V. CBDC REGULATIONS IN INDIA: THE ROADBLOCKS AND OPPORTUNITIES FOR RBI

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ABSTRACT

The introduction of Central Bank Digital Currencies ("**CBDCs**") as e-rupee, caused financial technology to spread its wings in the currency regulation of India. This development happened amidst several niche cryptocurrencies, which have taken the world by storm, with their increasing valuation. Although this wheel of cryptocurrency investments was marred with many crises, prime dent has been caused by the recent FTX crisis, which spilt out its volatile and unregulated nature. These incidents pushed the government to launch a digital currency which is backed by the sovereign and is recognised as a legal tender. In India, the citizens are becoming very adept with technology through the UPI payment systems, and its predecessors by facilitating financial inclusion via digital means. This growing connectivity between the banks and customers set a solid foundation for CBDCs. In this regard, RBI being the main regulator of currency, has released a concept note on CBDCs before their implementation on a pilot basis. The note exhaustively discusses several aspects, like the working infrastructure, possible merits and implications, along with relevant instances from several countries. However, the concept note of RBI is merely an epiphany of ideas, while the real scenario can turn out to be different. This paper presents the genesis of CBDCs and the difference between cryptocurrency and CBDCs besides providing a critical analysis of the concept note.

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I. INTRODUCTION

The winds of change can be felt, gliding at the very outset of technological evolution in the 21st century. The gradual shift has not only changed the way individuals carry out their business activities but also compelled governments across the globe to think beyond the traditional mechanics of financial systems pertaining to money and payment systems.[1] In recent years, the financial regulatory authorities of many countries across the globe have started implementing various forms of technology in their working infrastructure pertaining to the issuing of currencies, the cardinal one being, Central Bank Digital Currency (CBDC).[2]

The immense growth of fast and convenient digital payment systems as well as the mushrooming of unregulated private virtual currencies in multiplicity[3], sit at substantial odds with the historical concept of money.[4] Consequently, the integration of technology into the banking sphere has made bankers and customers perplexed. Undoubtedly, the fiat currency and Unified Payments Interface (UPI) hold the major chunk of financial transactions in our country, on that backdrop the issuing of CBDC will surely going to startle the conventional users of the existing payment mechanisms.[5] It is important to note that private virtual currencies are not a burden on the central bank balance

[1] Arner D, Barberis J, Buckley R, 'The Evolution of Fintech: A new Post Crisis Paradigm', (2016) UNSW Law Research Paper 62.
[2] World Bank Group and IMF 'Fintech: The Experience So Far', EPolicy Paper No. 19/024, (2019).
[3] Bains, Parma, and Nabuyasu Sugimota 'The Regulations of Crypto Assets: A Closer Look at the Crypto Asset Ecosystem' (2022) 2 IMF.
[4] Ibid.
[5] B. Singh and S.Kaur, 'Crypto Currencies/Blockchain and the Banking System' (2019) 2 The Journal of Indian Institute of Banking and Finance 56.

sheet and carry no intrinsic value.[6] Still, the growing use of these kinds of currencies gave central banks around the world food for thought.[7] This is certainly relevant as electronic payment methods become more popular and printing money becomes more expensive and difficult.[8]

Additionally, the steady rise of private virtual currencies gave a bundle of nerves to the government due to its volatile and decentralised nature which threatened the stability of the financial system.[9] Furthermore, the persisting cyber security concerns pressed the central banks to look for an alternative, and thereafter, CBDCs came into the picture. The RBI launched the pilots of CBDC, in both retail and wholesale spheres in November and December 2022 respectively. Though it has received a warm welcome from financial entities, the citizens are still in awe of this new development, whether it is a sword or a shield to them in the digital landscape, especially at the outset of the private crypto currencies.[10] There are several challenges before the RBI like cyber security, data protection, infrastructure cost, awareness and benefits of CBDC. This research article aims to demystify the operations, regulations and consternations regarding CBDC.

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[6] IMF, 'Review of the Institutional View on the Liberalization and Management of Capital Flow' (2022), IMF Policy Paper 2022/08. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2022/03/29/Review-of-The-Institutional-View-on-The-Liberalization-and-Management-of-Capital-Flows-515883> Accessed 29 March 2023.

[7] H.A. Saulamke and P.N.D.P Hinge, 'Digital Payment System with Reference to Financial Transactions in India: An Empirical Analysis' (2019) 8 Adalya Journal 70, 73.

[8] N. Sobti, 'Impact of Demonetization on Diffusion of Mobile Payments Services in India: Antecedents of Behavioural Intention and Adoption Using Extended UTAUT Model' (2019) 16(4) Journal of Advances in Management Research 472, 481.

[9] C. Margulis, A. Rossi, 'Legally Speaking, is Digital Money Really Money?' (*IMF Blog,* 14 January 2022) <https://www.imf.org/en/Blogs/Articles/2021/01/14/legally-speaking-is-digital-money-really-money> Accessed 29 March 2023.

[10] Ibid.

II. UNDERSTANDING THE NATURE OF CBDC, AND WHAT DIFFERENTIATES IT FROM CRYPTOCURRENCY.

The words "digitisation" and "technology" did not confine themselves to a part of tough jargon. Rather, they lie at the tip of the tongue of everyone, especially the enthusiasts of cryptocurrency. It has brought out a new form of excitement, because of the disruption it has caused in the traditional financial systems along with the influx of investors attributed to it.[11] India has seen a growing interest in cryptocurrencies in recent years, with a surge in trading volumes of different currencies and investments through varied channels. India holds the record of highest number of crypto owners and comes second with respect to adoption rate.[12] On the contrary, this inrush of crypto-investments worried the central government.[13] In 2018, the Reserve Bank of India (RBI) prohibited cryptocurrency exchanges effectively to cut off the banking channels for crypto traders and investors.[14] However, the ban was lifted in March 2020 by the Supreme Court of India in its judgement, which declared the ban unconstitutional.[15] Since then, there has been a renewed interest in cryptocurrencies, with many Indians investing in Bitcoin, Ethereum, and other digital assets. Indian exchanges such as WazirX, CoinDCX, and ZebPay have continuously reported a surge in trading volumes and user registrations. This verdict accentuated the need to alleviate the drought of crypto-based legislation.

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[11] Robert Searle, 'Futuristic Economics for the 21st Century?' in Dr. Debesh Bhowmik, *An approach towards Central Bank Digital Currency* (Kunal Books 2022).
[12] Ashwani Kumar, 'The crypto Framework: Building Blockchain Businesses, Nationally' (*Financial Express*, 5 October 2022).
[13] B. Singh and S. Kaur, 'Crypto Currencies/Blockchain and the Banking System' (2019) 2 The Journal of Indian Institute of Banking and Finance 56.
[14] Circular, Reserve Bank of India (6 April 2018).
[15] *Internet and Mobile Association of India V Reserve Bank of India,* (2020) SCC Online SC 275.

In January 2021, the government proposed a bill named *the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021* was introduced by the Indian Parliament,[16] which sought to ban all private cryptocurrencies, and simultaneously a framework for the creation of a digital rupee issued by the RBI. The RBI published various research papers and, in its concept note,[17] it defined CBDC as *"the legal tender issued by a central bank in a digital form. It is the same as a fiat currency and is exchangeable one-to-one with the fiat currency. Only its form is different."*[18] The recognition given to CBDCs as legal tender by the government makes them more reliable than cryptocurrencies.[19] Features like trust, safety and settlement finality, found in physical cash, are also present in e- rupee.[20] In essence, these are the manifestation of fiat currency in its new incarnation in digital form has gotten traction and countries across the globe have been using them for hundreds of years.

The difference between CBDCs and Cryptocurrencies.

There are certain key differences between CBDCs and cryptocurrencies. CBDCs are issued by central banks, which regulate and oversee their use, while cryptocurrencies are created by private individuals or

[16] Cryptocurrency and Regulation of Official Digital Currency Bill, 2021.

[17] Fintech Department, 'Concept Note on Central Bank Digital Currency' Reserve Bank of India (October 2022).

[18] https://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/CBDC22072021414F2690E7764E13BFD41DF6E50AE0AE.PDF

[19] Aarti Patki and Vinod Sople, 'Indian Banking Sector: Blockchain Implementation, Challenges and Way Forward' (2020) 4 Journal of Bank Finance and Technology 65.

[20] Press Trust of India, 'RBI Internal Panel Working on Model of Central Bank's Digital Currency division Very Soon: Deputy Governor B P Kanungoo' (*Economic Times,* 5 February 2021) <https://economictimes.indiatimes.com/news/economy/policy/rbi-internal-panel-working-on-model-of-central-banks-digital-currency-decision-very-soon-deputy-governor-b-p-kanungo/articleshow/80704944.cms> Accessed 29 March 2023.

entities and operate independently without sovereign authority.[21] CBDCs are recognized as legal tender in the countries where they are issued, while cryptocurrencies are not considered legal tender in most countries.[22] CBDCs are designed to maintain a stable value against the national currency and facilitate secure and efficient payments and settlements. In contrast, cryptocurrencies serve a broader range of purposes, including investment and speculation, and are often characterised by high volatility and fluctuations in value.[23] "*CBDCs are not digital assets as they are the mere digital manifestation of fiat currency and a significant point of difference is the taxation aspect. It is crucial to understand that while CBDCs are 'currency' they are not subject to tax. However, virtual digital currencies, as proposed in the Finance Bill, 2022, have been made subject to high tax incidence.*"[24] Finally, CBDCs are built on centralised and permission systems, while cryptocurrencies are often based on decentralised and permissionless blockchain technology which increases the risk of money laundering and terror financing.[25]

The recent instance of the FTX bankruptcy is a testimony to the volatile nature of cryptocurrencies because there is no central authority to

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[21] Bains, Parma, and Nabuyasu Sugimota 'The Regulations of Crypto Assets: A Closer Look at the Crypto Asset Ecosystem' (2022) 2 IMF.
[22] Tobias A 'Stablecoins, Central Bank Digital Currencies and Cross-Border Payments: A New Look at the International Monetary System' (IMF-Swiss National Bank Conference, Zurich, May 2019).
[23] C. Margulis (n. 9).
[24] Meghna Mittal, 'CBDC in India- A Leap of Faith?' (Vinod Kothari, 1 February 2022) <https://vinodkothari.com/2022/02/cbdcs-in-india-a-leap-of-faith/> Accessed 29 March 2023.
[25] Kosse and, I. Mattei, 'Gaining Momentum- Results of the 2021 BIS Survey on Central Bank Digital Currencies' (2022) BIS Paper No. 125. < https://econpapers.repec.org/RePEc:bis:bisbps:125> Accessed 29 March 2023.

regulate them.[26] As it went bankrupt, the global crypto currency market capitalisation was USD 0.95 trillion, and it has massively dropped to USD 0.84 trillion.[27] As a consequence, many people lost everything. Investors, venture capitalists and other investment managers related to crypto deals are trying to shift from the wreckage, and pondering over the fact that though cryptocurrency offers a great potential to earn money quickly, a brave face of approach is required to make it a fulltime venture.[28] Therefore, the adoption of CBDC in India, by using blockchain technology, gives the quality of fiat currency along with giving protection to citizens from the volatility of cryptocurrencies.

III. CURRENT STATE OF THE DIGITAL PAYMENTS LANDSCAPE IN INDIA.

India has come a long way in terms of its payment system and now, the digital payment system has become an irreplaceable part of modern-day life. The genesis of the digital payment system in India can be traced back to 1996, when ICICI bank launched online banking services for the first time to their clients at its retail branches, which was at seen as a luxury at that time.[29] Thereafter, a lot of payment systems have been developed by RBI such as debit cards, credit cards, National Electronic Funds Transfer (NEFT), and Real-Time Gross Settlement (RTGS) to provide hassle-free service to the people. Over the last few decades, India has experienced tremendous growth

[26] Jim Wyss, 'Licking its FTX wounds, Bahamas Step-ups Push for Digital Fiat (Bloomberg, 14 January 2023)<https://www.bloomberg.com/news/articles/2023-01-14/ftx-collapse-challenges-bahamas-sand-dollar-central-bank-digital-currency-cbdc#xj4y7vzkg> Accessed 29 March 2023.
[27] Suhail Nathani and Yash Desai, 'India: The FTX Collapse: Key Takeaways' (Mondaq, 9 January 2023) < https://www.mondaq.com/india/fin-tech/1268678/the-ftx-collapse-key-takeaways>Accessed 29 March 2023.
[28] Ibid.
[29] K. Bhinde, 'Growth of Digital Payment System in India' (2019) 22 Think India Journal 245.

in digital payments, largely due to the government's demonetization initiative in 2016.[30] The country has witnessed an unprecedented surge in the use of digital payment modes such as Bharat Interface for Money-Unified Payments Interface (**"BHIM-UPI"**), Immediate Payment Service (**"IMPS"**), Prepaid Payment Instruments (**"PPIs"**), and National Electronic Toll Collection (**"NETC"**) system. The growth in digital payments has resulted in more transparency in transactions, which has empowered the country's economy and promoted digital inclusion.[31] BHIM-UPI has emerged as the preferred payment mode over other alternatives[32] as it has served as the means of bringing the payment mechanism to the palm top, thereby promoting financial inclusion which sets the stage for CBDC introduction. But despite significant progress, large parts of the population remain financially underserved. Increasing financial inclusion has many challenges including access to digital technology. CBDC could potentially facilitate financial inclusion by increasing access to digital payments and thus serving as a gateway to wider access to financial services.

The concept note of RBI envisages the interoperability of CBDC with the current payment infrastructure of UPI, digital wallets like PayTM, Gpay and many more. However, there are certain limitations while doing transaction through UPI, there is cap on number of transactions a customer can do in a day and recently NPCI proposed to charge 1.1% on merchant transaction

[30] N. Sobti, 'Impact of Demonetization on Diffusion of Mobile Payments Services in India: Antecedents of Behavioural Intention and Adoption Using Extended UTAUT Model' (2019) 16(4) Journal of Advances in Management Research 472, 481.
[31] S. Rastogi and A. Sharma, C. Panse and V.M Bhimavarapu, 'Unified Payment Interface: A Digital Innovation and its Impact on Financial Inclusion and Economic Development (2021) 9(3) Universal Journal of Accounting and Finance 518.
[32] Ibid.

above 2000 rupee.[33] However, CBDC will provide hassle-free transaction service to customers without any charges and there will be no cap as such in terms of CBDC transactions in a day. In addition to this, RBI is also planning to provide offline payment service through CBDC for a certain amount that will enhance the digital inclusion in financial services.[34] Moreover, CBDC-R will be for small customer and merchants while CBDC-W will be wholesale and cross border payments.

IV. THE ROLE OF TECHNOLOGY IN CBDC REGULATION AND WORKING INFRASTRUCTURE

Cutting-edge technology is a prime requirement, especially when it comes to the invention of a currency that not only promises peer-to-peer payments but also provides convenience and cash-like safety. In addition to this, the concerns of privacy and accessibility must satisfy the designs as being a currency, it is bound to be in the pockets of people from various walks of life. As digital payments continue to rise in India, addressing these concerns is essential to build confidence amongst citizens and curb the financial turmoil.[35] In this regard, there are two broad types of CBDCs. For retail purpose, CBDC has the suffix 'R' (CBDC-R), which can also be utilised for general purposes. On the other hand, for wholesale, CBDC has the suffix 'W' (CBDC-W) which can be also utilised for interbank purpose. CBDC-R will be available to all non-financial consumers and businesses, covering the private

[33] Editor, 'NPCI Sets 1.1% Interchange Fee on UPI Payments Via Prepaid Instruments and Wallets' (The Economic Times,31 March, 2023) < https://m.economictimes.com/tech/technology/npci-sets-1-1-interchange-fee-on-upi-payments-via-prepaid-instruments-wallets/articleshow/99068703.cms>Accessed pn 16 March 2023.

[34] S. V. Kesavaraj, C. Mukund Jakhiya and C. Nisha Bhandari, 'A Study on Upcoming Central Bank Digital Currency: Opportunities, Obstacles, and Potential FinTech Solutions using Cryptography in the Indian Scenario,' 13 International Conference on Computing Communication and Networking Technologies, Kharagpur, India, 1-10 (2022).

[35] Concept note (n 16) 31-32.

sector. On the other hand, CBDC-W will aim to cover securities settlement and smooth payments in interbank transactions.

According to the Working Paper of BIS, which provides an encompassing viewpoint of all the central banks,[36] the private sector will play a vital role for efficient usage of CBDCs. The aforementioned observation is also supported by the concept note of RBI.[37] It envisages the operations of CBDC to be either *"Direct"*, where the central bank issues and gives access to CBDC or *"Intermediate"*, where private players also be a part of the core system developed by RBI, thereby forming a 'Two-tier Model'.

The general operation under the 'Two-tier Model' will carry on under two different mechanisms. The first one is the "Indirect Model", in which a bank or the service provider would act as intermediaries between the central bank and consumers, for the transactions of digital currencies, and would also provide digital wallets to the consumers. Point of difference must be noted, that this intermediary system will operate on the retail segment, while for the wholesale segment, central banks are bound to manage it directly, by keeping a track of all transactions.

The second mechanism is the "Hybrid Model", where as soon as the digital currencies are issued by the central bank, the private intermediaries are responsible for its distribution and all connected customer activities. Though the private intermediaries manage retail payments, the Central Bank also maintains a central ledger, which eventually forms a backup support that the technical infrastructure will facilitate the transaction if the intermediaries face

[36] Raphael Auer and Rainer Bohme, 'The technology of retail central bank digital currency' (BIS Quarterly Review, March 2020).
[37] Concept note (n 16) 24-25.

insolvency and technical outages. The aforementioned model deserves to be appreciated because of the foreseeability it possesses.

Though as per the concept note, RBI prefers to have an "Indirect Model" for digital currency transactions as it upholds its right to issue currency.[38] Aside from issuing currencies, there is an entire supply chain in various processes like account keeping, transaction verification, customer verification, etc. which are managed by RBI. Undeniably, the pace of these activities has accelerated by technical developments. Subsequently, to facilitate the smooth transfer of digital currency and efficiency in allied services, RBI will create tokens and issue them to authorised entities, known as 'Token Service Providers (TSPs). These TSPs will be responsible for token distribution to the end users. Interestingly, the official notification which brings in the CBDC on a pilot basis, mentions blockchain technology.[39] Blockchain technology has many variations underneath, which range from "permissionless technology" which is used in private cryptocurrencies and is processed by unknown validators, to "permission technology" which is processed by known and vetted validators. If CBDCs run on the permissionless variant, the threat of instability will turn into reality. Moreover, the cost of computing accompanied by the proof report requirement for every transaction will not only be expensive but also time-consuming. Therefore, a "permission" centralised form of blockchain technology is necessary.[40]

The concept note stressed the Distributed Ledger Technology (DLT)-based infrastructures.[41] In DLT, the ledgers are managed by multiple entities

[38] Ibid.
[39] Press Information Bureau, 'Central Bank Digital Currency (CBDC) pilot launched by RBI in the retail segment has components based on blockchain technology' Ministry of Finance (12 December 2022).
[40] Raphael Auer (n 30) 93-95.
[41] Concept note (n 16) 31-33.

in a decentralised manner and each transaction is verified independently, unlike conventional database technologies. However, this process of updating comes with its limitations. Each update in the ledger must harmonise across the nodes of all entities, thereby forming a consensus mechanism. The multiple rounds of communications from one entity to another take time, and henceforth the DLT, only enables lower transactions and can function effectively in small jurisdictions.[42]

Though the stage is set, there are several implications before the curtain falls. India is a country where billions of transactions happen varying from small-scale to voluminous ones, thus RBI requires the digital infrastructure to have robust scalability and a trusted environment to support CBDC.

V. MERITS OF CBDC IN INDIA - EFFICIENCY AND TRANSPARENCY IN TRANSACTION SYSTEMS.

With rapid developments taking place in the world, India has to maintain its place in the financial technology sphere. RBI has been working in this direction by issuing CBDCs to the common public and enterprises, in addition to monetary policy objectives, suiting the current landscape. The need of maintaining stability of digital payments along with building trust among end-users is a paramount prerequisite which will have the following perks:

- *Fewer intermediary risks:* Every banking transaction requires some form of intermediary or other, which acts as a middleman between the borrower and lender, and helps in pooling transactions.[43] However

[42] Ibid.
[43] Kristalina Georgieva, 'The Future of Money: Gearing up for Central Bank Digital Currency' (IMF, Feb 2022).

there are certain risks associated with the intermediaries. For instance, the recent insolvency of Silicon Valley Bank has affected the banking services of nearly half of all US based technology and life science companies.[44] CBDCs can reduce intermediary risks in several ways. The CBDC transactions are settled directly between the two parties without the need for intermediaries such as banks or payment processors. This helps in mitigating the risk of insolvency or defaults on obligations, which can disrupt the flow of payments and cause financial instability. Further, transactions can be settled in real-time or near real-time, which reduces the risk of settlement failures and the need for intermediaries to hold large amounts of liquidity to cover settlement risks.

- *Ease in Cross Border Transactions:* The existing banking procedure pertaining to the cross-border transactions is expensive and time consuming. The efficient mechanism of secure cross-border payments has been given the prime importance by the G20 Countries, and India being a host of the 2023 G20, showed immense potential by culminating e-rupee. The report by BIS titled*Using CBDCs across borders: lessons from practical experiments* mentions the research experiment that was conducted on the four jointly issued digital currencies of the central banks of two or more countries, respectively.[45] It concluded that, sovereign digital currency yields faster settlements with lower costs and greater operational transferability.
- *Preventing Financial Crime:* Many studies have found out that having a sovereign-backed digital currency would improve in countering

[44] Hanna Zialdy, 'Why Silicon Valley Bank collapsed and what it could mean' (CNN Business, 13 March 2023).
[45] Morten Bech, 'Using CBDC across borders: lessons from practical experiments' (BIS Innovation Hub, 2021).

financial crime such as tax evasion and money laundering. For that CBDCs will have to allow account-based traceability, as compared to the token-based design.[46] In the Indian context, CBDCs need to access enabling factors and fill regulatory gaps to prevent any obscurity that leads to the misuse of CBDCs in nefarious activities. Nevertheless, the Central Bank and other investigative agencies have to design digital currencies to incorporate high-security standards and strict regulations for transferability and traceability.

VI. PUBLIC PERCEPTION AND EDUCATION AROUND CBDC IN INDIA

The previous chapters greatly showcase that the Indian population synchronises with the attempts made by the central bank towards digitalization. UPI system bears the testimony of success as it lessened the burden on the pockets of the consumers by bringing the payment interface to palmtop. Consequently, the possibility of a digital divide has been reduced to some extent.

In the recent judgement in *Lotus Pay Solutions v. Union of India*[47], the division bench of Delhi High Court held that RBI has the authority to regulate the Payment Aggregators as it falls under the purview of the payment systems. In the judgement the bench also acknowledged the rapid development in technology in banking sphere; thereby the courts should accept the increasing scope and ambit of legislation in this regard.[48] The digital rupee serves as an important cue in integrating finance, and technology, therefore RBI has to

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[46] Swiss Federal Council, 'Federal Council report in response to the Postulate 18.3159, Wermuth, of 14.06.2018' (2019) accessed 30 March 2023.
[47] Lotus Pay Solutions v. Union of India, 2022 SCC OnLine 2939.
[48] Lotus Pay Solutions v. Union of India, 2022 SCC OnLine 2939.

address the legal framework with respect to the digital rupee. Through the Finance Act, of 2022, several amendments were made to the Reserve Bank of India Act, 1934 (hereinafter, "**RBI Act**") in accordance with the proposals of the central government for FY 2022-2023. The Section 2 of the RBI Act,[49] clause (aiv) was inserted after clause (aiii), which is as follows,

(aiv) "bank note" means a bank note issued by the Bank, whether in physical or digital form, under section 22;[50]

Section 22 bestows upon RBI the right to issue bank notes and now with the inclusion of the digital rupee, Section 22 will be read together with clause (aiv) of Section 2, for the matters concerned.[51] Moreover, Section 22 A was inserted, with respect to the non-applicability of certain provisions for the digital form of bank notes.[52] According to this provision, Section 24 (Denominations of notes),[53] Section 25 (Form of bank notes),[54] Section 27 (Re-issue of notes),[55] Section 28 (Recovery of notes lost, stolen, mutilated or imperfect)[56] and Section 39 (Obligation to supply different forms of currency)[57] shall not apply to the bank notes issued in digital form by the Bank.

General Public notion and applicability in public policies.

The digital rupee is a "**fit-for-purpose**" currency, as after it is pre-programmed, it could be accepted for only a specific purpose. The CBDC-R and CBDC-W can be immensely helpful in supporting social benefit schemes

[49] Reserve Bank of India Act, 1934, s 2.
[50] Reserve Bank of India Act, 1934, s 2 (aiv).
[51] Reserve Bank of India Act, 1934, s 22.
[52] Reserve Bank of India Act, 1934, s 22A.
[53] Reserve Bank of India Act, 1934, s 24.
[54] Reserve Bank of India Act, 1934, s 25.
[55] Reserve Bank of India Act, 1934, s 27.
[56] Reserve Bank of India Act, 1934, s 28.
[57] Reserve Bank of India Act, 1934, s 39.

and other targeted payments. For instance, a pre-programmed CBDC can be utilised to issue LPG subsidies, as direct benefit transfer, the programming would be done in such a way that only designated LPG agencies are authorised to use these currencies, and would possess the access to convert this CBDC into the retail CBDC or even the fiat currency from a commercial bank. Similarly, many schemes can be supported by this methodology, ranging from Pradhan Mantri Kisan Samman Nidhi ("**PM-KISAN**") to Pradhan Mantri Fasal Bima Yojana ("**PMFBY**").[58] The subsidies can also be extended to other sectors, like in case of agriculture, subsidies for fertilisers could be transferred by the means of CBDC. The specifically programmable CBDCs can also be utilised by private and non-government entities to pay employees' expenses, fuel and telecom bills and other expenses out of industrial supply chain management.

Therefore, adopting CBDCs for the facilitation of social benefit programmes in compliance with the human resource requirements ensures accuracy with pace. Subsequently, the CBDCs can also venture across jurisdictions to fulfil various cross-border remittances, but to make it possible, there has to be a requisite infrastructure for the interoperability of CBDCs between jurisdictions. MSMEs could significantly gain from the infrastructure which CBDCs promise to provide, as with the usage of CBDCs banks will be able to generate a more accurate risk profile. The built-in tracking mechanism boosts lenders' confidence in MSME borrowers and reduces the risk of default. This increases the creditworthiness of MSMEs. Also, the reduction of time and cost of transactions make the lenders process loan applications and disburse funds easily. The CBDCs can catalyse financial

[58] Mihir Gandhi and Vivek Belgavi, 'Central Bank Digital Currency in Indian Context' (PwC, 2021).

inclusion as it can be accessed by anyone with a smartphone and an internet connection, making it easier for MSMEs in remote areas or without access to traditional banking services to access credit.[59]

VII. THE IMPLICATIONS OF CBDCS.

- *Cyber security concerns:* Being a programmed digital currency, it also bears high risks by opening the doors to many cyber threats.[60] Moreover, the central bank has storage information, and sometimes even a complete cache, which creates a degree of apprehension of breach of data as it controls certain levels of transactions between the citizens and the banks. Similar to the problems that have plagued major tech companies and internet service providers (ISPs), this can cause serious privacy breaches. For instance, criminals might break in and exploit data, or central banks might forbid transactions between citizens. In simpler terms, there is a great requirement for setting limitations to control or the digital currencies will lead to over-surveillance by the central banking authorities, thereby breaching the privacy of citizens.
- *Accountability concerns:* Although the digital rupee is legally enforced by a statute, there is still a gap pertaining to accountability with respect to the disputes arising out of CBDC transactions. This makes the end-users perplexed. An IMF Study conducted in 2021 revealed that 40 out of 174 central banks are legally permitted to issue CBDCs, vouch for legal status and strike a balance between maintaining traceability of or

[59] Ibid.

[60] Budhen Kumar Saikia, 'CBDC in India Issues and Challenges' in Dr. Debesh Bhowmik, *An approach towards Central Bank Digital Currency* (Kunal Books 2022).

financial crimes and respecting the privacy in transactions.[61] Also, the consumer protection being, a cardinal aspect of banking services, a dispute redressal forum and regulations strengthening in this direction are greatly needed, and also a designated authority should exist to manage the disputes. It is pertinent to note that even the concept note released by RBI is silent about the cardinal aspect of dispute resolution.

- *Counterfeit concerns:* The technology operating CBDCs need to be guarded and updated at regular intervals, especially when it comes to the "**tokenised**" form of CBDCs. This could be done by creating a counterfeit CBDC token that looks and functions like a real one, or by creating a digital wallet that purports to hold CBDC but is empty or contains fake CBDC. Many studies have shown that CBDC could be counterfeited by creation of fake CBDC tokens or digital wallets.[62] The Central banks will need to implement strong authentication and verification processes to ensure that only authorised parties can create and use CBDC tokens and digital wallets. The use of sophisticated hacking techniques could attempt to breach the CBDC system and create counterfeit CBDC tokens or manipulate existing CBDC transactions to their advantage.
- *Anonymity Concerns:* The importance of anonymity in a currency depends on individual preferences and the context in which the currency is being used. Fiat currency holds a major chunk of conventional transactions, enjoys no control over it by the government in the form of ledger, and has no tax liability attached to it. If a CBDC

[61] Gabriel Soderberg, 'Behind the Scenes of Central Bank Digital Currency: Emerging Trends, Insights and Policy Lessons' (IMF, Feb 2022).
[62] Prabina Kumar Padhi, 'Emergence of Central Bank Digital Currency in Indian Perspective: A Conceptual Analysis' in Dr. Debesh Bhowmik, *An approach towards Central Bank Digital Currency* (Kunal Books 2022).

can be utilised for the same purpose, even though the customers transaction data will be saved in encrypted form but the same can also be decrypted by the government because it is maintaining the central ledger. This problem may dissuade the customers to prefer CBDC over fiat currency. However, if the government allows complete anonymity, then it will increase the money laundering and terror financing risks. Therefore, the anonymity concern is a double edge sword for RBI and to balance this problem requires further research and deliberations. The programming of CBDCs should be encrypted in such a manner that it can only be decoded when some illicit transaction is detected.[63]

VIII. THE PRACTICES FOR CBDC REGULATIONS - LESSONS FROM OTHER COUNTRIES.

As of July 2022, there are 150 countries exploring the CBDC and few have started implementing it under pilot projects. The first CBDC was launched by Bahamas in the form of Bahamian Sand Dollar, in 2020. Subsequently, China, Sweden, Jamaica and other countries have also introduced the CBDC in their countries, with Jamaica's JAM-DEX being the latest one.[64] The practices and framework developed by these countries is cardinal for our country to roll out CBDC on a large scale. However, the use of technology and control on CBDC issuance differ from country to country. For instance, in China, PCOB has tested DLT during its pilot testing and decided that its capacity to manage huge transactions does not meet its

[63] Pratima Ghosh, 'Problems and Prospects of Central Bank Digital Currency' in Dr. Debesh Bhowmik, *An approach towards Central Bank Digital Currency* (Kunal Books 2022).
[64] Marsh, Sarah 'Eastern Caribbean Blazes a Trial as First Currency Union to Lunch Central Bank Digital Cash' *(Reuters,* 1 April 2021).

requirements. Therefore, China relies on "**Hybrid Architecture**"[65] while other countries like the Bahamas and Sweden are exploring the DLT.[66]

Though Sweden is in favour of paying interest on CBDC that will be less than the bank interest for maintaining the monetary policy, China,[67] Bahamas ECCU and India[68] are against it. Currently, the Bahamas is the only country that prioritises reducing the use of money for illegal activities as a main goal for its CBDC.[69] This objective is linked to the country's efforts to strengthen its AML/CFT framework, which faced scrutiny in 2018 when it was placed on the FATF grey list due to strategic deficiencies. Following this, the Bahamian government implemented an action plan to address the deficiencies, leading to its removal from the list in December 2020.[70] On March 2nd 2023, Bank of England and HM Treasury, launched a new consultation paper which proposes the introduction of *'digital pound'* for everyday payments.[71] The Swedish Riksbank has released a report on CBDC, which highlights that the elderly and groups with certain disabilities will be adversely affected in a cashless society and is exploring the use of CBDC in facilitating digital payments especially suitable for these groups as a

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65 Working Group on E-CNY Research and Development of the People's Bank of China, 'Progress of Research & Development of E-CNY in China' (2021).
66 Raphael Auer (n 30) 5-10.
67 Ma, Winston, 'China's Cryptocurrency Regulations will Proper Similar Regulations Globally' (2021) 1 International Financial Law Review.
68 FB Beauro, 'CBDCs will not bear any interest: RBI DG T Ravi Sankar' (Financial Express, 8 April 2022) <. https://www.financialexpress.com/digital-currency/cbdcs-will-not-bear-any-interest-rbi-dg/2485365/> Accessed 29 March 2023.
69 The Central Bank of the Bahamas, 'Consultation Paper: Proposed Legislation for the Regulation of the provision and use of Central Bank issued Electronic Bahamian Dollars' (The Central Bank of Bahamas, 2021) <https://www.centralbankbahamas.com/viewPDF/documents/2021-02-15-11-24-12-Central-Bank-Electronic-Bahamian-Dollars-Regulations-2021.pdf> Accessed 29 March 2023.
70 Ibid.
71 Steve Browning and Jamie Evans , 'Central Bank Digital Currency: The Digital Pound' (House of Commons Library, 8 March 2023).< https://researchbriefings.files.parliament.uk/documents/CBP-9191/CBP-9191.pdf> accessed 29 March 2023.

complement to cash.[72] Similarly, India is a country with more than one billion population, where most of the population lives in rural area and they are not familiar with digital transaction system and still rely on cash. Government has to ensure that these people should not be left stranded. The countries with a highly digitalized payment sector are concerned about disruption of digital services and concentration risks like China where there are only two firms which dominate the market.[73] The PBOC has expressed concern that the failure of such firms could have serious consequences.[74] Currently, there are many online payment service providers in India such as Gpay, PhonePe, PayTM etc, and CBDC may pose the risk to make their business unprofitable because it will directly compete with existing service providers.[75] Banks provide credit facilities to various institutions for their project, CBDC may impact the bank profitability because people may not deposit their money in banks directly.[76] This may cause interest rate hike and make practically impossible for banks to function. Thus, credit facility for developmental projects will be very costly and this may impact the monetary policy of RBI.[77]

[72] Country Report, 'Sweden: Financial Sector Assessment Program-Technical Note on Central Bank Digital Currency' (IMF, 5 April 2023)< https://www.imf.org/en/Publications/CR/Issues/2023/04/05/Sweden-Financial-Sector-Assessment-ProgramTechnical-Note-on-Central-Bank-Digital-Currency-531866>Accessed 15 March 2023.

[73] Krishna Srinivasan, 'Opening Remark at Peer Learning Series on Digital Money/Technology: Central Bank Digital Currency and the Case of China' (IMF, 7 July 2022) < https://www.imf.org/en/News/Articles/2022/07/07/sp070722-central-bank-digital-currency-and-the-case-of-china>Accessed on 29 March 2023.

[74] Ross P Buckley and Heng Wang, 'China's Central Bank Digital Currency Will Transform the International Monetary and Financial Systems' (University of Oxford, 18 November 2022) < https://blogs.law.ox.ac.uk/blog-post/2022/11/chinas-central-bank-digital-currency-will-transform-international-monetary-andFinacial System> Accessed 29 March 2023.

[75] Press Information Bureau (n39).

[76] Ibid.

[77] Editor, 'Impact of CBDC on the Financial System and Economy of India' (Economic Times, 26 October 2023)< https://economictimes.indiatimes.com/markets/cryptocurrency/impact-of-cbdc-on-the-financial-system-and-economy-of-india/articleshow/95095731.cms?from=mdr>Accessed 29 March 2023.

Therefore, India has to take note of the concerns raised by the other countries. The offline operability of CBDC will be helpful for the area like northeast where there is not much digital penetration and people are living in area where it is not commercially viable for banks to carry their business. Therefore, CBDC will increase the digital inclusion. In addition to this, government is also planning to linked it with direct cash transfer scheme like PM-KISAN, PMFBY and Mahatma Gandhi National Rural Employment Guarantee Act (“**MANREGA**”).[78] The examples thereby provide hope for digital currency. Still, it is to be noted that, unlike the UK, India still has a high preference for cash, as the cash in circulation to GDP percentage in India is 12%, on the contrary, it is 3.4% in the UK, it is because of India has huge population, less digital inclusion, illiteracy and elderly population.[79] Therefore, the merits of having an e-rupee should be propagated amongst the masses as it will serve as one of the means to stay afoot with technology that grants greater security.

IX. CONCLUSION AND RECOMMENDATIONS FOR THE RBI

We are at the outset of the fourth industrial revolution, which has given impetus to technology in such a manner that it extends to blur the lines between digital, physical and biological spheres. Similarly, the concept of money has also evolved, as we have moved from exchange of goods in barter systems, to purchasing of goods and even services via currencies. Therefore, CBDCs serve as a prime example of a desired mode of currency in the fourth industrial revolution. The adoption of CBDC in India will bolster the conduct of digital transactions and its management, as it will eliminate the peril of volatility of cryptocurrency. Although the scalability of the e-rupee

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[78] Ibid

[79] Kunal Verma and Aashika Jain, ‘What is Digital Rupee? How Is It Different From Cryptocurrency?’ (Forbes, 24 March 2023)< https://www.forbes.com/advisor/in/investing/digital-rupee/> Accessed 29 March 2023.

might be marred by the concerns of cyber threats, huge number of transactions, hacking and the unanswered issue of anonymity of transaction data, yet with the robust and secured infrastructure, it cannot be scarred by these concerns. The debates, deliberations and discussions have to be held, amongst the stakeholders and the governments to address these concerns along with the setting up of a dispute resolution mechanism, and balance of anonymity. The RBI should regulate the operations of CBDCs in such a manner, that it would not disrupt the usage of existing payment service providers and banks credit facilities, in brief there has to be a healthy competition between CBDCs and the other digital payment alternatives. Since India has varied topography, CBDCs should have scalability, and its operations should be backed by a central ledger, as with the current scenario of varied financial crisis, the central ledger gives an assurance to the stakeholders for smooth recovery. Though CBDCs endeavours to reduce the time and intermediary risks involved in the current digital payment mechanisms like RTGS, IMPS etc, the technical regulatory bodies should strive hard to update its technology on regular intervals. This is important because, the transactions which are conventional should happen in an encrypted form, while the decrypting should only occur when there is an apprehension of any financial crime. The lessons from the foreign jurisdictions that adapted to this type of currency bear testimony to the fact that it can be a viable option in place of paper/ metallic currency. Albeit, the solutions might require significant investment in digital infrastructure and increment in expenditure on RBI's balance sheet, with time this mechanism will blossom at a larger pace with a cheaper rate.