Investigating Cryptocurrency as Shariʿah-Compliant Money by Critically Analyzing Arguments of the Opponent Scholars

Author: **Samina Naz**

PhD Scholar, Department of Economics,
University of Peshawar
samina.irfanq@gmail.com

Co-Author: **Dr. Naila Nazir**

Associate Professor, Department of Economics,
University of Peshawar
nailauom@gmail.com

Abstract

This paper aims to investigate whether cryptocurrency serves as Shariʿah-compliant money through critically analyzing arguments of the opponent Islamic scholars. Generally, something is referred to as money if it is used as a medium of exchange, unit of account, and store of value. Cryptocurrency such as bitcoin is *māl* because it is a valuable thing, it has uses and benefits, and it can be stored and presented electronically. Presently, it unsatisfactorily meets the functions of money such as medium of exchange, unit of account, and store of value. Bitcoin also fails to fulfill *maqāṣid al-shariʿah* at this stage. It must not necessarily have an intrinsic value. Volatility, speculation, and chance of being used in illegal activities are external factors and have no direct concern with regards to determining something as a valid currency.

Key Words: Cryptocurrency, Shariʿah, Medium of exchange, Unit of account, Store of value, *Gharar*, *Maysir*

1. Introduction

Cryptocurrencies are presently becoming popular all over the world. Bitcoin, a cryptocurrency which emerged in 2009, is a peer-to-peer electronic cash system which allows online payment from one person to another without going through a financial institution.[1] Although the technology behind it is highly advanced and innovative, it did not attract much attention in the beginning. Bitcoin became the first non-regulated, highly secure global currency that is independent of central authority by using distributed ledger techniques and cryptography. Lately, it has attracted a lot of interest, with its price increasing by about 1900% in 2017, rising from about $1000 in January 2017 to nearly $20,000 in December 2017.[2] Other similar crypto currencies were created and launched as a result of the remarkable success of bitcoin. Businesses accepting payment in bitcoin increased from 8,207 on 3 January 2017 to 11,291 on 19 December 2017.[3]

Being a decentralized currency, bitcoin is indeed a threat to the survival of the banking industry and national fiat currencies. Although cryptocurrency is a new fintech product, some countries are resisting it while some have a positive approach towards it. Like much of the Western world, the Muslim world is also undecided regarding the legality of bitcoin. Moreover, we cannot negate advantages of the block chain-based cryptocurrency. However, before its adoption, its legitimacy and adaptability issues should be addressed in Muslim-majority countries. This paper aims to identify and critically evaluate the factors due to which cryptocurrency is being opposed by the Islamic scholars and institutions. Being the first decentralized cryptocurrency, this research will focus on bitcoin.

2. Literature Review

A number of scholars declared that bitcoin is impermissible in Shariʿah. Since bitcoin has no intrinsic value and is not issued or controlled by a central authority, it is easy to use in illegal activities. It was also concluded that bitcoin contributes towards socioeconomic injustice as it has the elements of g*harar* (uncertainty) and *maysir* (gambling), thus jeopardizing the *maqāṣid* (goals) of Shariʿah[4]. Similar reasons for impermissibility are also identified by the other authors.[5] They reasoned that a cryptocurrency like bitcoin does not have any intrinsic value, has no physical form as it exists digitally, and is not backed by any other commodity like gold. In case of any suspicious activity, it is difficult to trace the real account holder because the account holders of bitcoin are unknown. Therefore, the paper concluded, bitcoin transactions have high uncertainty. It has been identified that the anonymity in the bitcoin system enable the account holders of bitcoin to carry out illegal transactions and online gambling activities.[6] Another scholar and Shariʿah consultant, Mufti Faraz Adam, considers bitcoin to be a non-Shariʿah-compliant money. He argued that that bitcoin is *māl* (wealth) and has *taqawwum* (legal value) but it does not possess *thamaniyyah* (currency attributes), so it fails to fulfil the role of money as described by Shariʿah. Moreover, bitcoin fails to fulfil the principle of preservation of wealth in Shariʿah.[7] Nurhisam[8] declared that bitcoin is not a legal currency. He argued that there is uncertainty in its nature and it has a high chance to be used in criminal activities such as money laundering, theft, and fraud, as there is no central authority taking its responsibility.

Other than these academic scholars, some Islamic religious scholars also considered cryptocurrency as impermissible for somehow similar reasons. Mufti Muhammed Salman Mazahiri stated in his book that bitcoin is illegitimate because it has no physical form and is independent of central authority.[9] According to him, it is highly volatile and therefore subject to gambling. Egypt's top Imam, Mufti Shawki Allam also declared bitcoin as illegitimate. The Grand Mufti stated that cryptocurrency is subject to lack of knowledge, fraudulence, cheating, and is independent of central authority, so it causes harms to individuals, groups, and institutions.[10] Prof. Dr. Monzer Kahf of the Qatar Faculty of Islamic Studies gave his argument that bitcoin is a highly speculative tool because of its volatile nature and it is not a currency. He argued that only a government can declare something as money, after which this money becomes a legal tender, and every person in the country accepts it for buying and selling of goods and services and for settlement of other obligations, such as payment of taxes and debts. From Shariʿah perspective, this legality is necessary for anything to be considered as money and to serve as a medium of exchange and store of value, which bitcoin fails to fulfil. It was concluded that on one hand bitcoin and other cryptocurrencies are not money as they are not believed to be legal tender, and on the other hand, they are not assets. Therefore, owing, buying, selling, and trading bitcoin is not permissible.[11] According to Magdy Ashour, Counsellor to the Grand Mufti of Egypt, bitcoin is prohibited because of the risks it holds. Moreover, he said, it is being used as a tool to fund terrorism, and is not guaranteed because it has no monetary cover from the Central Bank of Egypt. Therefore, he declared, one should avoid its transaction. It is forbidden because it has no set rules, which is considered as a contract annulment in Islam.[12] In Turkey, the Directorate of Religious Affairs has declared virtual currency as illegitimate, as it is independent of state's supervision and auditing and is, therefore, mostly used in illegal activities such as money laundering. It is also subject to speculation.[13] Saudi Arabia's popular cleric, Assim al-Hakeem, declared bitcoin as forbidden under Islamic law for the reason that it is ambiguous and facilitates money laundering.[14] The Fatwa Center of Palestine declared bitcoin and other cryptocurrencies as prohibited in Islam because it is unreliable and untrustworthy as its issuer is unknown and independent of central authority. According to them, bitcoin is a type of gambling and is subject to high speculation.[15]

Various Islamic institutions also declared bitcoin impermissible because it is not a legal tender. Naz and Nazir[16] obtained fatawa through email from about six national and international madrasas, all of whom declared cryptocurrency as illegitimate. Jamia Uloom-ul-Islamia and Jamia Binoria, Karachi declared that using bitcoin is illegitimate because the government did not declare it as a currency. According to Mufti Muhammad Hussain Khalil Khail of Jamia Tur Rasheed, Karachi and Mufti Abdul Qayyum Khan Hazarvi of Jamia Islamia Minhaj-ul-Quran, cryptocurrency is permissible in countries where the government has legalized it while it is illegitimate in countries where the government has banned it.

3. Research Methodology

This research focused on qualitative research method because the purpose of qualitative research is to have a deep insight of the specific situation. This research method mainly focused to explore related literature in journals, research articles, reports and related websites.

4. Discussion

Table 1: Arguments for impermissibility of cryptocurrency

Author(s)	Country	Arguments against cryptocurrency
Prof. Ahamed Kameel Mydin Meera	Malaysia	Not backed by real assets, no intrinsic value, *gharar*, *maysir*, contributes towards socioeconomic injustice
Nashirah Abu Bakar, Sofian Rosbi, Kiyotaka Uzaki	Malaysia	No physical existence, not backed by real assets, anonymity, uncertainty
Mufti Faraz Adam	United Kingdom	Does not fulfil the principle of preservation of wealth (*maqāṣid al-shariʿah*)
Luqman Nurhisam	Indonesia	Uncertainty, independent of central authority, used in illegal activities
Grand Mufti Imam Sheikh Shawki Allam	Egypt	Independent of state, ambiguous, chance of fraudulence, cheating
Mufti Muhammed Salman Mazahiri	India	No physical form, independent of central authority, volatility, gambling
Jamia Uloom-ul-Islamia	Pakistan	Not legal tender
Jamia Binoria, Karachi	Pakistan	Not legal tender
Mufti Muhammad Hussain Khalil Khail	Pakistan	Not legal tender
Mufti Abdul Qayyum Khan Hazarvi	Pakistan	Not legal tender
Dr. Magdy Ashour	Egypt	Independent of state, finances illegal activities such as terrorism
Directorate of Religious Affairs	Turkey	Independent of state, used in illegal activities such as money laundering, speculation
Shaykh Assim al-Hakeem	Saudi Arabia	Ambiguous, used in illegal activities such as money laundering
Darul Uloom Deoband	India	Bitcoin exists only in computers, it is fictitious money not real money
Prof. Monzer Kahf	Qatar	Volatility, speculation, not legal tender
Mufti Taqi Usmani	Pakistan	Not a currency, volatility, speculation

Shaykh Haitham al-Haddad	United Kingdom	Not backed by anything, independent of state, not legal tender, used in illegal activities
Fatwa Center of Palestine	Palestine	Uncertainty, independent of state, speculation, gambling
Sheikh Imran Hosein	Republic of Trinidad and Tobago	No intrinsic value

Source: Compiled by the researcher

Table 1 shows the factors identified by Islamic scholars and institutions for declaring bitcoin and other similar cryptocurrencies as illegitimate. These factors are as follows:

- It is not valid money
- It is not backed by real assets
- It has no intrinsic value
- It has no central authority
- It is not a legal tender
- It is used in illegal activities
- It is highly volatile and has speculative nature
- It involves *gharar* and *maysir*
- It jeopardizes *maqāṣid al-shariʿah*

4.1 It is not valid money

Anything that wants to be considered money under Shariʿah must satisfy the conditions of *māl*.

Māl

The fundamental condition for money is that it should have the status of *māl*. *Māl* refers to something which has value and can be compensated if it is destroyed. It is acceptable in trade and people do not behave as if it is valueless, as al-Suyuti cited the definition of *māl* from Imam al-Shāfiʻī. The majority of the scholars viewed *māl* as everything which has value and can be compensated if it is destroyed.[17] Therefore, *māl* is not limited to tangible things, but it can also be intangible. According to Usmani[18], if non-tangible things become valuable according to custom, such as rights and benefits, then they are treated as *māl*. Another scholar, Rahmani[19] argued that storability, not tangibility, is a core condition for identifying something as *māl*. He also explained that something can be considered as *māl* only if it is permissible in Shariʿah (*mutaqawwum*), has some benefits and uses, is capable of being owned and possessed, and custom treats and determines it as *māl*.

Mutaqawwum

Mutaqawwum is defined as something which is present and stored and is permissible to use in Shariʿah. It is a core condition to determine something as *māl*[17].

Customary practice (*ʿurf*)

When the texts of Shariʿah do not give any judgment in explicit term, *ʿurf*, or customary practice, is considered an important source of ruling. According to the jurists of all four main schools of Islamic law, something is considered as *māl* if it becomes valuable due to the custom and acceptability of the people.

Legal criterion of money or currency in Shariʿah

Usmani[18] identified that something may be referred to as money if it is used as a unit of account, medium of exchange, and store of value.

Cryptocurrency as *māl* and currency

By discussing the criteria and definition of *māl* and money, cryptocurrencies such as bitcoin are treated as a valuable thing among people, which is reflected by its market price (currently, one bitcoin equals about US$50,000). Bitcoin has many uses and benefits as a number of products can be purchased using bitcoin. As Kelion[20] stated, bitcoin can be used to purchase a "beer in Berlin, order pizza in Amsterdam, hire a taxi in Edinburgh, schedule a dental check-up in Ljubljana, do a degree in Nicosia, purchase Alpaca socks from Massachusetts - or even blast off into space with Virgin Galactic." Moreover, bitcoin has value, because users accepting it as payment have trust to use it elsewhere to purchase something they need. Anything can serve as a currency if the people using it maintain trust in its value. For example, among some Native American tribes, wampum, which were beads made from shells, served as a currency only because the people trusted it. In a similar way, bitcoin can serve as money today.[21] In addition, bitcoin is also capable of being owned and possessed electronically. *Mutaqawwum*, a core condition for *māl*, is also satisfied by bitcoin because it is present and stored electronically in specific devices[22]. In addition, according to one famous legal maxim used by jurists, everything is permissible unless we find it clearly contradictory to Shariʿah principles. Adam[23], Abu-Bakar[24], Paracha[25], and Darul Uloom Zakariyya, South Africa declared bitcoin as a *māl*.

Bitcoin is accepted as a medium of exchange by a substantial number of people, with about 11,291 businesses accepting bitcoin payment worldwide. Valdes-Benavides and Hernandez-Verme[26]; Sorge[27]; Yermack[28]; Krawisz[29] also said that bitcoin meets the criteria required of a medium of exchange. Conversely, there are scholars[30] [31]who say that bitcoin fails to fulfil the function of a medium of exchange because it is accepted for a limited number of goods. Moreover, they argue that its high volatility diminishes its ability to serve as a medium of exchange. Baur and others[32] ; Johnson[33] identified that only a small number of users use bitcoin as a medium of exchange and a majority of users hold bitcoin for speculative purposes.

Bitcoin also serves as a unit of account, as many websites and stores which accept payment in bitcoin express their prices in bitcoin. Valdes-Benavides and Hernandez-Verme[34], Sorge[35], and Krawisz[36] stated that bitcoin fulfills the unit of account function of money. However, Baur et al.[37]; Yermack[38] argued that bitcoin does not meet the criteria of a unit of account as volatility diminishes its ability to serve as a unit of account. A majority of merchants who accept bitcoin as payment express prices in normal currencies such as the United States dollar, Japanese yen, and euro to minimize the exchange rate risk, as bitcoin's price is highly volatile[39] [40]. Moreover, because of the high volatility, venders must recalculate bitcoin prices frequently, which confuse both sellers and buyers. Furthermore, price decisions by the seller are complicated as bitcoin is traded at different prices on different exchanges. Another difficulty to use bitcoin as a unit of account is that merchants are required to post prices for many goods up to four or five decimal places, because of the high cost of one bitcoin relative to the price of ordinary goods.[41]

Although the price of bitcoin is highly volatile in terms of fiat currency, the store of value function should be viewed in terms of its own. Otherwise, the price of gold and silver also fluctuates in terms of fiat money. Paracha[42] advocates that bitcoin fulfills the store of value function of money because one bitcoin will remain one bitcoin over time. Valdes-Benavides and Hernandez-Verme[43] and Krawisz[44] also stated that bitcoin performs the function of store of value. Contrarily, a number of studies highlighted that volatility, hacking attacks, and other security problems diminish bitcoin's ability to perform the store of value function[45] [46] [47] [48]. In the past, fiat currencies have also experienced extreme volatility. Therefore, on the basis of volatility alone, something cannot be disproved as a currency. For example, the Zambian kwacha depreciated 42% against the United States dollar in 2015[49], the Brazilian real fell 33% against the dollar in 2015[50], and the Mozambican metical depreciated 29% against the dollar in 2015[51].

4.2 It has no central authority

Bitcoin transaction is based on blockchain technology, which is more transparent and secure than a centralized system employed by a central bank or state. Moreover, in the past, some central banks and governments have destroyed the wealth through inflation. For example, Zimbabwe's annual inflation rate was 89.7 sextillion percent (89,700,000,000,000,000,000,000%) in 2008[52], Indonesia's average inflation rate was 58.0% in 1998, while Yugoslavia, Hungary, Greece, and Weimar Germany faced hyperinflations in 1994, 1946, 1944, and 1923, respectively. Preservation and protection of wealth (*maqāṣid al-shariʿah*), one of the major concerns in Shariʿah regarding money, can be attained through bitcoin. The value of bitcoin can never be inflated because the total supply of bitcoins is limited at 21 million, as it will be mined at diminishing returns roughly every four years. Thus, bitcoin is regarded as being protected from inflation originating from government restrictions.[53] [54] On the other hand, the nature of fiat money is inflationary, because it is born of *ribā*.[55] Accordingly, the lack of central authority can be bitcoin's strength, as in the case of Venezuela and Iran. In Venezuela, the inflation rate could reach 10 billion percent in 2019. Therefore, people have turned to bitcoin and other cryptocurrencies as a more reliable store of value. The use of bitcoin was almost zero in mid-2018, which rose to about 120 billion Venezuelan bolívar in August 2019.[56] In the case of Iran, the downfall of the Iranian rial accelerated due to sanctions imposed by the United States, so the people turned towards cryptocurrency to protect their wealth. As the Chairman of the Economic Commission of the Parliament, Mohammad Reza Pourebrahimi stated: "More than 2.5 billion dollars have been sent out of the country for buying digital currencies." Moreover, Iran is also thinking to transact with Russia in cryptocurrencies to evade the United States dollar and sanctions. As Iran is cut off from the international banking community, bitcoin seems more attractive. It is faster and more secure than sending money through the interbank messaging platform, and is swift as it is censorship-resistant and has no national borders and walls.[57]

Contrary to this, cryptocurrency is opposed for jeopardizing *maqāṣid al-shariʿah* by Adam[58] and Meera.[59] Because cryptocurrencies are highly volatile in terms of their value, the wealth of the public is not protected in this way. In addition, there is a possibility of fraud because cryptocurrency transactions are not monitored and validated by any responsible authority

4.3 It is not legal tender

Anything gets acceptability among people in jurisdiction automatically when a government makes it a legal tender. However, it is not necessary to have the status of legal tender for something to qualify as money. In Shariʿah, acceptability by the people is the main criterion for something to be money, whether it comes through a widespread voluntary acceptance of the people or by forcing it upon them through laws.

4.4 It is not backed by any asset

According to the heterodox Austrian School of economic thought, currency must be backed by assets such as gold, silver, or any other commodity.[60] Assets-backed currency has certain advantages for economy, such as the economy may be free from inflation. However, there are practical issues regarding implementing such a system now a days. According to Paracha[61], backing currency by assets such as gold is not feasible.

With further advancements in the crypto world, attempts are being made to back cryptocurrency by assets. For example, OneGram is a cryptocurrency backed by gold. A small transaction fee, related to each transaction of OneGram tokens, is reinvested to purchase more gold, which ultimately increases the amount of gold that backs each OneGram coin. The petro is another example of oil-backed cryptocurrency, being launched by the government of Venezuela.

4.5 It has no intrinsic value

Although there are evidences regarding the usage of currencies with intrinsic value in Islamic history, these currencies had a greater face value than its intrinsic value (e.g. fulus). Paper money and shells have also been used as currency which have no intrinsic value. Thus, for anything to become money, it must not necessarily have its own intrinsic value. *ʿUrf* and *taʿāmul* by people are the main criteria for money in Shariʿah. *Taʿāmul* is synonymous with *ʿurf*, and refers to common usage. When the usage of something becomes dominant and becomes customary in dealings and affairs, *taʿāmul* is established[62].

4.6 Used in illegal activities

Generally, anything lawful does not become unlawful merely for being used for an unlawful purpose. It is important to note that fiat money has also been used for illegal purposes, such as money laundering and fraud. Therefore, it is an external factor which has no direct effect on the Islamic legal criteria for money.

4.7 It is highly volatile and has speculative nature

A number of scholars, such as [63][64] [65] [66] claimed that bitcoin is mainly used as speculative investment. On the basis of high volatility and speculation, some scholars claim that bitcoin and other cryptocurrencies are impermissible. However, speculation has no direct effect with regards to determining something as a valid currency, because it is an external factor. Like all other assets, such as gold, silver, and fiat money, bitcoin's prices are based on the rule of demand and supply. Therefore, bitcoin and other cryptocurrencies cannot be declared impermissible simply on the basis of the speculation they experience, because gold, silver, and fiat currencies also experience speculation, and thus would be ruled impermissible if the same principle was applied to them.

4.8 Involvement of *gharar* and *maysir* in cryptocurrency

Islamic finance prohibits any activities that engage *gharar* or *maysir*. *Maysir* means to attain something through no effort. Gambling is prohibited because it can result in the taking away of one's property without any lawful exchange, it can cause frustration and annoyance instigated by losing, and it can lead to bankruptcy as it can be compulsive and addictive[67]. *Gharar* is referred to as risk[68], danger[69], and a transaction corresponding to a "zero-sum game with uncertain payoffs".[70] Moreover, *gharar* sale is the sale of probable items whose characteristics or existence are not certain due to the risky nature which makes it similar to gambling.[71]

According to Paracha[72], the prices of cryptocurrencies increase and decrease according to their demand and supply. If a person purchases something to earn profit by hoping its price would increase, there is an equal chance for loss as well. Therefore, this not impermissible in Shariʿah.

Moreover, Bakar and Rosbi [73]and Meera[74] argued that the bitcoin system involves high uncertainty (*gharar*) because the inventor of bitcoin is unknown, the system is vulnerable to hacking activities, the value of bitcoin is not backed by a tangible asset or government law, the value of bitcoin is unstable, and bitcoin account holders are anonymous.

More in-depth research is required to reach the conclusion about whether bitcoin involves elements of *gharar* and *maysir*.

5. Summary and Conclusions

This paper reviewed the reasons for impermissibility presented by a number of scholars and institutions. The paper identified that some of the reasons of impermissibility are:

- It is not valid money
- It is not backed by any assets
- It has no intrinsic value
- It has no central authority
- It is not legal tender
- It is used in illegal activities
- It is highly volatile and has speculative nature
- It involves *gharar* and *maysir*
- It jeopardizes *maqāṣid al-shariʿah*

In Shariʿah, money must meet the criteria of *māl*. Something can be considered as *māl* if it is permissible in Shariʿah (*mutaqawwum*), it has some benefits and uses, and is capable of being owned and possessed, and something would be automatically considered as *māl* if custom treats and determines it as *māl*. Cryptocurrency such as bitcoin is *māl* because it is a valuable thing, it has uses and benefits, and it can be stored and presented electronically. Something is referred to as money if it is used as a medium of exchange, unit of account, and store of value. Presently, it unsatisfactorily meets the functions of money such as medium of exchange, unit of account, and store of value.

Though there is no central authority, it fails to fulfil the protection and preservation of the wealth principle of Shariʿah. It must not necessarily have an intrinsic value. Volatility, speculation, and chance of being used in illegal activities are external factors and have no direct concern with regards to determining something as valid currency.

References

[1] Nakamoto, Satoshi. "Bitcoin: A peer-to-peer electronic cash system." *Decentralized Business Review* (2008): 21260.

[2] Higgins, Stan. “From $900 to $20,000: Bitcoin’s Historic 2017 Price Run Revisited,” *Coindesk*, December 29, 2017, https://www.coindesk.com/900-20000-bitcoins-historic-2017-price-run-revisited

[3] Thompson, Patrick. “Bitcoin Adoption by Businesses in 2017,” *Cointelegraph*, January 1, 2018, https://cointelegraph.com/news/bitcoin-adoption-by-businesses-in-2017

[4] Meera, Ahmad Kameel Mydin. "Cryptocurrencies from islamic perspectives: The case of bitcoin." *Buletin Ekonomi Moneter Dan Perbankan* 20, no. 4 (2018): 475-492.

[5] Bakar, Nashirah Abu, Sofian Rosbi, and Kiyotaka Uzaki. "Cryptocurrency framework diagnostics from Islamic finance perspective: a new insight of Bitcoin system transaction." *International Journal of Management Science and Business Administration* 4, no. 1 (2017): 19-28.

[6] Bakar, Nashirah Abu, and Sofian Rosbi. "Robust framework diagnostics of Blockchain for bitcoin transaction system: A technical analysis from Islamic Financial Technology (i-FinTech) perspective." *International Journal of Business and Management* 2, no. 3 (2018): 22-29.

[7] Adam, Mufti Faraz. "Bitcoin: Shariʿah compliant." *Amanah Finance Consultancy* 2017 (2017): 1-54.

[8] Nurhisam, Luqman. "Bitcoin: Islamic law perspective." *QIJIS (Qudus International Journal of Islamic Studies)* 5, no. 2 (2017).

[9] Mazahiri, Mufti Salman. “بٹ کوئن کی حقیقت اور اس کا شرعی حکم. (in Urdu). *International Centre for Education in Islamic Finance* (2018). Available at https://ia800105.us.archive.org/0/items/BestUrduBooks218B/BITCOIN_KI_HAQIQAT_AUR_USKA_SHARI_HUKUM.pdf

[10] BBC News. “Egypt's Grand Mufti endorses Bitcoin trading ban,” Januray 2, 2018, https://www.bbc.com/news/world-middle-east-42541270

[11] Kahf, Monzer. “Fatawa money, currencies, gold, sarf 2017” (2017). Available at http://monzer.kahf.com/fatawa/FATAWA_CURRENCIES_GOLD_COMMODITIES.pdf

[12] Egypt Today. “Bitcoin is forbidden in Islam: Mufti's counselor,” December 31, 2017, https://www.egypttoday.com/Article/1/38992/Bitcoin-is-forbidden-in-Islam-Mufti-s-counsellor

[13] Hurriyet Daily News. “Turkey’s top religious body declares Bitcoin ‘inappropriate’,” November 29, 2017, https://www.hurriyetdailynews.com/turkeys-top-religious-body-declares-bitcoin-inappropriate-123243

[14] The New Arab. “Digital currency bitcoin 'forbidden in Islam', rules Saudi cleric,” December 6, 2017, https://english.alaraby.co.uk/opinion/digital-currency-bitcoin-forbidden-islam-rules-saudi-cleric

[15] Abu-Bakar, Mufti Muhammad. "Shariʿah analysis of bitcoin, cryptocurrency, and blockchain." *Shariʿah Analysis in Light of Fatwas and Scholars’ Opinions* (2018).

[16] Naz, Samina, and Naila Nazir. “Exploring Acceptability and Legitimacy of Bitcoin in Islamic Financial System.” *Journal of Islamic Civilization and Culture 1* no.1 (2018): 35-53.

[17] Az-Zuhaili, Wahbah. "Fiqih Islam wa adillatuhu, terj." *Abdul Hayyie al-Kattani, dkk. Jakarta (ID): Gema Insani* (2011).

[18] Usmani, Mufti Taqi. “*Fiqh al-Buyu*.” (2015) Damascus, Syria: Dar al-Qalam.

[19] Rahmani, Khalid Saifullah. “Jadeed Fiqhi Masail.” (2010). Zam Zam Publishers, Karachi.

[20] Kelion, Leo. “Bitcoin: Experts clash over the crypto-currency,” *BBC News*, November 28, 2013, https://www.bbc.com/news/technology-25130261

[21] Kelly, Brian. *The Bitcoin big bang: how alternative currencies are about to change the world*. John Wiley & Sons, 2014.

[22] Paracha, Muhammad Owais.” ورچوئل کرنسیوں کی شرعی حیثیت (in Urdu)”. (2018) Jamiatur Rasheed Karachi. Pakistan.

[23] Adam, Mufti Faraz. "Bitcoin: Shariʿah compliant." *Amanah Finance Consultancy* 2017 (2017): 1-54.

[24] Abu-Bakar, Mufti Muhammad. "Shariʿah analysis of bitcoin, cryptocurrency, and blockchain." *Shariʿah Analysis in Light of Fatwas and Scholars’ Opinions* (2018).

[25] Paracha, Muhammad Owais.” ورچوئل کرنسیوں کی شرعی حیثیت(in Urdu)”. (2018) Jamiatur Rasheed Karachi. Pakistan.

[26] Valdes-Benavides, Ruy Alberto, and Paula Lourdes Hernandez-Verme. "Virtual currencies, micropayments and monetary policy: Where are we coming from and where does the industry stand?." In *Handbook on 3D3C Platforms*, pp. 123-159. Springer, Cham, 2016.

[27] Sorge, Artus Krohn-Grimberghe Christoph. "Practical Aspects of the Bitcoin System." *arXiv preprint arXiv:1308.6760* (2013).

[28] Yermack, David. "Is Bitcoin a real currency? An economic appraisal." In *Handbook of digital currency*, pp. 31-43. Academic Press, 2015.

[29] Krawisz, Daniel. “Bitcoin as a Store of Value, Unit of Account, and Medium of Exchange*,”* January 12, 2015. https://nakamotoinstitute.org/mempool/bitcoin-as-a-store-of-value-unit-of-account-and-medium-of-exchange/

[30] Lo, Stephanie, and J. Christina Wang. "Bitcoin as money? Current policy perspectives." *Federal Reserve Bank of Boston* (2014).Retrieved from https://bitcoinwallets.com/bitcoin-as-money.pdf

[31] Wolla, Scott A. "Bitcoin: Money or Financial Investment?." *Page One Economics®* (2018).

[32] Baur, Aaron W., Julian Bühler, Markus Bick, and Charlotte S. Bonorden. "Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of bitcoin and co." In *Conference on e-Business, e-Services and e-Society*, pp. 63-80. Springer, Cham, 2015.

[33] Johnson, Grahame, and Lukasz Pomorski. "Briefing on digital currencies." *Briefing to the Senate of Canada* (2014). Retrieved from https://www.bankofcanada.ca/wp-content/uploads/2014/04/Senate_statement.pdf

[34] Valdes-Benavides, Ruy Alberto, and Paula Lourdes Hernandez-Verme. "Virtual currencies, micropayments and monetary policy: Where are we coming from and where does the industry stand?." In *Handbook on 3D3C Platforms*, pp. 123-159. Springer, Cham, 2016.

[35] Sorge, Artus Krohn-Grimberghe Christoph. "Practical Aspects of the Bitcoin System." *arXiv preprint arXiv:1308.6760* (2013).

[36] Krawisz, Daniel. "Bitcoin as a Store of Value, Unit of Account, and Medium of Exchange*,"* January 12, 2015. https://nakamotoinstitute.org/mempool/bitcoin-as-a-store-of-value-unit-of-account-and-medium-of-exchange/

[37] Baur, Aaron W., Julian Bühler, Markus Bick, and Charlotte S. Bonorden. "Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of bitcoin and co." In *Conference on e-Business, e-Services and e-Society*, pp. 63-80. Springer, Cham, 2015.

[38] Yermack, David. "Is Bitcoin a real currency? An economic appraisal." In *Handbook of digital currency*, pp. 31-43. Academic Press, 2015.

[39] Lo, Stephanie, and J. Christina Wang. "Bitcoin as money? Current policy perspectives." *Federal Reserve Bank of Boston* (2014).Retrieved from https://bitcoinwallets.com/bitcoin-as-money.pdf

[40] Johnson, Grahame, and Lukasz Pomorski. "Briefing on digital currencies." *Briefing to the Senate of Canada* (2014). Retrieved from https://www.bankofcanada.ca/wp-content/uploads/2014/04/Senate_statement.pdf

[41] Wolla, Scott A. "Bitcoin: Money or Financial Investment?." *Page One Economics®* (2018).

[42] Paracha, Muhammad Owais. " ورچوئل کرنسیوں کی شرعی حیثیت (in Urdu)". (2018) Jamiatur Rasheed Karachi. Pakistan

[43] Valdes-Benavides, Ruy Alberto, and Paula Lourdes Hernandez-Verme. "Virtual currencies, micropayments and monetary policy: Where are we coming from and where does the industry stand?." In *Handbook on 3D3C Platforms*, pp. 123-159. Springer, Cham, 2016.

[44] Krawisz, Daniel. "Bitcoin as a Store of Value, Unit of Account, and Medium of Exchange*,"* January 12, 2015. https://nakamotoinstitute.org/mempool/bitcoin-as-a-store-of-value-unit-of-account-and-medium-of-exchange/

[45] Wolla, Scott A. "Bitcoin: Money or Financial Investment?." *Page One Economics®* (2018).

[46] Baur, Aaron W., Julian Bühler, Markus Bick, and Charlotte S. Bonorden. "Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of bitcoin and co." In *Conference on e-Business, e-Services and e-Society*, pp. 63-80. Springer, Cham, 2015.

[47] Johnson, Grahame, and Lukasz Pomorski. "Briefing on digital currencies." *Briefing to the Senate of Canada* (2014). Retrieved from https://www.bankofcanada.ca/wp-content/uploads/2014/04/Senate_statement.pdf

[48] Claeys, Grégory, Maria Demertzis, and Konstantinos Efstathiou. *Cryptocurrencies and monetary policy*. No. 2018/10. Bruegel Policy Contribution, 2018.

[49] Gaffey, Conor. "Why Zambia's Kwacha is the World's Best-Performing Currency," *News Week*, April 15, 2016, https://www.newsweek.com/why-zambias-kwacha-worlds-best-performing-currency-448266

[50] BBC News. "Brazilian real weakens to nearly 4 reais to the dollar," December 30, 2015, https://www.bbc.com/news/business-35202212

[51] Mohammad, Omar. "Mozambique has suffered a brutal drop in its currency," *Qartz Africa*, October 30, 2015, https://qz.com/africa/537510/mozambique-has-suffered-a-brutal-drop-in-its-currency/

[52] Hanke, Steve. "Zimbabwe Hyperinflates Again, Entering the Record Books for A Second Time in Less than a Decade," *Forbes*, October 28, 2017, https://www.forbes.com/sites/stevehanke/2017/10/28/zimbabwe-hyperinflates-again-entering-the-record-books-for-a-second-time-in-less-than-a-decade/#6d51ac743eed

[53] King, Ritchie. S. "By reading this article, you"re mining bitcoins," *Quartz*, December 17, 2013, http://qz.com/154877/by-reading-this-page-you-are-mining-bitcoins/

[54] Magro, Pablo. "What Greece can learn from bitcoin adoption in Latin America," *International Business time*, July 16, 2016, http://www.ibtimes.co.uk/what-greece-can-learn-bitcoinadoption-latin-america-1511183

[55] Evans, Charles. "Bitcoin in Islamic banking and finance." *Journal of Islamic Banking and Finance* 3, no. 1 (2015): 1-11.

[56] Reilly, Caitlin. "Venezuelans use cryptocurrency to bypass corruption, inflation," *Roll Call*, September 10, 2019, https://www.rollcall.com/news/policy/venezuelans-use-cryptocurrency-to-bypass-corruption-inflation

[57] O'Hagan, Brian. "How Donald Trump is helping Bitcoin grow in Iran," *Heckernoon*, July 26, 2018, https://hackernoon.com/how-donald-trump-is-helping-bitcoin-grow-in-iran-331ee7445bd

[58] Adam, Mufti Faraz. "Bitcoin: Shariʿah compliant." *Amanah Finance Consultancy* 2017 (2017): 1-54

[59] Meera, Ahmad Kameel Mydin. "Cryptocurrencies from islamic perspectives: The case of bitcoin." *Buletin Ekonomi Moneter Dan Perbankan* 20, no. 4 (2018): 475-492.

[60] Javaid, Omar. "Historical and Ideological Peculiarity of the Monetary Institutions: Islamic and Austrian School's Perspectives." *Islamic Monetary Economics and Institutions* (2019): 65-85.

[61] Paracha, Muhammad Owais. " ورچوئل کرنسیوں کی شرعی حیثیت (in Urdu)". (2018) Jamiatur Rasheed Karachi. Pakistan

[62] Adam, Mufti Faraz. "Bitcoin: Shariʿah compliant." *Amanah Finance Consultancy* 2017 (2017): 1-54

[63] Yermack, David. "Is Bitcoin a real currency? An economic appraisal." In *Handbook of digital currency*, pp. 31-43. Academic Press, 2015.

[64] Wolla, Scott A. "Bitcoin: Money or Financial Investment?." *Page One Economics*® (2018).

[65] Baur, Aaron W., Julian Bühler, Markus Bick, and Charlotte S. Bonorden. "Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of bitcoin and co." In *Conference on e-Business, e-Services and e-Society*, pp. 63-80. Springer, Cham, 2015.

[66] Glaser, Florian, Kai Zimmermann, Martin Haferkorn, Moritz Christian Weber, and Michael Siering. "Bitcoin-asset or currency? Revealing users' hidden intentions." *Revealing Users' Hidden Intentions (April 15, 2014). ECIS* (2014).

[67] Al-Qaradawi, Yusuf. "The lawful and the prohibited in Islam (K. El-Helbawy, MM Siddiqui & S. Shukry, Trans.)." *Plainfield, IN: American Trust Publications* (1999).

[68] El-Gamal, Mahmoud. "An economic explication of the prohibition of gharar in classical Islamic jurisprudence." *Islamic Economic Studies* 8, no. 2 (2001).

[69] Al-Zuhayli, Wahbah. "Financial transactions in Islamic jurisprudence, Vol. 1." *Damascus, Syria: Dar al-Fikr* (2003).

[70] Al-Suwailem, Sami. "Towards an objective measure of gharar in exchange." *Islamic Economic Studies* 7, no. 1 (2000).

[71] Al-Zuhayli, Wahbah. "Financial transactions in Islamic jurisprudence, Vol. 1." *Damascus, Syria: Dar al-Fikr* (2003).

[72] Paracha, Muhammad Owais. " ورچوئل کرنسیوں کی شرعی حیثیت (in Urdu)". (2018) Jamiatur Rasheed Karachi. Pakistan

[73] Bakar, Nashirah Abu, and Sofian Rosbi. "Robust framework diagnostics of Blockchain for bitcoin transaction system: A technical analysis from Islamic Financial Technology (i-FinTech) perspective." *International Journal of Business and Management* 2, no. 3 (2018): 22-29.

[74] Meera, Ahmad Kameel Mydin. "Cryptocurrencies from islamic perspectives: The case of bitcoin." *Buletin Ekonomi Moneter Dan Perbankan* 20, no. 4 (2018): 475-492.