

Research Article

Role of Blockchain and Cryptocurrency to Redefine the Future Economy

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Abstract

The virtual currencies have practiced a steady process and carry on to experience it. In fact, these cryptocurrencies found a significant place in the society and are already integrated because more people make use of them as one of the payment methods for products and services. These cryptocurrencies are using not only payment purposes but also invest in them to increase the capital. Blockchain is a peer-to-peer distributed ledger of time-stamped transactions. The entire ethos was decentralized and away from all central banks. Hence, it is a pressure group against the centralization and the control of fiat money. The central banks are controlling the traditional physical currency but the cryptocurrency and block chain technology, the user maintains a copy of their ledger and all copies of other ledgers which are synchronized through a consensus algorithm. In the recent past, due to high publicity regarding the blockchain technology both private and public sector organizations have opened their eyes and looked at the technology. The researcher also made an attempt to analyze the market cap of the Bitcoin and ten other leading cryptocurrencies since October 2013. The prime objectives of the study are: a) to study the role and future developments of blockchain and cryptocurrencies. B) To compare the market cap of Bitcoin with other top ten prominent cryptocurrencies. In fact, as of April 2021 more than 4000 cryptocurrencies are in existence but many of these cryptocurrencies have very little market cap and no trading volume. Some are more popular and offer communities of investors and backers. Bitcoin is the pioneer among the cryptocurrencies and introduced in the year 2009. Correlation analysis is employed to compare the relationship between Bitcoin market cap and other ten

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cryptocurrencies. In fact, as of April 2021 more than 4000 cryptocurrencies are in existence but many of these cryptocurrencies have very little market cap and no trading volume. Some are more popular and offer communities of investors and backers. After well examining and based on the previous study the researcher has chosen ten important cryptocurrencies other than Bitcoin. It is practiced that the analysts and researchers rank the digital coins in terms of their market cap. Here the researcher has selected these coins not only in terms of market cap but there are some other reasons such as the stability and other special features of the virtual currency. Within a decade the blockchain technology reached almost all parts of the globe. At present people from an average income group are trying to save or invest their money in cryptocurrencies. Transparency, security, privacy, cross border payments, low cost, minimizing errors and no central agency to control are the main future of the blockchain. Once the price of Bitcoin is decreased or increased it will directly influence the other cryptocurrencies in the near future blockchain technology will be more efficient and redefine the future financial system of the world.

Keywords: *Market cap, decentralized applications, transparency, virtual currency.*

Introduction

Cryptocurrencies are present in the world just from a decade ago and even though in the beginning the people did not trust much in their use, that perception has changed over the years. People were familiar with using conventional physical money until they felt uncomfortable. There was a real rejection of these cryptocurrencies but this attitude has changed gradually. Four large companies like Microsoft, Subway, KFC and Fotocasa were part of the loop of virtual coins. These companies have included cryptocurrencies for their economic means due to the efficient way to carry out the payments. They have entered to form part of the structure for the reason that of the special benefits offered for them. The motives behind that, these companies are transacting virtual coins between the payments because they believe these cryptocurrencies are more effective to exchange value, transparent, more instant, more secure and break the cycle of financial dependency.

The virtual currencies have practiced a steady process and carry on to experience it. In fact, these cryptocurrencies found a significant place in the society and are already integrated because more people make use of them as one of the payment methods for products and services. These cryptocurrencies are using not only payment purposes but also invest in them

to increase the capital. There was a significant transformation that happened in the year 2017. This year the cryptocurrencies were the radical phenomenon of the monetary scheme.

Blockchain Technology

It is a peer-to-peer distributed ledger of time-stamped transactions. The entire ethos was decentralized and away from all central banks. Hence, it is a pressure group against the centralization and the control of fiat money. The central banks are controlling the traditional physical currency but the cryptocurrency and block chain technology, the user maintains a copy of their ledger and all copies of other ledgers which are synchronized through a consensus algorithm.

In the recent past, due to high publicity regarding the blockchain technology both private and public sector organizations have opened their eyes and looked at the technology. They envision that this blockchain technology is not seen ever before, but it will become life changing for today's generation. This blockchain technology is also believed to be one of the foremost inventions of the recent period of time. According to Gartner, blockchain technology has already hit the highest point of the publicity cycle and has entered the period of disillusionment. Large multinational companies had started the incorporation of blockchain technology into their day to day practices.

The companies or a person one who uses the blockchain is only able to edit the sections of the blockchain that belong to them. For that the users are required to have separate private keys. The grand success and the feature of the blockchain technology is every copy is synchronized even though the blockchain is not connected to a common processor or assessed through devices linked to the central processing unit. Since the master data file is edited and saved. Synchronization is not necessary. Because there is only one master file stored centrally. One of the major advantages in blockchain is even if all the computers are off-line the users are able to assess and edit a master file that is always in synchronization. All edits to the synchronized file are time-stamped with the date and time of the change. An entry or editing of the file must not be changed and the record will be there forever.

Components of Blockchain Technology

The major components of the blockchain technology are:

Peer-to-peer networking is one of the key components of blockchain technology. Under which the computers are linked through a peer-to-peer network, the lack of a common server eliminates the control element that a company, bank or government has their own centralized server or common server. Every computer within the network will have every data update and shared.

Consensus protocols means within the peer-to-peer network, each and every computer must reach an agreement on the addition of new blocks to the blockchain which is done by using consensus protocols. The protocols are written into the software that is run by the computers within the peer-to-peer network. It makes sure that the computers within the network are synchronized at all times.

Blockchain is the agreement on the shared is known as the blockchain. It makes it easier for computers to verify the quantity of data held within the network and new data entries to create the link in the chain.

The concept of the Bitcoin is computers are connected to the internet and run the software of the Bitcoin. This Bitcoin software may be either mining or a Bitcoin wallet. If one user is depositing or withdrawing Bitcoin, an update of each transaction is carried out by the computer and shared with all other computers linked to the Bitcoin network.

Changing the Life of People

The evolution and growth of the Bitcoin and allies cryptocurrencies are not only bringing the attention of the general public but also endangered the basic foundation of the physical financial system of the world. Hence, the general public is also planning to invest their money in different cryptocurrencies instead of investing in gold and stock markets. Statistics reveal that more than two billion people in the world do not have their own bank account. These people realized how to have their business and own transactions with the help of blockchain technology.

Amazing Effects of Blockchain in Future

Blockchain technology is not only transacting cryptocurrencies but, it will be useful much more than that. Some major segments of the society which will emerge with blockchain technology are given below:

Supply Chain is an area to use the blockchain technology. Through this technology people can track fruits, food grains and vegetables supplies from the place of production to the shelf. IBM started to work on this with the help of blockchain technology. Further than food, the transparency of blockchain can also provide consumers the accurate source of manufactured goods, which is significant in today's society.

Power sector related trade also happened with the help of blockchain. It may allow the consumer to sell surplus energy to their neighbors. In this process the consumers need not get the consent from the power utility companies. Removing the control from the utility company, directly they can sell their excess energy to the neighbors.

Governments also started their pilot projects to integrate blockchain technology for their day to day operation. The United Kingdom already uses the blockchain technology to payout students' loans and to track the payment. This technology will minimize the number of fraud cases, reduce cost of the transaction and decrease corruption. Blockchain technology also used for record keeping includes land property deeds.

Healthcare industry can use blockchain technology to making patients' medical records without any leaking and hacking of medical records. It is also helpful to provide medical data to different data points through decentralized ledger.

Global Economy and Build Better Future

Cryptocurrencies have the prospective to facilitate social and monetary growth throughout the world by offering quick access to financial services. Utilization of Bitcoin and other cryptocurrencies have been increasing rapidly. This study shows the growth of virtual coin may overtake the traditional physical currency and traditional financial system.

Cross-border Payments

Exchange of significant worth has been both costly and moderate, and particularly for installments occurring across worldwide boundaries. One justification for this is that, when various monetary standards are included, the exchange cycle ordinarily requires the support of different banks in numerous areas before the proposed beneficiary can in reality gather their cash. There are existing administrations to help work with this cycle in a quicker manner. This innovation blockchain can possibly give a much quicker and less expensive option in contrast to conventional cross-line installments strategies. Undoubtedly, while ordinary cash settlement expenses may be pretty much as high as 20% of the exchange sum, blockchain may consider costs simply a small portion of that, just as ensured and constant exchange preparation speeds.

Methodology

In this study the researcher presents the role of blockchain and cryptocurrencies also predict the social and economic changes happening in future through the blockchain technology. The researcher also made an attempt to analyze the market cap of the Bitcoin and ten other leading cryptocurrencies since October 2013. The prime objectives of the study are: a) to study the role and future developments of blockchain and cryptocurrencies. B) To compare the market cap of Bitcoin with other top ten prominent cryptocurrencies. They are Ethereum (ETH), Litecoin (LTC), Cardano (ADA), XRP, Bitcoin Cash (BCH), Stellar (XLM), Chainlink (LINK), Binance Coin (BNB), Tether (USDT) and Monero (XMR). As all are attentive, Bitcoin has a significant role among cryptocurrencies. Bitcoin is the pioneer among

the cryptocurrencies and introduced in the year 2009. Correlation analysis is employed to compare the relationship between Bitcoin market cap and other ten cryptocurrencies. In fact, as of April 2021 more than 4000 cryptocurrencies are in existence but many of these cryptocurrencies have very little market cap and no trading volume. Some are more popular and offer communities of investors and backers.

After well examining and based on the previous study the researcher has chosen ten important cryptocurrencies other than Bitcoin. It is practiced that the analysts and researchers rank the digital coins in terms of their market cap. Here the researcher has selected these coins not only in terms of market cap but there are some other reasons such as the stability and other special features of the virtual currency.

Cryptocurrencies

Cryptocurrency is 'virtual or digital money which takes the form of tokens or coins'. Few cryptocurrencies are doing their business in the physical world in the form of credit cards. Large majority of the cryptocurrencies are intangible. 'Altcoin' means cryptocurrencies except Bitcoin, otherwise the virtual currencies which are molded after Bitcoin are named as altcoin. It is also called 'shiftcon'. The term "crypto" refers to complicated cryptography that allows for the creation and processing. Transactions of the digital currencies have been done across decentralized systems. These cryptocurrencies are always designed free from government control and manipulation.

Bitcoin (BTC)

Bitcoin was introduced in the year 2009 as a substitute for physical money. The key reason that the world of virtual coins has evolved this much is because they are located in a decentralized system. It is not regulated by any country, bank or government. The major difference between cryptocurrencies and traditional physical money is that the latter one is always in-charge of a bank.

Ethereum (ETH)

Ethereum is an alternative digital currency which has a decentralized software platform, which allows decentralized applications. It is built to work without any downtime and free from fraud and interference from the third part that is other than the users. The aim of this virtual currency is all over the world, anyone can have free access irrespective of nationality and faith. It was launched in the year 2014. This is the second largest digital currency based on the market cap after Bitcoin.

Litecoin (LTC)

Litecoin was introduced in the year 2011 and very next to the Bitcoin created by Charlie Lee, an MIT graduate. It is based on an open source global payment network which is not controlled by any central authority. Also it uses ‘scrypt’ as a proof of work that can be decoded with the use of CPUs of consumer grade. Litecoin is the sixth largest digital currency in the world.

Cardano (ADA)

Cardano is an ‘ouroboros proof of stake’ digital currency which was launched with a strong research based approach. Research is the backbone of cardano because; regarding the digital currency, the researchers of the cardano project have written more than 90 research papers. It aims to be the financial operating system of the world by establishing decentralized monetary products.

Bitcoin Cash (BCH)

Bitcoin cash grasps a significant role in the profile of altcoins. This is an earliest and successful one because of the decentralized nature of the digital currencies. It was launched during August 2017. The digital currency is split, with the original chain remaining true to its original code and the new chain beginning life as a new version of the prior coin complete with changes to its code.

Table 1

Showing the Market Cap of Bitcoin and Total Market Cap of All Listed Cryptocurrencies

Amounts in \$

Month/ year	Market cap of Bitcoin (BTC)	Total market cap of all cryptocurrencies	Market share of Bitcoin (%)
April-13	1,488,566,972	569,104,612,557	0.26
October-13	2,339,831,246	568,935,561,227	0.41
April-14	5,542,719,718	569,616,733,027	0.97
October -14	4,763,038,436	568,935,561,227	0.84
April -15	3,093,210,382	567,861,622,706	0.54
October -15	4,188,179,591	567,400,906,905	0.74
April -16	7,093,731,098	567,400,906,905	1.25
October -16	11,194,831,000	570,321,671,075	1.96
April -17	21,975,158,882	571,075,939,483	3.85
October -17	102,482,504,137	571,075,939,483	17.95
April -18	160,182,355,101	571,439,549,068	28.03
October -18	112,518,368,982	571,439,549,068	19.69
April -19	93,391,244,395	571,538,831,600	16.34

October -19	172,087,039,875	571,538,831,600	30.11
April -20	140,903,867,573	572,972,208,211	24.59
October -20	241,444,607,827	572,972,208,211	42.14
April -21	915,955,943,256	1,870,335,250,268	48.97

Source: Compiled from <https://coinmarketcap.com/>

Table 1 reveals the market cap of Bitcoin and the total market cap of cryptocurrencies from April 2013 to April 2021. In April 2013 market cap of Bitcoin was \$1,448.57 billion and the market share of Bitcoin during the same period was 0.26 percent. It was very less percent of market share. The Bitcoin was introduced in the year 2009 and this was the pioneer in the digital coin market. Over a period of 8 years, from 2014 to 2021 market cap of Bitcoin has increased 615 times. This is an astonishing growth in the world of digital currency. Moreover it obtains a market share of 48.97 as on April 2021. At present more than 9000 digital currencies are available. Of them around 4000 cryptocurrencies existed in the market, remaining coins trading values are very meager. But the Bitcoin alone has the market share around 50 percent of the total market cap of all the listed cryptocurrencies.

Table 2

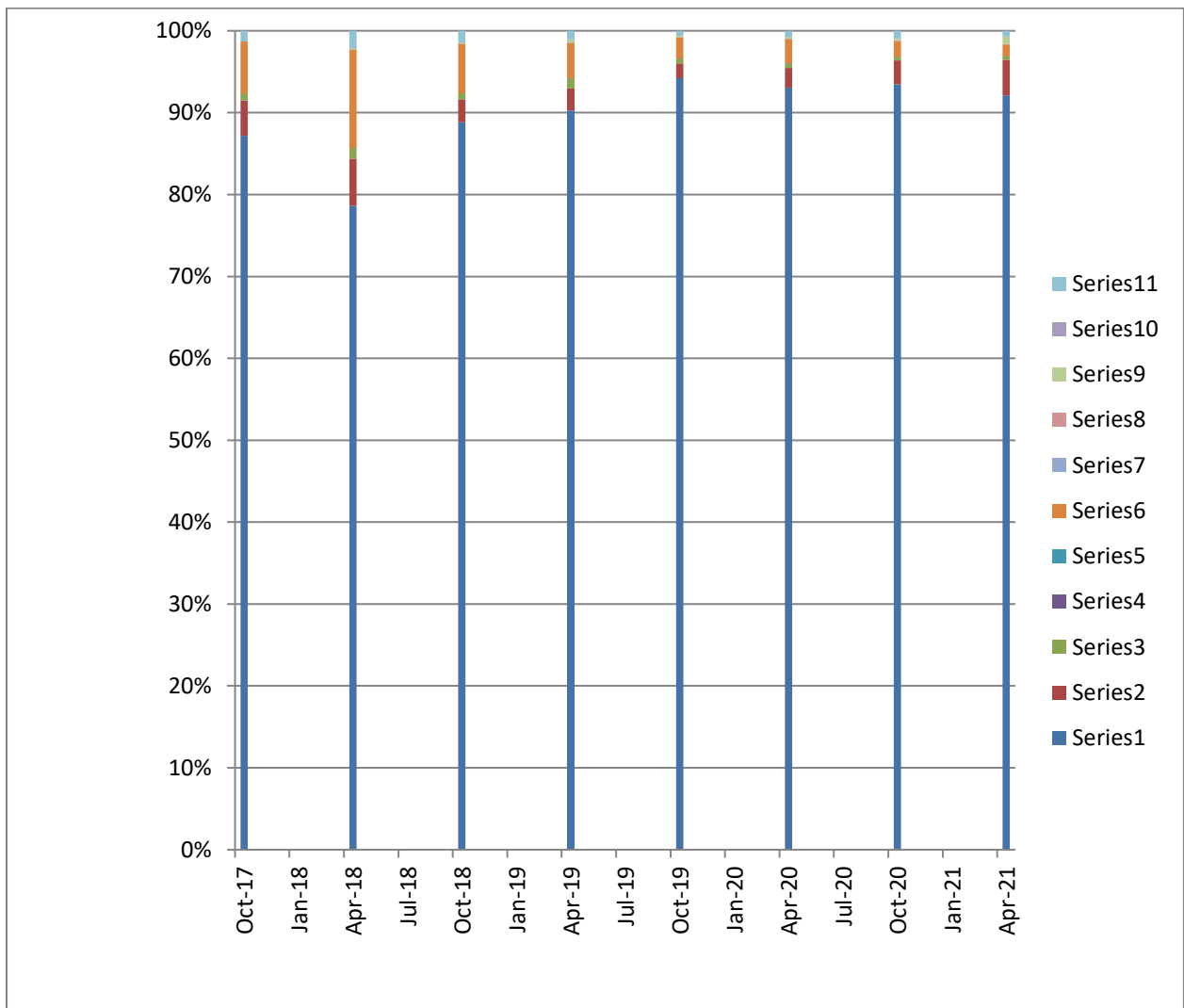
Showing the Market Cap of Bitcoin and Ten High-flying Altcoins \$ in Millions

Month/ year	Bitcoin BTC	Ethereum ETH	Litecoin LTC	Cardano ADA	XRP	Bitcoin Cash BCH	Stellar XLM	Chainlink LINK	Binance Coin BNB	Tether USDT	Monero XMR
Apr-13	1488.57	-	74.64	-	-	-	-	-	-	-	-
Oct-13	2339.83	-	47.87	-	53.49	-	-	-	-	-	-
Apr-14	5542.72	-	276.21	-	37.98	-	-	-	-	-	-
Oct-14	4763.04	-	123.96	-	131.84	-	2.86	-	-	-	2.96
Apr-15	3093.21	-	50.88	-	246.98	-	12.73	-	-	-	4.11
Oct-15	4188.18	45.72	131.47	-	151.06	-	9.12	-	-	0.45	3.99
Apr-16	7093.73	635.27	165.24	-	252.85	-	10.49	-	-	1.45	11.86
Oct-16	11194.83	956.00	194.52	-	284.76	-	10.49	-	-	6.95	73.77
Apr-17	21975.16	7206.67	799.09	-	1955.14	-	45.09	-	-	59.03	341.26
Oct-17	102482.50	29106.82	3060.68	741.69	7813.62	7569.66	503.13	69.61	122.90	452.56	1355.01
Apr-18	160182.36	68289.13	8650.93	9464.86	34165.95	24630.73	8513.15	180.50	1717.03	2412.35	4105.19
Oct-18	112518.37	21123.94	3060.38	1896.99	18591.27	7687.03	4400.04	154.16	1264.41	1923.44	1734.80
Apr-19	93391.24	16650.08	4291.11	1778.36	12493.35	4535.54	1883.41	156.88	3232.83	2829.39	1037.46
Oct-19	172087.04	19957.41	3807.83	1097.62	12892.25	4723.67	1292.82	936.41	3008.96	4125.47	1032.50
Apr-20	140903.87	21839.98	2886.86	1189.50	8677.07	4529.07	1268.50	1300.87	2548.28	6363.02	1073.83
Oct-20	241444.61	45978.76	3858.30	3308.83	11461.97	5030.28	1734.27	4736.46	4347.73	16381.26	2320.50
Apr-21	915955.94	267780.85	14928.03	34767.76	46868.57	14183.51	9544.09	13215.82	77495.44	49961.96	6359.47

Source: Compiled from <https://coinmarketcap.com/historical/20201025/> from 2013 to 2021

The above table 2 shows the market cap of Bitcoin and other leading digital currencies. The data were presented from April 2013 to April 2021. Among these 11 virtual coins, Bitcoin and Litecoin were introduced in the year 2009 and 2011 respectively. Remaining digital coins such as XRP, Stellar, Monero, Ethereum, Tether, and other coins

were introduced in the year 2013, 2014, 2014, 2015, 2015 and 2017 respectively. Hence the data for the coins which were introduced later do not live. The market caps of the cryptocurrencies have increased extraordinarily. For instance, the Bitcoin market cap has increased 615 times within the period of 8 years. Ethereum's market cap also increased more than 5,800 times since its origin. Some of the digital currencies such as Bitcoin, Ethereum, and Litecoin are maintaining their steady circulating supply. At the same time currency name Tether maintained its value since its introduction i.e., 2015 to 2021; it has been maintaining the price around \$1 but circulating supply nearly 50 billion in 2021.

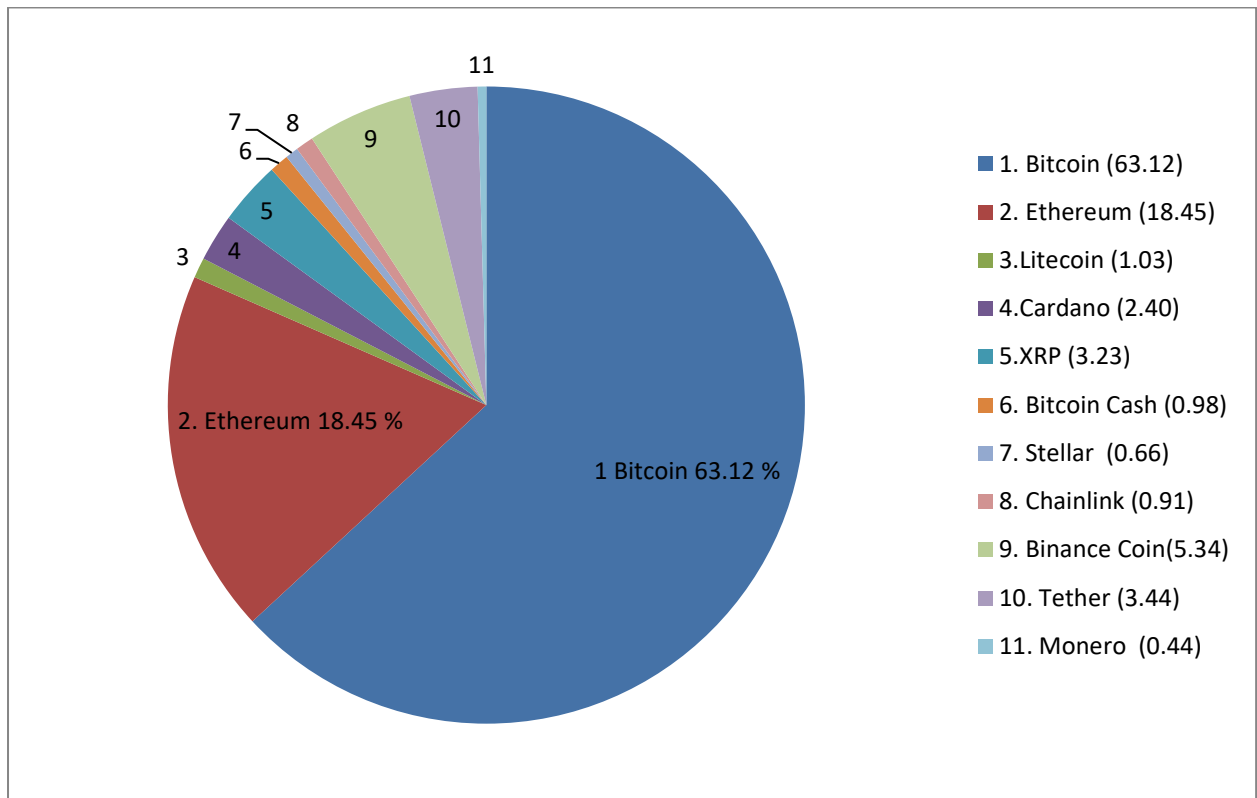


Source: Data compiled from <https://coinmarketcap.com/historical/20201025/> from 2017 to 2021

Figure 1. Shows the Market Cap of 11 Cryptocurrencies from October 2017 to April 2021

Figure one shows the market cap of selected cryptocurrencies. The series one to eleven has given in the below order: Bitcoin (BTC) Ethereum (ETH), Litecoin (LTC),

Cardano (ADA), XRP, Bitcoin Cash (BCH), Stellar (XLM), Chainlink (LINK), Binance Coin (BNB), Tether (USDT) and Monero (XMR).



Source: Compiled from <https://coinmarketcap.com/>

Figure 2. Shows the Market Cap of Bitcoin and Top Ten Altcoins as on April 2021

Bitcoin and other 10 prominent cryptocurrencies are shown in Figure 2. It clearly reveals the percentage of market cap among the top eleven cryptocurrencies in the world. Among these 11 digital coins, the Bitcoin possesses the first place and bagged 63.32 percent of the total market cap of all eleven digital coins. Ethereum ranked second in the list and have 18.45 percent of the market cap. Monero has a market cap of 0.44 percent and ranked eleventh in the given list. Followed by stellar having 0.66 percent of market Cap and ranked 10 in the list.

Correlations Analysis

Correlation analysis is employed to quantify the degree in which the variables are related. The correlation coefficient says the effect of one variable will affect the other. Hence, this correlation analysis provides a linear relationship between two variables. In this study the researcher choose Bitcoin as an independent variable and other ten altcoins were considered as dependent variables. Analysis was made among the market cap of Bitcoin and the market cap of ten prominent altcoins.

Table 3

Shows the Relationship of Market Cap between Bitcoin and Altcoins

Correlations		Bitcoin BTC	Ethereum ETH	Litecoin LTC	Monero XMR
Bitcoin BTC	Pearson Correlation	1	.983**	.896	.896
	Sig. (2-tailed)		.000	.000	.000
	N	17	12	14	14

Correlations		Cardano ADA	XRP	Bitcoin Cash BCH	Stellar XLM
Bitcoin BTC	Pearson Correlation	.968	.856**	.293**	.768**
	Sig. (2-tailed)	.000	.000	.481	.001
	N	8	16	8	14

Correlations		Chainlink LINK	Binance Coin BNB	Tether USDT
Bitcoin BTC	Pearson Correlation	.978	.989**	.982**
	Sig. (2-tailed)	.000	.000	.000
	N	8	8	12

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The above analysis exhibits the relationship between the Bitcoin and other altcoins. The outcome of correlation analysis reveals that there is a strong relationship between the market cap of Bitcoin and the other altcoins such as Ethereum, Litecoin, Monero, Cardano, Stellar, Chainlink, Binance Coin, Tether at one percent level of significance. Among the cryptocurrencies, Bitcoin is the pioneer and holds around 50 percent of the overall market share of the listed cryptocurrencies. Once the price of Bitcoin is decreased or increased it will directly influence on the other cryptocurrencies.

Discussion

Transparency is one of the significant issues in the present business and industry. In order to improve transparency, business association and multinational organizations enacted more rules and regulations. But with this blockchain technology organizations may go for complete decentralized network and no need of federal authority. While comparing other platforms and record-keeping system, blockchain technology has more advantages. Under this technology every transaction is recorded based on consensus method and every transaction is encrypted with a proper link to the old transaction using hashing method. Now a day's organizations spent money for third party vendors' this technology has no inherited centralized player so there will be no question regarding vendor cost. Supply chain will be more transparent than forever and facilitate each and every one to trace the goods. It also confirms that it is not misused in the supply chain process. Blockchain technology eradicates errors committed by

the human with the help of automation. It brings time consuming process and improved efficiency in terms of high speed. The streamlined and automated process makes everything becomes more efficient and hasty.

As per the above discussion blockchain technology has emerged as exuberant business opportunity with a high price since 2017. Most of the blockchain systems need to verify by all parties. Unfortunately this directs to blockchain overcrowding or jamming. In order to overcome the blockchain congestion, need to offer off-chain solutions. Currently Ethereum has the plasma network hence the uses may handle large volume of transactions. Interoperability is another important issue among the cryptocurrencies. A range of blockchains and different protocols are present but most of these cannot work collectively. It is impossible to pay an Ethereum digital currency with Bitcoin. Hence the people need to select individual platform or application for every cryptocurrency to invest their money. It is necessary to develop automatic swaps which will be helpful for cross-chain transactions. Different blockchain hacking incidents are raising big questions regarding the security of blockchain. It is required to provide more secure option for the average investors for investing their money and use the blockchain.

Conclusion

The study focuses the role of blockchain and future crypto economy. Within a decade the blockchain technology reached almost all part of the globe. At present people from an average income group are trying to save or invest their money in the cryptocurrencies. Transparency, security, privacy, cross border payments, low cost, minimizing errors and no central agency to control are the main future of the blockchain. More than 4000 cryptocurrencies are presenting. But all the digital currencies are listed by reason of the meager trade value. In this study the researcher has chosen Bitcoin and 10 prominent cryptocurrencies. Correlation analysis reveals that, there is a strong relationship between the market cap of Bitcoin and other selected cryptocurrencies. These cryptocurrencies are closely associated because if Bitcoin value is increased or decreased it will directly influence on altcoin. Currently the blockchain technology has some limitation such as interoperability, scalability and automatic swaps. Since its creation the technology has undergone lot of technological improvements. Providentially, more projects are working on to overcome the problems and strengthen the young technology. In the near future this technology will be more efficient and redefine the future economy of the world.

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