beings (*hablun min an-nas*), which reflects a human relationship with Allah GTH (*hablun min* Allah*)*. The concept of *Khalifah* of Allah proposes human beings to be trustees of other human beings (Sulaiman et al., 2009). Ihsan and Hj. Mohamed Ibrahim (2011) also report that clear and

transparent reporting will enable *mutawallis* to perform their responsibilities and result in higher transparency, which will lead to higher public trust. The concept of *Khalifah* of Allah concerns trust and accountability as a servant of Allah GTH to hold the trust, not to cause harm and to protect all the creations of Allah GTH, which will be evaluated in the hereafter (Ramli et al., 2014).

Therefore, this study extends institutional theory and Islamic institutional logic since it is related to waqf institutions in the scope of the waqf management system. Generally speaking, the waqf system should be assessed in light of multiple factors or Islamic principles, such as Syariah compliance, *Khalifah* of Allah, and accountability to Allah. According to Babacan (2011) and Abu Talib, Abdul Latiff, & Aman (2020), the waqf system should be assessed taking a multiple-dimensional approach, including Islamic culture, law, and other secular means, to reach a comprehensive institutional understanding of Islamic elements.

Table 1 shows Islamic institutional logic in institutional theory as understood in this study. The institutional theories follow the view of DiMaggio and Powell (1983) and Scott (2008). The religious institutional logic concept was developed by Nakpodia et al. (2018), whose study determined the relationship between religious institutional logic and corporate governance in Nigeria, which has a high religiosity environment and a principles-based regulatory regime, which can accelerate the emergence of robust corporate governance. They assert that poor application of religious principles has contributed to the challenges confronting corporate governance in Nigeria. Therefore, it is important to develop a regulatory model that embraces both principles-based and rules-based regulations and to establish the religious institutional logic existing in the coercive element in their study, but focusing on normative and cultural-cognitive elements. Additionally, Abu Talib (2019) and Abu Talib et al. (2020) report that accountability to Allah GTH logic may exist in coercive, normative, and mimetic isomorphisms.

Table 1.
Islamic Institutional Logic in Institutional Theory

Institutional theory of DiMaggio and Powell (1983)	Institutional theory of Scott (2008)	Religious institutional logic of Nakpodia et al. (2018)	Islamic religious logic of Abu Talib (2019) and Abu Talib et al. (2020)
Coercive isomorphism • Stems from political influence and legitimacy • Demonstrates that the organisation responds to meet regulations, laws, and standards set by authorities	**Regulation** • Regulatory activities, monitoring, restrictions, and enforcement actions by the authorities. • Is the main focus but less dominant when compared to normative element and cultural-cognitive element because it can be manipulated		• Accountability to Allah GTH • *Shariah* compliance

Table 1.
Islamic Institutional Logic in Institutional Theory (Continued)

Institutional theory of DiMaggio and Powell (1983)	Institutional theory of Scott (2008)	Religious institutional logic of Nakpodia et al. (2018)	Islamic religious logic of Abu Talib (2019) and Abu Talib et al. (2020)
Normative isomorphism • Related to professionalism • Unions that determine the conditions, methods, understanding, , and validation of their employment autonomously	**Normative** • Related to a prescriptive, evaluative, and obligatory into social life • Registration, certification, and recognition	**Normative** • Social responsibility, feeling ashamed, and respect become an obligation and not according to suitability to change	• Accountability to Allah • *Shariah* compliance
Mimetic isomorphism • Resulting from a general reaction to uncertainty • Imitation through employee transfer, or explicitly by organisations such as consulting firms or trade associations	**Cultural-cognitive** • Exposed through media, training programmes, and types of social logics • Share concepts that shape real social traits	**Cultural-cognitive** • Mimetic, mutual understanding • The desire to be a member of a group • Religion determines individual behaviour	• Accountability to Allah • *Khalifah* to Allah • *Shariah* compliance

III. METHODOLOGY

The interpretative qualitative research approach developed by Walsham (1995) was used to identify a framework for how blockchain technology could address the accountability and transparency challenges in the waqf management system (process) of Malaysia public universities. This approach was employed because it is related to social issues and information systems. According Walsham, the approach has led some information system researchers to adopt empirical approaches which focus particularly on human interpretations and meanings. As a research strategy, this study conducted three case studies of Malaysian public university waqf administrators. They were chosen because they have considerable collection funds and were operating before 2016 (the official inauguration of waqf in Malaysian public universities). It is believed that the selection was appropriate. Furthermore, primary data were collected from semi-structured interviews.

Table 2 shows the interview details of the respondents over nine sessions lasting 11 hours 23 minutes. Two respondents took part in Case Study A, with an interview duration of 4 hours 22 minutes. Case Study B involved three respondents, whose interviews lasted 2 hours 39 minutes. Case Study C consist of two respondents, with a 4 hour 22 minutes interview duration. The respondents were chosen not only because of their considerable knowledge, but also as they were waqf administrators, who face the accountability and transparency challenges and are aware of the emergence of blockchain technology. To validate

the data, the triangulation approach was used to collect converging evidence from different sources through verbal reports (recorded semi-structured interviews), as recommended by Appleton, Rgn, and Pgcea (1995); observations; and documents (Yin, 2011). Material provided by the organisations was employed such as note and from internet sources such as organisation website, guidelines from JAWHAR, and guidelines from IRB. Furthermore, Walsham (1995) states that data collection and analysis can be achieved in interpretive when involved the iterative process of data that have been implemented in this study. The iterative process occurs when flexibility of data to be collected and analysed with initial theories being expanded, refers to institutional theory with Islamic institutional logic. According to Walsham (1995), interpretive studies preserve a considerable degree of openness to the field data, and willingness to modify (expanded or revised or abandoned altogether).

Table 2.
Interview Details

No.	Position	Gender	Number	Interview duration
Case study A				
1	Director	Male	2	3 hours 2 minutes
2	Accountant	Male	1	1 hour 20 minutes
		Total number, hours and minutes	3	4 hours 22 minutes
Case study B				
1	Director	Male		1 hour 15 minutes
2	Head of Administration and Finance	Female	1	1 hour 24 minutes
3	Head of Waqf Fund Management	Male	1	
4	Assistant of Waqf Fund Management	Male	1	
		Total number, hours and minutes	3	2 hours 39 minutes
Case study C				
1	Assistant Registrar	Male	1	1 hour 45 minutes
2	Assistant Treasurer	Male	2	2 hours 37 minutes
		Total number, hours and minutes	3	4 hours 22 minutes
		Grand total	9	11 hours 23 minutes

Data reliability was also addressed in terms of the equipment used in the interviews, refers as audio recorders in this study. Permission letters were sent to the respondents for their voices to be recorded. Field notes (observations) were also made during the interviews to record the gestures and behaviour of the respondents, as suggested by Bogdan & Biklen (2007) and Jasmi (2012). Following Friese (2021), the interviews were transcribed and then uploaded to Atlas.ti software version 9 for open coding. The data were then analysed manually using

axial coding and finally analysed manually using selective coding, as suggested by Corbin and Strauss (2015), to identify themes related to the study framework. The framework was developed according to the themes in the data analysis and supported with references from the literature review. Table 3 shows a sample of the data analysis for manual open and axial coding. The ID number for each dataset was generated by Atlas.ti software version 9 in order to assist the researchers identify the data analysed and avoid missing any data.

To understand the process of the waqf management system, the study identified several articles related to the input, process and output for waqf institutions. It was found that the majority of the related discussion was in the SIRC and corporate waqf context, with limited discussion on input, process and output related to waqf in Malaysian public universities. However, the same research was used to explain the process of the waqf management system in the universities because the nature of their operations is countered as equal. The input for the waqf management system in this study refers to the collection of waqf (Nahar & Yaacob, 2011); the process for the waqf management system refers to payment and investment by complying with Islamic and SIRC internal operating production procedures, accounting, reporting, and act (Nahar & Yaacob, 2011); and the output for the waqf management system refers to the distribution of waqf (Nahar & Yaacob, 2011). Table 4 shows a sample of the data analysis from the manual axial to the selective coding (interpretive).

Table 3.
Sample of Data Analysis for Open and Axial Coding

Data	Open coding (What and why)	Data	Open coding (How)	Axial coding
R1A (1:234): … sometimes they want a receipt…	Receipt issuance to 'Servant of Allah'	R1B (3:152): …with the individual networks in blockchain…let's say we need data and we will verify the data and the data is secured…	Individual network technology in blockchain allows authentication to be made together in the system…	Errors in the receipt issuance for 'Servant of Allah' and blockchain solutions
R1B (3:147): ...the government has just recognised Section 44(11D) Income Tax Act, 1967 for tax exemption…	Receipt needed for tax exemption	R2C (20:22): …with this blockchain, even if *al-waqif* wants to contribute in the name of 'Servant of Allah', his name will come out…	Blockchain technology allows ID identifiers	

Table 4.
Sample of Data Analysis from Axial to Selective Coding (Interpretive)

Axial coding	Selective coding									
	AC[1]	TC[2]	I[3]	P[4]	O[5]	C[6]	N[7]	M[8]	KA[9]	SC[10]
Errors in receipt issuance for 'Servant of Allah' and blockchain solutions		/		/		/			/	

Notes:

1 = Accountability challenge; 2 = Transparency challenge; 3 = Input; 4 = Process; 5 = Output; 6 = Coercive; 7 = Normative; 8 = Mimetic; 9 = *Khalifah* of Allah; 10 = Shariah compliance

IV. FINDINGS AND DISCUSSION

The study findings are discussed according to the theoretical framework (Table 1) through the lens of Islamic institutional logic. The framework was enhanced based on the findings of the study (Figure 1). The discussion covers three main pillars of institutional logics: coercive, normative, and mimetic isomorphisms.

4.1. Coercive isomorphism

According to Nahar and Yaacob (2011), the process refers to the payments and investments made by complying with the Islamic and SIRC internal operating production procedures, accounting, reporting, and act. However, the findings of this study related to the payments process from the *al-waqif* to the waqf administrator and from the waqf administrator to the *mawquf alaihi.*

4.1.1. Errors in the receipt issuance for 'Servant of Allah' and blockchain solutions

Referring to Figure 1, there are possible technical errors in the issuance of receipts using the name 'Servant of Allah' or nominees who do not have transaction records or a historical background to claim from the Inland Revenue Board (IRB) due to the new circular on waqf claims. Feedback from the respondents included:

R1A (1:234) : …sometimes they want a receipt…

R1B (3:147) : ...the government has just recognised Section 44(11D) Income Tax Act, 1967 for the tax exemption…

Based on the above feedback, possible technical errors may occur when there is no transaction record or when nazir issue a receipt to the wrong nominee, specifically when the waqf administrator deals with the regulations by IRB on waqf tax exemption. As suggested by Yaacob and Nahar (2017), in valuing waqf assets there were administrative errors and waqf assets may have been miscounted. Faccia and Mosteanu (2019) also state that the current accounting system practices still provide room for error, which can lead to financial fraud.

Institutional theory	Islamic institutional logic in this study	Process of the system				Blockchain technology
		Process (Procedure)		Output (Distribution)		
		Accountability	Transparency	Accountability	Transparency	
Coercive isomorphism	Khalifah of Allah		Errors in the receipt issuance for 'Servant of Allah'			1) Individual networks technology in blockchain allows authentication to be made together in the system 2) Blockchain technology allows ID identifiers
			Difficulties in waqf distribution to *mauquf alaihi* (student)			1) Blockchain solution as a control tool to avoid misused of waqf distribution for other purposes 2) Blockchain solution is the public ledger to avoid dishonesty in providing information by *mauquf alaihi* (students) about the funding received 3) Blockchain solution allows *al-waqif* obtaining waqf distribution data and tallying with their database and avoid overlapping
Normative isomorphism	Khalifah of Allah	Difficulties in controlling the waqf activities by the other beneficiaries (faculties, centres, departments in university)				Blockchain solution allows the internal control on waqf activities
	Syariah compliance			Decision on the waqf distribution by internal members only		Blockchain solution allows awareness among stakeholders on waqf distribution
Mimetic isomorphism	Khalifah of Allah	System integration - difficulties in preparing certificates and financial reports				Traceability of blockchain to trace the transaction to prepare the financial reports

Figure 1.
Framework for How Blockchain Technology Can Address Accountability and Transparency Challenges in the Waqf Management System

Coercive isomorphism exists in this transparency challenge when the waqf administrator deals with IRB in order to fulfil IRB regulations. Furthermore, it was found that the related religious institutional logic from the Islamic perspective in such a transparency challenge refers to *Khalifah* to Allah when waqf administrators as trustees of other human beings; in this study, *al-waqif* and IRB. Therefore, *Khalifah* to Allah logic exists in the coercive isomorphism and further extends the previous studies of Abu Talib (2019) and Abu Talib et al. (2020), which show that *Khalifah* to Allah logic not only exists in mimetic isomorphism, but also in coercive isomorphism.

Therefore, this study is timely in examining the use of the blockchain solution in addressing this transparency challenge. Feedback from the included:

R1B (3:152) : …with the individual networks in blockchain…let's say we need data and we will verify and the data is secured…

R2C (20:22) : …with this blockchain, even if al-waqif wants to contribute in the name of 'Servant of Allah', his name will come out…

Therefore, the individual network technology in blockchain allows authentication to be made together in the system. This also consistent with Gazali and Che Ismail (2019), who stated that blockchain allows more complex transactions by spreading computation over the network. Beik et al. (2019) also state that anyone can see all the financial transaction occurring on the network in real-time, which offers a secure non-transparent charity model. Furthermore, based on the above feedback, blockchain allows ID identifiers. This is consistent with Chong (2021), who states that blockchain operates on peer-to-peer networks with decentralised validation performed by the nodes within the network of computers. Modifying one block would change the hash or unique identifiers of all past transactions (blocks) and their cryptographic validation.

Furthermore, blockchain technology combines decentralisation and allows no interference due to its transparent system structure. It also minimises the risk of human error and fraud (Fischer, 2018; Hambiralovic & Karlsson, 2018). Blockchain technology allows transaction history to be updated in real-time and can be trusted to minimise human error by screening information from various sources (Deloitte, 2016b, 2016a) and reliable updates (Demirkan et al., 2020).

4.1.2. Difficulties in Waqf Distribution to Main *Mawquf Alaihi* (Students) and Blockchain Solutions

On the other hand, beneficiaries are stakeholders who have no influence on waqf institutions, but are influenced by their actions (Hamdan et al., 2019). This study discovered that there has been dishonesty by students as the main *mawquf alaihi* in providing information to the university in Case Study A and this may also happen to other public universities because the waqf funding application is still manual through writing and interviews. The feedback showed that *mawquf alaihi* had received scholarships from other institutions without informing the university's waqf unit about it. Feedback from respondents were as follows:

RIA (1:231) : …the student did not inform us that he got sponsorship from another party, they wrongly declare the information…we have an interview with them but if they lied, we cannot do anything…

R2B (3:144) : …we confirm in writing and orally through interviews…

Other challenges refer to the absence of involvement of *al-waqif* from other institutions in the waqf management system. Related feedback was:

RIA (1:219) : …al-waqif assists students including those with existing study loans, depending on the intentions of al-waqif… there is a party asking us for a list of names of students eligible to receive funds, but we were not informed of whether or not the fund is received…

R2A (18:37) : …this is indeed the case…

The absence of the involvement of *al-waqif* from other institutions in the waqf management system will lead to wastage of waqf funds, which may violate the policy set by the university if the *mawquf alaihi* receives more than one scholarship from different institutions and different *al-waqif's* intention. Ihsan (2007) and Alomair (2018) report that for the sake of accountability and transparency, *al-waqifs* and *mawquf alaihi* have been identified as the stakeholders in waqf institutions. According to Afifuddin and Siti-Nabiha (2010), inefficiency in fund distribution management may occur if these transparency challenges not well handled. They also stated that there is inefficient management and illegal use of waqf funds related to the governance and accountability of waqf institutions

Al-waqifs are stakeholders who have mutual power-dependence, and can be influenced by and themselves influence the decisions of the waqf institution (Hamdan et al., 2019). This suggests that the involvement of waqf givers and beneficiaries in the university waqf management system is essential for maintaining accountability and transparency, as highlighted by Ihsan (2007), Ihsan and Septriani (2016) and Arshad et al. (2018). These transparency challenges were under coercive element when they related to the policy of the university on students' scholarships and *al-waqif* intentions. *Khalifah* of Allah logic also exists when waqf administrators deal with waqf distribution to students (*mawquf alaihi*) and *al-waqif* show responsibility to students.

The researchers found that blockchain solutions could be used to address those transparency challenges. Feedback from respondents included:

R2A (18:34) : …blockchain is a public ledger and is very helpful… blockchain can overcome this overlapping problem because there is such an approval transaction…

R2B (19:31) : …blockchain assists in terms of transparency because waqf needs to be controlled so that there is no leakage in terms of misused for other purposes or does not fulfil the al-waqif wishes…

R2C (20:26) : …if there is a blockchain, all al-waqif have in the system, they get the data, make decisions, and tally with their database. They know where the student gets the waqf distribution from and make it easier for us also, the information is reliable... this matter is indeed transparent and attracts many waqf giver…

Therefore, blockchain solutions can be used as control tools to avoid misuse of waqf distribution for other purposes; as a public ledger to avoid dishonesty in providing information by *mawquf alaihi* (students) about the funding received; and they allow *al-waqif* to obtain waqf distribution data and tally these with their database to avoid overlapping. This is in line with the view of Mounira (2020), who states that there are issues regarding waqf documents in Islamic countries

(such as damage and falsification of documents) and that blockchain technology could be used to prevent document fraud and interference with the system. Such technology can also easily open up data sharing facilities between different humanitarian agencies at a low cost, while protecting information (Galen et al., 2018; Rugeviciute & Mehrpouya, 2019). This finding is consistent with Chong (2021), who states that all information and transactions are systematically recorded through the cryptographic process in a public database, which allows all stakeholders to participate in and contribute to validating all newly-added information, whilst preventing old information from being removed or altered.

4.2. Normative Isomorphism

Two accountability challenges were found that occur in the process and output of the waqf management system. According to Nahar and Yaacob (2011), the process refers to payments and investments by complying with Islamic and SIRC internal operating production procedures, accounting, reporting, and act. However, this study focuses on waqf activity procedures by other beneficiaries (faculties, centres, and university departments). Meanwhile, the outputs are referred to the distribution of waqf (Nahar & Yaacob, 2011). However, this study focuses on decisions related to waqf distribution.

4.2.1. Difficulties in Controlling Waqf Activities by Other Beneficiaries and Blockchain Solutions

The findings demonstrate difficulties in controlling waqf activities by other beneficiaries in the process of the waqf management system. These beneficiaries are other units within the university, such as faculties, centres, departments and offices, questioning the inclusion of funds in university waqf units. This shows that they are not satisfied when the funds go to the waqf units. Based on the feedback given, these other units are additional beneficiaries to students as the main *mawquf alaihi.* They need to be involved in the public university waqf management system to provide awareness, proper understanding of waqf, and access to waqf financial information (Haneef, 2016; Ihsan & Septriani, 2016). Relevant feedback from respondents included:

R1A (1:249) : …people from other units will talk about why waqf should be in our units…

R1B (3:135) : …there is competition among other units…this waqf funding needs to be in the same entity and not separated…waqf giver will also be confused and necessary in one stage only…

This accountability challenge is related to normative isomorphism, in which waqf administrators determine the appropriate methods when they are dealing with other beneficiaries, which is consistent with the definition of normative isomorphism by DiMaggio and Powell (1983). Moreover, *Khalifah* of Allah logic also exists when waqf administrator accountable to *al-waqif* when they feel of 'insecurity' in showing their concern for the relationship with Allah and with other humans. They worried when the other beneficiaries misunderstand their duties in managing waqf. *Khalifah* to Allah logic exists in normative isomorphism

and further extends the studies of Abu Talib (2019) and Abu Talib et al. (2020), in that *Khalifah* to Allah logic not only exists in mimetic isomorphism but also in the normative element.

In relation to this, the study has discovered blockchain solutions to overcome this accountability challenge. An example of feedback from the respondents was:

R2C (20:29) : …with blockchain we can control them in terms of waqf funding and waqf distribution…

Therefore, the blockchain solution allows internal control of waqf activities. Using blockchain technology, based on Fiammetta (2017) and several articles (Dai & Vasarhelyi, 2017; Wang & Kogan, 2018; Yermack, 2017) and reports (CPA, 2017; Deloitte, 2016a; KPMG, 2016), Schmitz and Leoni (2019) reported that allowing the immutability of data to be updated and adjusted by participants in the system is key to accountability. Mounira (2020) also states that blockchain technology can help to store documents, support data in documents and connect waqf institutions with beneficiaries.

4.2.2. Decisions on Waqf Distribution by Internal Members Only and Blockchain Solutions

Output for the waqf management system in this study refers to the distribution of waqf (Nahar & Yaacob, 2011). In relation to this, feedback from respondents included:

R1B (3:140) : The distribution committee is chaired by myself and several representatives from Islamic centres, registrars, etc...

R1C (6:202) : SIRC representative is more to the corporate, top management of the university…

The feedback received suggests that not all stakeholders are involved in decisions on waqf distribution; only internal members are involved. This will mean the waqf distribution is poorly channelled to the beneficiaries (other units in university) and *mawquf alaihi* (students). This is also in line with the evaluation of waqf institution performance by Alomair (2018) and Ihsan and Septriani (2016), which state that the involvement of stakeholders is very important for maintaining internal and external accountability. Siti Umairah and Siti Mashitoh (2016) report that only public university B in their study had a representative from SIRC to determine the distribution of waqf. On the other hand, Hamdan et al. (2019) state that regulators (SIRC) and auditors are the dominant stakeholders that have influence but do not depend on waqf institutions. Since SIRC can influence the decisions of waqf institutions, its involvement in the waqf management system should be considered to ensure the accountability and transparency of public universities as waqf administrators, especially in making distribution decisions.

Normative isomorphism in this accountability challenge is related to professionalism or unions that determine the validation of waqf distribution decisions (DiMaggio & Powell, 1983). Moreover, *Shariah* compliance logic is involved in the challenge when waqf administrators deal with stakeholders concerning waqf distribution decisions, specifically SIRC. *Shariah* that has been set and monitored by stricter examination of waqf management with regulatory practices and standards (Mohamad, Mahmud, Ismail, Redzan, & Shahrudin,

2017). The government evaluation dimension (periodic reports and visits) and the *Shariah* audit compliance dimension represent accountability logic for waqf institutions (Siswantoro et al. 2018). Moreover, *Shariah* compliance logic exists in normative isomorphism, which is consistent with Abu Talib (2019) and Abu Talib et al. (2020).

Therefore, in relation to overcoming this accountability challenge, feedback from the respondents was as follows:

R2A (18:41) : …all parties can view the transaction…blockchain is very helpful in waqf projects…especially al-waqif…

R3B (19:37) : … if there is a system like blockchain, monitoring can be done simultaneously by all parties…

R2C (20:12) : …it's good that they're in the system, at least they know what's going on…reporting, for example, is prepared by us and needs to be sent to SIRC... if SIRC's representative is a member in the blockchain system, they can get the report themselves...

Based on the above feedback, it appears that the blockchain solution would allow awareness among stakeholders of waqf distribution. This is consistent with Mosteanu and Faccia (2020), who state that blockchain technology has a decentralisation feature that allows the presence of lawyers, auditors, accountants and any parties involved to verify data and information.

4.3. Mimetic Isomorphism

4.3.1. System Integration - Difficulties in Preparing Certificates and Financial Reports and Blockchain Solutions

The researchers found that there was an accountability challenge in system integration, specifically when the waqf administrator has prepared the appreciation certificate for the *al-waqif* and financial reports during the Covid-19 pandemic. Associated feedback from the respondents included:

R1A (17:8) : …when we invest, the system cannot show how much can be invested because it has been cut off …we still have to make a separate report and still have to do manually…our distribution reports are indeed numerous and still need to be made manually…

R2B (19:20) : … we do not have a system to keep the data …for example we want to give a certificate of appreciation to al-waqif is quite difficult because we have to re-open the file …we still do it manually to separate each collection amount and it may be accurate or not even though we have a cross check with the treasurer but there are two different collection amounts…although less or more 1 cent, this 1 cent falls to which al-waqif's intention?...

R4B (19:28) : …during the pandemic, six months we were unable to go to the office and reports could not be issued because our system was an internal system only…all reports are generated manually…

R1C (6:190) : …pandemic is challenging and every month we will make a report, we will report how much we get and how much we spend…

These findings are consistent with Noordin et al. (2017), who state that a comprehensive system for waqf institutions is lacking. Nahar, Awaludin, & Bakar

(2018) also found that one of the *mutawallis* in Malaysia manually recorded the waqf assets. Khamis and Che Mohd Salleh (2018) report that one of waqf institutions in Malaysia faced challenges in documenting the collection of cash waqf and that the sources could not be traced, which limited the effectiveness of record keeping for cash waqf activities. Furthermore, Astuti et al. (2019) state that there are many problems in the application of accountability in the waqf sector, including non-integrated systems.

This accountability challenge could be placed under mimetic isomorphism because all waqf administrators in public universities adopt the university treasurer system, which makes it difficult to address the challenge. According to DiMaggio and Powell (1983), mimetic isomorphism resulting from a general reaction to uncertainty about something leads to imitation. Furthermore, *Khalifah* to Allah logic exists when waqf administrators as trustees show their concern for *hablun min* Allah and *hablun min an-nas* and deal with *al-waqif* and SIRC on appreciation certificates and financial reporting. Therefore, these findings indicate that *Khalifah* to Allah logic exists in mimetic isomorphism and is consistent with Abu Talib (2019) and Abu Talib et al. (2020).

In relation to addressing this accountability challenge, examples of feedback from respondents were:

R1A (17:19) : …blockchain can track reports…

R2A (18:32) : if the university and SIRC really cooperates...university will hold the collection but SIRC as a controller…so the blockchain can improve the system process…

R4B (19:35) : …with blockchain, we can gather representatives from SIRC and if we combine the whole waqf system in Malaysia, it is much better for coordination purposes…we can easily access and trace the existence of a waqf asset...

R2C (20:34) : …we can track the transaction and easy for distribution…

Therefore, the respondents believed that traceability of blockchain could help to trace transactions in order to prepare financial reports. In terms of financial reporting, blockchain uses a distributed system by providing transparent, open access, and immutable storage of evidence (Ismailisufi et al., 2020; McCallig et al., 2019). Ismailisufi, Popovic, Gligoric, Radonjic, and Sandi (2020) also add that blockchain technology was initially applied to keep track of financial transactions. Elghaish, Abrishami, and Hosseini (2020) explain that all participants have an equal opportunity to track all financial transactions, regardless of their geographical location.

V. CONCLUSION AND RECOMMENDATIONS

This study has aimed to identify a framework for how blockchain technology can address the accountability and transparency challenges in the process of waqf management system by using institutional theory and Islamic institutional logic. It took an interpretative qualitative research approach, with three case studies of Malaysia public universities' waqf administrators and data analysis using open, axial, and selective coding.

The study findings indicate that there are two transparency challenges and several blockchain solutions, categorised in coercive isomorphism, in the process of the waqf management system in Malaysian public universities. The first challenge is errors in the receipt issuance for 'Servant of Allah', for which a blockchain solution could allow individual network technology in blockchain and authentication to be made together in the system and blockchain technology allows ID identifiers. The second challenge is difficulties in waqf distribution to *mawquf alaihi* (students), for which the blockchain solution as a control tool would avoid misuse of waqf distribution for other purposes; allow use as a public ledger to avoid dishonesty in providing information by *mawquf alaihi* (students) about funding received; and as a tool that allows *al-waqif* to obtain waqf distribution data and tally these with their database in order to avoid overlapping. Coercive isomorphism also exists in these transparency challenges when the waqf administrator needs to follow IRB regulations and university policy on student scholarships. *Khalifah* to Allah logic exists when waqf administrators are transparent to the IRB, university, and *al-waqif*. Therefore, *Khalifah* to Allah logic exists in coercive isomorphism.

In addition, categorised in normative isomorphism, the findings also indicate that there was one accountability challenge and blockchain solutions in the process of waqf management, and one accountability challenge and blockchain solutions in its output. The accountability challenge and blockchain solutions in the process refer to difficulties in controlling waqf activities by other beneficiaries (faculties, centres, and university departments), in which the blockchain solution could allow internal control of waqf activities. This accountability challenge is related to normative isomorphism when waqf administrators determine the appropriate methods when they are dealing with the other beneficiaries. Moreover, *Khalifah* of Allah logic also exists when waqf administrators accountable to *al-waqif* feel insecurity in showing their concern for *hablun min* Allah and *hablun min an-nas*.

Finally, the accountability challenge and blockchain solutions in the process refer to decisions on waqf distribution by internal members only, for which the blockchain solution could allow awareness among stakeholders of waqf distribution. Normative isomorphism in this accountability challenge is related to professionalism or unions that determine the validation of waqf distribution decisions. *Shariah* compliance logic exists in this accountability challenge when waqf administrators deal with stakeholders on waqf distribution decisions. The findings indicate that there was one accountability challenge and blockchain solutions, categorised in mimetic isomorphism, in the process of the waqf management system in Malaysia public universities. This accountability challenge is placed under mimetic isomorphism because all waqf administrators in public universities adopt the treasurer's system, that makes it difficult to address the stated accountability challenge. *Khalifah* to Allah logic exists when waqf administrators as trustees show their concern for *hablun min* Allah and *hablun min an-nas* and deal with *al-waqif* and SIRC on appreciation certificates and financial reporting.

Based on the conclusions, it is argued that the main theoretical contribution of this study relates to establishing Islamic institutional logic in the institutional theory in order to give confidence to waqf practitioners regarding the benefits of blockchain technology for improving their operations. The study extends previous knowledge of institutional theory in the work of DiMaggio and Powell

(1983) and Scott (2008) and of Islamic institutional logic of Abu Talib (2019) and Abu Talib et al. (2020). Furthermore, the study provides a practical contribution, as it suggests the best practices for waqf institutions to improve the existing waqf management system using blockchain technology, particularly in overcoming the existing accountability and transparency challenges and other related challenges. However, the study does have some limitations which could be addressed by future studies, such as by exploring the accountability and transparency challenges and blockchain solutions in the waqf management system of other waqf institutions, such as non-government organisations, cooperatives, and SIRCs. Furthermore, investigation of the other Islamic institutional logic that could be established in the institutional theory could also be examined by future studies. Ultimately, future studies are expected to enrich the results of existing ones.

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