Analyzing the Success Factors of the Malaysian Experience in Developing Islamic Financial Services Industry through Blockchain Applications - FINTERRA WAQF PLATFORM MODEL-

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Abstract:

This study aims to outline the framework of blockchain technology and its applications in the Islamic financial services industry, concentrating on the chances it presents for the growth of the waqf industry in Malaysia. This technology has spread in a fast manner and it has given hope to revive the idle waqf which leads for decades.

This paper also aims to study the potential of blockchain to change waqf applications with a special focus on Fonterra Waqf Chain as a case study. This latter is a platform for crowdfunding that employs blockchain notions and solutions. The findings of this study show how Finterra is addressing issues with subpar management of the outdated waqf properties that have been left unoccupied by utilizing its waqf chain platform.

Keywords: Islamic Financial Services; Blockchain; Endowment; FinTech; Finterra Waqf Chain.

Jel Classification Codes: G21, G24, A13.

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1. INTRODUCTION

In the aftermath of the 2008 global financial crisis, the term "Blockchain" appeared for the first time in a research paper presented by Nakamoto Satoshi, a pseudonym for an unidentified person or group of people. Blockchain technology is based on a peer-to-peer system that is transactions are conducted between users of this technology without any intermediary. Blockchain technology is currently considered the largest database distributed globally among individuals. Its use is not limited to providing crypto currencies only, but it has been shown that it can penetrate all magazines (economy, health, education, and management).

Although more than ten years have passed since the invention of blockchain technology, the world is still unable to fully understand the dimensions of this technology. Given the recent accomplishments obtained by its applications in different fields and sectors, particularly in the Islamic financial services industry, it is regarded as one of the top ten emerging technologies.

The rapid growth of the Islamic financial services industry led to a parallel growth of the Islamic endowment industry where the endowment is one of the most important industries in Islamic finance because the financial resources provide permanent and fixed financial resources of funding. Also, the endowment has a framework that has existed since Islam's inception and it has been affected by several problems including weak asset management, transparency, accountability, and incompetence. In some cases, document manipulation, concealment, or falsification is possible. Therefore it is necessary to reconsider solving its problems and passing the traditional administration by introducing blockchain technology in line with the technical development in the world today. In this study, we will focus on the use of blockchain technology in the endowment sector which has received great attention from many Islamic and non-Islamic countries. Who is working hard to raise the challenge of introducing blockchain technology in their institutions, their products, and their services on the one hand and adhere to the ethics and provisions of Islamic Sharia. On the other hand, it is in harmony with the developments of the global economy.

In the same direction, this paper aims to link the waqf sector with blockchain technology, as it seeks to provide recommendations and proposals that contribute to facing the various challenges, using the Fonterra waqf platform. The main objective is to define:

How does the Fonterra waqf chain contribute through blockchain applications to develop the Islamic financial services industry, specifically the waqf industry?

To solve this problem we have made the following main hypothesis: Applying blockchain technology in the Islamic financial services industry will positively improve the waqf sector. By making operations more secure, faster, and transparent, and eliminating the failed management, through the Fonterra waqf chain.

Objectives of the study

This study seeks to achieve some goals that can be clarified as follows:
-A review of the role of blockchain technology in the development of the Malaysian Islamic financial services industry;
-Highlight the features of the use of blockchain technology in the development of the endowment sector;
-Anticipate the future situation of the endowment sector after using of blockchain technology through its innovative applications, by studying the model of the Finterra waqf platform.

Research methodology Due to the multiplicity of aspects related to the problem of this study, the deductive method was used with its tools of description and analysis. The study is in the process of clarifying the elements associated with blockchain technology in the Islamic financial industry and its role in developing the endowment sector.

2. Conceptualizing Blockchain Technology

2.1 Blockchain Technology Definitions

There are many different blockchain definitions offered. For example, Coinbase, the world’s largest cryptocurrency exchange defines blockchain as “a distributed public ledger that contains the history of every bitcoin transaction”. Cryptocurrencies such as Bitcoin and Ethereum use a technology called blockchain. A blockchain is a list of blocks that anyone can see and verify. For example, bitcoin's Blockchain records each time

someone sends or receives bitcoins. Cryptocurrencies and their underlying blockchain technology allow value to be transferred online without the need for an intermediary like a bank or credit card company (coinbase, 2022). It is also a technology that allows public integrity transaction information to be stored and transmitted transparently and without a central authority. (Falleh Hamoudi, Naseredine Aissaoui, 2022, p. 603)

The first definition focuses on the characteristics of the blockchain, like decentralization and transparency. The absence of a necessity for an intermediary is one of the features of blockchain technology. Can transfer money from one person to another without the presence of a bank or credit company.

Blockchain technology is an ordered list of blocks where each block is identified by its cryptographic hash. These blocks allude to the ones that preceded it and resulted in the construction of a chain of blocks. Each one is made up of a collection of transactions. A block's transactions cannot be altered or reversed once it has been added to the blockchain. This is done to protect deal integrity and stop the issue of double-spending. (boukhari, 2019, pp. 20-21)

This definition highlights the components of the blockchain, such as the block, the information, and the hash. Additionally, it highlights the critical of the order of blocks to stop the problem of double spending.

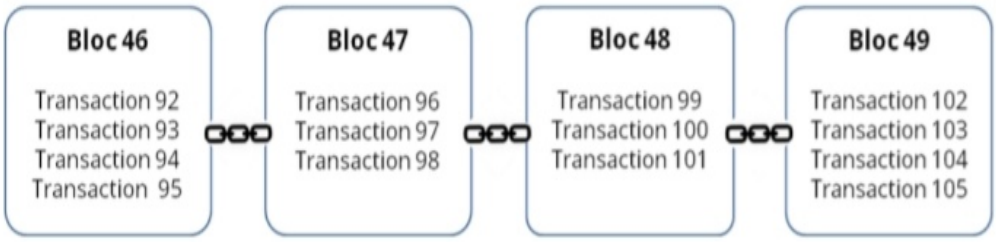
Blockchain technology acquires its secure and immutable nature by combining two innovations: a cryptographic link between records that makes changes progressively more difficult the longer the chain is, and the distribution of the data to all participating nodes on the decentralized network in which it is expected honest nodes outnumber potential attackers. (Karim Sultan, 2018, p. 51)

This definition highlights the main function of blockchain, which is its reliability and irrevocable nature.

In simple words, it is a decentralized ledger of all transactions across a peer-to-peer network. Using this technology, participants can confirm transactions without the need for a central certifying authority. Potential

applications include fund transfers, setting trades, voting, and many other uses. The figure below presents the structure of the blockchain.

Fig.1. blockchain structure



Source: (Leonard Beth , Annika Cayrol, 2017, p. 03)

2.2 Characteristics of Blockchain The following table illustrates blockchain's characteristics

Table1. Characteristics of Blockchain Technology

Feature	Description
Decentralization	Because it lacks a centralized node, blockchain technology has a fundamental advantage over other types of technology. Incredibly dispersed methods of data recording, storing, and updating are possible. The hash of the preceding block can be found in every new block.
Transparency	We discuss transparency because this public digital record has a history of all transactions made on the blockchain and is available to everyone. All transactions are available, but user identities are encrypted.
Access	The majorities of blockchain systems allow for the creation of any application by any user, public data record inspection, and open access to all users.
protection protection	Many computers are simultaneously controlling this procedure. These devices are referred to as network nodes. In contrast to systems completely dependent on a central computer, a node being

	hacked or shut down does not stop the remainder of the network from operating. The blockchain provides higher security than a traditional system because of its decentralized management model.
Stability	Unless someone manages to seize control of more than 51% of the node concurrently, all records will be preserved in perpetuity and cannot be altered.

Source: by researchers based on: - (Leonard Beth , Annika Cayrol, 2017, p. 04)
- (Monika Kołodziej, 2019, p. 46)

2.3 Types of Blockchain Technology

The following types of blockchains can be distinguished: (Babas Mounira , 2020, p. 313)

Public Blockchain: The public blockchain is seen as an open network where everyone can participate in the consensus process and is available to everyone; it does not have a single owner. Bitcoin is among the most well-known public blockchains;

Private Blockchain: The private blockchain, sometimes called a permissioned blockchain, makes use of a feature that restricts who can read and write data on the blockchain. One person owns and controls the block creation, hence mining and consensus procedures are not required.

Hybrid Blockchain: This block is generic for a specific and distinguishable group, and reliable servers control the compatibility procedure by a set of rules accepted by all parties. The blockchain is distributed to participants, which contributes to the network's partial decentralization.

2.4 Framework of Blockchain Technology

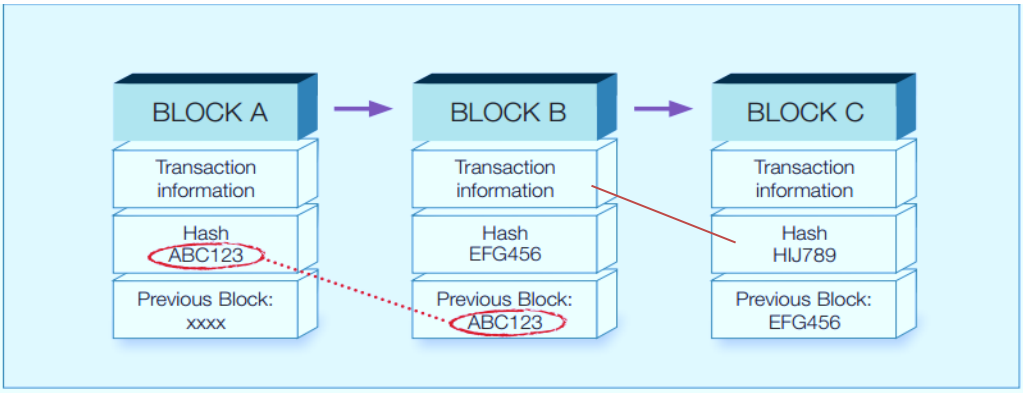
To simplify the blockchain technology framework, we use the transfer of cryptocurrency between Alice and Bob as an example. On the blockchain platform, Person A and Person B: They have an electronic portfolio, in which their accounts are registered. Their account of Alice is transferred to Bob’s account via the open ledger. It is called the open ledger because all those who join the network can view and participate in this process. It is open to everyone, which means that all people who join the network can see the other's portfolio with full transparency but under a Nickname.

The transfer is made directly from the account of person A to the account of person B without the presence of a mediator in a short time and safely. Provided that the amount is in the account Alice, this process is certified by all users. This is called the principle of majority consensus.

The question that can be asked now is: How does the blockchain form and how does the complete transformation process take place?

So, it can be said that the previous operations (money transfers) are all recorded in blocks, where each block absorbs a specific amount of operations until the final transfer process is completed. Then, a new block is created and linked to it, until a chain of blocks is formed .where each string is characterized from the string before with its fingerprint or code called the hash as shown in Figure 2.

Fig.2. Blocks linked via hash

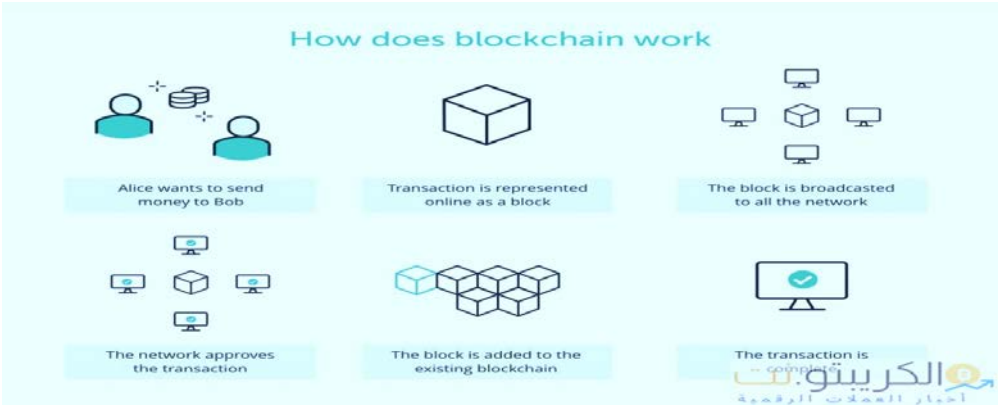


Source: (Michael Hamp & Maria-Elena Mangiafico, 2019, p. 10)

Each block in the same string is differentiated by its own hash. Also, each process in the block has its own hash. For example, when transferring a sum of money, and the person actually owns this amount in his electronic account, this process will not happen unless the correct hash for this process is found by prospectors or miners.

This process is called mining, which means that the miners who get the correct hash will get a percentage of the process they performed. The following figure show how blockchain technology works:

Fig.3. Blockchain Framework



Source: (Michael Hamp & Maria-Elena Mangiafico, 2019, p. 10)

2.5 Blockchain Technology Applications in Islamic Financial Industry

Smart Contracts:

Blockchain technology has great potential for the Islamic financial industry using its main application, which is called smart contracts.

The American National Institute of Standards Technology (NIST) and the International Finance Corporation (IFC) define smart contracts as "self-executing software code, contributing to the use of transactions signed by encryption on the blockchain network". (The World Bank Group, 2020, p. 06).

Smart contract solves many issues facing Islamic financial institutions. Although the smart contract will have a positive and negative impact on the Islamic financial services industry. There are many associated challenges and risks such as technical problems (irreversibility, inability to integrate external data sources, limited use of distributed ledger technology, and complex skill requirements to develop and deploy the smart contract system). However, there are several vital features of the Smart Contract in the financial services field, such as data integrity, data security, and data credibility, while at the same time regulating requirements for accounts and financial asset reports. So smart contracts will revolutionize many industries, including the Islamic financial industry, (Leisan Safina and Umar A. Oseni , 2019, pp. 222-223) as follows:

2.5.1 Crypto Currencies

The development of virtual currencies known as cryptocurrencies is one of the most amazing technological achievements in economics. There are several different types of cryptocurrencies, including Bitcoin, Ethereum, Ripple, Litecoin, and Dash. With the advent of virtual currency, financial transactions may now be conducted online without the need for mediators like banks. Immediate, cross-country, cross-continent, faster, simpler, less expensive, and more secure transactions are now possible. (Suharto, 2020, pp. 02-03)

Even though it's widespread recently, and rotated in many countries and governments. However, its acceptance into Shariah law is still under consideration.

Accordingly, it can be said that cryptocurrencies are of great importance from a technical and practical point of view and their relative advantages. As their profits made a qualitative leap in the world of finance within months, this encouraged the favoring to deal with them. However, the recent setback that bitcoin has suffered, as one of the most famous cryptocurrencies (its prices are falling in imaginary numbers). This is what made some traditional financial institutions and even Islamic financial institutions reconsider adopting these cryptocurrencies and dealing with them.

2.5.2 The Collection of Zakat and Takaful (Islamic Insurance)

The charitable zakat is an additional financial product in Islam. People can better understand where and why their money is being used thanks to blockchain. In many Muslim nations, the collecting of zakat has become institutionalized. The relevant religious authorities promote, collect, and distribute zakat by Shariah regulations. However, there are several difficulties. They include inefficiency, a lack of transparency in the collection, management, and distribution of money, the divergent opinions of Islamic scholars on how to handle them, and a lot of bureaucracy.(Hussein Elasrag, 2019, p. 13)

As a result, the blockchain was developed to control how these institutions operated, to increase transparency, and to make Zakat collection easier thanks to smart contract technology.

According to (Hussein Elasrag, 2019, p. 22), blockchain can assist in the elimination of sources of fraud in the insurance sector by transferring insurance claims into an immutable ledger. Accident and property insurance might become orders of magnitude more productive with the use of a shared ledger and smart contracts for insurance policies. Medical records can be transferred and cryptographically secured using the blockchain across healthcare providers and improving ecosystem interconnectivity. The blockchain can streamline the exchange of data and payments between insurers and reinsurers by safeguarding reinsurance contracts on the blockchain through smart contracts. Processing claims automatically in the auto insurance industries, etc. Process efficiencies, shorter claim processing times, and lower costs will result from smart contracts that unite insurers, clients, and third parties to a single platform.

2.5.3 Improving the Utility of Waqf

Effective waqf management can be helped by the blockchain system. When considering the many aspects of waqf papers in the Islamic world, one must consider the delays in the archiving, communication, and registration systems in the waqf-related ministries. As well as the potential for document tampering or fabrication. Waqf documents can be archived their data raised and approved in transactions, and contractual relationships between waqf and its beneficiaries and other parties can be organized thanks to blockchain technology's reliability, transparency, precision, speed, and safety. This is what we will discuss in some detail in the following axes.

3. The Development of the Malaysian Islamic Financial Services Industry

The waqf industry has expanded in tandem with the growing Islamic financial services industry in Malaysia.

3.1 The Development of the Endowment Industry in Malaysia

Malaysia is one of the biggest Muslim nations in the Islamic world. The Islamic financial industry including the endowment industry has developed in Malaysia very successfully.

The endowment is one of the main mechanisms in providing development support to all levels of the nation whose endowments in Malaysia are under many states rather than the federal government. It is

undeniable that there are some challenges and obstacles related to the issues of developing endowment assets among others, lack of funding and expertise, poor documentation and standard value of waqf property, and others.

However, it is no secret to everyone about the state of the waqf was like at many times, and other periods of growth and prosperity of the waqf. Today, the size of the gap has become large between the value of the endowment assets, the total income, and the actual interest desired from it. The global assets of endowments are estimated at US$10 trillion. (Umar A. Oseni ,Syed Nazim Ali, 2022, p. 03)

In Malaysia, there are more than 11,000 hectares of land under endowments worth $384 million. Furthermore, many endowment departments lack administrative competence, transparency, and accountability, as well as lack managerial skills. Many of them are unable to use the assets efficiently. Therefore, endowment management needs to consider innovative methods and investments that are compatible with Islamic law that achieves high returns for social and economic development, and this is the ultimate goal of the endowment. (Hazem Sassi, 2018, p. 24)

3.2 The Endowment (WAQF) Concept

The word waqf according to etymology comes from the Arabic "waqf" which means, "hold" "stop" or "stay in place". The word "waqafa - yaqifu – waqfan has the same meaning as habasa-yahbisu-tahbisan which means to make waqf. It is called withholding because the waqf is held back from damage, sale, and all actions that are not for the waqf. In addition, it is said to withhold also because the benefits and results are withheld and prohibited for anyone only those who are entitled to the waqf (Akrama Hatta, Azwar, 2022, p. 5682). While technically means “keeping some property and maintaining it for the limited benefit of certain philanthropy and forbidding any use or disposition of it beyond that particular purpose”. Additionally, waqf was not derived from the Quran directly but rather from the sayings of Prophet Muhammad, peace be upon him. (Azniza Hartini Azrai Azaimi Ambrosea, 2015, p. 334)

3.3 Waqf Characteristics

There are three main characteristics of Waqf namely: irrevocability, perpetuity, and inalienability. (Apnizan Abdullah, 2012, p. 1043)

Irrevocability: means the lack of power of the settler and donor to revoke his donation at any time, the declaration by the donor is binding. Waqf is effective and binding as soon as the declaration is made by the donor without any need for delivery of possession to the beneficiary.

Perpetuity: Perpetuity and irrevocability could appear to be the same thing. Perpetuity, however, differs from irrevocability in that the donor will not be able to withdraw his statement once the dedication has been made.

Inalienability: it is almost similar to Irrevocability. It means the donor's inability to dispose of the assets.

3.4 The Usage of Blockchain in the Waqf Sector

To keep pace with the financial innovations that touched the global economy, the long-term potential of blockchain technology in Islamic finance was presented during the "Global Endowment and Blockchain Forum 2018" held in March 2018, in Kuala Lumpur, Malaysia.

Over the past decades, a trust gap has arisen between the waqf and the institutions responsible for managing the waqf. Especially after the change of regulations and laws, these institutions became a large subject to politicians and their decisions and lost their independence significantly, which led to the collapse of these institutions, the loss of endowment funds and even a large part of their assets, not to mention the bad exploitation of them in violation of the conditions of the endowment and other matters. All of this led to the reluctance of the donors to continue and to stop their property and money. However, by using blockchain technology, it is possible to restore confidence in the endowment, contribute, and provide complete data and documents on the endowment. This helps in providing a global common database that can be easily reviewed and ensured of its compliance which will enhance transparency.

4. Evaluation of Fonterra Waqf Chain Experience in Malaysia

4.1 What Is Finterra?

Fonterra is a cloud-based financial services platform designed to harness both individual and corporate financial needs in a seamless and integrated platform. Fonterra integrates time-tested financial services and cutting-edge financial technology on a blockchain ecosystem enabling transparent, accountable, and secure financial services. (Steemit, 2018)

Wherever headquartered in Singapore, Finterra's global presence includes Hong Kong and Kuala Lumpur. (Finterra, 2022)

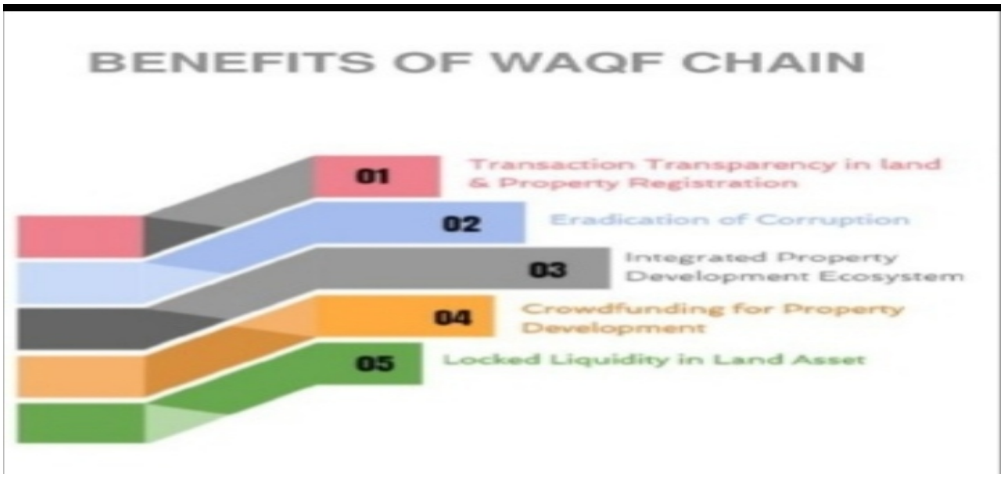
It is a platform that can be socially, economically, and ethically endowment. This platform is a highly developed technology, considered by many people to be the smart contract token standard. Fonterra is expected to be a global leader in the next generation of financial technology, and this software will provide social solutions through the blockchain. This in turn will contribute to achieving the continuous growth of societies and improving the development of blockchain technology. This company will serve its customer base of 400,000 people from different countries. (Finterra, 2022)

The Finterra waqf chain platform is an online tool for fundraising for charities. Hence, all donations made through the waqf chain platform are sent straight to the trust account of the bank that collaborates with Fonterra. The money will only be delivered to the campaign owner if the soft target is achieved before the campaign deadline. Otherwise, the contributors will receive a full refund of their money. All receipts for donations will be stored on Finterra's blockchain and accessible through the dashboard's "My Smart Contracts" section. (Bouakkaz Naoual, 2022, p. 143)

The new project called The Finterra waqf chain, aims to use technology in endowments that will benefit from a large range of untapped assets across the Islamic world. Fonterra has developed a crowdfunding platform that uses blockchain technology to create smart contracts linked to specific endowment projects. This is accomplished through offering a more efficient method of raising money, managing endowments, and transferring ownership, namely by accepting donations from Muslims to fund social projects including mosques, schools, and welfare programs.

In conclusion, Finterra intends to provide a smart contract ecosystem and accompanying blockchain to allow waqf boards and other interested stakeholders the opportunity to submit project outlines and plans to fund and develop endowment (Waqf) properties. (David Swinburne, 2018) The following figure summarized the benefits of the waqf chain.

Fig.4. Benefits of Fonterra Waqf Chain



Source: (Finterra, 2022)

4.2 How Does Finterra Waqf Platform Work?

The following steps are used to explain how the Fonterra platform works: (Ghezal Mohamed, Ahcene Lahsasna, 2020, pp. 07-08)

– The waqf board identifies and makes available a land asset for development;

– Authority or the Ministry of Endowments in the (specified) country decides which endowment land is eligible for investment and where it wants to construct an endowment project;

– The authority drafts a development proposal that includes a variety of information, including endowment data, a feasibility analysis, and suggested financing methods;

– The project proposal offered by the Ministry of Awqaf is examined and approved by an independent financial auditor;

– The management of the authorized fund - which is usually a bank - is addressed to launch an ICO (Initial Coin Offer) to develop the endowment project by selling crypto tokens to interested investors;

– Each WAQF CHAIN project will receive an automated token from Finterra in exchange for the required capital;

– The investors purchase the token, and then the money is raised and transferred to an account that is secured by the fund's management (a bank). Investors can select among the different Islamic financial transactions when they buy the token;

– CHAIN WAQF will have four financial transactions available: Cash Waqf, Islamic Loan, Mudaraba, and Sukuk;

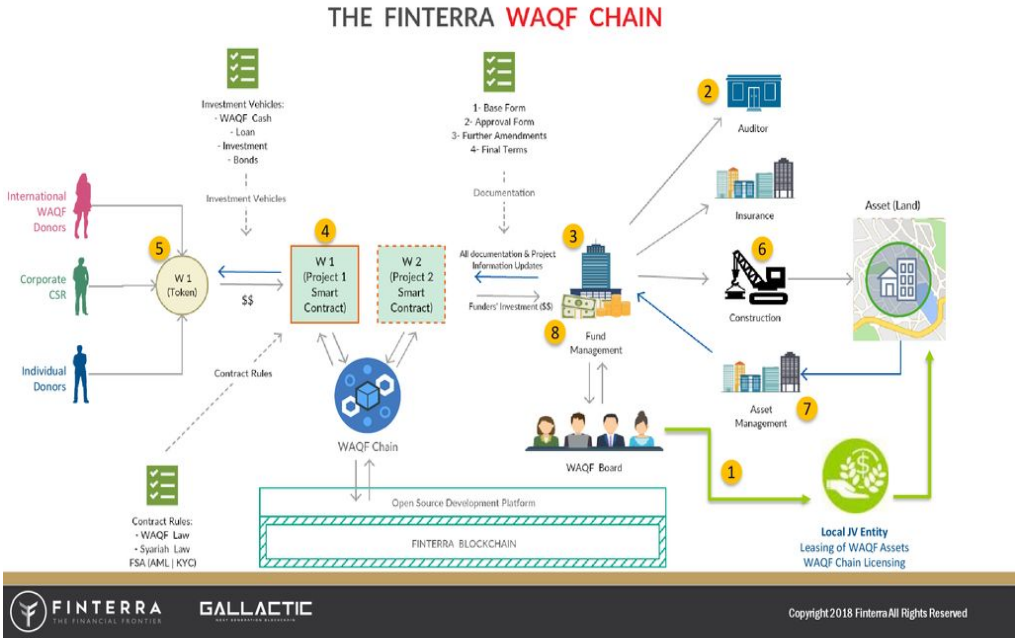
– When the required capital is reached, the fund's management appoints a construction company to start building and developing the project;

– Upon the completion of the project, the fund management assigns the project management to operate and maintain the asset;

– The fund management collects any revenue produced by the asset;

– Collected revenue is distributed to investors based on the fundamental conditions used in Islamic financial transactions. Figure 05 illustrates how the Fonterra waqf chain works.

Fig.5. The frameworkFonterraerra Waqf Chain



Source: (Finterra, 2022)

4.3 The Importance of the Fonterra Waqf Chain to Develop Islamic Financial Services Industry

Fonterra is a global blockchain platform that manages and develops waqf assets while also providing a social solution for waqf recipients and mankind. The Finterra waqf chain has six million-dollar revenue.

– The platform makes use of cutting-edge technologies to maximize the value of waqf and foster public acceptance of waqf property development;

– Maintain a very high long-term sustainable income and use assets and land for company and expansion by using crowdfunding on a new technological platform;

– Due to Finterra's waqf chain platform, businesses and organizations can now establish unique charity campaigns with clear goals and transparent real-time disclosure of the number of donations received that significantly improve donor experiences;

– The Finterra waqf chain guarantees transparency in internal business dealings and real estate development by doing away with corruption;

– Non-profit advisory boards manage waqf assets to give benefits and social advantages to the general populace. This issue could be solved using blockchain technology;

– Waqf chain ensures a socially evolved and cooperative working environment by helping those in need and sharing in one another's success;

– Finterra platform also reduces wealth hoarding by promoting an equitable distribution of wealth among all members of society, resulting in both financial and social fairness.

5. CONCLUSION

This study demonstrates the blockchain technology salient points, its components, its modus operandi, and its most important applications in Islamic finance. The study also tried to shed light on Finterra which aims to spread societal solutions based on the advantages of advanced blockchain technology. In this regard, this study has reviewed Malaysia's experience in developing the Islamic financial services industry by making use of blockchain technology through the Fonterra waqf chain platform. And it has reached the following results.

Study results

– Blockchain technology has many uses in different fields, as its role is not only limited to transferring money, whether digital or traditional but using this technology can register property, brokerage, and document transactions.

– The blockchain platform helps develop and rebuild new projects using smart contracts that are compliant with Sharia.

– The waqf industry has expanded in tandem with the fast-growing Islamic financial services industry in Malaysia.

– Fonterraa Company is based on blockchain technology which aims to develop the endowment sector, and develop the endowment use that is safe economically, ethically, and socially.

– Malaysia is the first Islamic country to use blockchain technology to serve and develop the endowment sector.

– Finterra waqf chain in Malaysia, a platform launched by Finterra to create smart contracts for, cash endowment, Islamic loan, speculation, and sukuk and link them to specific endowment projects, through a unified platform for cloud financial services for individuals and companies that provide a more effective way to raise donations, run social projects, manage and transfer endowment ownership, and fund endowment investments.

Study proposals

– To benefit from the lessons that the world has experienced due to the outbreak of the Corona epidemic, it is necessary to reconsider the endowment sector that it is developed to keep pace with the latest developments and technologies.

– The need for endowment institutions in the Islamic world to open up and adopt blockchain technology to renovate their services and develop their performance.

– The necessity of benefit from the experiences of start-up companies specializing in financial technology (FinTech) in the United States of America (USA) and identifying the factors of success in them where the endowment institutions conclude agreements with these companies regarding the formation of qualified and experienced employees in this field.

- Establishing protection systems, especially those related to protection

against any type of electronic attack, which requires regulatory frameworks for information security and information exchange.

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