

The suitability of cryptocurrency in the structure of Islamic banking and finance

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Abstract

This paper tends to examine cryptocurrency and its permissibility in the structure of Islamic banking finance. It identifies the major types of cryptocurrencies and also revealed its benefits. Despite these benefits and relating it to Islamic finance it was viewed from two angle; cryptocurrency and money in Islam and also cryptocurrency and the principles of Islamic finance. The study revealed it is compatible to structure of Islamic banking and finance when compared side by side to the features of fiat money which is currently in use. More so, the study clears some of the key issues like its legal tender, issuer unknown, money laundering & illicit purpose etc usually raised against cryptocurrency. The study concluded that cryptocurrency as an economic innovation has secured a pass mark to fit into the structure of Islamic banking and finance. The study further recommends that there is need to create standards guiding its operations, further ensure full disclosure on its transactions etc.

Keywords: *Cryptocurrency, Islamic banking & finance, Economic innovation, Legal tender.*

JEL classification: E42, G21, O31

INTRODUCTION

“No Nation or Individual is an Island”, thus the need for trade to take place amongst individuals or nations in order to ensure continued survival. In the traditional economies, the barter system of exchange was adopted but due to its shortcomings such as the problem of double coincidence of wants, it lack standard of deferred payment, common measures and store of value etc the modern form of currency was introduced. Currency (from Middle English; *curruant*,” in circulation”, from Latin; currency: *currens, -entis*) is more particular to money and this refers to a commonly accepted form of money (i.e., banknotes and coins) issued by the government (monetary authorities) which serves as a medium of exchange or for the payment of debt.

The introduction of currency tends to alleviate the hitches encountered during in the barter system. Currency can be categorized into two (2) monetary systems namely; Fiat and Commodity Money which depend on what guarantee the value. More so, some currencies are seen as legal tender in some political jurisdiction whereas others are exchanged for their economic value. However, as time evolves and with the increasing use of computer and internet, innovation into various areas gave rise to the advent of a

new type of currency called Digital Currency which is also referred to as cryptocurrency. This type of currency is now gradually permeating the financial landscape of different economies of the world.

Cryptocurrency is a digital asset designed to work as a medium of exchange which uses cryptography to secure its transaction in order to control the creation of additional units and to verify the transfer of asset (Wikipedia, 2018a). Cryptocurrency or cryptography emanated from a Greek word “*Kryptos*”-Hidden Secret and “*Graphein*”-to write. This involves the practices and study of methods to protect communication in the presence of third parties called adversaries.

The origin of cryptocurrency can be traced to Satoshi Nakamoto, a Pseudonymous developer in 2009 when she created Bitcoin. This form of cryptocurrency uses SHA-256 a cryptographic function as its evidence of work scheme. Since then different categories of crypto currencies have emerged. Cryptocurrency is further referred to as *altcoin* (i.e alternative coin). This form of currency control structure is decentralized in nature as opposed to the centralized electronic money and central banking system. Under this arrangement every transaction is digitally recorded in blocks. These blocks act like ledgers and once a block is used to capacity a new block is created. All blocks are connected to each other via hash tag (i.e., time stamping of transaction) based on evidence of work. These blocks are in linear chronological sequence which is called Block chain.

Currently, cryptocurrency have a market capitalization of about \$800 billion which is just 0.3% of \$215trillion in the total asset globally. (Investopedia, 2018). Despite this huge market capitalization and investor craze to invest their funds, it still has some contending issues regarding its adoption by certain economies of the world. This has further raises question on whether or not, cryptocurrency fits into the parlance of Islamic banking and finance? It is in lieu of this question that the following objectives were developed; to examine the various types of cryptocurrencies, to compare money (fiat) and cryptocurrency, examine the relationship between cryptocurrency and the principles of Islamic banking and finance and to examine some of the contending issues raised about cryptocurrency.

LITERATURE REVIEW

Cryptocurrency

The European Central Bank (2015) defines virtual currency or cryptocurrency as digital representation of value that is neither issued by a central bank or a public authority, nor necessarily attached to a fiat money or currency, but is accepted by natural or legal persons as a means of payment and can be transferred, stored or traded electronically.

There are about 1,348 types of cryptocurrencies that are available over the internet (Wikipedia,2018b). Though, it's not exhaustive as it keeps growing. However, we shall briefly discussed the major types of cryptocurrencies such as Bitcoin, Litecoin, Ethereum, Zcash, Dash, Ripple and Monero.

Bitcoin (BTC) is considered as the first cryptocurrency that emerged in 2009. It is based on peer to peer electronic payment system and a solution to the problem of double spending (Nakamoto,2008). It is premeditated basically to reduce the need of a financial institution or trusted third parties entities and it is based on SHA-256 algorithm. This form of cryptocurrency function as physical cash since its character is a bearer of e-cash and its transfer are irreversible. Bitcoin can be splitted around 8 decimal places and

could be extended further if need arise. In other words, a single bitcoin can be spent at a fractional increment that can be as small as 0.0000001 BTC per transaction. This increment is called *Satoshi* which was named after the author. Currently, the market capitalization of bitcoin stood at \$277billion as at Jan'2018 (Empirica,2018) which is considered as the highest amongst other cryptocurrencies.

Litecoin (LTC) was launched by Charles Lee in 2011. It is considered as silver to Bitcoin gold. This form of cryptocurrency makes use of script encryption algorithm which is contrary to SHA-256 adopted by bitcoin. This can be translated or decoded with the help of CPU of consumer grade. In other words, with the help of its cryptographic algorithm, like ASIC (Application-Specific Integrated Circuit Chips) it makes the block generation 4x faster. Currently, litecoin market capitalization stood at \$13.7billion as at Jan,18 (Empirica,2018).

Ethereum (ETH) is a non centralized software platform that enables smart contracts and distributed application (DApps) to built and run without any downtime, fraud, control or interference from a third party (Wikipedia,2018a; Empirica,2018). It was launched in 2015. Ethereum is run on its platform specific cryptographic token called Ether. This platform is to use to codify, decentralize, secure and trade just about anything. It is splitted into two (2); Ethereum and Ethereum Classic (ETC). It currently has a market capitalization of About \$98.3billion at Jan'18 (Empirica,2018).

Dash was formerly known as Darkcoin. It is very secretive in nature. Dash operates on a non centralized master code network that makes it difficult to trace its transactions and it can be mined using a CPU or GPU. This form of cryptocurrency was developed by Evans Duffield and it was launched in 2014. Though, in 2015 the concept was re-branded to Dash which means digital cash. This name change did not change its features like Darksend, InstantX etc (Investopedia,2018). Currently, it has a market capitalization of about \$9.6billion at Jan'18 (Empirica,2018).

Ripples (XRP). This form of cryptocurrency was launched in 2012. It has a network that is real time world settlement which enables it to offers instant, certain and low cost international payments. This system has a consensus ledger and as such it does not require mining which is seen as a distinguishing feature from the bitcoin and altcoins (Investopedia,2018). Consequently, it reduces the usage and computing power and minimizes network latency. It is against this background that such cryptocurrency is backed by many banks and financial institutions. Currently, its market capitalization stood at \$120b which is considered as the 3rd most capitalized cryptocurrencies as at the end of Jan'2018 (Empirica,2018)

Monero (XMR). This was first launched in April, 2014. It is a secured, private and untraceable currency. This type of cryptocurrency is entirely donation based and community driven (Investopedia,2018) which applies a unique technique called Ring Signature and with such a technique, there seems to be a bunch of cryptographic signature like at least one real player but since all of them appears valid, the real one cannot be isolated. Currently, its market capitalization stood at \$6.1b which is considered as the as at the end of Jan'2018 (Empirica,2018).

Zcash. This form of cryptocurrency is decentralized in nature and it was first rolled out in 2016. Zcash is https as it gives additional privacy or security where all transactions are documented and printed within a block chain. In Zcash, the details of the sender, amount, recipient remains private. This is achieved because its content are encrypted via the use of sophisticated cryptographic procedure or zero knowledge proof

structure which is referred to as ZK-SNARK. Currently, its market capitalization stood at \$1.7b which is considered as the as at the end of Jan'2018 (Empirica,2018).

Islamic banking and finance

Kamar *et al* (2015) sees it as the provision of financial services in accordance with the Islamic jurisprudence (*Shariah*). The *Shariah* is also known as *Fiqh Al-Mu'amalat* (Jurisprudence of Commercial transaction). The rules and practices of *Fiqh Al-Mu'amalat* emanated from the Quran and the Sunnah, and other secondary sources such as opinions collectively agreed among *Shariah* scholars (*ijma*), analogy (*qiyas*) and personal reasoning (*ijtihad*).

The principles of Islamic finance are as thus:-

Prohibition of interest: This implies that any return over and above the actual loan amount which is predetermined is prohibited. The prohibition of interest derives its source from both the Holy Quran and the Sunnah of the prophet. The Holy Quran (Q2:278) states that,“ *“O believers fear Allah and give up what is still due to you from interest (Usury), if you are true believers”*. Similar, prohibitions can also be found in 2:275,276 and 3:130 etc

Profit & loss sharing: Islamic banking and finance is based on the principle of profit and loss sharing which depicts a divergence from the conventional form of banking and finance. This means that lender and the user of the funds must share in the profit or loss from the investment/venture for which the money was lent according to the agreed ratio or capital contribution if funds are invested under the *Shirkah* agreement. This principle discourages one to be a creditor. The fundamental juristic rule in the *Shariah* that informs the idea of risk-sharing states: “*al ghunm bil ghurm,*” meaning “there is no return without risk.”

Gambling (maysir), uncertainty/speculation (gharar) are prohibited: Islamic banking and finance prohibits transaction involving gambling. As it is clearly spelt out in the glorious Quran, in Suratul Maidah which states that:-*“O you who believe! Intoxicants (All kinds of alcoholic drinks) & gambling & Al-ansab and Al-Azlam (arrow for seeking luck of decision) are abomination of shaitan (Satan) handiwork. So avoid (strictly all) that abomination in order that you may be successful. (Q5:90)*. This principle also demands that any contract entered into should be freed from doubt risk and speculation. In otherwords, parties involved should have an in-depth knowledge of the transaction dynamics.

Unethical business or investment is prohibited: Islamic banking and finance is based on the principle which prohibits investments in unethical businesses or prohibited commodities. That is it only supports practices or products that are in line with the *shariah* law. For example trading in alcohol, pork is prohibited as stated in Suratul Maidah 5:3.

METHODOLOGY

This study was conducted based on review of related literatures. This information was sourced from different reports, text, articles and other sources as it relates to cryptocurrency and Islamic banking and finance. The study further lay more emphasis on Bitcoin in its analysis taking into cognizance that it is the oldest and popular form of cryptocurrency.

RESULTS AND DISCUSSIONS

Cryptocurrency, Islamic banking and finance

In order to establish the permissibility of cryptocurrency in Islamic banking and finance it is cogent we briefly discuss the concept of Money in Islam and comparing it to cryptocurrency.

Money

Money refers to anything that is generally acceptable as a medium of exchange and for the settlement of debts.. Money has the following features such as :- a medium of exchange, standard for deferred payment, measure of value, portability and unit of account.

However, Jurists and scholars have dissected money into two variants: Natural money and customary money. Natural money is a type of money which has monetary value and it is created to serve as a medium of exchange. In other words, it has intrinsic value. Example of natural money includes gold and silver where as customary money refers to a type of money which gets the position of money due to custom and acceptability of people. Customary money is not created to serve for the purpose of money, but people accept it widely to use as medium of exchange.

Subsequently, customary money can be further splitted into two types: commodity money and fiat money. The commodity money has natural value and can be used for additional purposes while a fiat money is a paper currency which is issued by the governments (monetary authorities); it neither has natural value nor natural moneyness as its value is determined by the government.

Money (fiat) and cryptocurrency

Islam considers commodities with intrinsic value as currency. However, during the life time of the prophet, the following commodities were used as currency, Gold (as Gold Dinar), Silver (as silver Dinar), rice, dates, wheat, barley and salt. Gold and Silver were explicitly mentioned in the Quran 3:14 but because of it limited supply other commodities as earlier mentioned was used.

However, Imran Hosein, identifies six (6) common traits that captures the definition of money in Islam (Barker,2013). These are as thus: Money is either precious metal or food, Money is abundant and freely available, Money is durable and does not spoil or corrode, Money has intrinsic value, Money exist in creation and is made valuable by God, Money functions as a medium of exchange.

We shall further relate these features to that of the cryptocurrency to ascertain whether or not it best fit into money in Islam. Firstly, Money is either precious metal or food. This criterion best suits the earlier mentioned commodities (Gold, Silver, dates, rice, dates, wheat and barley) that were used as currencies during the era of the prophet. However, as time evolves this quality could not stand the test of time due to its limited supply and other hinges involved in its exchange which lead to the emergence of fiat money and electronic money. Consequently, Cryptocurrency does not seem to match this quality taking into cognizance the context this feature of money was presented.

Secondly, Money should be abundant and freely available. Cryptocurrencies adequately fit into this quality as it is available in different forms such as bitcoin, litecoin, Etheurem etc around the world without international restriction when compared to the fiat money. This is because it is online in nature, hence makes it available. Therefore, cryptocurrency is abundant, available and exchangeable in any part of the world.

Thirdly, Money is durable and does not spoil or corrode. Cryptocurrencies best fit into this feature as it is durable in nature. Taking into cognizance that it does not exist in physical form just like the bank notes and coins, it cannot be damaged. More so, its mode of storage gives it an edge against other form of currencies. It can be stored in hardware wallets, Desktop wallet, fiat wallets, mobile wallets and online wallets. Thus, by its nature every cyptocurrency is eternal.

Fourthly, Money has intrinsic value. By this feature cryptocurrency tend to also fit into this feature. By intrinsic value we refer to as the true value, fundamental value. In commodity money, the intrinsic or natural value can be partially or entirely due to the attractive features of the object such as a medium of exchange and a store of value. In addition, the cryptocurrencies has intrinsic value when compared to fiat money because the value of the latter is determined by the central authorities or planners. Therefore, it is the people that made cryptocurrency to have value due to one reason or the other not the government or central planner which is on the same position with that of gold. Consequently, cryptocurrency is backed by itself and not backed by the state law. This scenario of fiat money contravene the Quranic principle of mutual consent (al-nasai: 29¹) in transactions as the people are compelled to give up part of their properties against fiat money which has no intrinsic value.

Fifthly, Money exists in creation and is made valuable by God. Cryptocurrency tends to satisfy the first part of this feature (i.e money exist in creation) which is also associated with other forms of currencies like Gold, Silver, dates, rice, dates, wheat and barley as they all require the activities of man to discover its value. The second part of the qualities made valuable by God. This feature embraces its inherent value and not value created and assigned by man as obtainable with the fiat money. Cryptocurrency also fit in to this quality technically because its value is not pegged by the central authorities i.e. people are forced to value it instead of the people to value it due to their own unique reasons and which is further determined by the forces of demand and supply.

Lastly, money functions as a medium of exchange which implies that it can be used for exchanged of goods and services. Cryptocurrency adequately fit into the feature of money in Islam because it is now accepted and used for exchanges. For instances Microsoft and Dell accepts BTC for their products. Airline such as AirBaltic and Air Lithuania accepts BTC for purchase of tickets. In addition, it is also used to pay bills, hotels, buy properties, buying gift etc. For instance, there are over 150,000 merchants globally that accepts bitcoin and the number in increasing every month (CoinDesk Research,2016)

Therefore, it is clear that cryptocurrency fit into five (5) qualities of money in Islam even when compared to fiat money which satisfies two (2) to three (3) qualities. Logically, it can be deduced that cryptocurrency is more Islamic in nature when compared to fiat money despite that fact that the latter is widely used by both Muslim and non Muslim countries.

Suitability of cryptocurrency to the principle of Islamic banking and finance

Having x-rayed cryptocurrency by its nature which satisfies a first order condition (i.e., as money in Islam). It is also pertinent to further relate it against the principles of Islamic finance to ascertain whether or not it satisfies the second order condition.

¹ O you who have believed, do not consume ones anothers wealth unjustly but only (in lawful) business by mutual consent. And do not kill yourselves (or one another). Indeed, Allah is to you ever merciful

Cryptocurrency, have little or no level of *gharar* and *maysir* when compared to fiat money. This is owing to the fact that Islamic scholars have stressed that any form of payment should be free from *Gharar*. *Gharar* is generally interpreted as risk, hazard or uncertainty. In other words, it refers to deception based on the absence of information or the doubtfulness of delivery with the prospect of causing damage.

Cryptocurrency is more certain and not deceptive because parties involved have adequate knowledge of the market and the product. Also, it is more transparent because every single transaction is being stored in a massive circulated public ledger called the Blockchain (Cointelegraph, 2018). Therefore, when compared to fiat money which has a high risk level, it contradicts the principles of Islamic banking and finance. This can be wrapped up in the words of Anwar and Haque (1993) that fiat money is an innovation whereby government extracts resources from the people. Issuance of fiat money itself is contrary to Islamic justice as it entitles the issuing authority to steal commodities belonging to the people. The Quran clearly prohibited such transactions declaring them as unjust (Q2:188).

Fiat money due to its high level of *gharar* components, It breeds inflation especially the demand pull inflation (i.e. more money chasing fewer goods) which end up making such a fiat money to lose its value. In other words, if fiat money is continuously been printed, at little cost, by the state, this invariably, it could further lead to inflation, given the continued addition of more and more paper money into the monetary system thereby weakening the value of the said currency (Muedini, 2018) where as cryptocurrency tends to be deflationary in nature as compared to gold and other commodities which can serve as hedge tool. For instance, the hyperflation faced by Zimbabwe or Venezuela results to loss of value of their currency which they reverted to gold and other precious commodities to preserve their wealth which cryptocurrencies will suffice.

By and large as for a payment option, cryptocurrency tends to meet up with Islamic banking and finance. In the words of Mathew (2018) which he stressed that...as a payment network, bitcoin is *halal*. In fact bitcoin goes beyond what more conventional closed banking network offers. Unlike conventional bank network which uses private ledgers where there is no guarantee that the originator actually owns the underlying asset. Bitcoin guarantees with mathematical certainty that the originator of the transfer owns the underlying asset. Conventional banks operate using a fractional reserve which is prohibited in Islam. He further stressed that bitcoin is more *halal* than any currency in wide circulation today but probably still fall short of the strict and narrow definition of money in Islam. Modern sovereign currencies are based on debt with usury-this is strictly prohibited in Islam. Therefore all modern money is not *halal*. Bitcoin on the other hand is not based on debt-it is based on proof of work and at least not *haram*.

Cryptocurrency tend to conforms with one of the cogent principles of Islamic Banking and finance which is the prohibition of *riba* (usury) when compared to fiat money because in fiat money *riba* is inherent in it because it has the power to create its self without sufficient asset backing it up. Consequently, it keeps on creating infinite bubbles but with cyptocurrency most especially bitcoin, its quantity increases at an expected and a slow rate with its ceiling known to be 21Million units. Rather than the units of bitcoin being lent into existence at the whims of an individual, a new unit of XBTs is released in exchange for the provision of services to maintain the security and stability of the Bitcoin Network (Charles,2015).

Moreso, cryptocurrency also complies or incorporates the principles of risk sharings as oppose to risk shifting which is associated with the fiat money. This is against the background in which the Blockchain Management System is structured. It's a kind of *Musharakah- Musharakah* literally means Sharing. This refers to a relationship between two parties or more whom pool their resources together to a business based on an agreed profit or Loss ratio. Charles (2018) asserts that bitcoin operates according to *musharakah* in which the miners operate as general partners in loose confederation, who share the cost and benefits of maintaining the system. The greater the proportion to the total computing power in the system particular miner's investment is in equipment used to confirm transactions among users, the greater is that miners proportion of the XBT released by the system.

Clarification in issues of cryptocurrency

Most the criticism advanced by individuals, scholars etc to the permissibility of cryptocurrency can be summed as thus: Cryptocurrency is not a legal tender, cryptocurrency issuer is not known, cryptocurrency has no central authority or government backing it, cryptocurrency is extremely speculative and cryptocurrency is an avenue for money laundering and illicit activities.

Cryptocurrency is not a legal tender:

The issue that cryptocurrency has no legal tender which implies that it has no legal backing by the state is to be considered as a relative justification as there are some countries which Bitcoin for instance is legal. Among which are Australia, Bulgaria, Canada, Estonia, France, Germany, Iceland, Israel, Japan, Jordan, Mexico, Sweden Slovia etc. The major criterion for money in *Shariah* is its acceptability by people - whether it comes about by forcing it upon people via laws, or through voluntary acceptance of people (Abu-Bakar,2017).

Cryptocurrency issuer is not known/central authority

This is considered as a one of the major criticism of cryptocurrency that the issuer is not known and there are no monetary authorities to neither supervise nor guarantees it. However, it is pertinent to note that there exists a framework for the users of this type of currency which is fully disclosed for parties' consumption and taking into play that it adopts the block chain technology makes it more secured than the centralized system engaged by a government or central bank. More so, because of its cryptographic feature, it is mathematically unworkable to maneuver the laws and rules that govern its *modus operandi*. For example, the SWIFT network is widely used by banks as an inter-bank payment system. In February 2016, \$1 Billion USD was stolen from the Federal Reserve Bank of New York from the account of the central bank of Bangladesh (Wikipedia, 2018b)

Cryptocurrency is an avenue for money laundering and illicit activities.

The issue that cryptocurrency are used for money laundering and other illicit purposes does not make it to lose its way to be recognized as an acceptable form of currency. For instance fiat money (E.g US Dollars) are been used for similar purpose and it does not make the money to be illegal. In other words, using something lawful for an unlawful purpose does not make the thing itself unlawful. An example from the Hadith can be found in that the Prophet Muhammad (peace be upon him) forbade the selling of grapes to a wine merchant, since making wine is *haram* (impermissible), but did not forbid the production or trading of grapes for lawful purposes.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Despite the fact that cryptocurrency is considered as an economic innovation it is gradually occupying the center stage of the financial landscape as investors are gradually considering it as channel of investment. Though, this digital currency might absolutely fit into the conventional system but in the case of Islamic financial system cautioned is needed due to its ethical nature. However, from the analysis presented, we can see that cryptocurrency is compatible to Islamic banking and finance because it best fit into the major qualities of money in Islam and the principles governing the operations of Islamic Banking and finance when compared to the fiat money.

Recommendations

The following are some of the recommendations to ensure that cryptocurrency is adopted into Islamic banking and finance; There is need for all stakeholders (Islamic scholars, shariah experts, AAOIFI, IFSB etc) in various economies to sit down on a round table to formulate standards in order to guide its entire *modus operandi* as this could go a long way to address the fears of users/investors.

More so, there is need for more transparency in terms of full disclosure on all their transaction/profile of user as this will go a long way to cleanse the system because it will no longer be a hiding place for criminals, drug traffickers. In addition as an investment option, its structure is making it difficult to be taxed, thus investor will automatically evade tax but with more disclosure, tax can be levied on their investment and also *zakat* can be calculated on their investment.

Lastly, there is also need to ensure that they operate a quazi-centralized system rather than a fully decentralized system as this will ensure that additional repository are created and this will be of immense benefit in case of data loss.

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