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FUTURE OF BITCOINS - A STUDY

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Abstract

Digital mindsets and technology transformation is an inevitable need that organizations, businesses and individuals cannot ignore anymore. Businesses worldwide are gearing up for digital transformation in their existing processes, competencies, models and transactions. Digitization of financial systems and transactions are fallout of this revolution. Bitcoin can also be called a child of this technological revolution.

At the onset, bitcoins can be seen as the first pan-global medium of which have been used by people internationally and independently, i.e. without any reliance on government regulations. Of the various forms of digital currencies available today, the current bullish (rather more than bullish) rally of Bitcoin in the year 2016-17, caught my attention and motivated to examine the future of this transaction system, and analyze the two often speculated status of bitcoin - as the currency of the future or an asset worthy of investment, or a mere bubble that will eventually burst.

As the most popular form of cryptocurrency (according to research produced by Cambridge University in 2017, there are 2.9 to 5.8 million unique users using a cryptocurrency wallet, most of them using bitcoin) that is used for transactions and

can be recorded in a ledger, various conflicting opinion exists regarding its perceived value as the digital currency of the future.

In the paper I evaluate how the value of bitcoin is created and examine its potential as a currency of future or a commodity or asset.

Keywords: **Business; Cryptocurrency; Bitcoin; Global Currency**

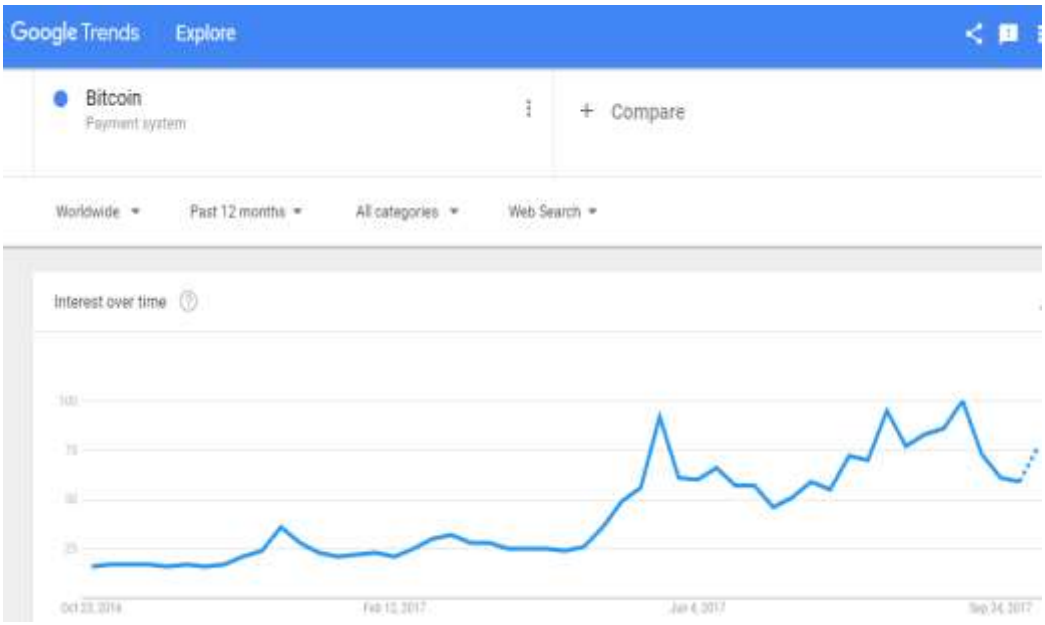
INTRODUCTION

The value of Bitcoin has soared by more than 750% in the year 2016-17, and is worth four times as much as an ounce of gold. Some governments across the world, for example, Japan has actually legalized bitcoin as a payment method recently, further increasing the usage of bitcoin being bought with current currencies such as Yen. Although currently used in limited commercial transactions, bitcoin can be traded globally. Considerable number of investors dealing with bitcoin has helped the digital currency multiply six times in value in 2016-17.

This meteoric rise in the value of this cryptocurrency has, in turn, increased the interest of the public in its perceived value. It has also led to a lot of speculators/gamblers rushing to invest in this currency in order to achieve future exponential returns. Again, this has not only played the role of a major catalyst in the rise of its perceived value but has also made the currency extremely volatile. The particularly unique features of keeping the digital footprint of those who transact in bitcoin anonymous as well as not being controlled by any administering organization or company has made some traders perceive bitcoins an attractive investment asset. Additionally, the concept of finite supply has also made some traders compare bitcoin to precious assets such as gold or diamond. However, the constantly fluctuating value of bitcoins also makes its valuation extremely volatile. On the other hand, the lack of a centralized control or regulatory body also makes it prone to changing compliance issues and vulnerable to money laundering. These aspects have also made a lot of people wonder whether Bitcoin is really a bubble that will eventually burst.

It would be fair to say that the value of Bitcoins are driven by purely their demand and supply in the market. A common platform where users buy and sell bitcoins while matching mutual needs, in order to earn profits is called a bitcoin exchange.
In this paper, I will first discuss the bitcoin phenomenon. Then I will analyze, using Metcalfe's Law, what causes the massive spike in the value of bitcoins, and whether eventually it will results in a bubble that is bound to burst. Next, I will evaluate whether bitcoins can be regarded as a currency or an asset worth investing in, so as to evaluate the significance of bitcoins in the future (Figure 1).

Figure 1: Google Trends demonstrate the increase in the interest of the public in Bitcoin in the Year 2016-2017.



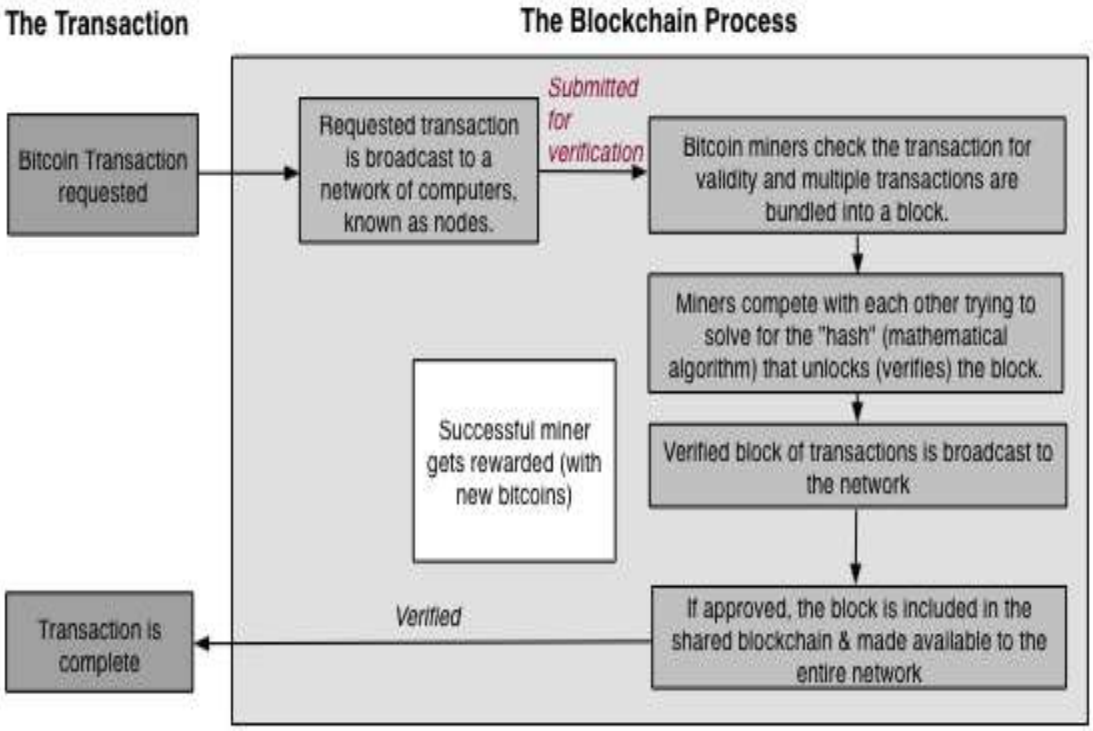
The Bitcoin Phenomenon

The concept of a cryptocurrency or a digital asset used as a medium of exchange is not new, but bitcoin has been often categorized as the first decentralized cryptocurrency, because of its unique characteristic of not being controlled by a single administrator but rather using cryptography to secure the transactions. In other words, it can be regarded as a method of payment or transfer of value that is independent of any authorities such as governments or central banks or any particular organization that traditionally controls money supply and availability of currency in the market.

Bitcoin was introduced by an unknown person or group in 2009 and released as open-source software. It uses decentralized technology for secure payments and storing money that does not require transacting banks' or people's names. Bitcoin works on a public ledger technology called blockchain, which holds a decentralized record of all transactions that is updated and held by all users of the network [1].

Transactions by users are added to blocks that are then turned into a complex math solution. Miners, who use highly powered computers, calculate these solutions which determine the possibility of the transaction. Additionally, other miners also check the solution post which the transactions are approved and the miners can get bitcoins (Figure 2).

Figure 2: The Transaction and Blockchain Process.



Since there is a requirement of high-end computing systems, this is controlled by a small group of people.

Reports also indicate that as the bitcoin code only allows a few transactions through in one "block", typically there is a big backlog of transactions on the blockchain which makes this a slow process.

- Following are some more characteristics of a blockchain, which gives bitcoins their inherent characteristics. Decentralized verification: The validation and verification of a transaction is done by miners, instead of an agency or government.
- Complete open records and anonymity: Every transaction, once validated, is transferred into a block of data which is recorded in the block chain ledger. This in turn is accessible to everyone in the network. However, the transaction records do not include personal data but take the form of encrypted data (hashes so there is complete anonymity.
- Incorruptible: A block chain, once recorded and shared, cannot be changed as it is open records and visible to everyone. Hence the ledger becomes incorruptible.

The implications of these characteristics are that the bitcoins are not controlled by any specific authority, but allows transparent transactions while maintaining

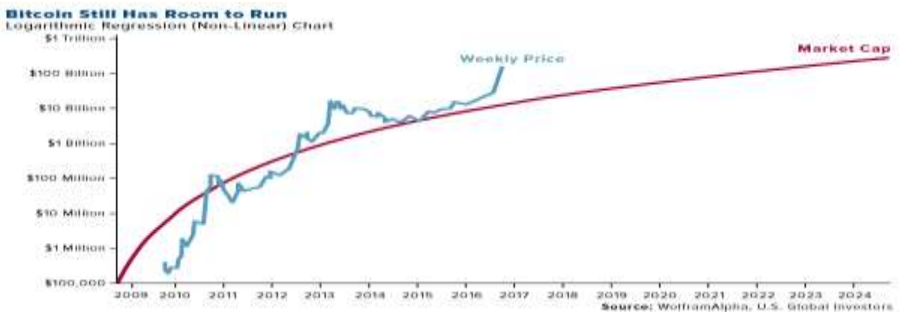
anonymity and is fairly incorruptible. These characteristics encourage many to foresee bitcoin as an alternative to a global currency in future.

What Spikes the Massive Value of Bitcoins?

The prices of a bitcoin is dependent on the volume of trading, i.e. demand and supply factors, and so this makes it volatile, as trading happens each moment. But how can we say with enough certainty that this high demand for bitcoins will persist in future? It is important to note that if the demand for bitcoins remains high, only then it can be seriously viewed as a potential currency, commodity or asset of the future, to understand the spectacular increase in the price of bitcoin, i have taken the help of Metcalf's Law. Metcalfe's Law, which states that the value of a network is proportional to the square of the number of its users, applies to bitcoin according to a new study published at the Journal of Electronic Commerce Research and Applications.

The study measured the value of the network based on the price of relevant digital currencies and compared it to the number of unique addresses that engage in transactions on the network each day, according to the abstract. The results show that "the networks were fairly well modelled by Metcalfe's Law, which identifies the value of a network as proportional to the square of the number of its nodes, or end users," according to the study. The findings can be useful to identify potential bubbles, with the study stating that "value bubbles show up where repeated extremely high value increases are not accompanied by any commensurate increase in the number of participating users, or any other development that could give rise to the higher value". Which means that once the bubble is inflated beyond fundamentals; the fundamentals eventually catch up, causing the bubble to burst with sentiment then potentially moving too far in the opposite direction, until fundamentals catch up again. The application of Metcalfe's law towards transaction numbers specifically has long been suggested, with a fairly strong correlation between the price of digital currencies and their transaction numbers observed over many years [2]. This law quantifies the 94% movement in Bitcoin prices over the last 4 years and proves that Bitcoin still has a lot of room to grow, further clarifying that it is not a bubble (Figure 3).

Figure 3: Logarithmic Regression [3].



Analyzing the Value of Bitcoin

In the previous section we have established that the more people become adept at using bitcoin, the more enhanced will be its perceived value, and hence bitcoins may become important transactional elements for future, instead of just being a fad that will eventually pass. However, does this qualify bitcoins to become currencies of the future, or is it just a form of crypto-commodity or asset for investment? The next section of the paper will evaluate these questions.

Evaluating Bitcoin as a Currency

Before we delve into whether Bitcoin can be a potential currency of the future, let us evaluate some features of a currency. Currency is a generally accepted form of money, including coins and paper notes, which is issued by a government and circulated within an economy. Used as a medium of exchange for goods and services, currency is the basis for trade [4].

The Merriam-Webster Dictionary defines currency as:

- Circulation as a medium of exchange
- General use, acceptance, or prevalence
- The quality or state of being present
- Something (as coins, treasury notes, and banknotes) that is in circulation as a medium of exchange
- Paper money in circulation
- A comment article used for barter
- A medium of verbal or intellectual expression.

A currency allows us to denominate cash flows and is a store of purchasing power. However on their currencies have no cash flows and cannot be valued. Their value comes from being priced against other currencies. In the long term, currencies which can hold their purchasing power better will also see their prices rise, in comparison to those currencies which do not. However, in the short term, regulatory bodies such as governments work towards manipulating the exchange rate of a currency.

Thus a currency is:

- A Unit of account for valuing assets and liabilities, and also goods and services. To do this well, one unit of the currency is identical to any other unit, divisible and countable.
- A medium of exchange which is easily accessible and transportable, and is accepted and trusted by buyers and sellers. Also the transaction costs should be low.
- A store of value which ensures that if one holds wealth in form of a currency it provides reasonable security and will not lose its buying power while stored.

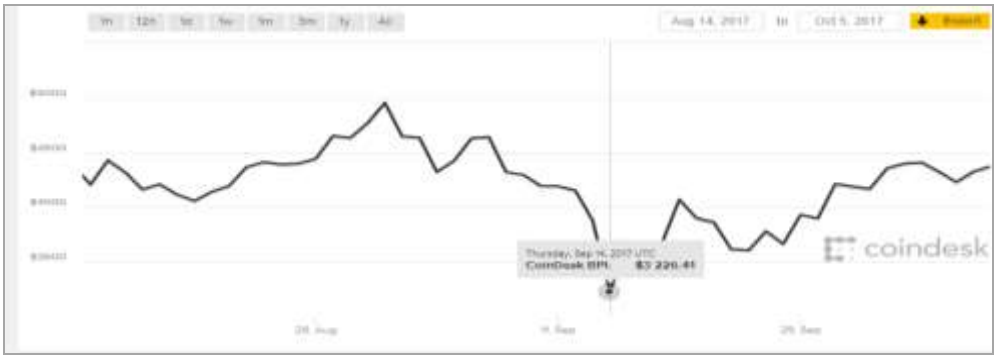
Do All of These Apply to Bitcoins? Let Us Evaluate

There is no doubt that a Bitcoin is a pan-global means of exchange. The value of Bitcoin has been rising 140% in 2016 and now an additional 575% in 2017. This rise in value has led Bitcoin backers to believe that Bitcoin can be a credible currency.

However, no government or central bank yet has any control on the number of Bitcoins in a country; it is decentralized and global. Anyone with a computer can have a Bitcoin address to receive or transfer Bitcoins immediately. Also Bitcoin is anonymous which means there is no accountability on how the transaction happens-making it impossible for governments to tackle hackers or unexplained transfers. One can also maintain multiple addresses without personal information. International and domestic transfers do not need foreign currency exchange rates and fees for transfer as is the case with traditional currency, making it impossible for governments to control and account for cash inflow and outflow. Transfers of Bitcoin also need limited fees. Additionally, there are two more problems with bitcoins as currency-its unstable value and its slow transaction processing. To make bitcoin transactions secure, the transaction method is really slow, making it impractical for everyday use.

In fact, there are only limited numbers of transactions which can be completed in a day. The value of bitcoin is highly volatile in Sep. 2017 its value decreased by 8% while in October 2017, the value increased by 39% [5]. The most important feature of a currency is that it needs to be a stable store of value. This is key for a developing country to attract the investment it needs. As Forbes economist and author John Tamny noted, even in developed countries, a stable currency value is important since those investing will expect a certain amount of earnings. In case of bitcoin, the instable valuation does not let one accurately predict the value of those earnings. Bitcoin's instable nature is a major reason why it cannot be perceived as an equivalent to a Currency. Additionally, for a government it is critical to know along with those who facilitate the transaction from whom they bought and to whom they would be selling. All of the above does not let bitcoins become a practical alternative to currency (Figure 4).

Figure 4: Graph illustrating Bitcoin's instable nature [6].



However, with additional government regulations, it may become an attractive investment for investors. For example, the Japanese cryptocurrency start-ups have put in place a framework by its financial authorities. This enabled people to pay for goods and services with bitcoin and also introduced exchanges or remittance operators to be licensed and subject to annual audits. These have made use of bitcoin official. On the other hand, some countries have banned companies from issuing their own virtual currencies and closing down cryptocurrency exchanges. For bitcoin to become a currency, central banks and governments around the world have to accept its use.

EVALUATING BITCOIN AS AN COMMODITY

A commodity derives its value from its use as raw material to meet a fundamental need, such as energy, food or shelter. While that value can be assigned depending on the demand for and supply of the commodity, developing commodities is typically a long process which makes it valuation process much more difficult than for an asset. A commodity is also a good used in commerce that is interchangeable with other commodities of the same type; commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade [7].

The Commodity Futures Trading Commission (CFTC) in the United States officially classifies the Bitcoin as a commodity. To understand why bitcoin is classified as a commodity let us take the simple example of gold and silver. Throughout the course of history, many commodities and even some manufactured products have served as currency. Previously gold and silver, though a commodity, have been used as a currency and medium of exchange.

Gold's long acceptance as a pseudo-currency or medium of exchange is due to its strength as a store of value, because of its scarcity and durability. Central banks and monetary authorities around the world continue to hold vast gold reserves and categorize their holdings as “foreign exchange reserves. However it cannot be compared to fiat currencies, because of convenience and acceptance, both as a unit of account and as medium of exchanges. Additionally, fiat currencies are controlled by sovereign governments and consequently can vary in value as per the regulations of the government.

On the other hand, if we compare bitcoins to diamond, which is also a commodity which has value, diamond is globally controlled by a company called de Beers, which ensures that it is not abundantly available and hence its high value preserved. In case of bitcoins, the control is decentralized and hence the value of bitcoins cannot be controlled.

Other than gold and diamonds, over the course of history salt served as a medium of exchange in ancient times. More recently, cigarettes or blue jeans have been employed as currency or rather barter elements, in certain areas of the world over recent decades. As you can see, the classification of Bitcoin as a commodity is both dubious and understandable, at the same time. It is hard categorized Bitcoin because it is so new and different from other assets available to market participants. One thing seems certain, the growth of interest in the cryptocurrency over recent years means that it is an asset that deserves our attention.

Evaluating Bitcoin as an Asset

An asset is expected to generate cash flows in the future. These cash flows can also be valued, and assets with high cash flows and less risk are valued more, while assets with lower cash flows and more risk do not have similar value. However, assets can be priced relative to each other, by controlling the price that you pay to a common metrics. Bitcoin, like gold and diamond, is a fixed asset; there are only a total of 21 million coins. However, bitcoin is also divisible; hence the growth potential for it is unlimited. As mentioned before, while diamond is considered a commodity and asset and available in finite supply as is bitcoin, it is globally controlled by a single organization, the DeBeers, which can control its prices, leading to diamonds being valued high because of its sparse occurrence and hence precious valuation. However bitcoins have a decentralized control, which do not guarantee their precious valuation perpetually. You cannot value Bitcoin, you can only price it: Bitcoin also does not generate cash flows standing alone for those who hold it, and is of no value until it is exchanged or sold-unlike gold or silver or other assets. As it is not raw material, it also cannot be used in the production of something useful.

However Bitcoin is widely accepted as an investment asset by those who do not trust central banks, governments and fiat currencies. In short, it takes on the role that gold has, historically, for those who have lost trust in or fear centralized authority. In other words, bitcoin is not exactly an asset, however it can be traded and as a result, it can be used as immediate investment tool (Figures 5-8).

Figure 5: Graph illustrating the price of Bitcoin vs. 1 ounce of Gold [8].

Figure 6: Graph illustrating the price of Bitcoin vs. 1 ounce of Gold [8].

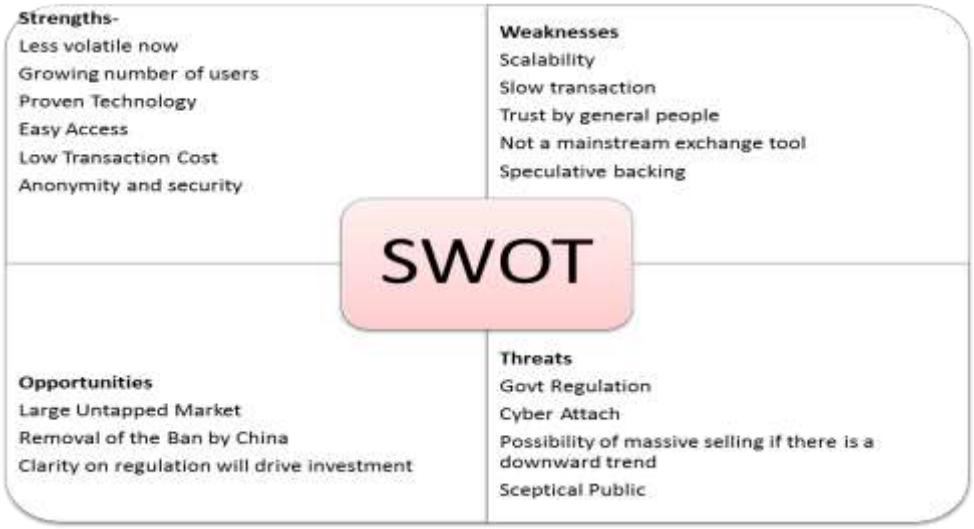


Figure 7: Google Trends showing which countries have shown the most interest in Bitcoin over the last 12 months.

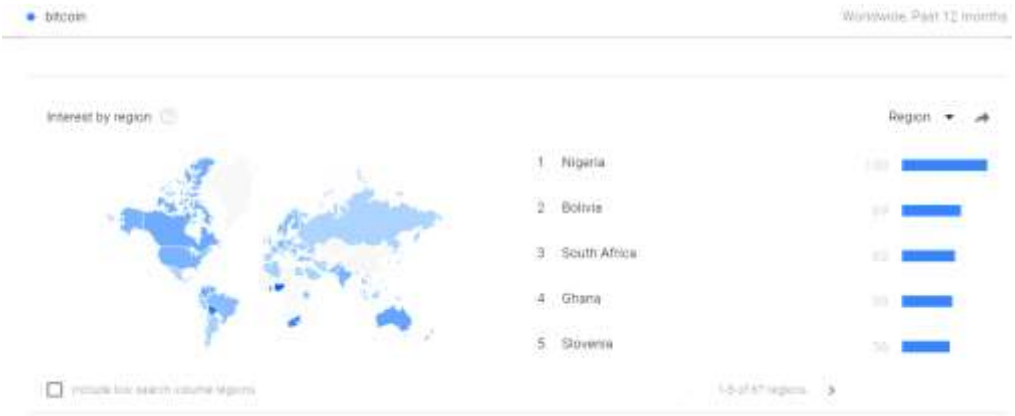


Figure 8: Graph illustrating how Bitcoin has become less volatile over time and can thus be a successful store of value.

CONCLUSION

Based on the analysis above, let us conduct a SWOT analysis of bitcoins. Bitcoin, and its operational child, blockchain technology, definitely have a stable future in the world markets. However, it is yet to be seen whether governments all over the world will keep resisting this as a pan-global asset since it operates beyond their reach and can facilitate activities that run out of bounds of their laws and rules or political agenda.

There is also no forum, where a user can reach out for any help or complaints. Also, there is definitely a lack of awareness. Bitcoins have also been used in Ponzi schemes, for ransom demands, resulting in huge loss of money for several investors and questions on its trustworthiness. However, we have also seen that Bitcoin is not a bubble and has potential to grow as a mode of transaction and investment. Definitely there is a lot of speculation surrounding it however there are also some critical risks associated, such as the uncertainty around the regulation part. If we analyse the Google trends, we find that over the past year, a major part of the interest in Bitcoin is from 3rd World countries, which shows that in countries like Nigeria and Zimbabwe where the general public has lost faith in their national currency due to Hyper Inflation, Bitcoin is a good alternative and good way for them to stop their wealth from getting eradicated due to Hyper-Inflation.

Bitcoin and some more cryptocurrencies have succeeded in attracting investors, and are getting more and more attention, but they have not succeeded yet as currencies. On the other hand, they definitely can be used for immediate investments. Thus, if we go by pure facts 'Bitcoin is a potential investment-worthy crypto-commodity, which promises extremely high returns in the future with a possibility of huge risks'.

Vinny Lingham has rightly said that Bitcoin has passed and was successful in its 1st Phase (2008-2016)=Creating a Digital Commodity,now is in its 2nd Phase=Proving it as a Store of Value and if successful within a few years will be in its 3rd Phase=Adopting it as a Currency.

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