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# **Cryptocurrency and Blockchain Technology's Role in Emerging Digital Economy.**

**Dr. T. P. Surya C Rao**  
Research Scholar

**Dr. K. Sankar Reddy**  
Lecturer, Govt. Degree College

## **Introduction**

Cryptocurrency is a digital currency in which encryption techniques are used to regulate the accumulation of units of currency and monitor the transfer of funds, operating independently of a central bank. Cryptocurrencies are classified as a subset of digital currencies and are also classified as a subset of alternative currencies and virtual currencies. The first decentralized cryptocurrency, Bitcoin, was proposed by Satoshi Nakamoto which makes electronic payments without intervention of traditional trustworthy banking system in 2009. It is held electronically on one's PC or in a virtual wallet. No one controls it or sees it – it is decentralized so no person, institution or bank controls the currency. Subsequently, there has been a rapid increase in the number of cryptocurrencies that have been created some of which are Litecoin, Ethereum, Zcash, Dash, Ripple etc. Bitcoin now provide an outlet for personal wealth that is beyond restriction and seizure. Currently, around 1600 bitcoin ATMs were installed and operation around the world. The number of cryptocurrencies available over the internet as of 27 November 2017 is over 1324 and figure is growing day by day. They confront the typical role of banks and financial institutions and pose a new challenge to central banks' control over the important functions of monetary and exchange rate policy. On the other hand, the legal status of cryptocurrencies varies substantially from country to country and is still no clarity across the globe. They have even been compared to pyramid schemes and economic bubbles, such as housing market bubbles.

The invention of the blockchain for bitcoin made it the first digital currency to solve the major issue of double-spending problem without the need of a trusted authority. While bitcoin had the power to make transactions untraceable, blockchain innovation that promised to make every transaction transparent and permanent. Underlying the use of bitcoin is blockchain, which possesses the ability of having permanent records of the transactions, known as blocks (the name for their portions of value) are used for, and at any time people can see those changes online in real time. It is that transparency that people have hopes in, but that's not the only thing blockchain does differently than the cryptocurrency it drove for so long.

Blockchain can easily transfer everything from property rights to stocks and currencies without having to go through like banks and clearing institution like SWIFT, while offering the same safety, higher speed and lower costs. Consider it from the financial perspective: billions of dollars are transferred daily in the financial markets, with every transaction being "cleared" by intermediate entities. Replacing them with a revolutionary technology that is faster, cheaper and safer will help save millions for businesses!

Inter alia, the decentralized digital currency, Bitcoin and Blockchain technology has created lot of interest in academicians, technocrats, economists and Bankers about its veracity in the modern world. It raises eyebrows in the recent past, about potential points of concern and conflict.

## **How Bitcoin works ?**

The Bitcoin digital currency approach is to work like conventional banking payment system—is intended to move monetary tokens between people through the changing of debit and credit account entries in the

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databases, but it has two immediate differences. First, the database that is used to record payments between people is public, rather than the privately held account databases of banks in the normal banking system. Second, the intermediaries who change that database are a decentralized network of people (“miners”) running special Bitcoin software, rather than banks running their own private software systems. They are decentralized network of clerks who check to see that customers have enough funds to transact and make necessary changes in the Public ledger or database. Mining is an activity where an individual (called the “miner”) uses his computer prowess to crack computationally difficult puzzles. The process of cracking such puzzles which are integral to the blockchain technology, help in maintaining them. As a reward for this, the miner gets new bitcoins which is nothing but creation of a bitcoin or mining. Everyone cannot be a bitcoin miner. Hence, one ought to consider buying bitcoins from bitcoin exchanges and store them in an online bitcoin wallet in digital form. Unicorn, Bitxoxo, Zebpay, Coinbase etc. are some of the bitcoin exchanges presently in India. Such bitcoins would be purchased in consideration for real currency. It would be interesting to note that currently, the value of 1 bitcoin is approximately about INR 7,59,642. People use the system anonymously which seems to dispute the very important functionality of its transparency. It means that such anonymous transactions are taking place through the use of highly transparent public ledger. Anyone at anytime is able to view all transactions on the system whilst but attributing a specific person’s identity to any particular transaction is almost impossible. Hence, the Bitcoin system consists of a widely distributed, and highly visible, online public database in real time mode which referred to as the blockchain, that people can use to record transactions of digital tokens between themselves. The database thus keeps score of their tokens on the system in a highly public and transparent.

### **Does Cryptocurrency has value or not?**

Historically, precious metals like gold, silver etc. used as currencies. Then fiat currencies printed by Government. Despite its creators claim that cryptocurrency is ‘mined’ using cryptographic algorithms, they are reluctant to call it a commodity. They also claim that it is not controlled by Government regulatory agencies, and so it is ‘democratic’. Hence, it do not fall under the definition of currency category either. It is just a technological innovation not backed by any tangible asset but by sheer demand across the globe. Some countries characterize Bitcoin as a digital asset rather than a currency. In this sense it bears some resemblance to gold, which similarly has ambiguity as to whether it should be perceived as an asset or as a form of money. It suffices to say that (i) Bitcoin is a digital token that can be moved between parties, and (ii) the token has market value in terms of major national currencies (the token can be exchanged for dollars, pounds and other currencies) and (iii) it is sporadically used— albeit often in small amounts—in exchange for real world goods and services.

### **Is cryptocurrency safe?**

A major step in securing blockchain as the money of the future lies in its acceptance and actual use. The future of Bitcoin will most likely be decided by those whom it will hurt or help the most, money managers. So are fund managers, analysts, and bond salesmen taking to cryptos? Not at all, but it is also very difficult to gauge the sentiment towards blockchain tech within the finance world.

Bitcoin, for instance will never have over 21 million coins in dissemination. Cryptography is used to ensure the security and privacy of transactions and exchanges, and to regulate the creation of new coins. Cryptography was developed during the Second World War, after the need for secure communication arose. It has undergone many developmental changes with elements of computer science and mathematical theory, and now it is used in financial system for decentralized currency. Many other digital cash before bitcoin had the problem of users double spending the same coin, which was why they had a central server. However, since bitcoin is decentralized, it needs consensus. Cryptocurrencies employ the use of a decentralized system which allows users to make safe and secure transactions and store their currency. Once the transaction is recorded, there is no going back, it is settled in the blockchain.

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Bitcoin price shot up 750% in a year! Cryptocurrency prices are not regulated as more people enter the market lured by the high prices, the prices climb higher and higher. Without any exception, it led to formation of a bubble over a period of time which will eventually burst and cause tremendous losses. Investing in cryptocurrencies involves very high risk as prices have been extremely volatile. Global bankers having not understood the phenomenon, formed a group for cooperation and coordination. If it is so, for retail gullible investors trying bitcoin as an investment is not at all a wise decision – if you don't understand don't invest in it! In times of political unrest, economic instability and uncertainty around the world, cryptocurrencies become safe-heaven for many people.

Unlike other investment avenues, cryptocurrencies are not regulated by government agencies or banks for grievance redressal. Another issue is confusion about its legal status. Bitcoin exchanges intend to draw investors' attention to the fact that RBI has not banned them. RBI voices its concerns, as bitcoin transactions have not been rendered illegal. Apart from the operational issues of trading in cryptocurrencies, there is also a high risk of fraud. There is still a good deal of misinformation and ambiguity regarding bitcoin trading. Due to lack of government control, terrorists and extortionists are also utilizing the cryptocurrency space to their advantage. Hackers remotely access the computers and put forward demands of payment in bitcoins. As such, it is crystal clear that it is very difficult to track unlawful activities in the cryptocurrency space. This risk also weakens the chances of cryptocurrencies becoming mainstream in India, leaving the future of the market already struck in uncertainty. Bitcoins are prone to losses arising out of hacking, loss of password etc. The second risk is the lack of any authorized central agency to regulate the payments or to turn to for redressal of grievances. The third is that there is no underlying asset for VCs (Virtual currencies) making the value a matter of speculation. Fourth is that the exchanges are located in various parts of the world, making the law enforcement a tricky thing for the multiple jurisdictions available. Fifth is that trading may subject the user to illicit and illegal activities since they can easily be used for illegal activities anonymously.

Anyone can use one or more of the available cryptocurrencies, as they choose. This is possible and Bitcoin in particular is providing some insight.

Some challenges are:

1. the present mining node infrastructure/blockchain structure does not scale to support large scale operations
2. the present blockchain itself is a bit unwieldy
3. there are some potential concerns about possibly challenging high concentrations of mining nodes by a small group of entities which potentially risks integrity of the blockchain
4. there is a potential issue with the need for near continuous communications among the mining nodes to ensure the Bitcoin blockchain does not encounter a fork
5. there is a potential issue with liquidity of conversion between Bitcoin and other currencies
6. there some potential fragility in the wallet structure

Undoubtedly, it's an exciting time for cryptocurrencies, however an average investor should be cautious of the following:

- ) Not to over expose and carefully plan a portfolio spread.
- ) Choose the exchange that's right, in terms of currency coverage and advanced features that suits. Do not do an offline trade.
- ) Be watchful of blockchain fees and service charges while moving currencies between services or swapping.
- ) Keep an eye on developments on legality.

Regulatory treatment of cryptocurrencies continues to evolve, but because the technology transcends global boundaries, the influence of national regulators is limited. Since cryptocurrencies were conceived specifically to avoid governmental controls, it's uncertain whether regulation efforts will be successful.

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### **What is the future of cryptocurrency in developing countries like India?**

Japan is the first country to take an unambiguous, encouraging regulatory approach. Japan has not only legally recognized Bitcoin, but also created a regulatory framework to help the industry flourish. Individual US States have adopted varying approaches. New York State created the BitLicense system, which imposes new requirements on companies looking to conduct business with New York residents. As of mid-2017, only three BitLicenses have been issued, and a far greater number withdrawn or denied. In 2015, the cost of obtaining a license was estimated to be as much as \$100,000, galvanizing an exodus of cryptocurrency companies from New York state. In contrast, Vermont and Arizona have embraced the new technology. Both states passed laws providing legal standing to facts or records tied to a Blockchain, including smart contracts. China has banned the cryptocurrency trading already to come up with regulations, Japan took the first initiative to regulate these currencies. USA and Australia are already setting up the guidelines to regulate as soon as possible. Countries like USA, UK, Denmark, Sweden, South Korea, Netherlands, Finland, Canada and Australia have been supportive of cryptocurrencies. As the Indian government watches the domestic growth of cryptocurrency with a mix of apprehension and intrigue, local startups are leading the way in incorporating bitcoin and other cryptocurrencies into India's lofty digital ambitions. Various crypto projects are already functioning in the market like Indico (a cryptocurrency) and Zebpay (a bitcoin exchange). India of course, isn't a dictator country like China where only one person decides the fortune of the country. It is a democratic country and if majority of population welcomes the cryptocurrencies, the government cannot deny that. All of us know that what potential is contained in the cryptocurrencies and definitely it's going to raise the economical grounds of the common man. The Digital Asset and Blockchain Foundation of India is an association of people interested in advocacy of use of cryptocurrency and digital assets in India. It aims to create awareness about the benefits and risks of cryptocurrencies, liaise with regulators and get clarity on taxation, attract investment and set up incubators to promote startups.

Bitcoins, in India, have slowly started gaining popularity, given the efforts of the government to move towards a cashless economy. Prevalence of Digital payments is not just a phenomenon in developed countries like USA and UK, but also in developing nations such as India, where the circulation of cash notes are reduced recently to push the country towards digital payment adoption. However, bitcoins, as of today, are not centrally administered or regulated by any specific body like the RBI which administers physical currency in India. RBI cautioned the users, holders and traders of virtual currencies, including bitcoins, about the potential risks that they are exposed to. The creation, trading or usage of (virtual currencies) VCs including Bitcoins, as a medium for payment are not authorised by any central bank or monetary authority. RBI reiterated its warnings recently in the wake of significant spurt in valuation of bitcoins cautioning users, holders and traders of Virtual Currencies (VCs) including Bitcoins regarding the potential economic, financial, operational, legal, customer protection and security related risks associated in dealing with virtual currencies. Further, no set rules, regulations or guidelines have been laid down for resolving disputes that could arise while dealing with bitcoins. Hence, bitcoin transactions come with their own set of risks. However, given this background, one cannot conclude that bitcoins are illegal as, so far, there has been no ban on bitcoins in India. The Indian tax laws are silent on the taxability of bitcoins completely. Income tax department slapped tax notices on almost five lakh high net worth individuals in the country transacting in bitcoin. Therefore, the issue of taxing cryptocurrencies has assumed more importance and urgency in India. Government is planning to bring in a regulatory framework for crypto currencies in the forthcoming Union Budget. This should clear the air on the status of such digital currencies and how they will be taxed. People fear things they don't know about, or are uncertain of - they may resist change for a while, however just as smartphones have become a part of our everyday lives, cryptocurrencies will someday become part of our everyday lives as well.

### **Blockchain technology role in emerging digital economy**

Some of the possible opportunities for the blockchain including monitoring the outbreak of pests or animal and plant diseases, border surveillance, tracking intellectual property, and identity systems that provide

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greater certainty over entitlements, benefits, and tax obligations. There are certain risks as well. The risks include both business and technical risks. For example, public ledgers do not afford privacy and blockchains generally are not suitable for storing large volumes of high speed data. Bitcoin's blockchain has been suffering from this very problem for more than a year. Finding a solution is a priority for any developers wanting to attract the number of users needed to make running a network profitable. The use of blockchain technology in financial transactions also poses problems for compliance with anti-money laundering legislation, which requires that anyone providing financial services (for example) must satisfy themselves as to the identity of their client or customer.

These shortcomings may explain why a number of high-profile blockchain projects have recently stalled. For example, Bank of Canada recently announced that its blockchain project, Jasper, is not yet fit to handle settlements. Citing transparency and privacy issues, the bank found that the benefits of using blockchain did not outweigh the risks. But risk is not the only reason that blockchain projects are stalling. In February 2017, the R3CEV consortium of banks and technologists announced after more than 18 months of investment, innovation, and testing, that they would not be using blockchain for their project because they did not need it. Meanwhile, in a speech delivered to the Africa Blockchain Conference in March 2017, Andreas Antonopoulos warned that many recent "blockchain" projects are fraudulent attempts to raise capital under the guise of innovation and disruptive technologies.

Plans are being made in the state of Andhra Pradesh in India, to open schools to teach blockchain to the young generation. So, when that level of strategies are being made and getting implemented, undoubtedly the country is welcoming blockchain and the projects based on it.

### **Banks prefer Blockchain**

Because of its "cleaner" reputation than bitcoin, blockchain has garnered the support of different financial institutions behind its design. Goldman Sachs, JP Morgan, and Bank of America have expressed great interest in blockchain by joining a coalition to implement it into banking practices. In addition to those large financial players, Visa, NASDAQ, Citi, and others have also agreed to be clients for blockchain related services and technology. These large, long established institutions feel that blockchain has less of a negative image attached to it than bitcoin, and because of that they seem more open to trying out the technology.

The attraction towards blockchain is simple: banks can increase the efficiency of their transactions by using their own controlled blockchains to record all transactions done by their customers, as opposed to trying to record all that data with different types of software that become outdated every few years. However, some experts like Don Tapscott (University of Toronto) feel that banks should be using blockchain technology not just to increase their banking capabilities, but to completely change how banking computing looks like for the entire industry.

Indeed, outside of traditional banking, blockchain services have allowed users to engage in high value currency transactions already. The processing times on these transactions are very quick, and allow for a high volume of money to be exchanged and recorded.

### **Change of Strategy**

Many of the companies who started off using bitcoin as their main currency are changing to focus on blockchain as a whole. Bitreserve changed its name to Uphold and has since allowed depositing of currency in any form, and Circle has changed to allow use of credit and debit cards to be used for deposit, holding, and sending of money worldwide.

Many startups that were created with a focus on bitcoin are changing to accommodate alternative currencies and to let others know that they are not nearly as bitcoin dependent as before for what seems to be a similar reason to the one banks use: that bitcoin has a negative connotation to it, and since blockchain is the hot commodity now, it seems like a smarter idea to tie the business to it whereby, more businesses and users adopt the blockchain technology, their use of it will also allow them to gain in popularity and maximize their

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returns. In Estonia, Government is implementing blockchain technology for healthcare, banking services and even governance by allowing its citizens to become ‘e-residents’

## Conclusion

This paper has attempted to provide an overview of some key dynamics within Bitcoin and blockchain technology that may be interest to academicians, technocrats and economists. The technology is still new, but it is apparent that there are potentially empowering uses of it in certain contexts. Despite the fact that, users are enthusiastic and experimental, it is still prone towards the elitist, tech-centric outlook of disruptive technology. Governments of various nations across globe ought to consider how block chain technology and cryptocurrency approaches could be implemented with sensitivity to the real struggles people face in implementing technology within diverse cultural and political contexts.

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