A COMPARATIVE STUDY OF BITCOINS IN INDIA AND UNITED STATES OF AMERICA

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PURPOSE
BITCOINS is the most popular virtual currency and is largest in terms of total market value. The usage of Bitcoins is legally allowed in USA for years and its gaining momentum in India. Hence, this study aims to compare the status of usage of Bitcoins in India as compared to USA.

Design/Methodology/Approach: *For the purpose of comparison, volume and number of daily transactions of Bitcoins in India and USA are selected. Secondary data for financial years 2013-14 to 2016-17 from reliable sources are collected and t-test is applied for testing the hypothesis.*

Findings: *The study concludes that, growth rate of volume of Bitcoins in India is more than that in USA. One of the outcomes of the study is that, there is significant difference between the mean number of trades per minute of Bitcoins in India and USA.*

Research Limitations: *This study is limited to only two countries India and USA whereas, Bitcoins are used in many countries all over the world.*

Practical Implications: *This study will generate understanding about Bitcoins amongst academicians. It will also help investors of Bitcoins to get the comparative picture of Bitcoins in India with regard to USA.*

Originality/Value: *Available research on Bitcoins is less and especially in context to India. This study would be pioneer in comparison of Bitcoins in India and USA. It would pave a path to other researchers to conduct further research on Bitcoins.*

Key Words: Bitcoins, India, USA.

Introduction

The rapid growing digitalization all over the world has resulted into emergence of virtual currency. The highlight of virtual currency is that, it is created as well as managed electronically only. Bitcoin is the most popular and fastest growing virtual currency in the world. It is largest of its kind in its market value. Bitcoins work on unregulated system and have many flexible features with peer to peer network system based on block chain technology. Anyone can create an account without any charge and without giving true identity for registration. Such features with unregulated nature makes this system subject to risk. It facilitates decentralization by using distributed transaction logs instead of storing transactions on single server. "Bitcoin's daily exchange rates exhibit virtually zero correlation

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with widely used currencies and with gold, making bitcoin useless for risk management and exceedingly difficult for its owners to hedge" (Yermack, 2014).

Review of Literature

Antonopoulos (2014) generates understanding about process of working of digital currency without any central server. The book explains the working of blockchain technology behind Bitcoin and the process of 'Bitcoin Mining' and 'Bitcoin Wallets', where Bitcoins are saved electronically, the purpose of Bitcoins, and the currency's application in the real world.

Cedillo (2013) presents interesting perspective of monetary development and describes how the shadow banking industry has come up with many financial innovations. His discussion states that, even the European Central Bank has recognized that its regulatory framework lags behind technological developments by 21 years. He categorized Bitcoins to be a part of shadow banking because it is a monetary system that operates outside the official financial system. In this regard, Bitcoin represents such an innovation that the official financial world will embrace in one form or another in the future.

Champagne (2014) focuses on the key issues behind the creation of Bitcoins which was envisaged by an unknown person who used the name 'Satoshi Nakamoto'. His book investigates who Nakamoto is, whether it is one real person or a group, and how it was possible for Nakamoto to create Bitcoin while remaining completely anonymous. The book contains actual emails and internet posts by Nakamoto, which are presented in chronological order. The author has explained a variety of technical Bitcoin topics in an easy manner. It includes a copy of the original white paper by Nakamoto which started the entire concept of Bitcoin. Wonglimpiyarat (2016) suggested that Bitcoins has the potential to revolutionize the payment mechanism and the study also addresses the key issues in extensive acceptance of Bitcoins by various governments across the globe.

Hüsler, Sornette, & Hommes (2013) examines the bubble and crash of Bitcoin in April of 2013. The study utilizes a learning-to-forecast laboratory experiment with human subjects and concludes that super-exponential bubbles can occur in such a setting. This study makes it clear that, the dramatic price swings are possible because Bitcoin is completely disconnected from fundamentals.

Kelly (2014) has taken investor's perspective to explain the overall potential of Bitcoin. The book includes the various aspects of Bitcoin like its regulation in the markets, investment, and trade alternatives. "Bitcoin is more than a medium of exchange; it is more than an emerging currency — and this technology has the revolutionary power of the personal computer and the Internet. Mainstream economists have hesitated to define Bitcoin as a currency because its price is too volatile to be considered a store of value and you cannot pay your taxes with bitcoins. There is no doubt the volatility is a huge hurdle; however, the price swings have become less pronounced as the currency has gained acceptance" (p. 8).

Morisse (2015) provides systematic literature review examining crypto currencies and Bitcoin. This review summarizes the main concepts of 42 papers and aligns them to information system research.

Plassaras (2013) has given futuristic approach for regulating Bitcoin. The paper discusses that an IMF membership would be a solution for avoiding negative effects of a future speculative attack on fiat currencies carried out by Bitcoin holders. The study does not estimate what the market value of Bitcoins would need to be for such an attack to be possible. Even though an IMF membership could theoretically stabilize the exchange rates, in practice collecting a sufficient stockpile would be problematic.

Sapuric & Kokkinaki (2014) has shown the comparison of volatility of Bitcoin exchange rates and other currencies. Secondary data of exchange rates from 2010 to 2014 was used for analyzing the comparison of currency rates with Bitcoin rates. The research concludes that, Bitcoin rates are highly volatile but when volume of Bitcoin trades is also considered then volatility seems to be stabilizing.

Vigna & Casey (2016) discussed about the future of Bitcoin and its usage in all fields. The authors investigated how in future, entire finance system will operate without any middle person being required, paving way for direct dealing between two persons. To illustrate this, the authors have used the example of Bitcoins. "For any currency to be viable, be it a decentralized cryptocurrency issued by a computer program or a traditional "fiat" currency issued by a government, it must won the trust of community using it. For cryptocurrency advocates, the whole point is to offer an alternative model for that trust"(p. 313).

Study conducted by Karalevicius, Degrande, & Weerdt (2017) suggest that the price of Bitcoins is determined by the perception of users and investors. The study highlighted the reactions of investors with reference to the news in the media.

Estrada (2017) studied the granger-causation relationships between Bitcoin price & the S&P 500 and concluded that there is no causal relationship between Bitcoin prices and prices of financial instruments. Kasper (2017) concluded that the "volatility of Bitcoin is roughly three times higher than that of most country currencies (except for the currency of South Sudan), but the volatility of Digital Cash is about six times higher than that of Bitcoin, and the volatilities of most other cryptocurrencies are also much higher than that of Bitcoin" (p. 15).

The above review of literature shows that, there has been some research conducted on volatility of Bitcoin prices, some regulatory issues, and its potential growth. But there is no published academic research available highlighting the Indian scenario of Bitcoin performance.

Objectives

The paper aims to

- study the legal status of Bitcoins in India and United States of America.
- compare the volume of Bitcoins transacted in India and United States of America.
- compare the number of trades of Bitcoins per minute in India and United States of America.

Hypothesis

To compare the number of daily transactions of Bitcoins in India and USA, researcher has formulated following hypothesis for the study.

Null hypothesis (H_0): There is no significant difference between the mean number of trades of Bitcoins per minute in India and in USA.

Alternative Hypothesis (H_1): There is significant difference between the mean number of trades of Bitcoins per minute in India and in USA.

Significance of the Study

This study will generate understanding about Bitcoins amongst academicians. It will also help investors of Bitcoins to get the comparative picture of Bitcoins in India with regard to USA. Available research on Bitcoins is less and especially in context of India. This study would be pioneer in comparison of Bitcoins in India and USA. It would pave a path to other researchers to conduct further research on Bitcoins.

Research Methodology

For the purpose of comparison, researcher has selected two factors namely, volume and price of Bitcoins in India and USA. Secondary data for financial years 2013-14 to 2016-17 from reliable sources have been collected and t-test has been applied for testing the hypothesis.

Conceptual framework

Virtual currency is defined differently by different countries and agencies. The European Central Bank defined virtual currency as "a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community" (ECB, 2012). The Financial Crimes Enforcement Network (FinCEN), a bureau of the USA Treasury, defined virtual currency as "a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency" (Financial Crimes Enforcement Network, 2013).

Satoshi Nakamoto is supposed to be the creator of Bitcoins. The identity of Satoshi Nakamoto is not revealed so we are not even sure whether there was any person with this name. But he published his invention in 2008 and released it in 2009 as open source software. Bitcoin is an online virtual currency system which does not have any central server. It is a currency system which is decentralized and unregulated with no central authority. It works on consensus of users and transactions are collectively managed by the system itself. Bitcoin system works on the basis of blockchain technology which keeps the record of all transactions in the form of blocks added to the chain. The process of adding new Bitcoins to the system is known as mining. Bitcoin mining can be done with the help of solving an algorithm which requires high-end computers and internet connection. Local Bitcoin INR and Bitfinex USD are the avenues for the Bitcoins trading, where, the former represents the Bitcoin exchange market for trading between Bitcoin and Indian Rupee and the latter represents the Bitcoin exchange market for trading between Bitcoin and US Dollar.

Legal Framework of Bitcoin Trading in India and USA

Reserve Bank of India, India's Central Bank, itself has no regulatory framework till date with respect to the Bitcoin trading, but is expected to introduce a code of conduct for Bitcoins and other virtual currencies soon. RBI, on December 24, 2013, issued a cautionary note warning the investors dealing in virtual currencies, about various risks associated with it. It makes it clear that, such virtual currencies are totally unregulated and Central Bank does not authorize these currencies. People dealing with it may do so on their own risk as no legal protection is available to safeguard the interest of investors. These currencies are based on internet and are prone to security risks. No prior regulatory approvals, registration or authorization is required to deal in virtual currencies. It may carry multiple risks to their users. It was also stated that, Reserve Bank of India may consider to launch its own virtual currency after examining the legal and operational issues relating to it. Various statutes may require to be amended for the same. On March 1, 2017, RBI Deputy Governor R. Gandhi also raised concerns over virtual currencies posing potential financial, legal, customer protection and, security-related risks. A committee consisting of finance and information technology experts is constituted to look into the matter. Hence, the present Indian scenario is that Bitcoins is neither totally banned nor are regulated as legal tenders. Though there are no clear regulations with regard to Bitcoins and also, with Central Bank's aversion in form of caution notes, still, the presence of Bitcoins has been growing in India with new Bitcoin exchanges like Zedpay, Coinsecure, and Unocoin coming up. These exchanges have their own self-regulating norms to avoid money laundering activities. Digital Assets and Blockchain Foundation India was formed as association of Bitcoin Exchanges (Desai, 2015).

Bitcoins are classified as convertible decentralized virtual currency by USA Treasury. In May 2013, the US Government Accountability Office (USGAO) recommended that, a tax guidance in respect of Bitcoins should be formulated by internal revenue service. In March 2014, a guidance was issued which considered Bitcoins as property for federal taxation and people mining Bitcoins were subject to self employment tax. In March 2014, US Commodity Futures Trading Commission considered regulation of Tera Exchange as the first Bitcoin Swap Exchange Facility (SEF). In June 2014, California assembly man submitted draft legislation to legalize Bitcoins. Bitcoin exchanges were given official status by New York State Department of financial services in 2014.

Comparison of Volume of Bitcoins transacted in India and USA

Volume of Bitcoins transacted in India

Daily volume data of India was collected from reliable secondary source (Coin Dance, nd) and then yearly average was calculated for four financial years from 2013-14 to 2016-17. Figure no. 1 shows the average annual volume of Bitcoins in India.

It can be seen in figure no. 1 that, average annual volume of Bitcoins in India has increased many folds from 527100 in 2013-14 to 13768965 in 2016-17, resulting in growth rate of 2512% over 4 years. The growth rate from 2013-14 to 2014-15 is recorded at 232% whereas, growth rate from 2014-15 to 2015-16 is 211%, and from 2015-16 to 2016-17 is 153%. This indicates that though the absolute volume has been increasing, the percentage of growth rate has been declining over the years. (Growth rate is calculated as increase in volume/previous years volume * 100).

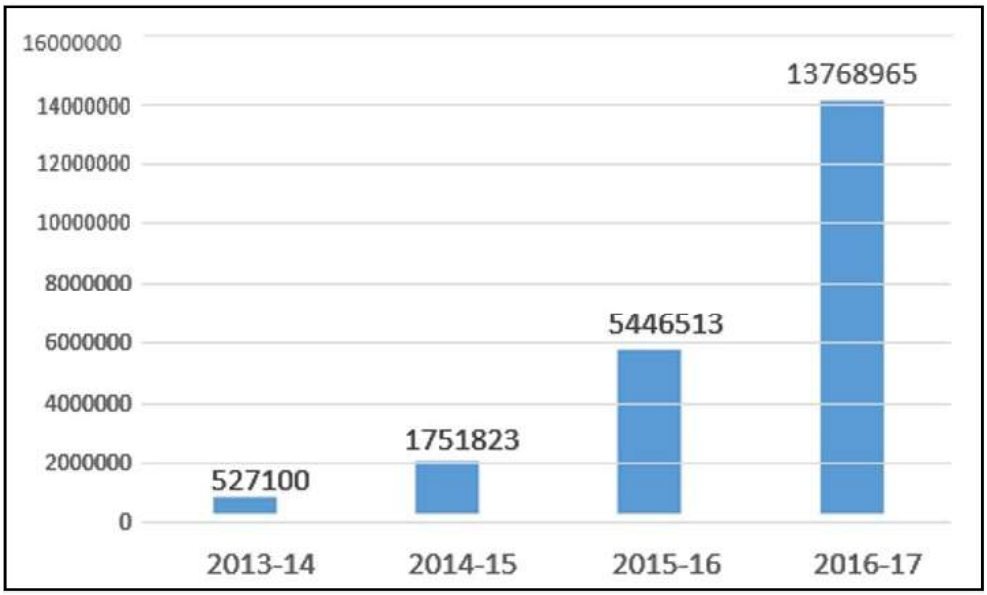

Figure No. 1: Average Annual Volume of Bitcoins in India

Source: Prepared by researcher

Volume of Bitcoins transacted in USA

Daily volume data of USA was collected from reliable secondary source (Coin Dance, nd) and then yearly average was calculated for four financial years from 2013-14 to 2016-17. Figure no. 2 shows the average annual volume of Bitcoins in United States of America.

It can be seen in figure no. 2 that, average annual volume of Bitcoins in USA has also increased from 1055266 in 2013-14 to 7056524 in 2016-17 resulting in growth rate of 569% over 4 years. The growth rate from 2013-14 to 2014-15 is recorded at 206% whereas, growth rate from 2014-15 to 2015-16 is 64%, and from 2015-16 to 2016-17 is 33%. This indicates that though the absolute volume has been increasing, the percentage of growth rate has been declining over the years.

Comparison of Volume of Bitcoins in India and USA

To compare the volume of Bitcoins in India and USA, researcher has compared the growth rate in volume seen in each of the years instead of comparing the absolute volumes of each country as shown in table no. 1.

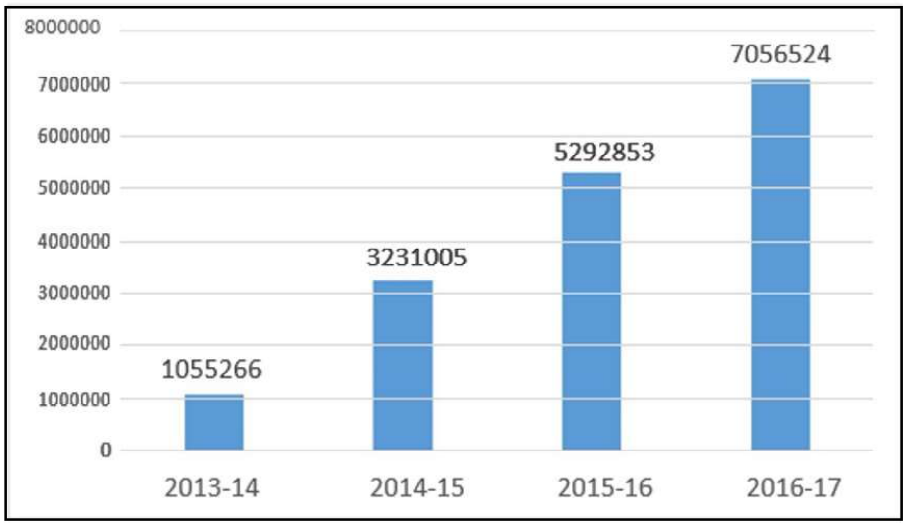

Figure No. 2: Average Annual Volume of Bitcoins in USA

Source: Prepared by researcher

Table No. 1: Growth rate of Volume of Bitcoins in India and USA

Year	Growth rate in India	Growth rate in USA
2014-15	232 %	206 %
2015-16	211 %	64 %
2016-17	153 %	33 %

Source: Calculated from Figure no. 1 & 2

It is evident from table no. 1 that, percentage growth rate has been high in all years in India as compared to USA.

Comparison of Number of Trades of Bitcoins in India and United States of America

Monthly average of number of trades per minute in India and USA were calculated and to test hypotheses, 't' test on two independent samples without assuming equal variance is applied. The result of the same is tabulated in table no. 2.

Table No. 2: Results of 't' test

Particulars	*India*	*USA*
Mean	0.005142466	0.143292436
Variance	2.84396E-05	0.008835497
Observations	49	49
Hypothesized Mean Difference	0	
Df	48	
t Stat	-10.2715391	
P(T<=t) one-tail	5.22956E-14	
t Critical one-tail	1.677224196	
P(T<=t) two-tail	1.04591E-13	
t Critical two-tail	2.010634758	

From table no. 2 it is observed that, 'p' value is less than 0.05 (5% significant level). Hence, null hypothesis stands rejected. Therefore, it is concluded that, there is significant difference between the mean number of trades of Bitcoins per minute in India and in USA.

Conclusion

Bitcoin is the fast growing virtual currency both in India as well as USA. The legal status of Bitcoins in India is still not clear as it is not totally banned nor it is regulated yet. It has been given legal status in USA since many years. The volume of Bitcoins is seen to be increasing in both India and USA, but the growth rate of volume is more in all years in case of India as compared to USA. There is significant difference between the mean number of trades of Bitcoins per minute in India and in USA.

Limitation and Further Scope of Study

This study is limited to only two countries India and USA whereas, Bitcoins are used in many countries all over the world. Further research can be conducted by expanding the scope of study to include other countries. Also, research can be conducted for analysing the reasons for different trends observed in performance of Bitcoins in various countries.

Recommendations

On the basis of the present study, following key points can be put forth with respect to investors, and various legal authorities in order to accelerate the growth of Bitcoins in the country.

Recommendations with respect to Investors:

i. The concept of Bitcoin is not very clearly understood by the common people, hence, the researcher suggests that regulators must allocate sufficient resources to generate awareness about virtual currencies. Awareness programs should be arranged. Detailed information about process and systems on which Bitcoins work and its implications & risks associated should be made available on the websites and social media sites as well.

ii. Investors being the most affected stakeholders in the transactions of Bitcoins, their perspective should be considered in the process of making various policy decisions with regard to legal enactments for virtual currencies.

Recommendations with respect to legal aspect:

i. RBI has issued cautionary notes regarding risks associated with Bitcoins and has also clearly stated that Bitcoins is not a legal tender still, the presence of Bitcoins in India has not vanished. Hence, it is suggested that amendment in the relevant statutes to be made to specifically exclude the ambiguity in interpretations about the legal status of Bitcoins in India.

ii. Instead of totally banning the usage of Bitcoins, government should opt for close watch on Bitcoin transactions and exercise power and controls wherever necessary.

iii. Central Bank must consider issuing its own virtual currency at earliest as the concept of virtual currency is inevitable in this globalized era.

Recommendations with respect to taxation aspect:

i. Amendment needs to be made in Income Tax Act to clearly specify the tax to be levied in case of capital gains arising out of Bitcoin transactions.

ii. Amendment is required in CGST and SGST Act with respect to indirect tax on Bitcoins.

Recommendations with respect to Bitcoin exchanges:

i. There should be close monitoring of the transactions on exchanges with respect to various virtual currency trades.

ii. Bitcoin exchanges should be brought under the purview of Securities Exchange Board of India (SEBI) and required to submit timely reports.

iii. Investor protection board must take responsibilities related to Bitcoin transactions to safeguard the interest of investors.

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