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FACTORS AFFECTING RISE IN DIGITAL MONEY

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ABSTRACT

With the introduction of bitcoin Digital Money, the whole economy is affected. A Digital Money is digital money or assets which can be used as medium of exchange of goods and services using cryptography, for the secure transaction and it can also control the creation of additional or extra currency units. Digital Money is divided as a subset under alternate virtual currencies. Bitcoin was declared as decentralized currency in 2009. Since then, numerous cryptocurrencies have been created. They are frequently called altcoins. The legalization of Virtual Money depends on the legal system of a country that's why it is somewhere legal and somewhere not. Virtual Money uses different time-stamping schemes to avoid the required trusted third party to timestamp transactions added to the blockchain ledger. Secondary research was used prior to primary research as a process to gather information for conducting research. The primary data were collected using a questionnaire. Quantitative data was administered through surveys distributed via a limited sample to approximately 100 participants. Results indicated that general public especially students who understand the concept of blockchain are strongly willing to invest in Virtual Money irrespective of the fact that it has no central authority. This research will provide guidance to the investors and government that the blockchain technology can be very useful in securing transactions and safe record maintenance. The blockchain technology has a very bright future and when the world is talking about it then how can Indian government ignore it and declare it illegal. In this dissertation the working of Digital Money and stock exchange have been explained and differentiated, along with detail description on topics like mining process of Digital Money, e-wallets, cryptography, the scope of bitcoin and blockchain, basic concepts in working of the stock exchange. This data will be useful for the people who are looking forward to investing in this volatile natured Digital Money, the digital currency.

KEYWORDS: *Digital Money, Currency, Block Chain, Stock Market, Security, Online Transactions*

INTRODUCTION

Digital Money is a decentralized and digital currency that relies upon the method of cryptography for the generation, transferring and distribution of such currency.

When we break the word Digital Money in two parts say "crypto" and "currency", it could be understood very well 'crypto' here refers to the cryptography which is a branch of computer science that deals with encryption, decryption, passwords, and all the secret and safety norms and the other word 'currency' means any form of money which can be used as a medium of exchange. Virtual Money are also called digital cash or virtual currencies or tokens but could not be like physical money. They exist online/virtually and are not authorized by a government or any legal authority. They usually run by their respective networks basically community or peer-to-peer network. Technically, Virtual Money is having

restricted entries in a database. Standard conditions must be met to change or update these entries which are actually very difficult or rather impossible. Virtual Money is created with cryptography; the entries are secured with mathematical algorithms, not people.

In a database, all the entries are restricted and it's a special database that used distributed properties. For example, if someone sends a Bitcoin to his/her friend, he or she is creating and sending a restricted entry could be sent to the Bitcoin network. The network makes sure that it should not be double spending; it is not centralized hence not authorized. Take the same example the network is sure that the same Bitcoin is not used to send to different people. People nowadays using Digital Money as a source of investment and exchange, that's why the value of Virtual Money like bitcoin, Ethereum's and other are increasing rapidly. Only for that reason, bitcoin was the best performing currency in 2016-17 and beat the performance of gold, nifty etc.

Virtual Money is different from the securities which are traded through various stock exchanges. It is not regulated by any central authority. So basically a Digital Money is a digital asset that is designed to work as a medium of exchange for trading of goods and other purposes like to buy a flight ticket etc. Cryptography is the only security system for secure transactions.

How the transactions have changed their phase over time. It could be understood by the following example as shown in figure 1
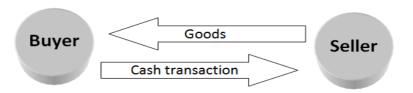

Figure 1: Cash Transaction

Source: Self

Cash is physical money, usually notes and coins. When this physical object handed to another person then its value also gets transferred to that person, without the involvement of the third party. Thus there is no credit relationship between the parties (both buyer and seller). The greatest benefit of the cash transaction is that whosoever is in the possession of physical becomes the owner of it by default. There was one drawback of this system; both the parties have to be physically present at the time transaction taking place, which makes the completion of transaction difficult.
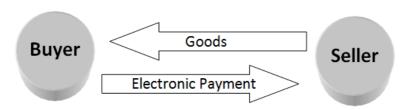

Figure 2: Payments Online

Source: Self Made

The ideal payment is that where the value of money is transferred electronically through cash data files. Under this system, although the transactions were made electronically the value of money was also preserved and could be circulated freely on electronic networks. The particular characteristic of the electronic payment system was that it could be copied to any number of times, thus the problem of double spending raised actually problem of multiple spending.
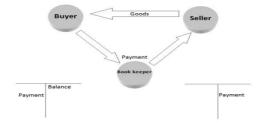
Figure 3: Payment Systems with the Central Authority

Source: Self Made

An example can easily explain the exchange system of Virtual Money through the process of distributed ledger shown in figure 1
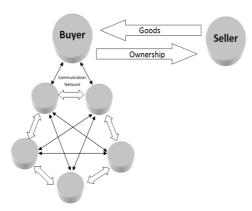
Distributed Ledger

Figure 4: Payment Systems with Distributed Ledger

Source: Self Made

The nature of the Digital Money transaction is such that it gives an invitation to nefarious activities like tax evasion and money laundering. For example in India, it is now treated as an illegal currency, because it is supposed that the Indian people are buying Virtual Money in cash and selling in white money so it has now become a medium of converting black money into white.

Virtual Money makes it convenient in transferring funds between two parties. The fund transfer is done with less transaction fees, allowing investors to avoid the higher fees charged by most bankers for online transfer.

The creator of bitcoins has used the blockchain system to store an online ledger of all the transactions which contains all transactions which were used in the past using bitcoins, it also provides a data structure to avoid threats from hackers and copied to all computers running Bitcoin software. According to technical experts, blockchain can be used for online voting and mass funding, and the financial institutions like JP Morgan Chase seemore potential in Virtual Money because of lower transaction charges.

To create a digital Digital Money balance there should be some central authority that can regulate the whole blockchain system, due to which the backup copies of the holdings can be secured from different issues like a computer crash, password issue, etc. Since prices are based on demand and supply, the rate of Virtual Money have fluctuated widely.

REVIEW OF LITERATURE

- Cryptographic forms of money involve a center technological artifacts and present a rich wonder in view of the interweaving of technological artifacts and social settings(**(Source Going Back to Basics in Design: From the IT Artifact to the IS Artifact, Allen S. Lee, Manoj A. Thomas, Richard L. Baskerville)**. It's an argument that digital forms of money are an alternate payment strategy that may eliminate middle people with cryptographic strategies and ought to be installed in the research regions of SIGeBIZ and SIGSEC.

- Bitcoin is a sort of pure P2P (peer-to-peer) virtual cash and can meet the possible necessity ofdecentralization (**Andrew Marshall, April 2017**). It might help entirely control the speed of cash supply, foresee the aggregate sum of cash available for use and successfully contain inflation. Bitcoin essentially has the capacity of cash and part of the money highlights; however, it isn't the genuine currency. Whether bitcoin can be moved into the genuine cash relies on the trust and certainty individuals have in the money and the entire system.

- The cryptographic money advertises has developed erratically and at uncommon speed over the course of its short life span. Since the arrival of the pioneer anarchic digital money, Bitcoin, to the general population in January 2009(**Zoe Bernard, Dec'17**), in excess of 550 Virtual Money was developed, and the greater share was captured by bitcoin. Research on the business is still as low as of other areas. Its major share is almost centered on Bitcoin instead of a more diverse spread of digital forms of money and is consistently being used by liquid industries, counting all the new coins, movement, and expanding government control on the business areas. In spite of the fact that the smoothness of the business does, in fact, exhibit a test to look into, an exhaustive assessment of the cryptographic money industry writ extensive is fundamental.

While digital money has been examined since the 1980s, bit coin is the first to see broad adoption. A key purpose behind bitcoin's prosperity is it's baked in decentralization. Rather than utilizing a national bank to manage money, bitcoin utilizes a decentralized system of hubs that utilization computational evidences of-work to reach accord on a conveyed open record of exchanges, otherwise known as, the block chain.

- Investigating the impacts of social innovations identified with the administration on cross country contrasts in Bitcoin costs. Investors pay a persistent premium over global costs in nations with a less financial opportunity, especially when they exist outside trade and capital controls restricting venture flexibility. Utilizing the Heritage Foundation's Economic Freedom Index and related macroeconomic time-arrangement, It was discovered that a 10 point increment in the list prompts a 7.5 percent to diminish in premium. Of the segment files, Financial Freedom has the biggest peripheral impact in that a 10 point change in its esteem diminishes costs by 5.3 percent. From this point of view, Bit coin can be viewed as a debacle resource offering another channel to dodge household locale restraint, a procedure taking after blemished markets for calamity protection actuating out of the blue high premiums.

OBJECTIVE OF STUDY

To Analyze the Concept and Trends of Digital Money

Bitcoin

Figure 5

Bitcoin is the most used peer to peer decentralized digital Digital Money in the world. Bit coins can be used in the form of digital cash that can be used for making online payments for goods and services. It is traded electronically like fiat currencies. Bitcoin is the widely accepted Digital Money in the world right now, having the largest market share as compared to other crypto currencies. The security of open source code has been carefully tested and upgraded overtime that it can't be hacked. There are 21 million bitcoins present in the market, out of which only 17 million are tradable and other 4 million are distributed among the people who are able to solve blockchain algorithm i.e. miners.

On solving 1 algorithm of bitcoin the person gets 50 bitcoins.

Brief History of Bitcoin

Many companies such as OS-gold, standard reserve, and INTGOLD were introduced between the year 1999 and 2004, but they were not able to last long because of their extreme dependency on the precious metal gold. And other companies like e-GOLD, e-Billion were investigated by our government because they had legal disputes, frauds and their assets were seized and frozen by the US government.

Although the case was not because of the clear violation of law it has affected the other gold-based derivative digital currencies. Thereafter in 2009, bitcoin came up with a solution for all failed Digital Money.

Trend of Bitcoin

30-minute chart via Coinstackr.com

Figure 6

Source: Internet

Litecoin (LTC)

Figure 7

Litecoin (LTC) makes utilization of the Scrypt encryption calculation, instead of SHA-256. One of the objectives of Litecoin is had exchanges affirm at a quicker speed contrasted with Bitcoin organize, and additionally make utilization of a calculation that has been impervious to quickened equipment mining advances like ASIC.

The whole measure of Litecoin that is accessible for mining and course is four times the amount of Bitcoin, which means there will be fourfold the amount of Litecoin open to Bitcoin.

Qualities

- Simple Cryptographic calculations which make the generation of block 4x speedier.

- Litecoin was recently used to play out across chain atomic swap which enables investors to swap cryptographic forms of money straightforwardly using a smart contract and without the requirement for an outsider, for example, an exchange.

Trend of Litecoin

Figure 8

Source: Internet

Ethereum (ETH)

Figure 9

Ethereum is a technology which can be used by anyone in the world; literally, anyone can use, build on, and invest in Ethereum. "Web3" an update to the internet is provided by Ethereum. Now thousands of developers are using Ethereum to build their applications, that's the reason it has started growing exponentially.

Ethereum also used blockchain technology although Ethereum is not bitcoin these have common blockchain technology. In market, bitcoin has captured the market but Ethereum can function much more than bitcoin, it is faster and cheaper than bitcoin. But Ethereum is not developed to replace bitcoin but it is Upgradation to that.

Trend of Ethereum

Figure 10

Source: Internet

Ripple (XRP)

Figure 11

Ripple isn't a run of the mill cryptographic money, rather it is all the more a computerized installment convention. Ripple works on an open source and shared the decentralized stage that permits a move of cash in any shape, regardless of whether it be cryptographic money, fiat cash (US Dollar, Yen, Peso…), item, or some other unit of significant worth. Ripple offers a property that it depends on a common, open database or record, which utilizes an accord procedure that permits installments, trades, and settlement in a conveyed procedure. The installment system can work without Ripple Lab's organization bolster. Giving PC energy to approve the system are organizations, network access suppliers, and the Massachusetts Institute of Technology.

XPR is the local virtual money inside the Ripple arrange. The XRP token is spoken to utilizing six decimal positions with the minimum huge position called a Drop. There were 100 billion XRP tokens made at the beginning of Ripple and as of now possesses 61percent is held by Ripple Labs. The organization has as of late put 55 billion tokens in an escrow and the arrangement to discharge one billion tokens every month. The lockup of the XRP tokens is intended to dispense with the worry that Ripple Labs could surge the market whenever. Right now, around 36 billion XRP exist inside the market.

Trend of Ripple

Figure 12

Source: Internet

Dash

Figure 13

Dash was launched in the year 2014, originally it was known as 'Darkcoin'. The main purpose was to ensure investors privacy and secrecy. Even the Digital Money's white paper author named it "the first privacy-centric cryptographic currency".

While despite everything it highlights solid encryption, Dash has since recast its desire. The digital currency now plans to end up a medium for day by day exchanges. "Dash is Digital Cash you can spend anyplace," its website strongly broadcasts.

The move in Dash's vision has served it well. As of this keeping in touch with, it is the world's twelfth most important cryptographic money. In 2017, its cost hopped by over 8,000% in the midst of an ocean of rising valuations for digital forms of money.

Trend of Dash

Figure 14

Source: Internet

IOTA

Figure 15

IOTA has turned into the fourth biggest crypto coin after Bitcoin, Ethereum and Bitcoin money. IOTA is short from the Internet of Things Application; this is the new progressive kind of computerized innovation. IOTA is the new age record that doesn't utilize a block chain and it uses another convention innovation that is called 'Tangle'. The Tangle is another information stage that is developed on the Directed Acyclic Graph (DAG), along these lines it has a chain, no blocks, and no miners. The Tangle has a rich range of highlights, zero charges, quick exchanges, boundless adaptability, safe exchanges and other. Particle forms exchange's expenses and versatility of the blockchain in a way that it eliminates the block and chain. This implies you need to affirm your last two exchanges when utilizing IOTA record.
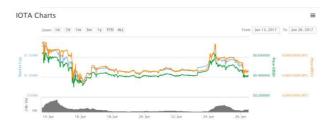
Trend of IOTA

Figure 16

Source: Internet

Monero

Figure 17

Monero is decentralized cryptographic money, which means it is secure advanced money worked by a system of clients. Exchanges are affirmed by disseminated accord and after that changelessly recorded on the blockchain. Third parties can't be trusted to guard your Monero.

Monero utilizes ring signatures, ring confidential exchanges, and stealth delivers to jumble the starting points, sums, and goals of all exchanges. Monero gives the benefit of the advantages of a decentralized digital currency, with no typical security concessions.

Trend of Monero

Figure 18

Source: Internet

Zcash

Figure 19

Zcash utilizes an extraordinary verification to secure the system called zk-snark - or evidence of development. This enables the system to keep up a protected record of parities without uncovering gatherings or sums engaged with exchanges. This occurs using zero information proofs - or fundamentally where the individual making the exchange can spend the ZEC and that the qualities adjust and they haven't been spent previously. Bitcoin each full hub keeps an adjust of what is held by each address in the UXTO or unspent exchanges yield database - with every exchange being checked to open that yield.

Zcash is set to dispatch on the 28th of October 2016 and has a strong overwhelming weight group dealing with it and support it.

Trend of Zcash

Figure 20

Source: Internet

SCOPE OF THE STUDY

This investigation was done to determine the difference between stock market securities and Virtual Money.

The study emphasizes on the decentralized working of Virtual Money and how it is different from normal working of cash. Although Virtual Money was in the market since the 1980s, but it got a sudden hike in the year 2014-15.

In foreign countries, people are accepting payments in bitcoins and are recharging their mobile phones and paying their bills via bitcoins. But in India bitcoin has been announced illegal currency. So here in this dissertation, one could understand why bitcoins are considered illegal in India, the particular reason behind this.

The use of blockchain technology innovation over various industries will provide a benefit of security and reliability. It's an ideal investment strategy with the advent of blockchain and Virtual Money being as new and revolutionary. It promotes cashless and digital economy.

After this, a government may understand that blockchain is a great innovation and can secure their transactions effectively. It may take initiative to make bitcoin legal. And people who are scared in investing in Virtual Money would be able to understand the working and start investing in Virtual Money.

REFERENCES

1. *Androulaki, E., Karame, G.O., Roeschlin, M., Scherer, T. and Capkun, S., 2013. Evaluating user privacy in bitcoin. In Financial Cryptography and Data Security (pp. 34-51). Springer Berlin Heidelberg.*

2. *Barber, S., Boyen, X., Shi, E. and Uzun, E., 2012. Bitter to better—how to make bitcoin a better currency. In Financial cryptography and data security (pp. 399-414). Springer Berlin Heidelberg.*

3. *Beck, U., 2015. What is globalization. John Wiley & Sons.*

4. *Decker, C. and Wattenhofer, R., 2013, September. Information propagation in the bitcoin network. In Peer-to-Peer Computing (P2P), 2013 IEEE Thirteenth International Conference on (pp. 1-10). IEEE.*

5. *Fujita, M. and Thisse, J.F., 2013. Economics of agglomeration: cities, industrial location, and globalization. Cambridge university press.*

6. *Garman, C., Green, M., Miers, I. and Rubin, A., 2013. Zerocoin: anonymous distributed e-Cash from Bitcoin. In IEEE Symposium on Security and Privacy (Oakland).*

7. *Grinberg, R., 2012. Bitcoin: an innovative alternative digital currency.Hastings Sci. & Tech. LJ, 4, p.159.*

8. *Hirst, P., Thompson, G. and Bromley, S., 2015. Globalization in question. John Wiley & Sons.*

9. *Jarecki, S., Kiayias, A., Krawczyk, H. and Xu, J., 2016, March. Highly-Efficient and Composable Password-Protected Secret Sharing (Or: How to Protect Your Bitcoin Wallet Online). In 2016 IEEE European Symposium on Security and Privacy (EuroS&P) (pp. 276-291). IEEE.*

10. *Kristoufek, L., 2013. BitCoin meets Google Trends and Wikipedia: Quantifying the relationship between phenomena of the Internet era.Scientific reports, 3.*

11. *McCallum, B.T., 2014. Bitcoin Issues.*

12. *Miers, I., Garman, C., Green, M. and Rubin, A.D., 2013, May. Zerocoin: Anonymous distributed e-cash from bitcoin. In Security and Privacy (SP), 2013 IEEE Symposium on (pp. 397-411). IEEE.*

13. *Miller, A., Juels, A., Shi, E., Parno, B. and Katz, J., 2014. Permacoin: Repurposing bitcoin work for data preservation," online full version:*

14. *Nakamoto, S., 2013. Bitcoin: A peer-to peer electronic payment system.*

15. *Reid, F. and Harrigan, M., 2013. An analysis of anonymity in the bitcoin system (pp. 197-223). Springer New York.*

16. *Ron, D. and Shamir, A., 2013. Quantitative analysis of the full bitcoin transaction graph. In Financial Cryptography and Data Security (pp. 6-24). Springer Berlin Heidelberg.*

17. *Velde, F., 2013. Bitcoin: A primer.*

18. *Yermack, D., 2013. Is Bitcoin a real currency? An economic appraisal(No. w19747). National Bureau of Economic Research.*

19. *Digital   Money   Definition   /   Investopedia   https://www.investopedia.com/terms/c/Digital Money.asp#ixzz5APbO73fq*

20. *Virtual Money and Bitcoin: Charting the Research Landscape Full Paper, Marcel Morisse Department of Informatics, University of Hamburg morisse@informatik.uni-hamburg.de*

21. *Wharton Research Scholars Wharton School 5-2015, An Analysis of the Digital Money Industry*

22. *Ryan Farell, University of Pennsylvania*

23. *Eclipse Attacks on Bitcoin's Peer-to-Peer Network, Ethan Heilman and Alison Kendler, Boston University; Aviv Zohar, The Hebrew University of Jerusalem and MSR Israel; Sharon Goldberg, Boston Universityhttps://www.usenix.org/conference/usenixsecurity15/technical-sessions/presentation/heilman*

24. *Does Governance Have a Role in Pricing? Cross-Country Evidence from Bitcoin Markets Robert Viglione, University of South Carolina - Department of Finance*