Crypto Currencies and Islamic Finance: The case of start-up Stellar

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Abstract:

In this article, we tackle a subject that is closely related to financial innovation, namely a new form of currency known as virtual currency, such as Bitcoin. Given that the use of this currency in trade and investment has increased considerably, we have tried to address the positioning of this crypto currency in Islamic finance, namely the opinion of experts on its use by Islamic banks.

To do this, we will attempt to gain a better understanding of the concept of virtual currency, the introduction of Blockchain Management Systems (BMS) based on Islamic law, and finally the case of Stellar, which has been approved by the Shariyah Review Bureau.

Keywords: Virtual currency; Bitcoin; Islamic finance; BMS; Stellar.

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I- Introduction.

Today, crypto-currencies have become a global phenomenon known to most people. Even if this phenomenon remains a little *geeky* and misunderstood by the public, banks, governments and many companies are aware of its importance.

First introduced in 2008, Bitcoin is the unicorn of crypto-currencies. It is a decentralised virtual currency with no central authority. Its operation is based on a network without intermediary and it does not benefit from a legal tender unlike the currencies issued by central banks. According to its supporters, the bitcoin protocol gives this crypto-currency the status of digital gold: by freeing itself from government money creation, it can be likened to a safe haven (BBC, 2022).

Despite the controversy surrounding this virtual currency and the reluctance of finance specialists, many commercial exchanges are being conducted using this method of payment. Given the growth of the Islamic finance market, this sector is attracting many companies, particularly those involved in crypto-currencies, whose ambition is to improve international financial flows. (Barthelemy, 2022)

To this end, this article could initiate a research phase aimed at providing a semantic basis for academic dialogue and specialist opinion on the production method of crypto-currencies and its adaptation to the principles of Islamic finance.

From this stems our main question, however simple and logical it may be:

Do crypto currencies in general and Bitcoin in particular comply with the precepts of the Muslim religion? In other words, are they legal?

To answer our question, we have divided our articles into three parts. The first is devoted to the notions and concepts of virtual currency, followed by a critical analysis of the various opinions of specialists on the method of issuing Bitcoin and its compliance with the fundamentals of Islamic finance. Finally, we conclude with an analysis of a company that has obtained halal certification.

1. Notions and concepts.

Before we begin by explaining the concepts behind crypto-currencies, we thought it would be useful to review the history of this new payment method.

1.1. Historical overview.

Satoshi Nakamoto, who announced his invention in 2008 and published the open-source software in 2009, just as the financial crisis was looming, invented Bitcoin. Many experts see his project as a way of freeing themselves from the banks and governments, whose responsibility was being called into question at the time. But Satoshi Nakamoto has never confirmed these allegations (Bourguignon, 2023).

He questioned the technical inadequacies of the time, hence the ambition to develop a more efficient alternative system. The mathematician starts from the premise that we are forced to use financial institutions to guarantee our transactions. In his view, this results in excessive costs and the acceptance of a certain amount of fraud. According to Nakamoto, what we need is: "***An electronic payment system based on cryptographic proof, which would enable two parties who so wish to carry out transactions directly between themselves without having to rely on a trusted third party***".

Following this brief historical overview, we will now present the concepts relating to crypto-currencies.

1.2. Definitions of crypto currency.

Crypto currency refers to a virtual currency that is traded peer-to-peer via a blokchain. It is based on the principles of cryptography to validate transactions and issue the currency itself (Steinmann, 2023).

It is an electronic or virtual currency that has no physical form. It is exchanged from peer to peer on a decentralised computer system, or blockchain, which is constantly updated and tamper-proof. The source code of a blockchain is based on the principles of cryptography to validate transactions and issue the currency itself.

To buy a crypto currency, the potential holder will most often go to an online exchange platform. A platform whose seriousness and professionalism can be judged by the number of transactions it handles and the volume of business it generates, as well as by the type of information requested from potential buyers.

Depending on the configuration, crypto currencies can be exchanged for goods, services or money. Without being able to speak of a **"price"** in the strict sense of the term, it should be noted that the value of almost all crypto-currencies is highly volatile (Juthier , 2023).

One of the most famous crypto currencies is Bitcoin, which is the subject of this article. Its definition and characteristics will be illustrated in the second part of this article. We will now move on to a presentation of the different types of virtual currency.

1.3. Crypto currency typologies.

Investing in crypto-currencies is quite different from investing in shares, as you cannot rely on the company's financial results. Instead, it's a kind of bet on a project, a promise, or even a business model. However, you have to be very careful, because the market is liable to send share prices plummeting, sometimes for no reason at all. You need to have your heart in the right place and only invest what you're prepared to lose (Raymond, 2023).

There are more than 1500 crypto currencies, but not all of them are the same. In what follows, we'll try to take a closer look at some of them so that you can see more clearly.

Table 1 : Crypto currency classifications.

Cryptocurrencies	Definition
Bitcoin (BTC)	This is the mother of all crypto currencies. It enables payments to be made over the Internet without going through a trusted third party (bank, PayPal, etc.). Its technology is based on the blockchain, a global network of thousands of computers that validate users' transactions. Anyone can consult the transactions in this huge register via the cryptographic addresses of the users.
Ethereum (ETH)	This is a protocol for creating decentralised applications. The insurance sector is very interested in it. It can also be used to make simple payments, like Bitcoin. This new financing lever enables start-ups to raise money without having to turn to the venture capital sector. The crypto currency used on Ethereum is ether.
Ripple (XRP)	This system is more reserved for banks. The Californian company Ripple created it in 2012. It considerably reduces the costs and time taken to transfer international funds.
Bitcoin cash (BCH)	It is a system similar to Bitcoin, which was created in 2017 after the community split. This followed a heated debate about the technique for validating transactions on the network.
Litecon (LTC)	A rival system to Bitcoin. Charlie Lee, the former head of engineering at the Coinbase broker, created it in 2011.
Cardano (ADA)	According to its creator Charles Hoskinson, it was designed to overcome Ethereum's two main shortcomings: it is not scalable, and updates are difficult to implement because of its decentralised governance system.

Source: Compiled by us based on (Inconnu, 2023)

In what follows we take a closer look at Bitcoin and its compliance with Islamic law

2. Bitcoin versus Islamic finance.

A UFO of the financial world, Bitcoin presents itself as an alternative means of payment over which governments have no control. It has no physical existence and is not subject to any central bank. It cannot be turned off: its system is based on a network, fed by tens of thousands of computers across the planet. It is like a giant account book, reputed to be inviolable, in which the history of all transactions is recorded (Belaouar, 2023).

Before checking whether this virtual currency complies with the precepts of Islamic finance, we will focus on how Bitcoin works.

2.1 The concept of Bitcoin and how it works.

Bitcoin is a cryptographic currency and a peer-to-peer payment system. Its unit of account is the Bitcoin, limited to 21 million units and divisible to eight decimal places.

All transactions are verified by the network nodes and recorded in a forgery-proof public register known as the ***blockchain***. The system operates without a central authority or a single administrator, but in a decentralised manner thanks to the consensus of all the nodes on the network. Bitcoin is the largest decentralised crypto currency, with a capitalisation of around $56 billion in August 2017 (Herbst, 2023).

Users contribute their computing power to verify record and secure transactions in the blockchain. This activity, known as *mining*, enables participants to be remunerated, for each new block validated, by newly created Bitcoins and by the fees for the transactions processed. The Bitcoins can then be exchanged for other currencies, goods or services. The price is set on specialised marketplaces and fluctuates according to the law of supply and demand (Bergstra, 2015).).

As a means of payment, Bitcoin is being accepted by a growing number of merchants, attracted by transaction fees that are generally lower than the 2-3% charged on credit cards. For the Bitcoin system, they are between 0 and 2% of the transaction amount. Unlike credit cards, any fees are borne by the buyer (not the seller), who chooses to pay them voluntarily.

A Bitcoin transaction is irrevocable and cannot be reversed. Despite a **500%** growth in the number of merchants accepting bitcoin in **2014**, the crypto currency is not yet well established in retail but continues to gain a foothold in commerce (Clubfunding, 2023).

Since its creation in 2009 and until the closure of Silk Road by the US authorities in 2013, Bitcoin has been used mainly as a medium of exchange by criminal networks, on gambling sites and for the purchase of illegal substances and pirated databases. The US Senate also recognises that Bitcoin can be used to provide perfectly legitimate financial services.

After this summary of Bitcoin and how it works, we will now look at how it complies with the principles of the Sharia. In order for Bitcoin to fit into the Islamic finance regime as a usable virtual currency that complies with Sharia principles, we will need to give a brief summary of currency in Islam and its importance.

2.2. Money in Islam.

Islam defines money as "anything that has intrinsic value and with which the contracting parties are satisfied"; let's explain this definition (Hummel & Warren, 2009):

- ***Intrinsic value: Something that*** has value in its own right. Such as non-perishable foodstuffs like wheat, barley, dates or precious metals;
- ***Satisfaction of the contracting parties***: Currency in which the parties involved in the commercial transaction (purchase/sale) recognise as having value and mutually accept as the means of conducting the commercial exchange. This is supported by verse 29 of Sura An-Nissa :
  "O believers! Let none of you eat the goods of others unlawfully. But let there be (legal) trade between you, by mutual consent. And kill not yourselves. Allah is indeed Merciful to you". A commercial transaction in Islam is therefore an exchange of (generally) two things of equal value.

During the lifetime of the Prophet (peace and blessings of Allah be upon him and his family), Muslims used gold and silver coins minted by the Persian neighbours of the Sassanid Empire. However, the Prophet (peace and blessings of Allah be upon him and his family) indicated to Omar the measures equivalent to a dinar and dirham. It was not until his accession to the Caliphate that these dinars and dirhams were finally minted and put into circulation as the official currency of the Muslims (Belaouar, 2023).

When the lands of Islam were colonised, the colonists introduced paper notes in order to regularise commercial transactions under their tutelage. Many fatwas followed and were unanimous on the fact that paper money, even if a gold deposit covers it, only represents the "IOU" of that deposit and not the deposit itself. ***Exchanging IOUs (in this case, paper money) for commercial transactions is not permitted in Islam.*** Because it has no intrinsic value and the IOU is strictly between the depositor and his guarantor, in other words, the note cannot be exchanged with anyone outside the act of deposit. ***Money is therefore debt.***

Today the situation has worsened. The money issued by the monetary authorities is in no way backed by a gold deposit or silver bullion. Our money is purely printed-paper, and its only value is its fluctuating purchasing power at any given moment.

In conclusion, for finance to be at least Islamic (or to look Islamic), it is imperative that transactions are carried out using the gold dinar and the silver dirham as currency. ***An "Islamic" financial system that conforms to the fraud of paper money is Islamic in name only***. For there to be money, these three functions must be present:

- Value measuring instrument ;
- Instrument of exchange ;
- Reserve of value instrument.

What follows is an analysis of the production of Bitcoin and Sharia law.

2.3. Sharia dictates.

The religious position on Bitcoin and cryptocurrencies in general has evolved considerably in the Arab world, with some religious figures considering them to be currencies compatible with Islamic precepts, while others vigorously condemn them.

Bitcoin is very similar to fiat money, which is not redeemed by gold and silver, and whose status as money derives from the trust placed in its issuer, which is the sovereign authority of each country. Whose value changes in relation to a country's balance of trade, i.e. its exports and imports in the first instance, followed by investments and speculation on the foreign exchange markets, as the main factor influencing the stability or instability of a currency in relation to other currencies (Bergstra, 2015).

When we talk about issuing money, there is always a sovereign authority; however, with Bitcoin there is no sovereign issuing authority.

2.3.1. Production of the Bitcoin digital currency.

The answer to the question of whether Bitcoin can be considered money may seem obvious to many. However, in Islamic countries, there are specific guidelines on Islamic financial principles that people use to define what is or is not money. So the question will be whether Bitcoin is compatible with Islamic commercial law (*fiqh al-mu'âmalât*).

According to the information available, anyone can issue a Bitcoin currency in the process known as *mining* on specific websites. This is done using an electronic program requiring a high-powered computer. The computer process culminates in the production of a specific number of units of digital Bitcoin. As a result, anyone can use the program and issue a Bitcoin currency to credit their own Internet-based account (Sparkes, 2023).

This production method constitutes a substantial point of divergence between the sovereign issuer currency and Bitcoin. The latter is not issued by an authority that defines and guarantees it. This particular aspect of Bitcoin is shrouded in obscurity.

Some of the available information suggests that this currency could even evaporate electronically from a user's Internet account. The absence of a guaranteed authority would mean that, in the event of such an evaporation, there would be no one for whom compensation could be claimed. However, the difference between Bitcoin and money issued by commercial banks (as part of a money creation process) is that issuance by banks relies on the guarantee of the original deposits as well as oversight by the sovereign authority (Hummel & Warren, 2009). Neither of these factors is available in Bitcoin.

The real purpose of Bitcoin is to compete with other currencies in the purchase of goods and services, and even to speculate in currency. Bitcoin has in fact emerged as a currency accepted in thousands of shops around the world and has become a parallel currency to other currencies insofar as it has become exchangeable with the dollar and the euro at prices accepted on Wall Street like any other currency.

The transition of the Bitcoin currency from its issuer to the owner of the restaurant or owners of dollars or pounds lifts Bitcoin out of the obscurity and mist that surrounds the phase of its production, to a stage where a general norm is formed around Bitcoin; as a medium of commercial exchange, or a store of value or wealth. These are the main characteristics of any currency.

Following this explanation of how this virtual currency works, with the aim of providing a better understanding of this mechanism, we now move on to the Islamic legal position on the issue of this crypto currency.

2.3.2. The Islamic legal viewpoint on broadcasting.

Sharia law says that a currency must have intrinsic value; backed by a tangible asset such as gold or silver. This means that money must have some use before it can be considered permissible. Not all money can be halal just because people consider it valuable. In some cases, financial institutions create currencies that have no intrinsic value. A currency has to be backed by a commodity of real value, Bitcoin is not.

Current money has not been backed by a tangible asset since the abolition of the gold standard in the 1970s. However, this does not prevent it from being counted as money.

The four main factors that make Bitcoin intrinsically valuable are:

- Its value is dictated by demand and supply;
- It can be used as a single currency;
- It is "mined" as we said above;
- It is rare (scarcity principle).

Sharia law does not permit the use of money based on Riba (ribâ al-qouroud: interest rate on negotiated debts). Islamic law also prohibits the charging of interest and the profiting from interest paid on loans. Islam does not believe that money is a commodity but rather a means of exchange. A currency is considered halal (permissible) if it is deflationary in nature. This means that a currency should be resistant to inflation and should command a stable market price. Islamic law also prohibits the use of a currency in haram (illegal) activities. (Aims, 2023).

A currency that is based on interest and debt is called "*fiat*", which can be defined as **"*A currency whose monetary value bears no relation to its value as a commodity, which in most cases is negligible in comparison*".** (Hummel & Warren, 2009). Such money is haram.

A transaction becomes Fiat if one counterparty to the transaction is required to earn unfairly more than the other. It is therefore unacceptable to trade currencies for speculative purposes. For Islam, a currency can only be traded at the spot price (to avoid ribâ).Many specialists are in favour of treating a crypto currency in the same way as ***fiat*** notes and coins. Such as:

- Dr ***Munzir Kahf*** of Qatar's Faculty of Islamic Studies;
- ***Islamweb.***net.

Blossom Finance, a microfinance company based in Indonesia, says it is very compatible with the principles of Islamic Sharia law and more suited to Islamic financing methods.

The fundamental Sharia requirement for means of payment to be recognised as an acceptable tender is that they are acceptable to a significant number of counterparties in a given demographic or community. This is why there are conflicting opinions between regulators, merchants and sharia scholars when it comes to crypto-currencies

Since Bitcoin is the result of a computerised 'mining' process, it can be compared to old currencies that were physically 'mined'. Its future circulation is predetermined. Miners obtain a proportional value of the currency when they mine it. This serves to authenticate the process of mining the currency. Some might argue that the 'virtual' nature of Bitcoin makes it haram, but there is no denying that it can be verified using the **Blockchain Management System** (**BMS**) (Crosby , Nachiappan , Pattanayak, Verma, & Kalyanaraman, 2016). By extension, this makes it halal for some scholars.

Critics of Bitcoin argue that it should not be used as a currency because of its extreme speculative nature and the lack of a **regulatory** body. Some experts have issued fatwas citing high chances of market manipulation and low confidence in the currency. Here are a few of them (Aims, 2023) :

- Dr ***Ahmad al Hajji al Kurdi***, a member of the Fatwa Committee and the Ministry of Islamic Affairs in Kuwait, issued a fatwa against Bitcoin, putting forward very abstract arguments considering that buying and selling this crypto currency was "very uncertain";
- The Saudi cleric, ***Assim al Hakeem,*** was more specific, stating that virtual currencies were incompatible with Islamic law because they offered anonymity to criminals;
- In January 2018, Egypt's Grand Mufti ***Shawki Allan*** branded Bitcoin illegal and a gateway to perversion. According to him, using this currency would encourage fraud, treachery and ignorance;
- According to the ***Malaysian Fatwa Council***, Bitcoin is not eligible to resemble silver or gold in cyberspace on the basis of simple limitation or deflationary nature.

Of all these hostile religious opinions, there are few in-depth explanations of the technical or even moral aspects that pose a problem.

Seeing that certain segments of Arab society, essentially the most religious classes resistant to change, were already showing some opposition to these new currencies, some Arab states anticipated these blockades by pursuing dual policies. These include the United Arab Emirates, which first carefully distinguished blockchain technology from crypto-currencies such as Bitcoin in its official communications, and then set about establishing official, regulated crypsto currency exchange platforms as soon as possible (Aby, 2023).

The ***Emirati firm Adab Solutions*** presented itself as the first Sharia-compliant Islamic platform. This swift action by the Emirati government enabled it to meet the growing need of some of the country's young people (both locals and immigrants) to buy virtual currency. So, rather than allowing uncontrollable networks to develop with multiple currency conversions and the use of various foreign sites whose reliability would have been left unchecked, the Emirati government has directed a large proportion of local buyers to these regulated, Sharia-compliant sites where it is possible to deposit local currency without having to use the dollar.

More and more religious voices are being raised in the Arab world, and more specifically in the Gulf States, in support of crypto-currencies and their Islamo-compatible nature. However, it is necessary to ask whether these moves are intellectually honest, since many religious figures seem to have no knowledge whatsoever of the technical characteristics of these virtual currencies. It is therefore legitimate to wonder whether this is not more a case of religious authorities systematically aligning themselves with government decisions in the countries in question (Saudi Arabia, United Arab Emirates, Bahrain, etc.) (Aby, 2023).

From a moral and religious point of view, however, the use of crypto currencies does not appear to be incompatible with Islamic precepts. For example, several arguments can be put forward in support of the idea:

- Bitcoin, like the vast majority of crypto-currencies, is transparent, since all exchanges are recorded on the public blockchain. Contrary to the argument put forward by certain religious figures, it is easy to refute the argument that "anonymous Bitcoin" is a paradise for traffickers of all kinds;
- Bitcoin, like all crypto-currencies, is a better way of combating the low level of banking in Muslim countries. This objective, which is closely linked to the fight against poverty, represents a strong religious argument for the adoption of crypto currencies by religious leaders;
- Contrary to some of the arguments put forward, Bitcoin and other virtual currencies are based on a real economy. The most popular of these crypto-currencies are increasingly being accepted by businesses around the world.

After presenting the concepts relating to crypto currencies and Bitcoin in particular; we tried to make an analytical passage on the principle of production of the latter and its compliance with the principles of Islamic finance; we deemed it necessary to present the case of a major start-up in the crypto-currency sector, which has obtained halal certification in Bahrain. This would open the doors to many countries that apply the rules of Islamic finance.

3. Case study: Stellar

According to the International Monetary Fund and the World Bank, in 2018 Islamic finance accounted for almost **2,200 billion** dollars in banking and financial assets. Today, it is estimated to be well over **2,000 billion** dollars. This sector is attracting many companies, particularly those from the crypto-currency sector (Inconnu, La finance islamique dans le monde, 2023).

Such is the case with **Stellar**, a decentralised protocol designed to improve international financial flows. It is currently the sixth largest company in the sector, with a market capitalisation of $5.6 billion (Stellar, 2023).

On 17 July 2018, the foundation in charge of its development announced that it had received certification from the ***Shariyah Review Bureau***, a consultancy specialising in Islamic finance and authorised by the Central Bank of Bahrain. Stellar, believes that this certification will open the doors to member countries of the Gulf Cooperation Council (Saudi Arabia, United Arab Emirates, Qatar, etc.) and certain regions of Southeast Asia: "*This is an important step forward for Stellar, as these regions are hotspots for remittances from many foreign workers.*" (Lin, 2018).

The price of the crypto currency developed by Stellar (XLM) has risen by 32% in two days, far more than the sector as a whole. However, the sector has taught us to be sceptical after such announcements.

3.1. Specialist opinions.

Mr Kader Merbouh[1] explained the Hallal certification obtained by Stellar in Bahrain (Aby, 2023):

- As a hidden payment system not backed by a financial institution, the use of virtual currencies entails major risks for their users;
- The Shariyah Review Bureau is not a benchmark structure in the world of Islamic finance;
- Each country has its own perception of Koranic law. In the field of Islamic finance, this can be guaranteed by the national central bank, commercial banks or internally by financial structures. There is no guarantee that Stellar's announcement will enable it to expand everywhere as the company wishes;
- There's interest in financial centres like Dubai, Kuala Lumpur and especially Bahrain, whose influence has declined in recent years. Crypto currencies could be a way for the kingdom to make a comeback;
- Africa, on the other hand, is completely lagging behind on this phenomenon: in November 2017, the Office National des Changes, a body dependent on the Moroccan Ministry of Finance, banned its transactions on its soil ;
- There may be reluctance in many countries because the authorities simply don't understand this new technology;
- This is all the more complex because each crypto currency has its own particularities and not all will be deemed compliant ;
- As far as Bitcoin is concerned, we can say that it is adapted to Islam thanks to three of its characteristics: the transparency of exchanges enabled by the blockchain, the financial inclusion of people with little access to banking services and the fact that it is based on a real economy.

A London mosque is also allowing donations in bitcoins. Its chairman said on 13 July 2018 that he had collected the equivalent of €15,600 during the month of Ramadan. Despite the scepticism of many people at the mosque about accepting Bitcoin, but there were three times as many donations in crypto currencies, which shows how important it is to accept this means of payment.

Conclusion.

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Throughout this paper, we have tried to shed some light on how Bitcoin is issued, but above all to check whether it complies with the rules of Islamic finance. Bitcoin is a virtual currency whose sole function is to make payments online, without intermediaries. No more, no less. Its incredible growth has tended to make us forget this fundamental aspect.

When you look at Bitcoin's Blockchain Management System (BMS), it's easy to see how it complies with the ban on usury. The BMS also incorporates the principles of maslaha (interests, utilities) (Crosby , Nachiappan , Pattanayak, Verma, & Kalyanaraman, 2016). Bitcoin's insane rise of over 1,318% in 2017 makes you want to throw away your savings account and take to the speculation highway in the hope of becoming Croesus in a matter of weeks.

In addition, many financial institutions in Islamic countries have opted to adopt BMS. Companies in Indonesia, Malaysia and several other countries are using the crypto currency to transfer equity investments to small and medium-sized enterprises in need of capital.

According to numerous academic articles, reviews and expert opinions, Bitcoin is not incompatible with Islam. It is free of riba and incorporates the principles of maslaha. Nevertheless, some scholars are very reticent about this "new currency", while others are keeping an open mind and keeping a close eye on developments in the world of crypto currency, which could be an effective instrument for the development of Islamic finance.

At the same time, we took a look at a start-up specialising in crypto currencies, Stellar, which was able to obtain hallal certification in Bahrain despite differing opinions among specialists.

Finally, crypto currency can be seen as a new form of money, one that can be integrated to positively influence the real economy. For example, a group of Islamic banks could organise a virtual money exchange based on the principle of Musharakah to allow bank customers to buy and sell crypto-currencies efficiently, transferring value between them and bypassing the inefficiencies of the status quo banking system.

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