

# Exploring the Impact and Challenges of Digital Currency: the Literature Review

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## ABSTRACT

This article explores the literature review as an effort to examine the relevant studies on the impact and challenges of digital currency based on selective economics and legal issues. The scope of research is generally on the issues arising from the impact and challenges of digital currency. The methodology used is socio-legal analysis with reference to text materials and examples. The expected outcome will enable some insights on the impact and challenges concerning digital currency for application in Malaysia.

**Key Words:** Digital currency, literature review, impact and challenges, associated risks.

## INTRODUCTION

Digital economy is undeniably the era in which digital currency has become part of the revolving technology. Changes are inevitable which Malaysia must anticipate and participate. Digital currency poses challenges to various sectors particularly the financial services industry. Malaysia Financial Sector Blueprint 2011 – 2020 was introduced by Bank Negara Malaysia as a ten year strategic plan and one of the Blueprint recommendations is to develop a framework for monitoring and managing risks arising from non-regulated entities and activities through enhance data collection and surveillance of entities and activities outside the supervised financial system. Relatively, in 2009, a programmer by the pseudonym Satoshi Nakamoto introduced '[bitcoin](#)', partially in response to the financial crisis and as an alternative for a currency that governments and banks could not easily manipulate (Murphy et al, 2015).

In regards to bitcoin, Murphy et al (2013), stated that the bitcoin has no intrinsic value in that it is not redeemable for some amount of another commodity, such as an ounce of gold. Unlike a dollar, a bitcoin has no physical form, is not legal tender, and is not backed by any government or any other legal entity, and its supply is not determined by a central bank. The Bitcoin system is private, but with no traditional financial institutions involved in transactions. Unlike earlier digital currencies that had some central controlling person or entity, the Bitcoin network is completely decentralized, with all parts of transactions performed by the users of the system.

Bitcoin is a cryptocurrency because it relies on the principles of cryptography (Murphy et al 2013) and by description is monetisation. Monetisation is the process of converting or establishing something into legal tender (Hall, 2016). It refers to the conversion of an object into money to be generally accepted as a medium of exchange.

According to Murphy et al (2015), Bitcoin offers users the advantages of lower transaction costs, increased privacy, and long-term protection of loss of purchasing power from inflation. However, it also has a number of disadvantages that could hinder wider use. These include sizable volatility of the price of Bitcoins, uncertain security from theft and fraud, and a long-term deflationary bias that encourages the hoarding of bitcoins. In addition, Bitcoin raises a number of legal and regulatory concerns, including its potential for facilitating money laundering, its treatment under federal securities law, and its status in the regulation of foreign exchange trading.

For the purpose of this research, monetisation shall include but not limited to digital money, virtual money or crypto currency and the term shall be used interchangeably as necessary and for general reference, the term 'bitcoin' will be used.

## Definition

A virtual currency has been defined by the European Central Bank as "a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community" (European Central Bank, 2012).

The [United States](#) Department of Treasury defined it "more tersely as a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency". (USDT, 2013). Thus, what is the status of virtual currency as a legal tender?

Virtual currencies are distinguishable from fiat currency and electronic money (e-money) (Frew, Folsom and Wingerden, 2015). Nakamoto (2008) the founder of bitcoin mentioned that bitcoin is a peer-to-peer electronic cash system which allows online payments to be sent directly from one party to another without going through a financial institution. This definition suggests that bitcoin is mainly used as an alternative currency.

The legal status of virtual currencies varies substantially from country to country and is still undefined. While some countries have explicitly allowed its use and trade, others have banned or restricted it. In Abu Dhabi for example, virtual currencies are not regulated and not a legal tender but treated as *commodities* similar to fuel and other precious metals (Das, 2018).

## Objectives

To explore the literature review on the impact and challenges including associated risks on digital currency.

## Research Problem

What are the impacts and challenges of digital currencies?

## Methodology

Library- based research on journal articles, case reports, legislation, treaties and historical records via the library, internet and the relevant international materials.

### THE LITERATURE REVIEW

#### Some Insights

The growing popularity of digital/virtual currency raises grave issues relating to syariah compliance and regulatory concerns about its possible impact on real currencies, tax implications and potential for frauds and criminal use in which Malaysia should be ready for. In terms of bitcoin, Bank Negara Malaysia (BNM) has issued a statement in 2014 stating that “The Bitcoin is not recognised as legal tender in Malaysia. BNM does not regulate the operations of Bitcoin. The public is therefore advised to be cautious of the risks associated with the usage of such digital currency.” (BNM, 2014).

Accordingly digital money such as bitcoin is not centralised nor controlled by the Central Bank or by any legal entity and because of this, has associated risks. Digital money or virtual currency is not backed by physical assets and neither money nor foreign currency, and could therefore be a medium to conduct illegal trade. It could be for any transactions based on supply and demand including arms sales, drug dealing, human trafficking, money laundering and sale of child porn. Such a network of anonymity and criminality would also be ideal for group sponsored terrorism (Goldman et. al. 2017).

The law and regulation of virtual currencies are currently in a state of flux worldwide (Eagle, 2016). With many prominent businesses now accepting Bitcoin, there is an increasing expectation for regulators worldwide to provide security for virtual currency use and storage and clarity on the laws. For example, the Financial Services Regulatory Authority (FSRA) of the Abu Dhabi Global Market (AGDM) is preparing a set of regulations for cryptocurrencies, ICO and cryptocurrency exchanges. Hence, FSRA is evaluating the development of a regulatory framework with industry firms and relevant authorities (Das, 2018).

In this regards, national and international agencies must work together in the area of advanced tracking techniques, training, and online identification methods. Government agencies may also focus on digital currency exchange organizations. As the bitcoin community expands and matures, the need for government mandated licenses, record keeping, and reporting is bound to increase. For example, the New York Department of Financial Services has regulated regulations on virtual currencies, which went into effect on 3 June 2015. The “BitLicense” requires virtual currency businesses with New York customers to obtain a licence. It also has requirements related to consumer protection, anti-money laundering and know your customer (NYDFS, 2016).

## The Benefits and Risks of Digital Currency

According to Murphy et al (2013) the advantageous of bitcoin are that it has lower transaction costs for electronic economic exchanges, increased privacy and no erosion of purchasing power by inflation while the disadvantageous are that it is not a legal tender, does not enjoy the dollar's network externalities, price volatility discourages its use as medium of exchange, the system's long-term deflationary bias will discourage its use as currency and bitcoin's network security is uncertain.

There are many arguable issues whether digital currency (eg. bitcoin, ethereum and so on) can be characterized as medium of exchange or an asset. A statistical analysis conducted by Baur et al. (2017) has shown that there was no correlation between bitcoin and traditional asset classes such as stocks, bonds and commodities both in normal times and in periods of financial turmoil.

The findings on bitcoin showed that bitcoins are mainly used as a speculative investment and not as an alternative currency and medium exchange. This result was based on the return properties of bitcoin daily data between July 2010 and June 2015. The WinkDex data was used as the daily exchange rate of Bitcoin to US dollar (USD) from the WinkDex website (<https://winkdex.com/>). Nevertheless, Nakamoto (2008) the founder of bitcoin mentioned that bitcoin is a peer-to-peer electronic cash system which allows online payments to be sent directly from one party to another without going through a financial institution. This definition suggests that bitcoin is mainly used as an alternative currency. For example, Dubai has issued the first state cryptocurrency called *emCash* in 2017. It would be used for the payment of governmental and non-governmental services and is considered as a legal tender for these agencies (Buck, 2017). The users, emPay benefit from this digital currency in such a way that the merchants receive immediate payments in real time hence bypass intermediaries (Taylor, 2018).

The UAE Central Bank and Saudi Arabia may have their own cryptocurrencies but regulated as digital currency which is accepted by the currency exchange houses group (Abbas, 2018). However, bitcoin can also be used as an asset and thus would serve a different purpose. Whilst a currency can be characterized as a medium of exchange, a unit of account and a store of value, an asset does not generally possess the first two features and can be clearly distinguished from a currency.

Villar (2004) cryptocurrencies and digital currencies such as bitcoins do not generally have legal tender status, and the broad acceptance of currencies such as bitcoins does not have a requirement upon any government or country. Thus, this is the weakness of cryptocurrency because of the lack of regulations, lack of consumer protection and an oversight. In addition, value of digital currency is very volatile and easily devalued overnight such as the Mt Gox incident (Greenberg (2014)).

Yermack (2015) argued that bitcoin does not behave much like a currency according to criteria widely used by economists. Instead, bitcoin resembles a speculative investment similar to the internet stocks of the late 1990s. Even, bitcoin meets one of the money criteria that as a medium of exchange but only a few people use it widely as medium of exchange. In addition, he further argued that bitcoin perform poorly as a unit of account and as a store of value as it needs merchants to quote the prices of common retail goods out to four or five decimal places with leading zeros. Besides, he found Bitcoin is very high volatile and trade for different prices on different exchanges without the possibility of arbitrage.

The other additional lack of characteristics is that bitcoin cannot be deposited in a bank, and, instead, it must be possessed through a system of 'digital wallets' that have proved both costly to maintain and vulnerable to predators. However, the largest free economic zone in the UAE, The Dubai Multi Commodities Centre (DMCC), has recently issued licenses to firms that trade cryptocurrencies, Dubai gold trader Regal RA. The firm will offer cold storage vault for bitcoin, ethereum and other cryptocurrencies in DMCC headquarters in Almas Tower Dubai (Helms, 2018). Cold storage of cryptocurrencies refers to crypto stored offline on a hardware wallet. This is in contrast to internet based wallet or third-party service that could be vulnerable to attacks or scam (Zuckerman, 2018).

As a store of value, bitcoin faces great challenge due to thefts, hacking attacks, and other security related problems. It showed that Bitcoin's daily exchange with the US dollar exhibits virtually zero correlation with the dollar's exchange rates against other prominent currencies such as the euro, yen, or British pound and also against gold. Thus, it makes its risk nearly impossible to hedge for businesses and customers and renders it more or less useless as a tool for risk management.

Surprisingly, Blau (2018) did not find that, during 2013, speculative trading contributed to the unprecedented rise and subsequent crash in Bitcoin's value nor did find that speculative trading was directly associated with Bitcoin's unusual level of volatility. Contrary to the idea that speculative trading contributes to Bitcoin's volatility, he did not observe a positive relation univariate or multivariate tests. Results from his study should alleviate some concerns about the viability Bitcoin as a currency instead of a speculative investment. Because of price dynamic, Bitcoin functions more as a speculative asset than as a traditional medium of exchange. The price dynamics indicated the presence of a bubble in Bitcoin as stated by Blanchard (1979), Flood and Hodrick (1990) and Sckelinkman and Xiong (2003). Dwyer (2014) found that the average monthly volatility of returns on Bitcoin was higher than for gold or a set of foreign currencies in dollars, but the lowest monthly volatilities for Bitcoin were less than the highest monthly volatilities for gold and the foreign currencies.

According to the Max Kubax (2015), bitcoin cannot be easily considered as money. This function examination is based on volatility calculation for bitcoin and other currencies and assets. Comparing of results shows that volatility (and therefore risk) of bitcoin is significantly higher than of other currencies and assets. It cancels the store of value money function of Bitcoin. The most innovative contribution of Bitcoin remains in the function as a payment network. However, it cannot be missed that operations of this network are not guaranteed and bear certain risk. If there was another efficient payment network implemented by banks or official institutions in the future, and if this payment network brought appropriate guarantees as those provided by current payment system, the competitive advantage of Bitcoin would be eliminated. Recently, 16 of the UAE's leading banks, has established a platform Emirates Digital Wallet (EDW) called *klip*. It helps the UAE residents to replace physical cash in the pockets. *klip* is expected to pave the way for cashless spending, transfer and storage of money for everyone living and working in the UAE (Khatib, 2017).

On cryptocurrency funding, Abu Dhabi regulates initial cryptocurrency offerings (ICOs) for cryptocurrency funding (Kharpal, 2017). ICOs are a way for start-ups to raise money by issuing a new cryptocurrency, while users pay them in bitcoin or ethereum. This is a crowdfunding with digital money. It is expected to raise money for the firms in a less expensive manner while being more transparent (Kharpal, 2017). However ICOs were not regulated and that no licenses are currently offered to firms within the Dubai International Financial Centre (Khatib, 2017).

Ciaian et al. (2018) analysed time series daily data (bitcoin & 16 alternative virtual currencies). They found that bitcoin and altcoin markets are interdependent. The Bitcoin-

altcoin price relationship is significantly stronger in the short run than in the long run. They cannot fully confirm the hypothesis that the Bitcoin price relationship is stronger with those altcoins that are more similar in their price formation mechanism to Bitcoin. In the long-run, macro-financial indicators determine the altcoin price formation to a slightly greater degree than Bitcoin does. The virtual currency supply is exogenous and therefore plays only a limited role in the price formation.

Gkillas and Katsiampa (2018) analysed the 5 major cryptocurrencies (Bitcoin, Ethereum, Ripple, Bitcoin cash and Litecoin) and found that Bitcoin cash is the riskiest whereas Bitcoin and Litecoin are the least risky among 5 major cryptocurrencies. They used Value-at-Risk and expected shortfall analyses.

Gaspareniene et al. (2016) on their research on the factors of digital shadow consumption. The results of the research have shown that the most significant factors of digital shadow consumption include lower prices of products and services in digital black markets, unfavourable economic situation in the country, technological advancement, IT advantages, time saving obtaining a product/service in the local market and lack of opportunities to obtain a desired product in the local market. The majority of the consumers neither verify the status of a trader nor request (or not always request) purchase confirmation documents, which highly contributes to motivation of an illegal trader to maintain e- activities unregistered, this way escaping revenue taxation.

However, a study conducted by Guesmi et al. (2018) investigated the properties of Bitcoin in the financial markets. They explored the conditional cross effects and volatility spillover between Bitcoin and financial indicators using different multivariate GARCH models. Interestingly, their studies found that a short position in the bitcoin market allows hedging the risk investment for all different financial assets. Hedging strategies involving gold, oil, equities and Bitcoin reduce considerably the portfolio's risk, as compared to the risk of the portfolio made up of gold, oil and equities only.

### **Cryptocurrency Risk from the Islamic Perspective**

The objective of Islamic law is to protect human affairs both in this world and hereafter. The hierarchy of the protection is the basic necessities of life (*dharuriyyah*), necessities to alleviate the hardships of life (*Al-Hajjiyyat*) and elegance of life (*tahsiniyyat*). For the *dharuriyyah*, it includes food, shelter, clothes, education and health care. However, basic necessities are not limited to those designed to secure the one's physical existence but also to protect faith, progeny, intellect, and wealth. Without proper administering these necessities, the functioning of the society may be disrupted. The wealth protection however is not only in the form armed robbery, stealing, breach of trust but it encompasses the economic activity (Haron 2017). Hence Islamic principle calls for the preservation and development of wealth as exposing wealth to excessive risk (*maisir*) may causes harm to individuals, societies and the economy as a whole.

In determining the risks involved in cryptocurrency, we will look into the trend of extreme volatility of the cryptocurrency price. Taking the example of the bitcoin value, it started at \$13 per bitcoin and has rise to \$1150 before crashing into \$520 within a few months. The substantial risk of losing significant value is high as much as it can go up in price. This could be due to the lack of the provision of real assets or state guarantees. Furthermore, the absence of central authoritative body to control and regulate such activities worsen the situation that may lead to the existence of excessive risk (*maisir*) and uncertainties (*gharar*) to the crypocurrency holders that contradict to the *shariah*.

Furthermore, in the event of misconduct, it is difficult to determine the jurisdiction due to the decentralised nature of cryptocurrency.

In addition, as cryptocurrency is prone to hacking activities due to its nature, the money can be stolen. The loss could be due to user error, security breach of public and private key or technology failure at the virtual currency wallet (Zahudi & Amir 2016). There is a potential that the accounts and the virtual currency wallets are inaccessible. The recovery of the stolen money is difficult because the transaction is fast and irreversible. Hence the risk of losses are high that may harm the wealth of an individual or institution that contradict to the principles of shariah. Furthermore, the cryptocurrency holders find it difficult to exchange for fiat money particularly when it involves high volume. The liquidity risk may further affect the market confidence which in turn influence the difficulties in exchanging cryptocurrency for fiat money. In addition, the difficulties in the redemption have forced the merchant to mitigate their losses with higher fees. Hence, the risk of liquidity in cryptocurrency may lead to higher transactional costs.

## **CONCLUSION AND SUGGESTION FOR FUTURE RESEARCH**

Digital currency is borderless and applicable everywhere around the globe. Digital currency, if regulated cannot be a domestic regulated tool but has to be applicable worldwide. Thus, the question of 'how'? There is yet any international law to regulate virtual currencies for purpose of uniformity. It is noted that each country regards virtual currency differently and regulations are constantly evolving. This paper suggests for future studies to explore on the stance of other governments for precedent. It is acknowledged the importance to understand key characteristics relating to monetisation, however, there is no legislation yet in Malaysia to be used or referred to determine the terminology of virtual currency.

The traditional questions relating to regulatory authorisation, issuers' liabilities and insolvency remain vague. The issue on cross border and jurisdictional application and the potential of virtual currency is undoubtedly confusing. As such, it is proposes to conduct a study on the usage of virtual currency and its key points and relate the important factors associated with it in terms of legal and economic requirements. It is hoped that the findings could be an indication to the authorities of the importance and necessity for regulatory changes in the financial services industry. There is an increasing expectation for regulators worldwide to provide security for virtual currency use and storage including clarity on the laws. Most importantly is to find the adaptable solutions to strike a balance between the protection of interest of the market integrity and consumer protection.

The next question to look at is how to regulate effectively in a practical manner suitable to curb illegal activities yet innovative to encourage the advance of technology.

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