IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

The Future Of Digital Currencies And Their Impact On Financial System

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ABSTRACT

Digital Money, also known as electronic money or e-money, refers to any form of currency or value that exists in digital or electronic form. It represents a digital representation of traditional fiat currency, such as the US dollar or the euro, or a digital representation of an asset, like gold or a specific commodity. Digital Currency is typically stored and transacted electronically, using digital devices such as computers, smartphones, or other electronic devices. It allows for quick and convenient transactions, as well as seamless online payments.

Similar to physical banknotes, the Digital Rupee will have unique identification and will be regulated by the RBI. The liability for the currency will rest with the central bank. Digital Currency aims to be accessible both online and offline. The RBI plans to launch two versions of the Digital Rupee: Digital Rupee for Wholesale (e₹-W) catering to financial institutions for interbank settlements and Digital Rupee for Retail (e₹-R) for consumer and business transactions. The implementation of the Digital Rupee is expected to eliminate the costs associated with the security printing of physical currency, which is currently borne by the general public, businesses, banks, and the RBI. The transition to a digital currency has the potential to enhance efficiency, transparency, and accessibility in financial transactions within the Indian economy.

Key words: E-Money, Digital Currency, Bitcoin, cryptocurrency. .Central Bank Digital Currencies CBDC, Virtual currency.

Introduction of Digital Currency

Digital currency refers to money that exists only in electronic form, without a physical counterpart like coins or banknotes. It operates entirely within digital networks, enabling transactions to occur electronically. Unlike traditional currency issued by governments, digital currency is decentralized and typically relies on cryptographic techniques for security. This means that digital currency transactions are recorded and verified through a decentralized network of computers, known as blockchain technology, rather than through a central authority like a bank or government. Digital currency offers several advantages over traditional forms of money, including increased accessibility, speed, and lower transaction costs. However, the digital nature of these currencies also presents unique challenges, such as regulatory concerns, cybersecurity risks, and the potential for illegal activities.

Digital currencies do not have physical attributes and are available only in digital form. Transactions involving digital currencies are made using computers or electronic or digital wallets connected to the internet or designated networks. In contrast, physical currencies, such as banknotes and minted coins, are tangible, meaning they have definite physical attributes and characteristics. Transactions involving such currencies are made possible only when their holders have physical possession of these currencies. Digital currencies have utility similar to physical currencies. They can be used to purchase goods and pay for services. They can also find restricted use among certain online communities, such as gaming sites, gambling portals, or social media networks.

Digital currencies also enable instant transactions that can be seamlessly executed across borders. For instance, someone in the United States may make payments to a counterparty in Singapore using digital currency, provided they are both connected to the same network.

1. **Central Bank Digital Currency**

Recently, the **Governor** of the **Reserve Bank of India** emphasised the innovative features being developed for **India's Central Bank Digital Currency (CBDC),** also known as the **e-rupee.**

- He emphasised the potential of features like **permanent transaction** deletion to boost **user anonymity.**

What is Central Bank Digital Currency (CBDC)?

- **About:**

1. A CBDC is a **legal tender** issued by a central bank in **digital form.**
    - Unlike private cryptocurrencies, CBDCs are **backed by the central bank,** ensuring stability and trust.

2. It is the same as a **fiat currency** and is **exchangeable one-to-one** with the fiat currency.
    - A fiat currency is a **national currency** that is **not pegged** to the price of a commodity such as gold or silver.
3. The digital fiat currency or CBDC can be **transacted using wallets** backed by blockchain.
4. Though the concept of CBDCs was **directly inspired by Bitcoin**, it is different from **decentralised virtual currencies** and crypto assets, which are not issued by the state and lack the 'legal tender' status.

- **Objectives:**
    1. The main objective is to **mitigate the risks and trim costs** in handling physical currency, costs of phasing out soiled notes, transportation, insurance and logistics.
    2. It will also wean people away from cryptocurrencies as a means for money transfer.
- **Global Trends:**
    1. **Bahamas** was the **first economy** to launch its nationwide CBDC namely Sand Dollar in 2020.
    2. **Nigeria** is another country to have rolled out **eNaira in 2020.**
    3. **China** became the **world's first major economy** to pilot a digital currency **e-CNY in April 2020.**

Features of Digital Currencies

1. Digital currency is electronic money without physical form, functioning within digital networks for transactions.
2. Unlike government-issued currency, it's decentralized, secured by cryptographic methods and recorded on blockchain networks.
3. This decentralized system replaces the need for central authorities like banks or governments to verify transactions.
4. Digital currency provides benefits such as accessibility, speed, and reduced transaction costs, yet poses challenges including regulatory issues, cybersecurity threats, and potential for illegal use.

Characteristics of Digital Currencies

As mentioned earlier, digital currencies only exist in digital form. They do not have a physical equivalent. Digital currencies can be centralized or decentralized. Fiat currency, which exists in physical form, is a centralized system of production and distribution by a central bank and government agencies.

Prominent cryptocurrencies, such as Bitcoin and Ethereum, are examples of decentralized digital currency systems.

Digital currencies can transfer value. Using digital currencies requires a mental shift in the existing framework for currencies, where they are associated with sale and purchase transactions for goods and services.

Digital currencies, however, extend the concept. For example, a gaming network token can extend the life of a player or provide them with extra superpowers. This is not a purchase or sale transaction but, instead, represents a transfer of value.

Types of Digital Currencies

Digital currency is an overarching term that can be used to describe different types of currencies that exist in the electronic realm. Broadly, there are three different types of currencies:

1. Cryptocurrencies

Cryptocurrencies are digital currencies that use cryptography to secure and verify transactions in a network. Cryptography is also used to manage and control the creation of such currencies. Bitcoin and Ethereum are examples of cryptocurrencies. Depending on the jurisdiction, cryptocurrencies may or may not be regulated. Cryptocurrencies are considered virtual currencies because they are unregulated and exist only in digital form.

2. Virtual Currencies

Virtual currencies are unregulated digital currencies controlled by developers or a founding organization consisting of various stakeholders involved in the process. Virtual currencies can also be algorithmically controlled by a defined network protocol. An example of a virtual currency is a gaming network token whose economics is defined and controlled by developers.

3. Central Bank Digital Currencies

Central bank digital currencies (CBDCs) are regulated digital currencies issued by the central bank of a country. A CBDC can be a supplement or a replacement for a traditional fiat currency. Unlike fiat currency, which exists in both physical and digital form, a CBDC exists purely in digital form. England, Sweden, and Uruguay are a few of the nations that are considering plans to launch a digital version of their native fiat currencies.

The use of CBDCs has been suggested as a means of enhancing the speed and security of centralized payment systems, lowering the costs and dangers of handling cash, and promoting greater financial inclusion for people and companies without access to conventional banking services. They may also make cross-border payments easier and lessen the need for foreign exchange.

The introduction of a U.S. CBDC presents certain difficulties. For instance, for Congress to authorize the issuance of a CBDC, there must be robust privacy and security infrastructures put in place. The government must also weigh the possible impacts on monetary policy and the operational management of the switch from conventional money to a CBDC.

TYPES OF DIGITAL CURRENCY

Here's a tabulated form explaining the different types of Digital Currency along with relevant examples:

SL.No	Types of Digital Money	Description	Examples
1	Centralized Digital Money	Digital money is issued and regulated by a central authority, stored in centralized databases, and transactions are processed through trusted intermediaries.	PayPal, Venmo, Alipay, WeChat Pay, Apple Pay
2	Cryptocurrencies	Decentralized digital money based on cryptographic techniques, operating on decentralized networks like blockchain, with transactions verified by network participants.	Bitcoin (BTC), Ethereum (ETH), Litecoin (LTC)
3	Digital Fiat Currency	Digital versions of traditional fiat currencies are issued and regulated by central banks, aiming to provide the benefits of digital transactions with fiat currency stability.	eEuro, e-Yuan, e-Krona, e-Dollar (in development stages)
4	Stablecoins	Digital currencies are pegged to the value of a specific asset (fiat currency, commodity, or cryptocurrency) to maintain stability and reduce volatility.	Tether (USDT), USD Coin (USDC), Binance USD (BUSD)
5	Mobile Money	Digital currency is stored and transacted using mobile devices, typically in regions with limited access to traditional banking services.	M-Pesa, Paytm, AliPay, WeChat Pay
6	Digital Gift Cards	Prepaid digital cards with a specific monetary value that can be used for purchases within designated platforms or stores.	Amazon Gift Card, iTunes Gift Card, Google Play Gift Card

LIST OF DIGITAL CURRENCY NAME

SL.No	Types of Digital Money	Description	Examples
1	Bitcoin (BTC)	2009	The first decentralized cryptocurrency introduced blockchain technology.
2	Ethereum (ETH)	2015	A decentralized platform enabling smart contracts and decentralized applications.
3	Ripple (XRP)	2012	Designed for fast, low-cost international money transfers and remittances.
4	Litecoin (LTC)	2011	A peer-to-peer cryptocurrency is known for its faster transaction confirmation.
5	Bitcoin Cash (BCH)	2017	A fork of Bitcoin aiming to improve scalability and transaction speed.
6	Cardano (ADA)	2017	A blockchain platform designed for the development of decentralized applications with a focus on security.
7	Polkadot (DOT)	2020	A multi-chain platform enabling interoperability between different blockchains.
8	Chainlink (LINK)	2017	A decentralized oracle network providing real-world data to smart contracts.
9	Stellar (XLM)	2014	A platform for fast, low-cost cross-border transactions and token issuance.
10	Dogecoin (DOGE)	2013	Initially created as a meme, it has gained popularity as a digital currency with a strong community.

Advantages and Disadvantages of Digital Currencies

Advantages of Digital Currencies

1. **Fast Transfer and Transaction Times:** The amount of time required for transfers involving digital currencies is extremely fast. As payments in digital currencies are made directly between the transacting parties without the need for any intermediaries, the transactions are usually instantaneous and low-cost. This fares better compared to traditional payment methods that involve banks or clearinghouses. Digital-currency-based electronic transactions also bring in the necessary record-keeping and transparency in dealings.
2. **No Physical Manufacturing Required:** Many requirements for physical currencies, such as the establishment of physical manufacturing facilities, are absent for digital currencies. Such currencies are also immune to physical defects or soiling that are present in physical currency.
3. **Monetary and Fiscal Policy Implementation:** Under the current currency regime, the Fed works through a series of intermediaries (banks and financial institutions) to circulate money into an economy. CBDCs can help circumvent this mechanism and enable a government agency to disburse payments directly to citizens. They also simplify the production and distribution methods by obviating the need for physical manufacturing and transportation of currency notes from one location to another.

4. **Cheaper Transaction Costs:** Digital currencies enable direct interactions within a network. For example, a customer can pay a shopkeeper directly as long as they are situated in the same network. Even costs involving digital currency transactions between different networks are relatively cheaper as compared to those with physical or fiat currencies. By cutting out middlemen who seek economic rent from processing the transaction, digital currencies can make the overall cost of a transaction cheaper.
5. **Decentralized:** Digital currencies may be decentralized. This means they are not controlled by any government or financial institution. Decentralized digital currencies make them more resistant to government interference, censorship, and manipulation. Decentralization means true control over the digital currency is spread over a broader range of owners or users.
6. **Privacy:** Because transactions with digital currencies are not linked to personal data, users are given a high level of privacy and anonymity. They are therefore very helpful for those who want to protect the confidentiality of their financial dealings.
7. **Accessible Around the World:** Anyone with an internet connection can utilize digital currencies from anywhere in the globe. These services are therefore particularly helpful for people who do not have access to conventional banking institutions. In addition, many of these banking services only need access to an internet connection; for geographical areas that are not as developed with a strong financial infrastructure, digital currencies may be a stronger option.

Disadvantages of Digital currency

1. **Storage and Infrastructure Issues:** While they do not require physical wallets, digital currencies have their own set of requirements for storage and processing. For example, an internet connection is necessary as are smartphones and services related to their provisioning. Online wallets with robust security are also necessary to store digital currencies.
2. **Hacking Potential:** Their digital provenance makes digital currencies susceptible to hacking. Hackers can steal digital currencies from online wallets or change the protocol for digital currencies, making them unusable. As the numerous cases of hacks in cryptocurrencies have proved, securing digital systems and currencies is a work in progress.
3. **Volatile Value:** Digital currencies used for trading can have wild price swings. For example, the decentralized nature of cryptocurrencies has resulted in a profusion of thinly capitalized digital currencies whose prices are prone to sudden changes based on investor whims. Other digital currencies have followed a similar price trajectory during their initial days. For example, Linden dollars used in the online game Second Life had a similarly volatile price trajectory in its early days.4
4. **Limited Acceptance:** Digital currencies are still not commonly used as a means of payment by retailers and other enterprises. Because of this, using them for routine transactions may be challenging. Though digital currencies have gained in popularity, there are still limited functionalities in everyday transactions in many places.

5. **Irreversibility:** On a digital currency network, transactions are irreversible. This means that once a transaction has been completed, it cannot be undone. In circumstances where a mistake or fraud has taken place, this may be a disadvantage. This is also a tremendous disadvantage for those new to the digital currency space, as there is a substantial learning curve. Because there is no central oversight area for many digital currencies, new users can't simply go to their local branch to receive help for many digital currencies.

Pros and Cons of Digital Currencies

Pros

- Faster transaction times
- No physical manufacturing required
- Lower transaction costs
- Make it easier to implement monetary and fiscal policy
- Greater privacy than other forms of currency

Cons

- Can be difficult to store and use
- Prone to hacking
- Volatile prices that result in lost value
- May not allow for irrevocability of transactions
- Limited acceptability

Challenges and Benefits of Adopting Digital Payment Systems

As digital currencies continue to gain popularity, India, too, has experienced an advancement in its digital payment systems. Platforms such as Unified Payment Interface (UPI) offer users the convenience of seamless, affordable, quick, and secure digital transactions.

The expansion of the **Unified Payment Interface (UPI)** in the country reflects its capacity to create a top-tier payment infrastructure from ground zero. The UPI system has established a national open standard that over 550 banks have adopted as of January 2024. The interface also facilitates seamless operations for global entities like Google, WhatsApp, Walmart, Amazon, and Uber. For instance, while booking a cab, the user can pay for the service through a cashless medium without using their bank account details in real- time.

The UPI ecosystem offers several benefits, including 100% coverage for payment transactions through Person to Person (P2P) and Person to Merchant (P2M) payments. The platform supports various

merchant integration methods, with QR-based payments being the most prevalent. Remarkably, in just five years, the market has witnessed the deployment of over 256 Mn UPI QR codes from meagre 2.5 Mn devices.

The UPI ecosystem strengthens India's leadership position in the global digital payment landscape by ensuring safety and compliance with international security standards and certification. The success of UPI extends beyond national borders, with its launch in several countries, including Sri Lanka, Mauritius, France, UAE, Singapore, Bhutan, and Nepal.

The growing popularity of advanced payment methods has brought new challenges. These include increased fraudulent activity, data breaches, and recurring lapses in information security. According to the latest RBI Annual Report, fraud incidents have nearly doubled compared to the previous year. Financial institutions (FIs) reported a 34% increase in fraud cases related to cards and Internet banking, with the number rising from 3,596 in 2021-22 to 6,659 in 2022-23.

Digital Currency Adoption for Economic Growth

The introduction of digital currency represents more than just the modernisation of the financial system. The rise of new and emerging technologies has also evolved as a strategic imperative to ensure sustainable economic growth. In their pursuit of developing and exploring digital currencies, countries must work closely with each other and private entities to successfully push the boundaries of technology. This must, however, be done against the backdrop of a strengthened cybersecurity regime and a conducive regulatory framework that adapts to the ever-changing customer needs and preferences.

India, particularly with its innovative and successful India Stack, can help countries unlock the economic primitives of identity, data, and payments at the population scale and collaborate with like-minded countries to continue evolution in this domain.

Conclusion

Digital currency undoubtedly has the potential to transform the financial sector and bridge the existing geographical boundaries. By seamlessly integrating with legacy systems and offering inter operability, they can extensively assist in facilitating trade and economic opportunities for countries. While its real-world impact is significant, it must be balanced with facilitative governance that ensures the benefits reach.

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