

The Impacts Of Crypto Currencies On The International Payment Systems

Fatima Qudrat Malik

Istanbul Aydin University

Abstract

Background

The primary aim of this research article is to examine the effect of cryptocurrencies on international payment systems. The research has discussed the data and information about the benefits and risks associated with cryptocurrencies and the risk factors associated with the emergence of cryptocurrencies to financial institutions have been comprehensively analyzed and evaluated in this research.

Materials and Methods

The approach used for this paradigm is Interpretivism also known as constructivism or qualitative research and falls under the category of exploratory research. The data collection method used is one-to-one interviews through emails and the interviews conducted are unstructured interviews. Ten interviews have been conducted from the Faculty of banking and finance at Istanbul Aydin University using the purposive sampling technique.

Results

The study has discussed the positive and negative effects of cryptocurrencies. Some of the major positive impacts of cryptocurrencies like Bitcoin and Libra on the international payment systems is the elimination of the need of following central regulations for making international payments, anonymity, and adding value to the international payment systems because of the inflation rate, demonetization. On the other hand, the negative impacts include scalability, limited speed of transactin, lack of centralization, and no government regulations.

Conclusion

The study suggests that crypto currencies have various advantages as well as various limitations in context to the international payment systems. Cryptocurrencies have negative impacts on global payment systems as well. It means the findings of the study are confirming existing assumptions about the effects of cryptocurrencies on international payment systems.

Keywords: *Bitcoin, Libra, International Payment systems, Cryptocurrencies, and financial institutions*

Date of Submission: 15-04-2021

Date of Acceptance: 29-04-2021

I. Introduction

With the arrival of cryptocurrencies, the economy began to change, as they were presented as an alternative to the conventional system. Cryptocurrencies continue in the eye of the hurricane. Although they have been in the market for several years now and their use has increased over time, the truth is that their defenders are equal in number and passion to the detractors of the system. Among the latter are renowned economists and financial authorities who distrust their seriousness, since they believe that because they are in a decentralized system, which is not regulated by a public body, they can be lent for money laundering, to finance illicit activities, or else to evade taxes.

Understanding the concept of cryptocurrencies is immensely significant to grasp its impact on payment methods. They appear for the first time in 2008, during an economic crisis, when currencies from different countries faced a strong devaluation, at a time when investments and capital also suffered strong blows (Breidbach & Tana, 2021). The creator of bitcoin, the digital currency par excellence, is Satoshi Nakamoto, a programmer who launches this virtual currency, which works on the internet. It is not a physical currency, but a system based on mathematics and cryptography, and which is made up of digits only.

It has been observed that with the arrival of cryptocurrencies the economy began to change, since they were presented as a brilliant alternative to the conventional system, and had the attraction of not being subject to any central or public body (Ahmed, 2020). It works by supply and demand, is not linked to the formal financial system, to any central bank or a government.

All of the above also means that those who have invested and made their transactions in cryptocurrencies do not require intermediaries and therefore do not have to pay commissions, they make the transactions they want from their computer in a more agile and fast way. There are no intermediaries, rules,

costs, charges, or anything like that. Then the transactions are done one by one, and each party has a virtual wallet from which the bitcoins are sent or received.

It has been analyzed that there are some 21 million bitcoin coins in circulation, although there are other virtual currencies, although less famous, among them ethereum, lite coin, and ripple (Akyildirim, Corbet, Katsiampa, Kellard, & Sensoy, 2020). Experts have predicted that the daily use of bitcoin will grow 363%, to 175,000 million in 2027; which means that it will become a third of the total of digital currencies.

The primary reason for the emergence of cryptocurrencies is first, due to the high performance, that bitcoin has achieved at times, and only during the last year, it has achieved a considerable rise. It had a strong increase in its value, reaching more than the US \$ 7,000 for one bitcoin, which has meant that not only investors try to get them anyway, but also that the financial system and the press put more interest there (Deniz & Stengos, 2020). With the exposed data, there is nothing more than to recognize the impact of bitcoin, a currency that became powerful, and that is already used to carry out their transactions.

However, not everyone can trade in this market. Anyone who wants to buy, sell or issue a bitcoin must be an expert in technological and computational issues since it is a transaction that requires a higher technical level, understanding, and patience since it is a complex and difficult task. Perhaps for the same reason, it is that it has been pointed out that the programmers of this system have made and reviewed, through different mathematical algorithms, the security of the system at the time of making transactions (Rognone, Hyde, & Zhang, 2020). Vital fact for the confidence of those who invest and buy or sell with cryptocurrencies. With all of the above, the call is to be vigilant and cautious.

On the one hand, there are established financial institutions that have already accepted these cryptocurrencies, such as Falcon Private Bank or Saxo Bank, which already has bitcoin on its trading platform. There are also large companies that have included it as a means of payment (Alves, 2020). However, numerous researchers have warned and affirmed that it is a "possible bubble", so it is recommended to have some prudence when investing in them since they are still young currencies, which have arrived the minute they can experience the cost of being a system without any regulation. Most likely, cryptocurrencies are here to stay. It is still a system that requires time to establish itself and gain the trust of the researchers and investors.

Cryptocurrencies are at least partly responsible for the current upheaval in the international financial markets. The assessments of the potential of digital currencies differ widely. While some see them as the future of payment, others believe they see a gigantic speculative bubble here. The Marshall Islands are planning to be the first (and at the same time almost smallest) state in the world to introduce cryptocurrencies as legal tender (Ghosh, Gupta, Dua, & Kumar, 2020). Other countries such as South Korea or Japan only accept Bitcoin as a means of payment. But what is the difference between accepted and legal tender? And do cryptocurrencies have the potential to be accepted as a means of payment online and offline in the future?

The basic purpose of this research paper is to identify the impact of cryptocurrencies on international payment systems. Moreover, the research will conduct data and information about the benefits and risks associated with cryptocurrencies. The risk factors associated with the emergence of cryptocurrencies to financial institutions have been comprehensively analyzed and evaluated in this research. This study will contribute to the body of literature by adding the impact of cryptocurrencies on financial institutions as there is very limited research conducted on this topic. The data from the secondary sources is collected by inducing the descriptive research approach. The data regarding the independent and dependent variables are collected from the journal articles, peer-reviewed articles, published sources, online sources, and also the previous researches are integrated with the research paper to have a detailed and deeper understanding of the variables to describe these variables

II. Literature Review

Bitcoin has generated growing interest in recent years, and the debate that sparked has branched out. Initially, the discussion about Bitcoin forked into two areas. On the one hand, the study of bitcoins as an asset and the possibility that they could be an alternative to fiat money. On the other, the analysis of the blockchain as an exchange mechanism and its possibilities as a payment or securities clearing and settlement system or other assets. Meanwhile, the price of bitcoin has experienced strong difficulties, going from zero to touch the 20,000 USD per bitcoin. Currently (December 2018), its price is at around 3,500 USD per bitcoin. As shown in Scheme 1, the debate previously exposed has become even more complicated. This document focuses on the analysis of bitcoin as an exchange mechanism, specifically in its strengths and weaknesses as an alternative to traditional payment systems.

There has been the development of an exceptional financial bubble on the value of bitcoin. This cryptocurrency, born in the heart of the financial crisis of 2008, questions the centrality of modern payment systems and the role of communication technologies in the international monetary system (den Haan, Ellison, Ilizetzi, McMahon, & Reis, 2017).

The corpus used for this analytical research consists of three works dealing with the issue of digital currencies by different approaches. In the most recent, *Before Babylon, Beyond Bitcoin*, D. Birch uses his experience as a consultant in digital currency and digital identity to analyzing past and present experiences of "electrifying" money (D. Birch, 2017). He studies in particular several cases of electronic payment systems, such as the monetary transfers by telegraphic way of the Western Union, from 1871, or the Kenyan M-Pesa, a technology of payment by mobile phone created in 2007.

Mr. Nishibe, the economist at Senshu University in Tokyo, confronts the development of cryptocurrencies with the thought of the great authors of economic thought, while H. Halaburda and M. Sarvary, professors of economics at New York University and the Columbia Business School, consider bitcoin from the point of view of the mechanisms of economic theory (Halaburda & Sarvary, 2016). The three books put bitcoin innovation into perspective by presenting the major episodes that have marked monetary history, such as the appearance of the first Babylonian currencies or the bankruptcy of John Law in France in the 18th century (D. Birch, 2017).

According to Birch, the supranational character of digital currencies is similar to that of gold, so that a monetary system based on a rare digital currency like bitcoin would recreate the monetary opposites of the 19th-century gold standard by preventing the isolated state from manipulating exchange rates to its advantage (D. G. Birch, 2018). Last parallel with gold: Bryan showed that gold, although a symbol of peace and stability in the 19th century, was closely linked to imperial violence and policies of commercial exclusion (Trent, 2019). Similarly, the blockchain is associated with a value of transparency of transactions, which are all reported, in the tamper-resistant register, but bitcoin quickly gained a bad reputation as a currency of the Darknet. Nishibe mentioned, in particular, the Silk Road site, which was disconnected by the FBI in 2014, because it traded there for bitcoin many illegal goods, such as drugs, computer viruses, or false papers (Nishibe, 2016).

For cryptocurrencies to establish themselves across the board as a means of payment, high transaction speed is of great importance. Unfortunately, many cryptocurrencies (still) seem to have a major weakness here. With Bitcoin, for example, only 7 transactions per second are currently possible (according to Segwit2x: 9.6 per second). Other digital currencies such as Ethereum or Bitcoin Cash currently only manage 20 or 92 transactions per second. For comparison: the e-wallet provider PayPal can handle up to 450 transactions per second; the VISA credit card can even handle up to 56,000 transactions per second. The transfer of crypto money only takes so long because every transaction has to be checked by the network (blockchain) and the payment has to be validated accordingly. This process can take several minutes or even several hours - too long for a retail payment. However, it should be noted that the transaction speed for cryptocurrencies is continuously being optimized.

Another decisive factor for whether cryptocurrencies are accepted as a means of payment are the transaction costs involved. These differ depending on the digital currency chosen. For a Bitcoin transaction, 30 Satoshis is currently charged as a fee per byte (Ghosh et al., 2020). On average, 225 bytes are required for an average transaction. This means that the average transaction fee is around 6,750 satoshi. Currently, 1 satoshi = 0.0000001 BTC. Accordingly, the transaction fee is 0.0000675 BTC. The transaction fees are charged, among other things, in order to avoid the pointless transfer of small amounts and thus an overload (so-called denial-of-service attacks).

In the case of bitcoin, the tool is a significant computing power devoted to solving a computer problem predefined by the software. The owners of these powerful computers dedicated to solving the problem are called "miners" (Li, Jiang, Chen, Luo, & Wen, 2020). Each time a miner resolves the problem, he gains a certain amount of bitcoin (which decreases as the number of bitcoins available in the network increases). Halaburda and Sarvary explain that miners must invest in specific equipment to have sufficient computing power allowing them to solve the problem before others and win the bitcoins in play. The value of bitcoin is therefore protected by the difficulty of production.

According to Birch, the supranational character of digital currencies is similar to that of gold, so that a monetary system based on a rare digital currency like bitcoin would recreate the monetary opposites of the 19th-century gold standard by preventing the isolated state from manipulating exchange rates to their advantage (D. G. Birch, 2018). Last parallel with gold: Bryan showed that gold, although a symbol of peace and stability in the 19th century, was closely linked to imperial violence and policies of commercial exclusion (Trent, 2019). Similarly, the blockchain is associated with a value of transparency of transactions, which are all reported, in the tamper-resistant register, but bitcoin quickly gained a bad reputation as a currency of the Darknet. Nishibe mentioned, in particular, the Silk Road site, which was disconnected by the FBI in 2014, because it traded there for bitcoin many illegal goods, such as drugs, computer viruses, or false papers (Nishibe, 2016).

The development of bitcoin poses the question of the digitalization of currencies shortly. Birch indicates three main motivations for adopting a digital currency for the payment system of tomorrow. First, bitcoin would be inexpensive to produce while being an irreversible instrument of exchange and available

online, which would allow it to fulfill the role of cash in the 21st century (Dwyer, 2015). Second, it would be comparable to a coin, as it provides an anonymous and fungible means of payment, anonymity being allowed through the blockchain pseudonym system. It is extremely difficult to find real individuals, as their identities are hidden under a series of numbers and numbers, and encrypted using unique keys. Third, bitcoin would be a store of credible value, since its value does not depend directly on a government.

Different researchers have explored that surprisingly, it is not exactly what the inventors had in mind when they started the history of cryptocurrencies ten years ago. No "financial freedom" for freaks and billionaires. Some of the values that were important to the Bitcoin revolutionaries can be found in this future perspective, albeit differently than expected - decentralization, de-hierarchization, democratization (Corbet, Larkin, Lucey, Meegan, & Yarovaya, 2018). In international politics, governmental and non-governmental cryptocurrencies lead to dehierarchization by depriving US hegemonic power of its financial blackmail instruments. Cyber money could be used to decentralize power in the euro area and for regions (Gronwald, 2020). At the global level, government crypto money could increase the ability of politics to act in relation to the markets and thereby strengthen democracies.

III. Research Methodology

3.1. Research paradigm

An approach used for the paradigm is Interpretivism also known as constructivism or qualitative research. This approach has focused on a particular context in which understanding the historical and cultural setting of the participants is developed effectively (Creswell & Poth, 2017)

3.2. Philosophy and Approach of Research

The research philosophy is developed according to the research objectives and the objectives being developed in the first chapter to determine the nature of the study as exploratory, descriptive, and explanatory. This paper falls under the category of exploratory study because it focuses on defining and understanding the effects of virtual currencies and the payment transfer methods and the secondary data available on this topic. An inductive approach has been used for discussing outcomes of the researches conducted on the topic of cryptocurrencies. The primary research approach used for this study is conducting one-to-one interviews.

3.3. Data Collection

The data collection method in this study has been identified to be one-to-one interviews through emails. . This research paper has used the unstructured interview method, which has been examined by numerous researchers to be an effective method to conduct in-depth analysis. The interview developed for this research has been designed as open-ended questions. In this method, the interviewer asked the same open-ended questions to all of the respondents.

3.4. Sampling Method

The sampling method used in this research paper has been a purposive sampling technique. This sampling method was selected because of the topic of the research topic as it demands in-depth knowledge of cryptocurrencies and the international payment methods primarily used for payment transactions internationally.

3.5. Target Population

This research method has used interviews for data collection and the purposive sampling technique has shown that the interviewer knows the respondents. Some of the target populations used in this research are the professors from the educational institute there are 10 interviews conducted with the faculty of banking and finance at Istanbul Aydin University.

3.6. Ethical Considerations

A research study can be valid and authentic only if it is based on the principles of ethics.

- Firstly, the ethics of this research paper includes the maintenance of confidentiality of the respondents and the inclusion of accurate data collected from the interviewees in the paper with the correct interpretation.
- Secondly, ethics for this research paper also entails that it should be plagiarism-free and no content should be taken from any source without mentioning the name of its author
- In addition, it is focused that appropriate references are given along with all the important information taken from different sources and it is made sure that the collected data is solely used for research only and should not be misused or misinterpreted

IV. Analysis (Results/Discussion)

4.1. Effects of Cryptocurrencies on International Payment Systems

Cryptocurrencies have positive as well as negative effects on the international payment systems and the section of the study would target both sides of cryptocurrencies in this context.

4.1.1. Positive Effects

- One of the major impacts of cryptocurrencies like Bitcoin and Libra on the international payment systems is that they eliminate the need of following central regulations for making international payments. It

means that cryptocurrencies do not follow regulations formed by banks or governments for making international payments.

- Cryptocurrencies are adding an anonymity feature to the international payment systems (*What are the positive impacts of cryptocurrency?* n.d.). Banks and other monetary institutions reveal the identity of an individual or a business while performing an international transaction.
- Cryptocurrencies are adding value to the international payment systems because inflation rate, demonetization, and various such factors have no impact on the international transactions performed via cryptocurrencies.

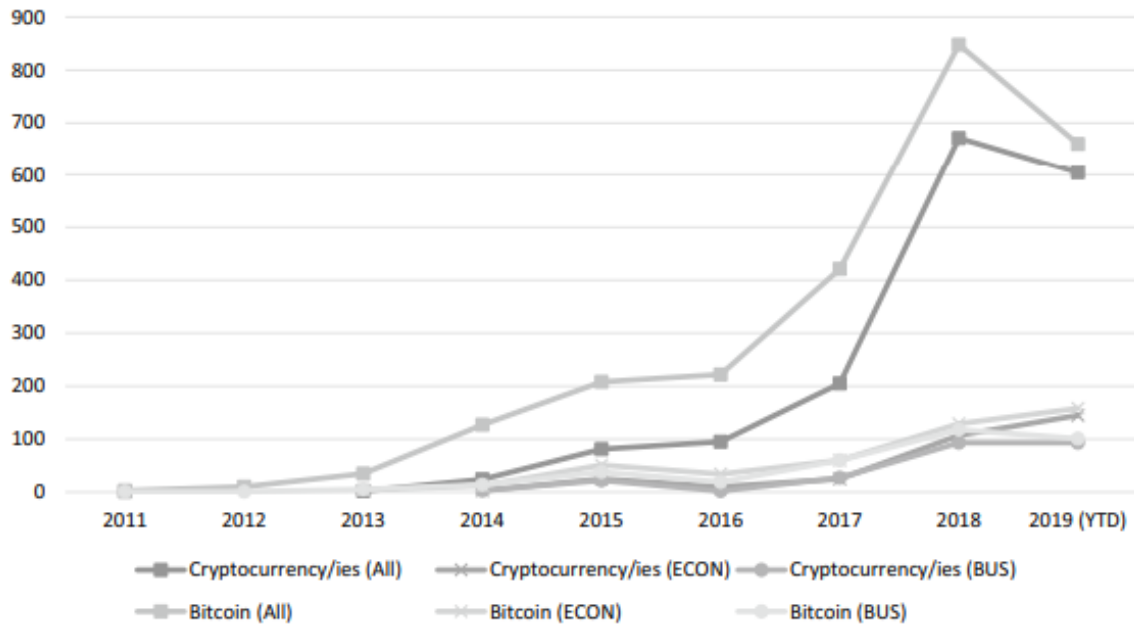


Figure 1 Publication trends of Scopus database

The figure suggests the publication trend of Scopus database and it suggests that more and more researchers are trying to understand the significant concept of Bitcoin and they are investigating the impacts of cryptocurrencies on the international payment systems.

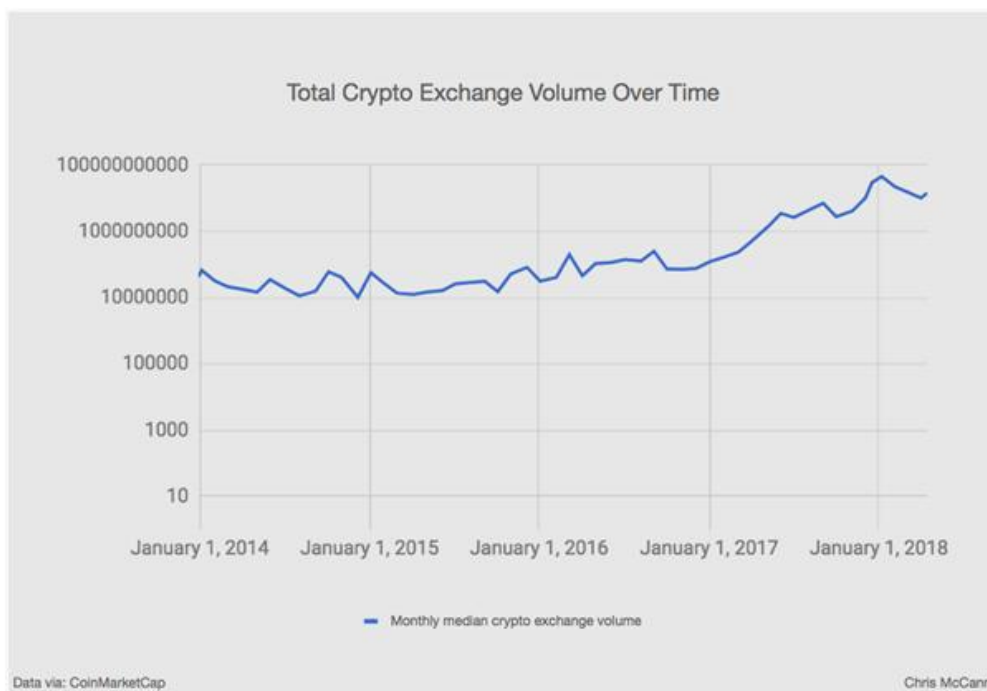


Figure 2 Total Exchange volume of cryptocurrencies over time

The graph is making it evident that the total exchange volume of cryptocurrencies is showing a positive trend. It means that more and more number of people are using various international payment systems that use cryptocurrencies. The graph is showing that the trend of adoption of international payment systems that use cryptocurrencies is increasing over time and the number of transactions conducted via this system is increasing as well.

4.1.2. Negative Effects

Cryptocurrencies can have various negative effects on the international payment systems as well. One of the major challenges of the international payment systems using cryptocurrencies is their scalability. The international payment systems using cryptocurrencies are facing the issue of the limited speed of the transaction.

Traits of money	Gold	Fiat money (Euro)	Cryptocurrency (Bitcoin)
Way of exchange	Physical	Physical and digital	Digital
Controlled	Market	European Central Bank	Algorithm
Highly divisible	○	+	+
Globally transferable	+	+	+
Durable	+	+	+
Acceptable	+	+	○
Centralization	○	+	-
Secure (counterfeiting)	+	○	+
Stability (Volatility)	○	○	-
Predictable supply	+	○	+
Collateral	+	○	-

+ High ○ Medium - Low

Figure 3 Comparison of various money forms

- The figure is highlighting a comparison of various forms of money. The table suggests that the acceptability of cryptocurrencies is medium as compared to fiat currency and gold around the world. It means that cryptocurrencies have a negative impact on the international payment systems that use this form of currencies.
- Lack of centralization is another important challenge for cryptocurrencies. Another negative effect of cryptocurrencies on the international payment systems is the poor cybersecurity of cryptocurrencies. They have no such infrastructure that can assure the safety of the international payment systems.
- Furthermore, cryptocurrencies have no government regulations. It means that cryptocurrencies harm the international payment systems in the sense that investors are not ready to invest in such international payment systems that lack the involvement of the federal governments and other reliable authorities.

Possible Solutions for Boosting Cryptocurrencies Effectiveness

The lack of proper infrastructure that can support transactions through various cryptocurrencies across the borders is the major reason that the international payment systems that use cryptocurrencies are not secure (Ooi, Ooi, Yeap, & Goh, 2020). Therefore, hackers can attack cryptocurrencies and they can breach confidential data of international payment systems. There is a need to implement robust safety measures in international payment systems like traditional banking systems.

It is important to connect the value of cryptocurrencies with different tangible and intangible assets. It would help to improve customer adoption of cryptocurrencies and improve their confidence in international payment systems that use cryptocurrencies (Fry & Cheah, 2016). this solution would help to reduce the volatile nature of cryptocurrencies as well (Zimba, Wang, Mulenga, & Odongo, 2020).

The federal governments have to play their part in overcoming the negative effects of cryptocurrencies' international payment systems. The need to introduce government-backed cryptocurrencies in this context and introduce phone wallets for their citizens for using cryptocurrencies.

The federal governments need to devise and implement significant regulations for cryptocurrencies as well. It would improve the trust of citizens in cryptocurrencies and they would start using such international payment systems.

Requirements and possibilities of crypto currencies

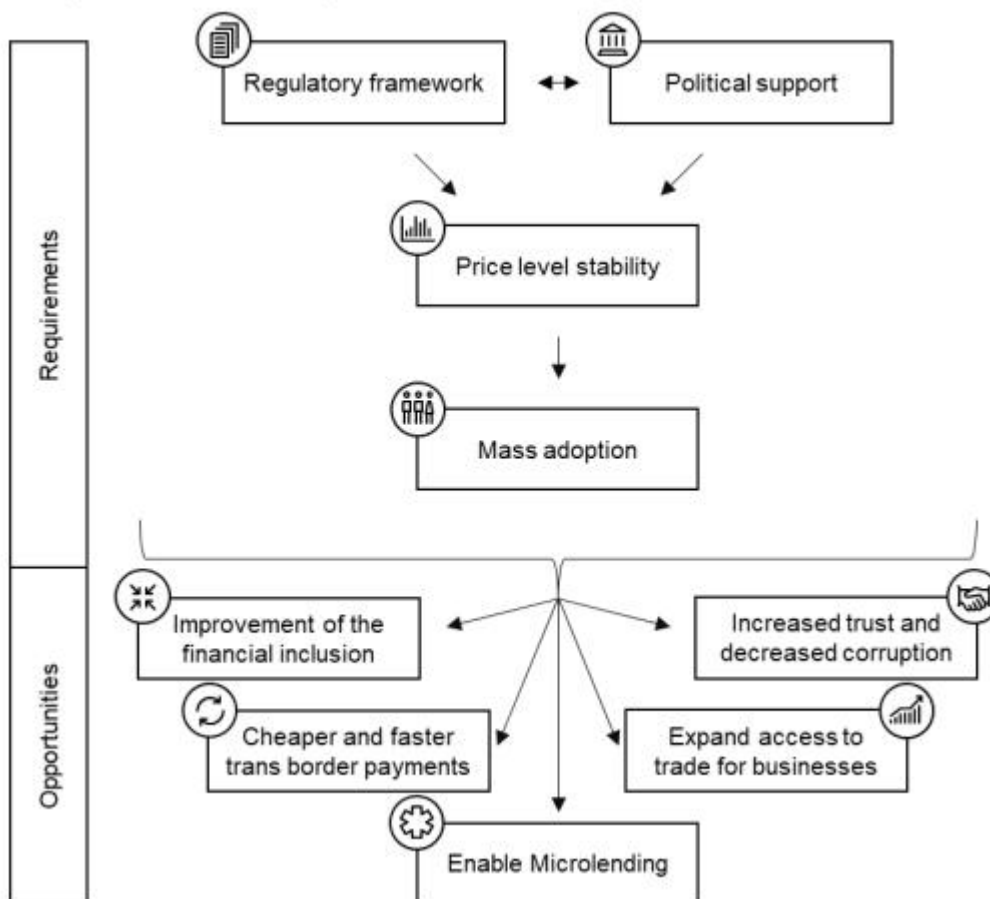


Figure 4 Requirements and Possibilities of Cryptocurrencies

It is evident from the figure that a robust regulatory framework is important for taking advantage of international payment systems that use cryptocurrencies. In simple words, it is good to say that a mixture of a robust regulatory framework and political support can play an important role in this regard (White, Marinakis, Islam, & Walsh, 2020). The result would be increased stability of price level. The addition of tangible and intangible value to cryptocurrency would help it making an asset and improving its inherent value (Bianchi, 2020). Therefore, the users of cryptocurrencies can take more benefits from such international payment systems.

V. Conclusion

In conclusion, the research aims to understand the effects of cryptocurrencies on international payment systems and it is providing a complete analysis of the financial institution. Based on the quantitative and qualitative analysis the study suggests that crypto currencies have various advantages as well as various limitations in context to the international payment systems.

It means that cryptocurrencies have positive as well as negative impacts on the global payment systems. The results suggest that strong information technology infrastructure can play an important role in this regard for improving the scope of cryptocurrencies used in the world (Mohammad, 2020). The upgrade in the information technology platforms would improve safety and security challenges associated with different sorts

of cryptocurrencies. The study used secondarily as well as primary data for understanding the impacts of cryptocurrencies on international payment systems.

The survey questionnaire helped researchers collecting empirical data based on the experience of experts regarding cryptocurrencies and other people who have certain knowledge about cryptocurrencies and their effects on the global payment systems. The results from analysis of the empirical data collected via the survey questionnaire suggest that cryptocurrencies are making their place in the international payment systems and many banks and other monetary institutions around the world are allowing their customers to use cryptocurrencies and they have separate booths for their assistance as well.

The findings of the study confirm the existing assumption about cryptocurrencies that cryptocurrencies have both positive and negative effects on international payment systems. The findings of the current research suggest that the use of cryptocurrencies for international funds transactions is improving around the globe and some banks and other monetary institutions are legalizing the use of cryptocurrencies and are supporting their customers or clients willing to use cryptocurrencies for their funds' transaction.

The funds' transaction through cryptocurrencies is faster than the conventional currencies and the tax ratio is low. Moreover, the government involvement in systems using cryptocurrencies for transaction purposes is low. Therefore, cryptocurrencies have positive impacts on global payment systems.

However, the findings of the study suggest that cryptocurrencies have various challenges or issues as well. Ethical hacking and data breaches are major limitations associated with cryptocurrencies. Moreover, the lack of regulations for systems that use cryptocurrencies for funds transactions is another significant issue in this context and people are reluctant to use such payment systems owing to chances of fraudulent. Therefore, it is good to say that the findings of the study suggest that cryptocurrencies have negative impacts on global payment systems as well. It means the findings of the study are confirming existing assumptions about the effects of cryptocurrencies on international payment systems.

References

- [1]. Ahmed, W. M. (2020). Is there a risk-return trade-off in cryptocurrency markets? The case of Bitcoin. *Journal of Economics and Business*, 108, 105886.
- [2]. Akyildirim, E., Corbet, S., Katsiampa, P., Kellard, N., & Sensoy, A. (2020). The development of bitcoin futures: Exploring the interactions between cryptocurrency derivatives. *Finance Research Letters*, 34, 101234.
- [3]. Alves, P. (2020). Dynamic characteristic of Bitcoin cryptocurrency in the reconstruction scheme. *Chaos, Solitons & Fractals*, 134, 109692.
- [4]. Birch, D. (2017). *Before Babylon, Beyond Bitcoin: From Money That We Understand to Money That Understands Us*: London Publishing Partnership.
- [5]. Birch, D. G. (2018). Who will make money? Tokens and the '5Cs' of future currency. *Journal of Payments Strategy & Systems*, 12(2), 111-121.
- [6]. Breidbach, C. F., & Tana, S. (2021). Betting on Bitcoin: How social collectives shape cryptocurrency markets. *Journal of Business Research*, 122, 311-320.
- [7]. Deniz, P., & Stengos, T. (2020). Cryptocurrency Returns before and after the Introduction of Bitcoin Futures. *Journal of Risk and Financial Management*, 13(6), 116.
- [8]. Dwyer, G. P. (2015). The economics of Bitcoin and similar private digital currencies. *Journal of Financial Stability*, 17, 81-91.
- [9]. Ghosh, A., Gupta, S., Dua, A., & Kumar, N. (2020). Security of Cryptocurrencies in blockchain technology: State-of-art, challenges and future prospects. *Journal of Network and Computer Applications*, 163, 102635.
- [10]. Li, X., Jiang, P., Chen, T., Luo, X., & Wen, Q. (2020). A survey on the security of blockchain systems. *Future Generation Computer Systems*, 107, 841-853.
- [11]. Mohammad, S. M. (2020). Blockchain and Bitcoin Security in IT Automation. *International Journal of Computer Trends and Technology (IJCTT)-Volume*, 68.
- [12]. Nishibe, M. (2016). *The Enigma of Money: Gold, Central Banknotes, and Bitcoin*: Springer.
- [13]. Ooi, S. K., Ooi, C. A., Yeap, J. A., & Goh, T. H. (2020). Embracing Bitcoin: users' perceived security and trust. *Quality & Quantity*, 1-19.
- [14]. Rognone, L., Hyde, S., & Zhang, S. S. (2020). News sentiment in the cryptocurrency market: An empirical comparison with Forex. *International Review of Financial Analysis*, 69, 101462.
- [15]. Trent, N. (2019). The National Memorial for Peace and Justice, by Bryan Stevenson. In: University of California Press.
- [16]. White, R., Marinakis, Y., Islam, N., & Walsh, S. (2020). Is Bitcoin a currency, a technology-based product, or something else? *Technological Forecasting and Social Change*, 151, 119877.
- [17]. Zimba, A., Wang, Z., Mulenga, M., & Odongo, N. H. (2020). Crypto mining attacks in information systems: An emerging threat to cyber security. *Journal of Computer Information Systems*, 60(4), 297-308.

Fatima Qudrat Malik. "The Impacts Of Crypto Currencies On The International Payment Systems." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 12(2), 2021, pp. 01-08.