

A Holistic Study on India's Currency Revolution: E-Rupee

Kirti Wadhawan¹, Prashant Dwivedi², Dimple Wadhawan³

^{1,2}Assistant Professor at Management Department, Dr. Virendra Swarup Institute of Computer Studies, Kanpur, U.P., India

³Project Coordinator Executive at Superhouse Education Foundation, Kanpur, U.P, India.

Abstract

In the realm of digital revolution and advancement, the subject matter of currency had been evolved to many different scenarios. From coins to notes to plastic money and finally to digital currency, our traditional medium of exchange had gone through a big transition in the past decades. In the economic concept of going for paperless and cashless, man has developed several different modes like Debit card and credit cards (Plastic money) as meeting economic settlement of exchange. But unfortunately, due to environmental commitment of cutting the utility of plastics and centralization of chips manufacturing ability to some few nation's only, the concept of plastic money can't be a one fix permanent solution to this currency revolution initiatives. Therefore we have many economies today who are concentrating their efforts towards making their currency digital. The concept of Central Bank Digital Currency (CBDC) is the new concept in this story of currency Revolution.

If we check out the global scenario, there are close to 10 countries around the world who have digital currency, as per the reports of India times. To a surprise of the world, we had littoral and islands nation's too, who are really doing a good job to channelize their currency towards a digital shift. The Bahamas, Jamaica and Singapore like island nation's too had taken a massive step towards currency digitalization. In the bid to make Indian Currency also adapt with this digital shift, we in India too had successfully running our currency digitalization for the E-Rupees. Although, E-Rupees success in India is yet in the pilot stage and its full-fledged implementation is yet to be put in place.

But the point of the matter is that India very soon is going to be in e rupees market. E rupee will going to be in every pocket very soon. Thanks to the digitalization, and demonetization of 2016 that E-Rupees will be the new reality of India. E-Rupees will be in every hands very soon. Point of the matter is that we all must push our self for this currency revolution. India is hopeful

That the pilot project of E-Rupees will chase the full-fledged success and very soon India will chase economic triumph. The introduction of E-Rupees will initiate a new dawn of economic growth for the Indian people. Indians will be going to be more empowered in the financial terms as Indian Central Bank i.e. will be making better initiatives for strengthening the businesses as well as Indian citizens.

In this research paper, we will be analyzing all the aspects about E-Rupees and how it can be a game changer for Indian Economy in the coming years. Also we will be focusing on its potential merits and demerits of aggregate economy as a whole as well as for the ultimate users. This research paper is prepared from the secondary data sources, and after taking references from like-minded journals, magazines,

articles, editorials and research papers. The aim of writing this research paper is to highlight the fact that How Indian Currency is stepping ahead towards digital revolution in this digitalized world.

Keywords: E-Rupees, Digital Rupees, eINR, Digital Currency, RBI, UPI, Currency Revolution, Digitalization, Cashless Economy, Cryptocurrency, Fiat Currency, E-Money and NPCI.

Introduction:

In the realm of economic hardship due to uncertain geo-political events like Ukraine-Russia war, pandemics, epidemics, global inflation, global supply chain disruptions due to extremities of tensed ties between middle-east countries and other like-minded nations. 21st century world is stepping ahead towards, the nationalistic sentiments to not only sustain their economy, but also to dominate the rest of the world. The reality of the world is that we have US and China playing tug of war to be the world's next superpower, and too made tune rest of the nation's dance on its economic command.

To become a strong nation at the geo-political level, it's not only the soft diplomacy power that would always works? Rather the nation need to make themselves economically stronger and financially sustainable to ensure that none of the economic challenges could ever, make their economy weaken. Until and unless, any nation don't plan about her economic strength in a serious manner, they had to keep on dressing their fragile economic position with tall talk at the administration level.

The above stated point had made it clear that, it is the economic strength of any nation which made you stand at the front of the global stage, decisively with good count of strategic partners and allies. Now that we had understood the relevance of economic strength, it is equally important to decode the pillars over which our economic strength will be thriving. A nation will be requiring the trio of **Business, Business-oriented government strategy and the Currency** to ensure its economic strength.

A boast to start-ups ecosystem will ultimately push the Businesses of the country. Strong Government at the center will push the economy by making Pro-Business/Economic strategies. Finally we had the currency, available in both physical as well as digital form for settling all the business deals. Holding World's strongest currency is itself a kind of privilege for any nation. A currency of any economy which is fully convertible as well as globally acceptable make payment settlement easier and hence enhance the trade network of that country at a very great pace.

In the world of digital revolution, currency too had entered in digital arena for economic ease and payment flexibility. Most of the world's economies are rushing towards introducing the digital version of their currency for their population, so as to ensure financial inclusion, ease of payment and transparency. Therefore the Government of India as well as Reserve Bank of India had green signaled the pilot project of E-Rupees to take place. After completion of Digital Rupees successful trail, India will very soon join the nations with Digital Currency ecosystem.

Now that we had clearly understood the relevance of Digital currency in the modern world of digitalization and globalization, lets us focus on E-Rupees related all key narrative vis-à-vis Indian Currency revolution in complete detail. We will be covering every possible aspect from different prospective about E-Rupees and will also talk about the future scope and challenges of E-Rupees in India.

Theoretical Framework:

Central Bank Digital Currency: E-Rupee The Future of India – Scope & Challenges (Dr. Sunil Patel & Dr. Himanshu Barot, 2023) The CBDC had the potential bring positive shift in the economic and financial system. It will give a direct boost to the financial inclusion to majority of those, who currently lives in the reality of partial banking services. But the other side of the story is that e-Rupee is not much stronger in terms of privacy security of the users. Government surveillance need to be extended for its implementation cause from the very beginning, otherwise chances of potential risk will always sustain. But in the wider terms, E-Rupees potential as a game changer can't be ignored.

Monetary Policy Implications of Central Bank Digital Currency with special reference to India, (Debesh Bhowmik, 2022) According to the conclusion compiled by the authors in their research paper, E-Rupee will be having too many challenges for it as a digital currency of Indian economy. The financial inclusion of India is far behind than other developed economies of the world and therefore there are chances that this shift towards digital currency will not be suited for India in the initial stage of its introduction. India is having some structural banking issues like huge burden of Non-Performing Assets (NPAs) before it to be sorted out first, secondly the low profit scenario and rural-urban banking divide could possibly destabilize the growth of India's maiden Digital currency. Although, many things had been improved in India with respect to financial infrastructure. Today internet, banking and UPI is in the reach of every household, which is a good indicator for planning the inaugural of digital currency for India. In such a scenario, the Reserve Bank of India need to play a crucial role here, to balance out things in an adequate way, and keep a strong vigil to avoid any such financial & banking crises.

Central Bank Digital Currency in India: the case for digital rupee (Peterson K. Ozili, March 2023). The Indian audience had a deep curiosity and interest for Central Bank Digital Currency. Although the future of CBDC is very vibrant, but we can't ignore the potential risk associated with it. According to the conclusions shown in the given research paper, it is not going easy for India to have smooth CBDC led digital currency transition. India need to ensure a monetary and digital evolution at a large scale for making CBDC a future reality. The story of India's CBDC will be a far different model for the rest for the world. Keeping in mind, our specific economic and monetary conditions, we need to figure best possible design for our own self.

E^{Rupee}. The Digital Currency in India: Challenges and prospects (Md. Asraful Haque & Mohd Shoab, 2023). India is a home of physical currency, a nation where cash is very much friendly to a sizable population. The aim of RBI is clear to replace Indian wallets with that of digital ones. The aim suits the trends of modernized social order of holistic digitalization of everything, then why not currency in that respect. But the journey for E-Rupee will not be an easy one. There will be a challenge of adoption, e-rupee digital wallet adoption would be a slow process initially and last but not the least is that government need to prepare a specific digital wallet & payment gateway guidelines for the easy adoption of E-Rupees. The initiative of E-Rupees will open new gates for India to lead the world, E-Rupee can be a change maker in our success story.

Promoting Financial Inclusion through Central Bank Digital Currency: An Evaluation of Payment System Viability in India, (Srijanie Banerjee and Manish Sinha, 2023). The modern economies had the bright future for digital finance and digital money both. For the holistic success of any digital currency, it is required that the digital currency must be adopted by all including (Rich and Poor). India is positive for digital adoption. Need of the hour is to make stringent policy measures and financial inclusion at the

grassroots level. For digital currency success, we need to adhere strong cyber rules and regulations. At the same time, we need to promote an ecosystem of digital literacy and cyber secured.

What is E-Rupees/Digital Rupees?

Rupees is the legal tender currency of the **Republic of India**. Rupees are being issued by India’s Central Bank, officially known as ‘Reserve Bank of India’ in different denomination to be used as a monetary medium of exchange. Digital Rupees is the electronic version of Indian Rupees, having equivalent value as legal tender and is also issued by India’s RBI as ‘Central Bank Digital Currency’. E-Rupees is also available in all denomination like way Indian currency notes and coins are available. It is a kind of digital token duly signed by the Governor of RBI with its own specific number on it. In the attempt to make tectonic shift in the currency circulation and to adhere more transparency to the economic system, the Government of India has introduced the concept of E-Rupees in the year 2022. The aim is to zero out corruption, bring more transparency, making exchange of money more safe & secure with enhance financial inclusion. With E-Rupee in to the picture, beneficiary will be actually benefitted with the exact benefit needed by them. **National Payment Corporation of India (NPCI)** is the nodal agency behind the campaign of digital currency (E-Rupees) in India.

Difference between CBDC & Cryptocurrency:

Before we move ahead in to the nitty-gritties of E-Rupee in this research paper, it is important to understand the difference between Central Bank Digital Currency and privately owned and regulated Cryptocurrencies. The key differences between the two are discussed below:-

S.NO.	Basis of comparison	Central Bank Digital Currency	Cryptocurrency
1.	Network	CBDC works on Centralized & permissioned network.	Cryptocurrencies are mostly operational on decentralized network.
2.	Backed by	CBDCs are mostly backed by the government of the nations.	Cryptocurrencies are not backed by any government.
3.	Security	There is high security in CBDCs.	There is less security in Cryptocurrency.
4.	Control & Regulation	CBDCs functions in controlled and regulated environment.	Cryptocurrency functions in uncontrolled and unregulated environment.
5.	Rate Flow	CBDC flows with stable currency rate.	Cryptocurrency flows with volatile currency rate.

Factors that push E-Rupees in India:

There can be multiple factors that works in favour of E-Rupees arrival in India. Of course, the modern world is in the phase of highly digitalization and technological upgradations, if one nation is doing any improvement, others would definitely follow that. Digital Currency had its origin almost a decade ago (2007 onwards), we can’t put more halt to its inception. Especially considering the Indian scenario in mind, E-Rupee arrival had bunch of factors behind it that help its beginning in 2022 itself. The initial push begins from Government’s **Digital India Mission**, which targeted massive scale **Digitalization** of India’s

paper-back economy. To support nation's digitalization vision, India is in the dire need of internet connectivity. That internet connectivity need was fulfilled by up to many extend via Jio Network, who not only make internet facility cheaper per capita, but also ensure remote coverage of its network towers and connectivity over which today's digitalization of India is thriving to epitome.

Cheap Internet and access of smart phones, had made Indians ready for digital ecosystem. Later circumstances like **demonetization** of currency notes by Central government in the year 2016 and **COVID-19 Pandemic** of 2019-20, push more people to go cashless and contactless transaction without exchanging physical money with each other. Today **UPI, BHIM & NPCI** like regulatory bodies are smoothly handling the millions of payment and money transfer transactions online every single day, with utmost safety and security. Thousands of electronic wallets are available online that are used by people for meeting their money exchange needs digitally. Government is regulating all the payment gateways and ensuring financial digitalization of its citizens. With the success of these initiatives, Government and RBI stepped another historic move by launching digital Rupee in the service of their countrymen.

Denominations available In E-Rupees?

The Digital Rupees or E-Rupees is available in eleven different denominations. The Denominations in digital form are all exactly the same that of the physical Indian Rupees notes and Coins. The E-Rupees is available in 50 paisa, Re 1, Rs 2, 5, 10, 20, 50, 100, 200, 500 and 2000. A user need a digital wallet to keep this E-Rupees with them. All these digital denominations of notes carry the signature of the Reserve Bank of India's Governor, along with a unique number of their own note identity. The user can see virtual rupee notes and their exact look, while a user is using them from their digital wallet for making payments and needful.

Why do we need E-Rupees?

The adoption of technology in different field is not rampant because it only ease our routine lifestyle; it is rather because, technology plays a stellar role in cutting down the cost as well. The physical mode of currency which is in wide use in India, have its sound printing and minting cost. According to a data taken from Indiaherald.com report, the Reserve Bank of India have to pay higher cost of printing 200 Rs note, than printing 500 Rs note. The rising prices of paper have increased the printing cost for the paper currency. The report data clearly indicate the following information vis-à-vis Indian Currency Printing Cost.

S.No.	Currency Denomination	Cost of Printing Per 1000 notes
1.	10 Rs Note	Rs 960
2.	20 Rs Note	Rs 950
3.	50 Rs Note	Rs 1130
4.	100 Rs Note	Rs 1770
5.	200 Rs Note	Rs 2370
6.	500 Rs Note	Rs 2290

If we focus on the above table, we will find that printing cost of 1000 notes of currency denominations of Rs. 200 is the expensive one, among all the other discussed denominations. Also the Currency printing

cost is subject to inflation as well. Which means every year the printing prices goes up from the level they were last year, due to increased prices of their printing resources (inputs).

Now that we have clearly understand the cost logic of having physical currency, it is more suitable from economic perspective to fix this cost issue with the permanent solution. A solution that is unaffected with any sort of inflation or increased printing charges/ paper charges year after year.

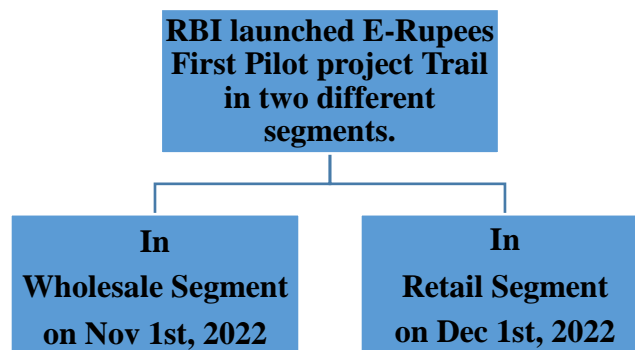
E-Rupee need now comes into the picture. The above discussed table is just the narrow picture of India’s vast story of Currency printing cost. If you do the sum total the above figures for six different denominations (960+950+1130+1770+2370+2290) it will give you Rs. 9470 for printing (1000*6) some 6000 currency notes. Let’s imagine the scenario of the wider picture, taking the narrative of 100 times more of the discussed story. (The figure will give the rough idea of the greater picture).

S.No.	Count of Currency Notes	Total Cost of Printing them (in Rs.)
1.	6000 notes	Rs. 9470
2.	600000 notes	Rs. 947000

Now you can estimate the huge cost burden, which our economy is currently, bearing because of this physical currency option. Imagine for a while, that if each and every denomination to be available in digital format, crores of Rupees can be saved by the Indian Economy for making this currency transition shift from physical money to E-Rupee (Digital Money). Launching of E-Rupee will be cost relieving action for our economy. We can save such estimated 9 lacs rupees on every printing of such 6 lacs currency notes of different denominations. Not only this lakhs of Rupees spend every year for storing these currency notes or transporting them from one location to another can also be saved. Government can channelize the saved fund for meeting other public needs of nation importance or for strengthening India’s basic infrastructure in rural and backward areas. This could be a potential factor for India to push such currency transition towards E-Rupees as soon as possible. If E-Rupee can save a lot of money in an aggregate, India must made smart choices of pushing E-Rupees on an immediate basis.

First Phase of E-Rupees Pilot Trail:

E-Rupees, a kind of digital version of traditional Indian Rupees, that is supported by block chain technology. The wholesale version of digital currency is called as CBDC dubbed as Central Bank Digital Currency. On the other hand, its retail version is called as Digital Rupees or E-Rupees. It was first proposed in the year 2017 and finally launched by Reserve Bank of India, on December 1st, 2022; for the pilot trials. For the purpose of doing transaction, it uses Block chain Technology distributed ledger technology.



The central bank (RBI) has observed four banks initially for the purpose of conducting pilot trial of E-Rupees at the first stage. RBI issued 1.71 crore to these four participating Banks based on their indents, for smooth conduct of Phase-I pilot trail of E-Rupees. For the purpose of conducting initial pilot trial, RBI has identified Four Indian cities for the Phase-I. It is important to note here that Pilot trails is restricted to some Closed User Groups i.e. CUG.

S.NO.	Banks chosen for Pilot Trail - I	Cities chosen for Pilot Trail - I
1.	State Bank of India	Bengaluru
2.	ICICI Bank	Bhubaneshwar
3.	Yes Bank	New Delhi
4.	IDFC First Bank	Mumbai

However the media reports (The Hindu/Economy/March 13, 2023) had confirmed the e-Rupees in circulation to be around 130 crore for the pilot project. In fact, there is an enhanced participation of banks also, the count had increased from four to nine.

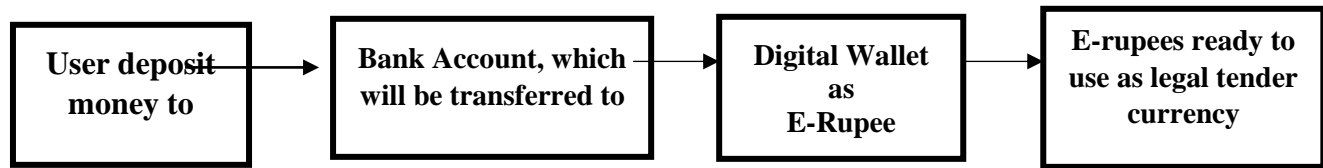
The Second Phase of E-Rupees Pilot Trail:-

The second phase of E-Rupee will be in continuation of the first trail so made. The second pilot project will be having wider user groups, with an increased count of participatory banks. Also the learning of Phase-I pilot trail of E-Rupees will become an add-on for improving E-Rupee to next level. The sole purpose of making second trail is to strengthen E-Rupee to a far extend and also to improve its security features. As a user of E-Rupee Currency in future, we are assured of its concreteness as a future digital currency.

Key-features about E-Rupees:

1. E-Rupee is a kind of digital token that represent legal tender value as an Indian currency.
2. User has to keep it in his/her digital wallet.
3. E-Rupees kept in users digital wallet, will not earn any sort of Interest from the bank.
4. E-rupees will work on Quick Response (QR) Code.
5. It can be used for specific purpose to meet out specific need.
6. In this pre-paid services is given by the participatory banks.
7. National Payment Corporation of India will keep a track of all the payments channelized through E-Rupees.
8. To provide Direct Benefit Transfer to the beneficiaries, government will be pushing Digital or E-Rupees by providing E-Rupees vouchers that could be redeemed only at the desired point, for which it was issued.
9. It is currently available in 11 denominations including 2 coins of 50 paisa and 1 Re and rest are nine notes of Rs. 2, 5, 10, 20, 50, 100, 200, 500 and 2000.
10. Its biggest feature is that it not even required Internet for its working.
11. The facility of E-Rupees is for both Mobile phone and smart phone users.

How does E-Rupees will work?



How to get E-Rupees Service?

As we now the fact that until and unless, E-Rupees is in trail stage, and when it will be ready to be operational at large scale, there are some chances of modifications with respect to its installation procedure. However, in the trail stage, only Closed User Group are availing the facility of E-Rupees, that too with the authorization of the participatory banks. There is a step-by-step procedure for availing the services of E-Rupees. This include:-

- User need to request E-Rupee service from the participating bank, who will sent details to the user's registered mobile number and E-mail.
- After that, user can download any participating bank's wallet for RBI digital/e-rupee network. For example:- there is application on **Google Play Store** called **eRupee by SBI, Digital Rupee by UBI, HDFC Bank Digital Rupee or Digital Rupee By ICICI Bank.**
- User can download the e-Rupee app as per their convenience and choice.
- Read all the terms and Conditions, then accept and continue.
- Do KYC verification via User's registered mobile number.
- Set Application PIN for authentication.
- Fill all requisite details & Confirm
- Once installed successfully
- Digital Wallet is ready to scan any QR code and do transactions.

Benefits of E-Rupee to Indian Economy:-

There are so many benefits for an economy for adopting digital currency. However the extent of its adaptation depend upon some factors like safety and security of transaction, backing by Central Bank, user data privacy and transaction fees, installation cost, convenience of money handling, coverage of dimensions and ease of app performance. In the world of Cryptocurrency; there are many block-chain crypto modelled currency system available, that are privately regulated and are less secure. Still these virtual currencies are in circulation with negligible control on them by any government institution or nodal agency. **Bitcoin, Ethereum, Libra, Litecoin, Dai, Toncoin, Stellar, Binance USD, Cosmos, Dogecoin, Avalanche, Tezos, Neo, WOO Network and Arbitrum** are the names of few players from such a vast cryptocurrency market. Since these private cryptocurrencies lack confidence and are prone to data theft, majority of population trust Central Bank issued Digital Currency for meeting their virtual currency needs. Here are some benefits listed below from digital rupee to Indian economy. They are:-

- a) E-rupee introduction will be a game changer for Economic digital perspective.
- b) It will help economy to shift in paper-less & cash less mode.
- c) RBI's cost of coin minting and note printing get reduced.
- d) It will restrict black money transaction up to certain extent.
- e) It will help to address wastage of currency notes.
- f) It will enhance more transparency.

- g) E-Rupee vouchers will be generated which will strengthen the goal of Direct Benefit Transfer initiatives of the government.
- h) The practice of Tax evasion can be avoided.
- i) It will promote financial inclusion in the economy.
- j) It will ultimately help in reducing corruption and promote transparency in the economy.
- k) It will give a big push to India's fintech infrastructure.
- l) It can play a stellar role in making Indian economy a resilient economy.

Challenges for E-Rupee:-

Any Technology or innovation is the reality for two-sides. If it has pros, than it must had other side of cons as well. The same is the case with e-rupee as well. Despite E-Rupee is a innovation of digitalized world, packed with countless benefits and ease. It had its negative side too. Hence the picture remain incomplete, unless we had not clearly understood its demerits, which make it a challenge for most of us to adopt the same. Let us discuss them in detail in the following points:-

- a) Firstly, we must not forget that E-Rupee is still an evolving technology, whose development work is in progress.
- b) Its payment gateway transaction cost is also a bone of contention for the international governments.
- c) Cyber-theft is another problem, not fully tackled vis-à-vis E-Rupee.
- d) Theft of user privacy or breach of user's private data can be a possible loophole.
- e) To be a user of E-Rupee, person must possess some basic technology know-how.
- f) Elderly population will resist adopting it.
- g) Rational investor will avoid using E-Rupees, as digital wallets of different banks for e-rupee pay no interest.
- h) We need to have some minimum facilities like (Internet, mobile phone or smart phone) for utilizing E-Rupee in general.
- i) India don't have the facility of Data Farms of her own, we have to avail the services of the data farms that are outside India. Any denial of access from outside actors, will create a big question mark on Indian user's financial data safety.
- j) There might to a chance of e-rupee malfunctioning, in case of Internet shutdowns or network issues.
- k) E-rupee will never be a perfect substitute for traditional cash money in any case, thus we can't claim holistic financial transparency by any chance.
- l) There is a problem to make payment let's say 1220.20 Rs via E-Rupees. As currency denominations of E-Rupee for Paisa is only 50 paise, customer will have to pay in aggregate for no reason. This problem is okay for micro sense, considering the macroeconomic picture in mind, this will be another flaw for e-rupee story.
- m) Reach of E-Rupee will be less for the low and middle income groups.

Future prospect of E-Rupees:

The future of E-Rupee is vibrant and positive for India, but RBI need to address some really essential issues for its future prospect. These are as follows:-

- Address the digital divide of the country.
- Increase awareness about Digital Currency.
- Improve the Rate of adoption for E-Rupees, especially among the elderly population.

- India need to address its Trade deficit, which usually weaken our physical currency value that could negatively hamper our E-Rupees also.
- For the mass adoption of E-Rupee in India, we need to ensure that some basic facility including mobile phone, internet connection, bank account, digital wallet and basic digital literacy for adopting E-Rupees.

Conclusion:

There is no doubt that digital future will be a well settled reality, with digital currency to exchange for our desired goods and services. E-Rupee will be the vibrant future of India's currency system. And one day probably, every Indian pocket will be having the digital wallet filled with E-Rupee. We all would become ready very soon, for this gigantic currency transition from paper currency to E-Rupee. If things goes as planned, we will be having pan-India access of E-Rupee in the next decade around 2030. Can you imagine? 143 crore of Indians are going to transact in E-Rupees in few couple of years from now; making E-Rupee one of the world's largest used centralized digital currency of the world. It is something aspirational for any nation to take a giant leap for its economic prowess. But nothing comes for free. If India really want to live the ecstasy of currency transition and its economic boon in an aggregate, we have to pay the price for it right now.

We had to fix the challenges and loopholes associated with it on an urgent basis, so as to ensure that E-Rupee will get an easy settling between the day-to-day payment transaction needs, just like our traditional coins and paper notes are servicing us presently. We have to make it secure and reliable, strong enough against any cyber threats and data breach. The authorities must ensure that every section of the society must get adjusted with it. It is not like that E-Rupee will only be a tool of literate and young generation of India, rather illiterate & elderly people too must adopt this currency transition. We need the digital currency which is save, flexible and pro people. It must ensure data security as well as privacy of the user. It must be free from financial flaws and speculative loopholes. It is going to be our future money, therefore central authorities like RBI & NPCI along with Government of India have a crucial role to play in the pilot trails of India's maiden digital currency. Continuous improvement and loop refinements will make the E-Rupee, one of the safest currency medium of exchange one day. In the closing lines, it can be noted that New India is ready to adopt and use New Digital Currency. Adhering to the popular concept "Sky is not the limit" let the lines walk the talk for India's currency as well. Welcome E-Rupees in the monetary lifeline of every Indian.

Bibliography/References:-

1. <https://www.axisbank.com/digital-rupee-cbdc/?cta=megamenu-retail-DigitalRupee> (Image Used)
2. https://www.business-standard.com/article/finance/e-rupee-rbi-creates-rs-1-71-crore-of-digital-currency-for-retail-pilot-122120101215_1.html
3. <https://www.thehindu.com/business/Economy/e-rupee-worth-over-130-crore-in-circulation-sitharaman/article66613993.ece>
4. <https://www.thehindubusinessline.com/blexplainer/bl-explainer-rbis-e-rupee-versus-upi/article66213758.ece>
5. <https://www.deccanherald.com/business/how-does-e-rupee-work-how-s-it-different-from-cryptocurrency-and-upi-1175304.html>

6. <https://indianexpress.com/article/explained/explained-economics/e-rupee-india-digital-currency-quixplained-8300320/>
7. https://m.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=54773
8. <https://www.india.gov.in/spotlight/e-rupi-digital-payment-solution>
9. <https://www.outlookindia.com/business/what-is-e-rupee-and-how-it-can-transform-the-way-we-transact-news-293396>
10. <https://m.economictimes.com/wealth/save/how-first-time-users-can-register/sign-up-for-e-rupee/articleshow/101758053.cms>
11. <https://www.npci.org.in/what-we-do/e-rupi/product-overview>
12. https://en.m.wikipedia.org/wiki/Digital_rupee
13. <https://www.drishtiiias.com/daily-updates/daily-news-editorials/e-rupee-to-bolster-indian-economy>
14. <https://crypto.com/price>
15. <https://in.investing.com/crypto/currencies>
16. Artha – ‘A Newsletter of the Finance Lab’ December 2021, Volume 7, Issue 3. Indian Institute of Management Calcutta. E-Rupee! By Binay Bhushan Chakrabarti.
17. <https://timesofindia.indiatimes.com/blogs/voices/e-rupee-and-its-impact-on-the-indian-economy/>
18. <https://www.google.com/amp/s/www.businesstoday.in/amp/latest/economy/story/cryptocurrency-vs-cbdc-vs-digital-money-whats-the-difference-349323-2022-10-08>
19. <https://coinmarketcap.com/community/articles/64141cd624b7f93706ee7c3e/>
20. <https://www.thehindubusinessline.com/opinion/need-to-push-e-rupee/article67202750.ece>
21. <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1882883>
22. **Dr. Sunil Patel & Dr. Himanshu Barot. (2023). ‘Central Bank Digital Currency: E-Rupee The Future of India – Scope & Challenges’** Rabindra Bharati Journal of Philosophy ISSN: 0973-0087 Vol: XXV, No. 5, 2023
23. **Debesh Bhowmik, (2022) ‘Monetary Policy Implications of Central Bank Digital Currency with special reference to India’** Asia Pacific Journal of Management and Technology. Volume2(3) 01-08 online ISSN: 2652-6840 <https://doi.org/10.46977/apjmt.2022v02i03.001>
24. **Peterson K. Ozili, (March 2023) ‘Central Bank Digital Currency in India: the case for digital rupee’**
25. **Md. Asraful Haque & Mohd Shoaib, (2023). “E^{Rupee}- The Digital Currency in India: Challenges and prospects”** BenchCouncil Transactions on Benchmarks, Standards and Evaluations 3 (2023) 100107 case report **KeAi Chinese Roots Global Impact** <https://doi.org/10.1016/j.tbench.2023.100107>
26. **Srijanie Banerjee and Manish Sinha (2023) “Promoting Financial Inclusion through Central Bank Digital Currency: An Evaluation of Payment System Viability in India”** AABFJ, Vol. 17, No. 1, 2023
27. <https://economictimes.indiatimes.com/news/economy/finance/digital-rupee-to-save-costs-of-printing-distributing-and-storing-cash/articleshow/89413532.cms?from=mdr>
28. <https://www.indiaherald.com/Money/Read/994511712/How-much-it-costs-RBI-to-print>