

## EVALUATION OF CRYPTO-CURRENCIES AND BLOCK CHAIN IN INDIA: A LOGICAL STUDY

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### ABSTRACT

*Crypto- currency is a pioneering notion of virtual currency. This turned out to be a new technique of investment instruments in India. Despite the fact that Indian government hasn't framed any regulatory body concerning crypto- currency trading and transactions in India; previously it was restricted by the government to buy and sell crypto currencies, yet gradually there has been a boom in investment in Crypto in India. Crypto currency transacted using Block chain technology; which provides security without need for a central clearing authority; it is a decentralized ledger of all transactions across a peer-to-peer network. The concept of crypto- currency is a slight tough to understand and accept, however it is easier to use; It is considered challenging because it is completely unique from the conventional currencies that have been used since ages. In the prevailing research an attempt has been made to Evaluate Crypto-currencies and Block Chain in India. The basic aim here was to empathize with crypto currency and block chain technology. Here in the research researcher had conveniently selected five different crypto currencies on the basis of availability of data. Further Graphical Presentation is done that represent of some of the key parameters like opening price, Closing Price, Market capitalization and Trading of different crypto currency was considered for analysis of which yearly average was calculated considering the research period of six years from 2015-16 to 2020-21. In order to justify and rationalize the research researcher tried to comparatively examine key parameters of different selected Crypto – Currency with the help of ANOVA test which revealed that there was significant difference in Market capitalization, Opening and Closing Price but there was no significant difference in Volume (trading) of Selected Crypto currencies. In addition, it also tried to examine the impact of Market capitalization on Trading of Crypto – Currency with the help of Regression analysis which revealed that. There was a significant effect of market capitalization on Volume (trading) of all selected Crypto Currencies except in Ethereum and XRP.*

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**Keywords:** *Crypto-Currencies, Block Chain, Trading, Opening and Closing Price, ANOVA, Regression.*

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### Introduction

The Advancement in technology has elevated the systems of how people work, correspond, shop and do payments. Now Companies as well as customers' demand for E-payment instead of traditional cash payments with the speedy propensity of a Smartphone, consumers can pay for goods through digital payment systems. Nowadays, a new payment technique is evolving: crypto-currency. Crypto-currency can be exchanged online for goods and services.

### Meaning of Crypto- Currency

Crypto- currency is a digital payment system; that doesn't depend on banks for the verification of transactions; it's a peer to peer structure that can facilitate anyone anywhere to send & receive payments. In preference to physical (conventional) money that is transmitted everywhere and exchanged in the physical world, crypto-currency payments exist purely as digital records to an online database that depict precise transactions. When one transmits crypto-currency, all the transactions are noted in a public ledger; one can store his /her crypto - currency in a digital wallet.

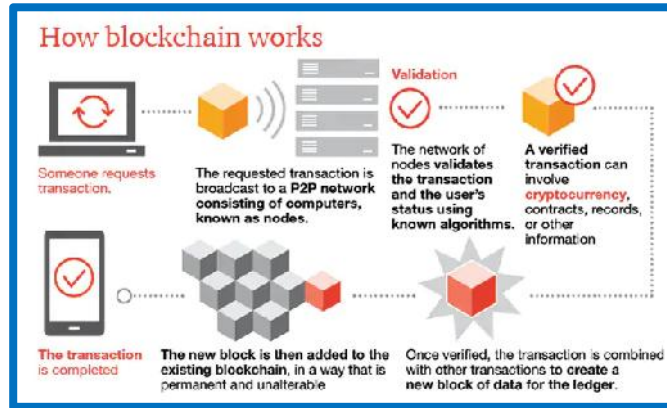
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Crypto- currency is named for the reason that it uses encryption for verification of transactions which means innovative coding is involved in saving and conveying crypto-currency data between wallets and the public ledgers. The intention of the encryption is to provide protection to the users.

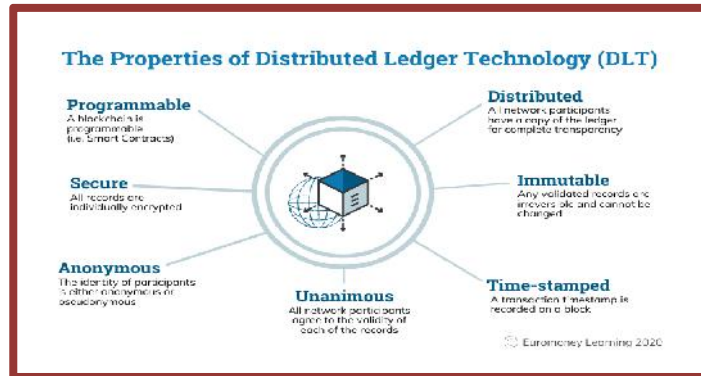
**Block Chain and Crypto Currency**

A block chain is a decentralized ledger of all the transactions; within a peer-to-peer network with this technology, one can ratify transactions without requisite for a central clearing authority. Prospective transactions can incorporate - settling trades, fund transfers, voting, and numerous other matters.



Block chain is a kind of system of keeping records of information in such a way that makes it complicated or impracticable for any kind of change, hack, or cheat in the system.

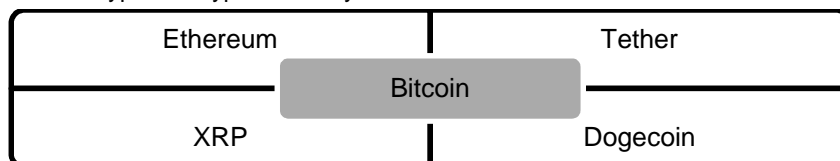
Fundamentally; a block chain is a digital ledger of transactions which are copied and distributed within the entire network of computer systems on the block chain; Each block in a chain encompasses a numbers of transactions plus every time when a new transaction take place on the block chain - a record of that transaction is added to every member's ledger. The decentralized databank managed through multiple members is recognized as Distributed Ledger Technology – DLT; Block chain is one of the types of Distributed Ledger Technology in which transactions are recorded with an irreversible cryptographic signature which termed as hash.



By means of this technology if one block inside one chain was altered, it would straightaway be noticeable that it had been manipulated with. If hackers want to corrupt this block chain system, they would need to modify each block in the chain, within all of the allotted forms of the chain.

**Types of Crypto Currencies**

Some of the types of crypto currency is been described below:



- **Bit Coin**

Bit coin is a digital currency known as crypto- currency which has achieved popularity from the time when it started in 2009 by an unknown person / group of people called Satoshi Nakamoto. Moreover; Bit coin was the first real world application of the block chain system; which is owned and controlled by its consumers - peer to peer and not having central control as the traditional currencies have.

- **Ethereum**

Ethereum is a decentralized, open-source: block chain with stylish contract functionality. Ether - ETH is one of the crypto- currency after Bit coin, it is the 2<sup>nd</sup> leading crypto- currency considering market capitalization. It was introduced in July 2015 by Vitalik Buterin.

- **Tether**

Tether introduced in 2014 by Brock Pierce, Reeve Collins, and Craig Sellars, tether is known as a 'stable coin' since it is measured to the US dollar; it was launched as Real Coin that was relaunch as Tether in November by Tether Ltd. - the company which is accountable for preserving the reserve amounts of fiat currency. Finally, it started trading in February, 2015.

- **XRP**

Ripple is a technology which performs as crypto- currency and a digital payment network for monetary transactions; It was first publicized in 2012 and was co-organized by Chris Larsen & Jed McCaleb. The token used for the crypto-currency operates the ticker symbol XRP. Officially, Ripple is the network and company's name while XRP is the crypto- currency token.

- **Doge Coin**

Doge coin is a crypto currency formed by Billy Markus and Jackson Palmer, who elected to generate a payment system as a joke, making fun of the wild conjecture in crypto-currencies at the time. It was announced on 6<sup>th</sup> December, 2013.

### **Crypto – Currency and India**

Crypto in India is currently booming, the market has been thriving, and retail investors are adding to the fire with their enthusiasm. India has been estimated to have over 10M + crypto investors, and this number is snowballing every day.

The Economic Times reported; "Top crypto exchanges have conveyed to the government in recent interactions that capital markets regulator Securities and Exchange Board of India (SEBI) is better suited to regulate the sector than the Reserve Bank of India, as crypto assets are closer to commodities than to currency".

Some important aspect to be known about crypto-currency markets in India:

<b>Investing in crypto is not Illegal</b>	In the year 2018, RBI imposed a ban on banks from easing crypto currency transactions. Later on, in March 2020, the Supreme court pronounced against the RBI ban; It specified that there were no clear grounds for levying such a ban.
<b>Crypto- currency transactions are taxed</b>	Under the Income Tax Act; Profits earned through investing in crypto-currencies are considered as capital gains tax
<b>Crypto currencies are not expensive</b>	One can purchase Bitcoins in portions also. In India, there are crypto exchanges like Coin Switch Kuber which allows their users to buy Bit coin with a minimum investment of just ₹100.
<b>The value of crypto is as real as Rupee</b>	Crypto-currencies are digital assets that do not hold a physical form. It is belief, the intangible nature of cryptos do not have real value; they are just a set of codes. The practicality is that no currency owns real value unless people have faith in it. Rupee in India holds magnitude since it is a sovereign currency moreover people trust in its sovereignty. Suppose, if once government declares Rupee to be void and announces a new currency; then Rupee will not hold value. Correspondingly, many people have faith in crypto-currencies as a means of exchange and a store of value.
<b>Investing in crypto- currency is simple</b>	Investing in crypto currencies frequently and can be understood by technologically educated people. Before the Supreme Court ruled out the RBI ban on cryptos; investing in cryptos was quite byzantine; now that situation has been rehabilitated. Crypto currencies are nothing but digital money One can utilize crypto-currency to buy goods or services; however maximum people use it as a store of value worldwide.

### Literature Review

(Malik, 2020) had conducted a research on “Drivers of Bit coin Prices: An Empirical Analysis of India” with an objective of evaluating the price of Bit coin in India during 156 weeks starting from 2017- to 2019 through Vector Error Correction. At the end researcher concluded that Bit coin price is affected by Bit coin supply, gold prices, money supply, and Bit coin trade volume.

(Ayub & Abrar, 2020) had carried out “A Comparative Study on Top Five Digital Currencies in India: Crypto currencies’ ’. Here in this research researcher comparatively examined five crypto – currencies: Bit coin, Ethereum, Ripple, Tether and Bit coin Cash which were selected based on the market capitalization rate. Research period is six months from October 2019 to March 2020. The result concluded by the researcher that the decline in price of crypto currencies in March 2020 due to the world pandemic Covid-19.

(Bhosale & Mavale, 2018) had analyzed “Volatility of select Crypto-currencies: A comparison of Bit coin, Ethereum and Lit coin”. The researcher tried to compare the price of three crypto currencies - Bit coin, Ethereum and Lit coin from December 2017 and January 2018 using Graph and Descriptive statistics. Research concluded that Bit coin was much steadier than other two coins during the selected period.

(Kaur & Kaur, 2018) had done “A Comparative Study of Bit coin and Other Crypto currencies”. Researchers compared Bit coin Vs Lit coin, Ethereum, Ripple and Dash considering some factors like Usage, YTD Performance, Total Supply, Public Awareness, Community and Rank according to market capitalization and overall result obtained showed that Bit coin is performing well in all aspects as compared to others.

(Blesson & Manjari, 2018) had written an article entitled “Crypto- currency: An Overview on Its Impact on Indian Economy”. The researcher empathized on studying about crypto- currency and how it affects the Indian economy furthermore researcher also described the present state of affairs and future projections of crypto currencies in India.

(V & P, 2019) conducted “A Study On Opportunities and Challenges of Crypto- currency in India with Special Reference to Bit coin”. It was a conceptual article discussing history, types, its working, advantages and disadvantages, challenges and opportunities. Moreover researchers tried to scrutinize Bit coin in India.

### Rational of the Study

Take into consideration above literature reviews, very few researchers are being done on the current theme. As per the observation and analysis it has been revealed that no research has been conducted during the 2015-16 to 2020-21 contemplating the objective mentioned in this research. This gave opportunity for leading present research on “Impact of Market capitalization on Trading – A Comparative Evaluation of Crypto-currencies in India”

### Objectives

- To comparatively examine different Crypto – Currency during the research period of 6 years from 2015-16 to 202-21.
- To examine the significant impact of Market capitalization on Trading of Crypto – Currency during the research period of 6 years from 2015-16 to 202-21.

### Hypothesis

- Ho<sub>1</sub>:** There is no significant difference in Market capitalization of different selected Crypto-Currency during the research period of 6 years from 2015-16 to 202-21.
- Ho<sub>2</sub>:** There is no significant difference in Trading (Volume) of different selected Crypto-Currency during the research period of 6 years from 2015-16 to 202-21.
- Ho<sub>3</sub>:** There is no significant difference in Opening Price of different selected Crypto-Currency during the research period of 6 years from 2015-16 to 202-21.
- Ho<sub>4</sub>:** There is no significant difference in Closing Price of different selected Crypto-Currency during the research period of 6 years from 2015-16 to 202-21.
- Ho<sub>5</sub>:** There is no significant impact of Market capitalization on Trading of different selected Crypto-Currency during the research period of 6 years from 2015-16 to 202-21.

### Methodology

- **Universe of the Study**  
All Crypto – Currency which are traded in India

- **Nature of the Study**

The prevailing research is descriptive since researcher aimed to describe crypto – currencies and analytical since researcher aimed to analyze different parameters related to selected crypto – currency during the study.

- **Sampling Technique**

Convenience sampling technique is employed in view of the fact that different crypto currencies have been selected on the basis of availability of data during the research period.

- **Sample of the Study**

In this research researcher has selected Five Crypto Currency.

**Table 1: Market Capitalization**

Company Name	Market Cap
Bit coin	51,559,506,664,010
Ethereum	20,408,159,974,566
Tether	4,544,021,306,844
XRP	3,022,064,878,674
Doge coin	3,239,237,805,432

Source: <https://www.coingecko.com/en> on 5/24/2021 at 5:26 P.M.

- **Collection of Data**

In prevailing research is based on secondary data collected from different websites.

- **Period of the Study**

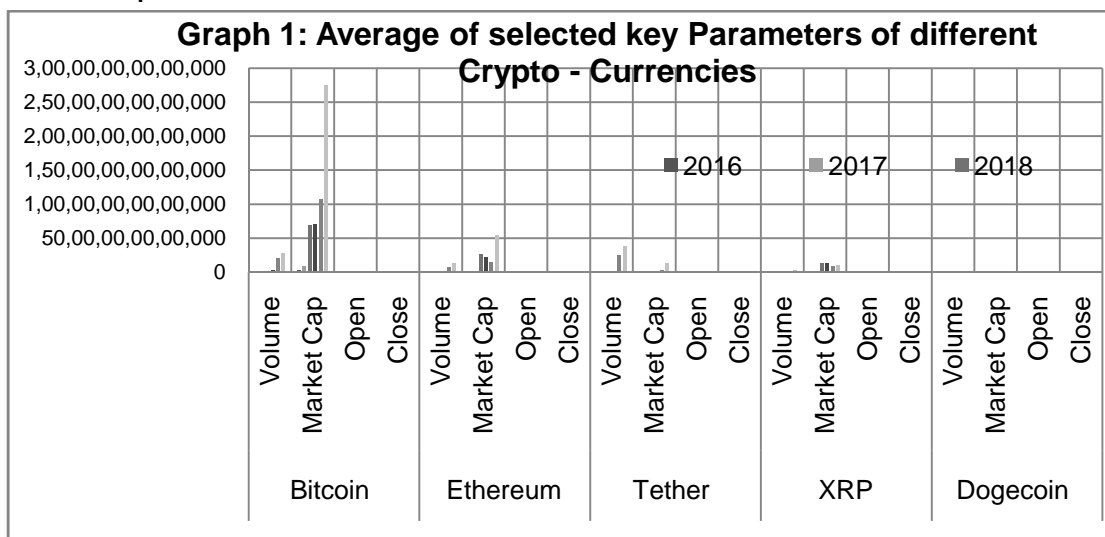
Research period consist of six years from **2015-16 to 2020-21**.

- **Tools and Techniques**

- **Variables:** To comparatively examine different selected Crypto – Currency during the research period. The key parameters like opening price, Closing Price, Market capitalization and Trading of different crypto currency was considered for analysis of which yearly average was calculated considering the research period of six years from 2015-16 to 2020-21.
- **ANOVA:** To comparatively examine different selected Crypto – Currency during the research period.
- **Regression Analysis:** To examine impact of Market capitalization on Trading of different selected Crypto – Currency during the research period.

**Data Analysis**

- **Graphical Presentation**



Graph 1 depicts Average of key parameters: Volume (Trade), Market Capitalization, Opening and Closing Price of selected crypto – currencies during six years from 2016 to 2021. Here it shows the yearly average value of different parameters from 1<sup>st</sup> April to 31<sup>st</sup> march every year. It can be seen that the Bit Coin is leading crypto currencies while Ethereum stood second and Tether third during the research period. XRP and Doge coin are slowly and gradually competing with other leading crypto currencies. Moreover the prices of all the currencies are reasonable so anyone can start investing in them very easily.

- **ANOVA Analysis**

**Table 2: ANOVA – Single Factor**

ANOVA							
	Source of Variation	SS	DF	MS	F	P-value	F CRIT
MktCap	Between Groups	3.30594E+26	4	8.26E+25	3.99	0.01	2.76
	Within Groups	5.18478E+26	25	2.07E+25			
	Total	8.49071E+26	29				
Volume	Between Groups	3.16591E+24	4	7.91E+23	2.34	0.08	2.76
	Within Groups	8.46216E+24	25	3.38E+23			
	Total	1.16281E+25	29				
Opening Price	Between Groups	1.15687E+12	4	2.89E+11	5.09	0.00	2.76
	Within Groups	1.42181E+12	25	5.69E+10			
	Total	2.57868E+12	29				
Closing Price	Between Groups	1.16604E+12	4	2.92E+11	5.05	0.00	2.76
	Within Groups	1.44243E+12	25	5.77E+10			
	Total	2.60847E+12	29				

Source: Calculated in Microsoft Excel

Above table depicts ANOVA test; from which it can be seen that F- Calculated value in case of Market capitalization (3.99), opening Price (5.09) and Closing Price (5.05) is lower than that of F – Critical Value (2.76), subsequently null hypothesis will not be accepted in this circumstances and therefore there is significant difference in Market Capitalization, Opening Price and Closing Price of different selected Crypto-Currency. Oppositely; F- Calculated value of Volume /Trading (2.34) is lower than that of F – Critical Value (2.76), subsequently null hypothesis will be accepted in this circumstances and therefore there is no significant difference in Trading (Volume) of different selected Crypto-Currency.

- **Regression Analysis**

**Table 3: Regression Matrix**

Regression Statistics					
	Bit coin	Ethereum	Tether	XRP	Doge coin
Multiple R	0.90	0.78	0.89	0.47	0.98
R Square	0.80	0.61	0.79	0.22	0.95
Adjusted R Square	0.75	0.51	0.74	0.02	0.94
Standard Error	5.83164E+11	3.82477E+11	8.62679E+11	1.02301E+11	5338699600
Observations	6.00	6.00	6.00	6.00	6.00

Source: Calculated in Microsoft Excel

Above table depicts Regression statistics; which displace that the multiple correlation coefficient in Bit coin (0.90), in Doge Coin (0.98); this indicates that the correlation among the Market Capitalization and Volume (trading) is Very High positive. In the case of Ethereum (0.78), in Tether (0.89); this indicates that the correlation among the Market Capitalization and Volume (trading) is High positive. While in case of XRP (0.47) this indicates that the correlation among the Market Capitalization and Volume (trading) is Low positive.

**Table 4: ANOVA Test**

ANOVA						
		DF	SS	MS	F	Significance F
Bit coin	Regression	1	5.49889E+24	5.49889E+24	16.17	0.02
	Residual	4	1.36032E+24	3.40081E+23		
	Total	5	6.85921E+24			
Ethereum	Regression	1	9.08376E+23	9.08376E+23	6.21	0.07
	Residual	4	5.85153E+23	1.46288E+23		
	Total	5	1.49353E+24			
Tether	Regression	1	1.11074E+25	1.11074E+25	14.93	0.02
	Residual	4	2.97686E+24	7.44214E+23		
	Total	5	1.40843E+25			
XRP	Regression	1	1.16917E+22	1.16917E+22	1.12	0.35
	Residual	4	4.18623E+22	1.04656E+22		
	Total	5	5.3554E+22			
Doge coin	Regression	1	2.19754E+21	2.19754E+21	77.10	0.00
	Residual	4	1.14007E+20	2.85017E+19		
	Total	5	2.31155E+21			

From the above table; F – Significance value in Bit coin (0.02), Tether (0.02) and Doge Coin (0.00) are lower than that of 0.05 alpha level hence the null hypothesis will not be accepted means there is significant impact of Market Capitalization on Volume(Trading). In the case of Ethereum (0.07) and XRP (0.35) are higher than that of 0.05 alpha level hence the null hypothesis will be accepted means there is no significant impact of Market Capitalization on Volume(Trading).

**Table 5: t – Test**

		Co-efficient	Standard Error	t Stat	P-value
Bit coin	Intercept	-50,449,719,530	332,870,718,621	-0.2	0.9
	MktCp	0.1	0.0	4.0	0.0
Ethereum	Intercept	-36,391,830,903	229,902,642,607	-0.2	0.9
	MktCp	0.2	0.1	2.5	0.1
Tether	Intercept	217,971,922,401	419,406,078,131	0.5	0.6
	MktCp	3.0	0.8	3.9	0.0
XRP	Intercept	20,099,150,742	71,864,064,248	0.3	0.8
	MktCp	0.1	0.1	1.1	0.4
Doge coin	Intercept	-5,293,144,711	2,823,225,852	-1.9	0.1
	MktCp	0.5	0.1	8.8	0.0

From the above table; P – Value in Bit coin (0.0), Tether (0.00) and Doge Coin (0.00) are lower than that of 0.05 alpha level hence the null hypothesis will not be accepted means there is significant impact of Market Capitalization on Volume (Trading). In the case of Ethereum (0.1) and XRP (0.4) are higher than that of 0.05 alpha level hence the null hypothesis will be accepted means there is no significant impact of Market Capitalization on Volume(Trading).

### Conclusion

India is an emerging player in the world crypto- currency market. Overwhelmingly; the trough result of ANOVA test after comparative analysis it is being revealed that there is a significant difference in Market Capitalization, Opening Price and Closing Price of difference while there is no significance difference in Volume (Trading) of different selected crypto currency. Secondly through the result of Regression Analysis it is being revealed that market capitalization had a significant impact over Volume (Trading) in Bit coin, Tether and Doge Coin. Which means change in Market capitalization will result in significant change in volume of different Crypto currencies which means that the demand of crypto currencies at some point depends on market capitalization too.

**Recommendation**

Moreover, it is being observed that even though it is a totally new concept and requires technical knowledge, there is a constant increase in demand of all the selected crypto currencies during the research period. The government must develop some authorized rules and regulatory body for controlling and managing Crypto currency in India.

**Significance of the Research**

The research would be beneficial to those who want to learn Crypto – Currency and Block Chain. The research would be beneficial to prospective investors in making wise decisions. Prevailing research will be benefited to students as well as Potential Researcher

**Limitation of Research**

This research is purely based on secondary data which has its own limitations. Study covers only Five crypto currencies- Bit coin, Ethereum, Tether, Doge Coin. Moreover, these are being evaluated considering yearly average of Market Valuation, Volume, Opening and Closing Price during six years.

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