

A study on Central Bank Digital Currency and Cryptocurrency Technology, Security and Challenges

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1. Abstract

“Frequently enhancement in the technology and communication the mode of the transaction has changed. In late 90’s where we use the paper currency or hard currency. For the business purpose we use Bonds or Gold’s. It is time taking process. When internet introduce in early 2000 and after 2010 excessive use of the internet suddenly change the mode of the transaction .Now businesses are moving towards the digitization by investing in the crypto or digital assets.

2. Introduction

Cryptocurrency and CBDC are placing a major role in the transaction. Where crypto uses the multiple user to grant access to the new user. In CBDC the centralized bank of a country has the authority to authorise the user. Transactions in the networks are verified by nodes (Individual computers) which is called block chain. The unknown person who developed the cryptocurrency, name as Bitcoin used block chain technology which can be exchanged in to other currencies. In the year 2017 the research study of University of Cambridge finds that, 68 million user which are using cryptocurrency as a wallet basically using Bitcoins as crypto.

The Reserve Bank of India now started a pilot project on CBDC. In total 119 countries only 11 countries has launched CBDC, 18 countries are running pilot project, 32 countries are in development stage.

Finding the acceptance of Digital Rupees all over the world and differentiation between CBDC and Cryptocurrency and to study which currency is fruitful for the transaction and for the security purpose which needs to be apply.

3. Literature Review

Ozili, P. K. (2022) finding says that the CBDC provides the financial stability in the banking system where crypto currency presents the financial risk and usability. It also find that there are alternate ways financial inclusion where adults can access the formal services.

Focusing on the CBDC the research unit of the Press Information Bureau (Ministry of Information and Broadcasting) press released on 1,December 2022 include the benefits of CBDC implementation include reduction of operational cost, boosting innovation in cross-border payments.

Big Data Analytics in the Insurance Market by Peterson K. Ozili It also include the financial inclusion where CBDC can enhance the rate of digital payments. It also help the offline payment method.

Key words : Digital Currency, Bitcoin, Cryptocurrency.

4. Types of Currency

4.1 Digital Currency

Digital Currency is just a digital representation of physical currency. It carries the features of physical currency in term of transaction. This currency is controlled by the central bank of any country and can used for online payment.

4.2 Virtual Currency

The virtual currency is de-centralise mean there no regulation of the government. It can also be used for transaction in the games, apps which are designed and developed be the developers. Virtual currency is fluctuation in nature so it doesn’t hold any real value. It has only digital acceptance example- Wallet of any payment application.

First country to implement Cryptocurrency

El Salvador has become the first country in the world to legally use the Bitcoin officially.

First country to implement CBDC

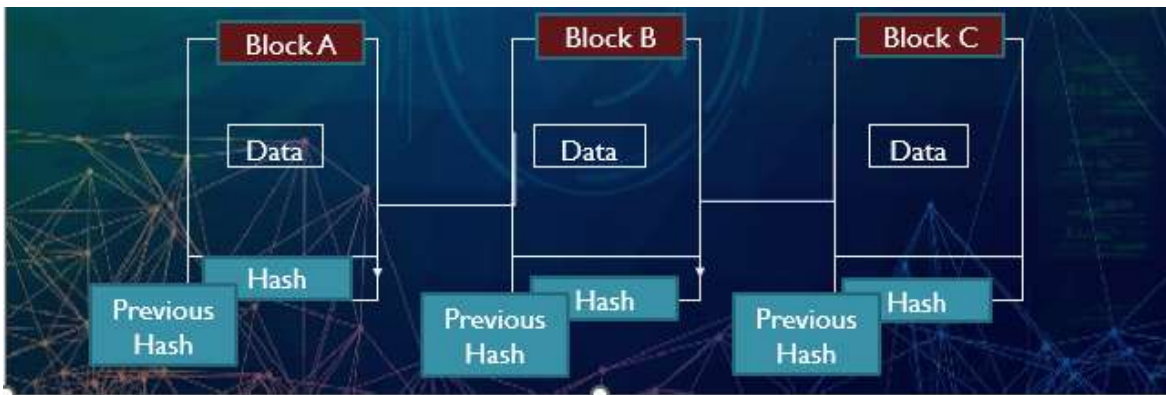
Bahamas was the first country to use CBDC that was Sand Dollar in 20 October 2020.

5. Technology

In terms of India Reserve Bank of India, is using Blockchain technology to developing their digital currency. By using that RBI will be able to trace all the transaction of those mobile wallets which are offered by many private companies.

What is A Blockchain?

A blockchain is a technology where every block contain data and they are connected to the each other. In this every block has an its Hash which is a unique and it also holds the Hash of previous block. When new user enters in the all the node (computers) verifies the user.



6. Difference between Cryptocurrency and CBDC

| | Cryptocurrency | CBDC |
|---------------------|--|--|
| Nature | Cryptocurrency are decentralized and anybody can create and buy. | CBDC can't be created by anybody except central bank of any country. In case of India- Reserve Bank of India. |
| Transparency | Based on Blockchain Technology which public or permission less blockchain technology. Means holder of crypto can see whatever changes happening in cryptocurrency. | It is also based on Blockchain Technology but private blockchain. Only bank can kept that data. That means a closed network. |
| Use case | Crypto is both assets and currencies. Means crypto can be used for investments. Whenever the value increases the investor can sell them on higher price and gain profit. | It is digital replica of physical currency. It can be used only as selling and buying thing. |
| Security | Encryption protects cryptocurrencies. | Strong passwords are required to protect digital wallets, banking apps, credit cards and debit cards. |

7. Security

For the security Cryptocurrency used encryption method to secure account of the user. Authentications required if someone is entering in the crypto Network. In this the user are publicly visible to everybody but at the time of login the user has to use its public key and private key. If anybody want to hack the crypto network it has to Hack 51 % of network. Because for making any changes and transaction the majority of the user has to give permission. Since in the crypto network computers are called Nodes which are in different places so it is impossible to hack the or by going on their places individually.

Where as Digital currency does not use any encryption. It work as simple entering into your bank account and making transaction. It is run by an centralized organization and it can be hacked or personal account can be hacked.

8. Challenges

In terms of cryptocurrency it is not centralised so no control on this by any government. In terms of India and its new policy anybody is making transaction in cryptocurrency and making profit then the user has to give 33% of its profit to the government because it come under “Virtual Digital Asset” and as per the norm tax is applicable to Assets. For avoiding this the data can be share to other country and rebait it. The user can get back with the help of FDI to the NGO’s.

9. Conclusion

The CBDC is a best way to use as digital currency which can save the printing cost of currency of any country. The government has full authority on the currency and it can also track the transaction but as the securtiy is concern their must be some advance security features should be introduced for authentication. Thus for the investment purpose crypto is good option but it is difficult to trace bypasses (ousider) transaction.

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