



CRYPTOCURRENCY FROM SHARIAH PERSPECTIVE

BY

NADIYAH SYAHIRA BINTI NORDIN

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International Islamic University Malaysia

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ABSTRACT

Cryptocurrency is seen to create a new phenomenon to the landscape of financial services industry. It has gained attention in attracting all relevant players in the industry to delve deeper into the issue. Preceding bitcoin as the inaugural prevalent product, cryptocurrency has been utilized as the medium of payment in various sectors. Owing to that factor, it is conceivable why it is taken as a new phenomenon. Islamic finance, being an integral part of financial industry, also concerned about this new emergence. The usage of cryptocurrency penetrated Islamic finance through the introduction of Mudharabah-based offering for small enterprises by Blossom Finance. Owing to this observance, this calls for an academic approach of cryptocurrency analysis from Shariah perspective. This is due to the reason that practices in Islamic finance without proper Shariah deliberation may run the risk of non-compliance. This research sought to identify the concept of cryptocurrency from its features and process. The technical features comprising of validating mechanism, mathematical algorithm and coins supply are analysed in the context of the fulfilment of currency prerequisites from Shariah perspective. The prerequisites, which are derived from the views of classical and contemporary scholars, are capturing the function of money that are notably being the medium of exchange, store of value, being commonly acceptable within a community and having a legal tender status. Through the analysis conducted of examining the technical features of cryptocurrency against the currency prerequisites and requirements, it is apparent that the technical features of cryptocurrency satisfy the prerequisites of currency from Shariah perspective except for the legal tender status. However, that does not deny the other fulfilment and consideration that cryptocurrency could serve the function as medium of payment although greater emphasis is on the legal tender title of a currency.

خلاصة البحث

ويُنظر إلى العملة المشفرة "كربتوكرنسي" على أنها ظاهرة جديدة في مجال صناعة الخدمات المالية. وقد اكتسبت إهتماماً في جذب جميع اللاعبين ذوي الصلة في هذه الصناعة إلى خوض أعمق في هذه المسألة. كما تُعرف البيتكوين كمنتج مبدئي للعملة المشفرة "كربتوكرنسي" كوسيلة للدفع في مختلف القطاعات. وبسبب هذا العامل يمكن تصور سبب اعتباره ظاهرة جديدة. والتمويل الإسلامي باعتباره جزءاً لا يتجزأ من الصناعة المالية، كما تهتم الصناعة المالية بهذه الظاهرة الجديدة. وتم استخدام كربتوكرنسي في التمويل الإسلامي من خلال الم القائمة المعاملات القائمة على المضاربة للشركات الصغيرة من قبل شركة "Blossom Finance". بسبب هذه الظاهرة في التمويل الإسلامي دعت الحاجة إلى نهج أكاديمي لتحليل كريتوكرنسي من منظور الشريعة. ويرجع ذلك إلى أن ممارسات التمويل الإسلامي وبدون التكيف الشرعي المناسب قد تتعرض لعدم الامتثال للشريعة الإسلامية. سعى هذا البحث إلى التعرف على مفهوم كريتوكرنسي من حيث خصائصه وخطواته الإجرائية. ويتم تحليل السمات التقنية التي تشمل آلية التحقق، والخوارزمية الرياضية، وتوفير القطع النقدية للوفاء بمتطلبات العملة من منظور الشريعة. الشروط المسبقة المستمدة من آراء العلماء الكلاسيكيين والمعاصرين، تستحوذ على وظيفة المال التي تعنى على وجه الخصوص وسيلة التبادل، وتخزين القيمة، وكونها مقبولة بشكل عام داخل المجتمع، ولها وضع الغطاء القانوني. من خلال التحليل الذي أجرته الدراسة للسمات التقنية للكربتوكرنسي ضد متطلبات العملة، فمن الواضح أن السمات التقنية للكربتوكرنسي لتلبية الشروط الأساسية للعملية من منظور الشريعة بإستثناء الوضع القانوني. ومع ذلك، فإن هذا الاستثناء القانوني لا ينكر المتطلبات الأخرى للعملة لإستخدامها كوسيلة للدفع، على الرغم من أن التركيز الأكبر على لقب الوضع القانوني للعملة.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Master of Science (Islamic Banking and Finance)

.....
Rusni Hasan
Supervisor

This research paper was submitted to the IIUM Institute of Islamic Banking and Finance and is accepted as a fulfilment of the requirement for the degree of Master of Science (Islamic Banking and Finance).

.....
Syed Musa Alhabshi
Dean, IIUM Institute of
Islamic Banking and Finance

DECLARATION

I hereby declare that this research paper is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION OF THE STUDY

Cryptocurrency is seen to create a new phenomenon to the landscape of financial services industry. It has gained attention in attracting all relevant players in the industry to delve deeper into the issue. Preceding bitcoin as the inaugural prevalent product, cryptocurrency has been utilized as the medium of payment in various sectors. Owing to that factor, it is conceivable why it is taken as a new phenomenon. This is due to the reason that financial services industry is the marketplace for rendering services to meet financial needs and facilities of people. Therefore, when this cryptocurrency wave hitting the existing usual daily operation of financial services landscape, it attracts people to learn more on how cryptocurrency functions and its underlying potential.

Any new emergence of technology, with the breakthrough of encryption and network computing, will drive instrumental change in the industry (Clinch 2013). Cryptocurrency, being one of the types of virtual currency (VCs), is privately owned system that mainly offers to facilitate peer-to-peer exchange system bypassing traditional financial institutions' services and clearinghouses. Without the traditional intermediaries in the picture, it creates uncertainties as to how to predict the future of this new emergence because cryptocurrencies and their notably associated technology known as decentralized distributed ledger based on blockchain (Watanabe, et al. 2016) is rapidly thriving and accepted by people.

The penetration has also been pervasive in Islamic finance landscape. It is apparent through the introduction of Blossom Finance in Indonesia (Redman 2015) that used cryptocurrency, which in this case is bitcoin, as the currency of the capital in Mudarabah structure of microfinancing that they facilitated. This crowdfunding scheme is targeting microfinance sector and the mode of capital payment is not using currency denominated in Indonesian Rupiah.

Furthermore, since cryptocurrency scheme exhibits many potential benefits including greater speed of payment and efficiency (Nguyen 2016), particularly across borders, it serves as the best choice to ultimately promote financial inclusion using online platform. This is similarly the case in Blossom Finance, which aims to offer fair accessibility to financing for microfinance sector of people to promote social entrepreneurship, so the incorporation of cryptocurrency usage in their Mudarabah structure seems to fit well into the purpose.

However, how cryptocurrency is perceived in Shariah perspective has not been widely discussed, despite it deserves an attention (Gassner 2015) on the extension of how cryptocurrency satisfies the core principles of Shariah as well as for it to be suitable of having legal tender status. Islam requires for a currency to hold an intrinsic value (Zainudin 2016), and money shouldn't be produced out of vacuum. Therefore, it is critical to match the cryptocurrency scheme and Shariah principle to see how Shariah perceives this new phenomenon. What more, if it is to be used in offering Islamic finance product, such the case of Blossom Finance. That adds more emphasis on the importance to discuss this issue in light of Shariah deliberation.

Whilst the above being the objective of the research, this paper is to provide a new outlook on the discussion regarding cryptocurrency. This study also will

examine the Shariah perspective of cryptocurrency that will be laid down to match the technical aspects of cryptocurrency. Subsequently, the discussion of legal tender status from Shariah perspective will also be provided as a corollary discourse.

1.2 BACKGROUND OF THE STUDY

There have been many literatures discussing the future potential of this new emerging phenomenon. However, there's still dearth of literatures focusing on the Shariah perspective of this subject matter in concern. This sought to be a call for academic fraternity to deliberate on the Shariah aspects on cryptocurrency due to the increasing interest in this new technology (International Monetary Fund 2016)

Cryptocurrency is a name given to a virtual currency system that uses cryptography to allow transfer and exchange of digital token in secured and verified manner (Dourado and Brito 2014). The advent of cryptocurrency is first introduced by Satoshi Nakamoto, a pseudonym behind the idea of cryptocurrency known as Bitcoin in 2008 (Nakamoto 2008). Since then, many other cryptocurrencies are introduced in the market, employing the same basis of innovation as Bitcoin. The difference is that there are differing parameters in their governing algorithm for the cryptocurrency to be operated in the system.

In transaction using cryptocurrency, it will be considered a valid transaction when the network agrees that it is valid. This is achieved through what is called as consensus. Consensus is the innovation introduced by Nakamoto to redress the issue of trust foundation in transacting across an online network. The consensus is reached when majority of the network verifies that the transaction is valid. The validity of the transaction is evaluated through the digital signature in a cryptographic function.

There are arrays of different governing algorithm in cryptocurrency structure in many types of cryptocurrency existing in the market, which is associated to the developer's choice of adoption. It is still nonetheless based on the idea of innovation invented by Nakamoto.

Therefore, it can be inferred that cryptocurrency has become a new centre of attention in the industry, and it doesn't halt there. In Islamic finance, it is observable that cryptocurrency has also penetrated in sense of its utilization, as what has been previously mentioned about the practice of Blossom Finance (Redman 2015). The practice in Blossom Finance leaves us the universal message that cryptocurrency can surely fit in the Islamic Finance structure.

There is where the study breeds. It is instrumental to see cryptocurrency from Shariah perspective to further allow the utilization of cryptocurrency in more development in Islamic financial instrument.

1.3 PROBLEM STATEMENT

Since the inception of the practice of cryptocurrency, which is headed by the introduction of Bitcoin by Satoshi Nakamoto (Nakamoto 2008), there's divergence of acceptance level by various stakeholders in regards to how they pick up this new emerging, edge-cutting phenomenon. Despite of its potential, cryptocurrency is vulnerable to abuse. It is favorable to certain dark segment of black market that would definitely prefer to be under the radar and the technology has served them well because it is anonymous (Murphy, Murphy and Seitzinger 2015) and the identity of the user behind wouldn't be divulged unless hybrid or permissioned blockchain is adopted.

This poses the question of the scope of treatment by the respective stakeholders to embrace the surge of cryptocurrency. There has also been differing degree of acceptability by the regulators. However, based on the report done by International Monetary Fund, it is stated that cryptocurrency phenomenon is one of the regulators' policy consideration and it is not conferred the legal tender status insofar the regulators are concerned (International Monetary Fund 2016).

The issue that is brewing still is the potential that cryptocurrency inhibits, but there is also considerable risk it posed when it comes to the illegal transaction using cryptocurrency. This situation creates an uncertain trajectory of cryptocurrency. Therefore, it prompts regulators to regulate this phenomenon to minimize the risk that it posed.

Furthermore, since there has been introduction of cryptocurrency in Islamic finance, it calls for necessary research to be done in this subject matter. Since the essence of Islamic finance is Shariah conformity, adoption of cryptocurrency without proper deliberation in Shariah perspective may pose a problem. It is to avert any uncertainties and ambiguity that are essentially dismissal point in Shariah perspective.

Therefore, this study is done to provide clarification on cryptocurrency from Shariah perspective to accommodate more avenues in creating viable Islamic financial instrument, without ignoring the concerns of regulators and Shariah principles.

1.4 RESEARCH OBJECTIVES

1. To examine the concept and features of cryptocurrency

2. To analyze the Shariah perspective of cryptocurrency particularly on its features and process

1.5 RESEARCH QUESTIONS

1. What are the concept and features of cryptocurrency?
2. What are the Shariah perspective of cryptocurrency's features and processes?

1.6 LITERATURE REVIEW

There are numbers of literatures writing about cryptocurrency as a concept and the deliberation on the technicalities. However, in the light of Shariah discussion, there's still lack of impactful literatures that can give enlightenment on cryptocurrency from the lense of Shariah purview.

Satoshi Nakamoto, a pseudonym behind the emergence of Bitcoin breakthrough, introduces the idea of cryptocurrency first and foremost to dismiss the idea of having an intermediary in performing financial transaction (Nakamoto 2008). The electronic cash system as it is first being called, relies on the owner to digitally sign a hash that can verify the chain of ownership of the coin transferred. Hashing is a cryptographic digital security that is reliable for verification and information validation. Nakamoto essentially wrote the paper with a comprehensive framework of Bitcoin system, which is observable to enhance and extended for better operation and reliability (Miller, et al. 2014).

Vitalik Buterin introduces the kernel of Ethereum work in 2013 (Wood n.d.). Ethereum is the evolved version of Bitcoin, which allows users to encode logic in a few lines of codes (Buterin 2013). This is also known as 'smart

contracts'. Therefore, it is apparent that cryptocurrency development continues to evolve and enhance using the key functionality of blockchain technology.

Eli Dourado and Jerry Brito states that cryptocurrency is a term given to a network system that uses cryptography to allow transfer and exchange of digital token in a secured protocol, in a distributed and decentralized manner (Dourado and Brito 2014). The digital token, despite being exchanged on an online platform, is tradable at market rates for fiat money. (Watanabe, et al. 2016) discusses that blockchain technology allows cryptocurrency to operate in a decentralized system, and that can ensure reliability of the system whereby it depends on consensus of the majority to validate a transaction.

(Murphy, Murphy and Seitzinger 2015) explains that cryptocurrency, with Bitcoin as the preceding case, is named cryptocurrency because it relies on the cryptography principle that makes the transaction using the cryptocurrency secured from the view of third party. (Miller, et al. 2014) in the paper introducing Permacoin as another type of cryptocurrency, state that cryptocurrency involves a continuous effort to provide solution for computational mathematical puzzles. The proposed cryptocurrency is basically a repurposed concept of Bitcoin that requires the special users in the network known as miners, to invest in storage on top of the computing resources.

(Teutsch, Jain and Saxena 2016) elucidates that cryptocurrencies such are Bitcoin and Ethereum, rely on a similar protocol known as Nakamoto consensus as their underpinning. Nakamoto consensus is named after the founder of Bitcoin system, the first cryptocurrency available. However, more needs to be researched on the security of Nakamoto consensus because it is vulnerable to attacks when miners take control of 51% of the computing power in the system.

(Nirmala Singh and Sachchidanand Singh 2016) states that blockchain is used as a database that can track all transactions happening across (cryptocurrency) network. Each individual block in a blockchain is identified via a generated hash, which is a form of cryptographic function. Any slight modification in data will wholly change the hash, thus gives more security to users transacting using cryptocurrency across network, because it can't be reversely engineered and tampered (Vermont General Assembly 2016).

On the other hand, there are also compact numbers of literatures discussing on cryptocurrency in Islamic finance, with few attempts to include Shariah deliberation pertaining to the topic.

(Evans 2015) details out every layer of blockchain protocol as the substrate technology of cryptocurrency, and he argues that it conforms to Shariah principle. In the lines of argument given in the paper, four Shariah principles are displayed and argued that the blockchain protocol conforms to the principles. However, (Bergstra 2014) is keen to disagree with the proposition raised. He sees that the blockchain protocol is defeating the Shariah principles in terms of its inclination to fall within the category of gambling that is prohibited in Islam. Since the gambling implicit is prevalent in the cryptocurrency mining, so the paper states that it doesn't conform to Shariah principles.

As much the literatures attempt to deliberate cryptocurrency together with blockchain as the underlying substrate for it from the perspective of Shariah, it is observable that there's still lack of depth in analysis deriving from Shariah principles originating from the primary source of Shariah repository resources to address the issues that afloat. Furthermore, most literatures presented are focusing

on the technical functionalities and elements, rather than cryptocurrency from Shariah perspective.

Deriving from there, this study aims to bridge the gaps between literatures that have been presented pertaining to cryptocurrency from Shariah perspective. In supplementing the deliberation, an overview of cryptocurrency technicalities will be laid down and the subsequent discussion pertaining to the Shariah analysis and legal tender from Shariah perspective will be given to provide a clear understanding on this subject matter.

1.7 SIGNIFICANCE OF THE STUDY

A distinctive contribution of this research is sought to be the preamble of, what is hoped, many following studies specifically on the cryptocurrencies in Islamic finance from Shariah perspective. At the time of the study, there is yet to be serious put forth to delineate Shariah perspective in cryptocurrency.

Further, the study may contribute to facilitate the development in new Islamic financial instrument utilizing cryptocurrency as the means of payment. It is essential for a research to be done in light of Shariah and Islamic Jurisprudence purview and basis to evaluate this matter in concern. Recent studies are centralizing on the technicalities of cryptocurrency and how it can be evolved and enhanced in terms of its technological reform and digital security. On the other hand, classical fiqh books remain embryonic on the topic of currency in light of Shariah principle. Moreover, there are no impactful study can be found connecting the established Shariah principle to the concept of cryptocurrency.

By this study, it is targeted that the respective authoritative body will escalate on further research to form a regulatory framework for cryptocurrency. The

current trend is that people are advantaging from the regulatory lapses existing in regulating the movement of cryptocurrency adoption, so prior research needs to be done to bridge the gap.

Therefore, this study is presented to fill in the gap, essentially to give an overview of cryptocurrency and delivering Shariah perspective to cryptocurrency as a concept and practice. Specifically, the research aimed to serve as a source of reference to the relevant stakeholders, notably:

1. Regulators

This research provides, among others, the discourse of cryptocurrency holding legal tender from Shariah perspective. Therefore, it seeks to contribute to the calibration of policy framework regarding this new phenomenon.

2. Shariah Committee

This research provides source for Shariah Committee deliberation on cryptocurrency.

3. Islamic Finance Industry

Due to the prevalence of the practice, Islamic finance industry can benefit from this research to develop products using cryptocurrency as means of payment.

4. Fintech Startups

This research gives source for Fintech startups to refer when developing new innovative ideas in the financial industry.

5. Research

This study serves as an additional literature that provides discussion on both ends; overview on cryptocurrency and Shariah perspective of it.

1.8 SCOPE AND LIMITATION

Generally, the study is the general research on the concept of cryptocurrency, rather than focusing on one type of cryptocurrency available in the market. The generic features and development of cryptocurrency will be described without specifying on one particular type. However, reference to certain particular brands of cryptocurrency such as Bitcoin, Ethereum and Namecoin may be done whenever relevant for the purpose of clarification. The research also examines the cryptocurrency that is adopting blockchain technological platform as the structure to be incorporated in the research. This is due to the prevalence of the practice and blockchain is regarded as a trusted network (Mougayar 2016) and thus will be more relevant to the present research. The approach of the research will be on the examination of the constituents of cryptocurrency features from Shariah perspective.

The study also focuses on the process involved in the cryptocurrency default architecture in terms of its validating mechanism, mathematical algorithm and coins supply. And thus excludes the discussion of cryptocurrency features from its origination.

The study will not rely on any specific jurisdiction or regulation. However, reference to regulation of specific countries may be made whenever necessary for clarification purposes. The research may also cite and quote specific provision relating to cryptocurrency regulatory responses, whenever relevant. The study will be more on the general overview of the features and process of cryptocurrency, as to establish the connection with the research question and objective.

1.9 RESEARCH METHODOLOGY

In this research, the researcher uses qualitative method. Qualitative research is designed to understand how and why things happen that includes an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world (Cooper and Schindler 2011), which what researcher chooses for this research.

The researcher selects qualitative research for this study instead of quantitative research is because the research seeks to understand the question of how the topic is analyzed from Shariah perspective and legal tender analysis. In addition to that, the study is focused more on gaining understanding (Cooper and Schindler 2011) of cryptocurrencies.

The researcher commences the study through conducting library research that “involves identifying and locating sources that provide factual information or personal/expert opinion on a research question; necessary component of every other research method at some point” (Princeton University n.d.). Library based research is finding general books to seek comprehensive understanding on the searched topic (Bryman 2004). It also refers to study conducted as a “systemic study and investigation of some aspect of library and information science where conclusions are made based on the analysis of the data collected” (HLWIKI International 2017).

This study is designed to focus on understanding the cryptocurrencies ecosystem from Shariah and legal tender standpoints mainly. Therefore, the researcher considers the study as an exploratory research, which conclusion is derived from the analysis of the data accumulated and observation being made. The researcher believes that exploratory research is the most appropriate form for this

study; because it is on the course to gain understanding on a particular topic, which can develop further avenues for new research and it is not intended to test a particular theory (Dane 1990). The study is not done to identify relationships and testing hypothesis, it is rather an attempt to explore on the subject matter in concern, to gain more comprehension and analyze the data collected thus enabling a conclusion to be made.

This research adopted the qualitative content analysis approach whereby texts are being compared and categorized to extract the differential views in literatures. A summative content analysis is conducted followed by the interpretation of the underlying context to derive the perspective of the subject matter in concern (Mayring 2014). It would help to gather different views in accommodating to the research question and serving the purpose of the research. This design also could aid the researcher in working through the text, and registering the occurrence of these categories.

The aspects that are being delineated in this research are firstly, the general overview of cryptocurrencies comprising of their definition, historical development, generic features and challenges. Coming secondly is the Shariah perspective followed by the analysis of legal tender provision. Main reference for this study that the research referred to would be both primary and secondary sources. Primary sources are defined as the uninterpreted, original or new materials type of data (Saint Mary's University of Minnesota 2013), and it has not yet been interpreted by anyone. Secondary sources, on the other hand, are “sources that interpret, include, describe or draw conclusion based on works written by others” (Saint Mary's University of Minnesota 2013).