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Bank Quest

Rs. 40/-
(ISSN 00194921)

The Journal of Indian Institute of Banking & Finance (ISO 9001:2015 Certified) खंड / Vol 93/ अंक / No 02 - अप्रैल - जून 2022 April - June, 2022

Embedding ESG (Environmental, Social and Governance) into Banks' Strategy

IIBF - PUBLICATION LIST

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Contd. on Page 60

CONTENTS

Bank Quest

Volume 93, Number : 2

April - June - 2022

(ISSN 00194921)

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MISSION

The mission of the Institute is to develop professionally qualified and competent bankers and finance professionals primarily through a process of education, training, examination, consultancy / counselling and continuing professional development programs.

ध्येय

संस्थान का ध्येय मूलत: शिक्षण, प्रशिक्षण, परीक्षा, परामर्शिता और निरंतर विशेषज्ञता को बढ़ाने वाले कार्यक्रमों के द्वारा सुयोग्य और सक्षम बैंकरों तथा वित्त विशेषज्ञों को विकसित करना है ।

Printed by Mr. Biswa Ketan Das, **published by** Mr. Biswa Ketan Das on behalf of Indian Institute of Banking & Finance, and **printed at** Onlooker Press 16, Sasoon Dock, Colaba, Mumbai-400 005 and **published from** Indian Institute of Banking & Finance, Kohinoor City, Commercial-II, Tower-I, 2nd Floor, Kirol Road, Kurla (W), Mumbai - 400 070. **Editor** Mr. Biswa Ketan Das.

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IIBF, Mumbai

As we are aware of the fact that there is no Planet B, it is pertinent to deliberate whether our actions as individuals and as a part of responsible organisations are creating and fuelling growth whilst strengthening our environment and societies. The consciousness around the concept of Environmental, Social & Governance (ESG) has gained momentum in the past few years. MSCI in its report on 'ESG Trendsetters in APAC' has mentioned that India & Indonesia are the main markets of concern in APAC on the basis of their scores on key ESG trends. However, as per CRISIL's 'ESG Compendium', India is the only country whose actions are in line with Paris Agreement for limiting global warming to 2 degrees Celsius.

In the current scenario, there is a need for uniform systems and practices to bridge the gap in ESG assessments which have evolved due to asymmetric information available across organisations. ESG is much more than ticking the boxes or showing good intentions. What is important is whether we are embedding some principles to integrate ESG into our business. The Reserve Bank of India in its 'Financial Stability Report' has cautioned users of ESG ratings and data products and advised to conduct due diligence on their usage in their internal processes.

One of the endeavours of Bank Quest's is to provide its readers a holistic picture of contemporary events in banking & finance domain. Therefore, the theme for Bank Quest, April - June, 2022 issue has been aptly chosen as "Embedding ESG (Environmental, Social and Governance) into Banks' strategy".

The first article under the theme of this issue is jointly written by Dr. Abhishek Kumar Singh, Assistant Professor, Ramanujan College, Delhi University & CA Nisha Kapoor, Member of ICAI on "CSR and ESG - Journey towards Sustainable Development Goals". This article discusses India's ESG evolution and analyses the trend of Corporate Social Responsibility (CSR) during FY 2014-21 towards creating awareness regarding sustainability.

The next article on the theme of this issue is authored by Dr. Kratika Shrivastava, Deputy Director (Academics), Indian Institute of Banking & Finance (IIBF) on "Indian Banks adopting to ESG Practices: An exploratory study based on D-SIBs". This article identifies certain ESG parameters and study their impact on profitability of D-SIBs. This study infers that there is a significant impact of ESG parameters under study on the overall profitability of bank and there is scope of integrating an ESG framework to overall productivity of banks.

This issue also features an article in Hindi written by Mr. Sanjay Kumar, Manager (Rajbhasha), Reserve Bank of India on "बैंकों में साइबर अपराधों की प्रकृति और सुरक्षात्मक उपाय". In this article, the author has thrown light on various types of cyber-crimes affecting banks.

IIBF organises Micro Research Paper Competition annually for its life members who are presently working in banks and financial institutions. For the benefit of our readers, we are also carrying prize winning articles under “Micro Research Competition, 2021-22” in this issue.

The I prize under Micro Research Competition, 2021-22 was awarded to Mr. Thiruppathy V. Officer, Canara Bank for the paper “Central Bank Digital Currency - Way Forward”. Mr. Thiruppathy V. has discussed the architecture of Central Bank Digital Currency, Central bank’s role in its issuing and reconciliation & its impact on Macro-economic, Monetary & Fiscal Policies.

The II prize under Micro Research Competition, 2021-22 was awarded to Mr. Ishan Katyal, Manager, DICGC, Reserve Bank of India for his paper on “Central Bank Digital Currency - Way Forward”. This paper explains the concept of currency and the need posed for implementing a digital currency. This paper also discusses about the requirement of a proper legal & regulatory framework along with the challenges & risks involved in using Central Bank Digital Currency.

The III prize under Micro Research Competition, 2021-22 was awarded to Mr. Sridhaar R. R, Manager, The Karur Vysya Bank Ltd. for the paper “In Future We Need Banking not Banks”. This article concludes that the perception of the word ‘banking’ will undergo transformation. The author suggests that customer service, a differentiating factor among the FinTech players will be given more importance than the expected rate of return.

This issue also features “Legal Decisions Affecting Bankers” by Mr. Prakhar Galaw, Advocate, High Court of M.P, Principal Seat at Jabalpur.

Apart from the above articles, we are also carrying a summary of the Macro Research Report on “A Study on Issues and Challenges in MSME Financing in the State of Bihar” by Dr. Vipul Kumar Singh, Assistant Professor, National Institute of Industrial Engineering (NITIE), Mumbai & Dr. Santosh Kumar, Assistant Professor, Chandragupt Institute of Management, Patna.

Bank Quest has a long standing history of publishing insightful articles in the wide spectrum of banking & finance. I hope readers will appreciate Institute’s efforts in bringing out each issue of Bank Quest to the best interest and benefit for its readers. We welcome your suggestions to enrich the contents of the journal.

Biswa Ketan Das

CSR and ESG - Journey Towards Sustainable Development Goals

Dr. Abhishek Kumar Singh*

Nisha Kapoor**

The COVID-19 pandemic has increased the focus on impact of sustainability and the financial system. Businesses are now being evaluated by their mechanism of dealing with the ecological and social concerns. Thus, sustainability has become an essential corporate goal for which business strategies impacting reporting and disclosures on Corporate Social Responsibility (CSR) and Environment, Social, and Governance (ESG) are focused. The paper aims to bring forward the sustainability patterns by describing the evolution of sustainable reporting in India, CSR contribution trends over the seven years from FY 2014-15 to FY 2020-21 and bringing to light the picture of ESG reporting along with conceptualization of Business Responsibility and Sustainability Reporting (BRSR).

Introduction

Sustainable development focuses on an integrated approach that combines Environmental concerns along with Economic development.

In 1987, the United Nations Brundtland Commission defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Today almost all the countries in the world are seeking ways to meet their development needs and enhance ways and methods to mitigate the risks of threat of socio-economic disasters like climate change and ensure development not only today but also in future.

Corporate Social Responsibility (CSR) and Environment, Social, and Governance (ESG) initiatives develop sustainable business practices and provide information to the society about the ethics, goals, and risks of a company. This article explain the evolution and trends of CSR contributions over the past seven years, elucidates the difference between and the overlapping concepts of CSR and ESG and presents the framework for Business Responsibility and Sustainability Reporting (BRSR).

The recognition started when in the 11th five year plan, inclusive growth was recognized as an essential part of India's quest for development. It meant to include the neglected sections of society in the growth process. This was the initial move towards integrating the notion of business responsibility and sustainability into business activities.

In line with this national aim, Corporate Social Responsibility (CSR) evolved as a medium for integrating social, environmental and human issues as a part of corporate projects. Further, to set in motion the concept of Business Responsibilities, The Ministry of Corporate Affairs had issued 'Voluntary Guidelines on Corporate Social Responsibility, 2009' and it was further revised as 'National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business, 2011' (NVGs). The eight principle NVGs namely 'inclusive growth and equitable development' focuses on stimulating activities on national, social and environmental and economic areas, including community development initiatives and this principle

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of NVG was subsequently translated into a mandatory provision of Corporate Social Responsibility (CSR) in Section 135 of the Companies Act 2013.

Henceforth, the ESG reporting scenario in India has come a long way with the release of several other guidelines, including Business Responsibility Report (BRR), Integrated Reporting (IR), National Guidelines on Responsible Business Conduct (NGRBC), and recently, the Securities and Exchange Board of India (SEBI) introduced Business Responsibility and Sustainability Report (BRSR) in May 2021. BRSR is the communication and disclosure of a company's ESG goals and the progress made towards achieving them. The evolution of ESG in India is summarized in Table-1 below.

Table 1- The evolution of ESG in India

Year	Details of initiatives towards ESG
2007	RBI advises Commercial banks on CSR, sustainability and non-financial disclosure.
2009	The Ministry of Corporate Affairs (MCA), Government of India (GoI), for the first time introduced Corporate Social Responsibility (CSR) voluntary guidelines. They announced to formulate CSR policy together with strategic planning along with the roadmap for CSR initiatives. According to these guidelines, six elements of CSR policy namely, care of stakeholders, ethical functioning, respect for worker's right and welfare, respect for human rights, respect for environment and activities related to social and inclusive development should be considered by companies.
2011	MCA, GOI refined the CSR Voluntary Guidelines, 2009 and introduced National Voluntary Guidelines (NVG) on Social, Environmental & Economic responsibilities on business. Their adoption was voluntary from Financial Year (FY) 2011-12 and comprised of nine principles like business should protect, respect and restore the environment etc.
2012	The Securities and Exchange Board of India (SEBI) issued guidelines for mandatory adoption of BRR practices as per framework by the top 100 listed entities.
2014	The Companies Act, 2013 was enacted and according to sub section (4) of section 135 the landmark CSR law came into existence.
2015	The SEBI in 2015, issued new guidelines along with BRR format and made reporting mandatory for top 500 listed entities.
2017	The SEBI vide circular dated 7th Feb 2017, suggested adopting Integrated Reporting Disclosure Practices by the top 500 listed entities on voluntary basis from FY 2017-18.
2019	The SEBI extended the provisions of BRR to top 1000 listed entities from FY 2019-20.
2021	As per SEBI circular dated 10th May 2021, top 1000 listed entities are required to prepare Business Responsibility and Sustainability Reporting (BRSR) instead of BRR from FY 2021-22. The SEBI issued new format of BRSR and reporting on the Company performance based on nine principles as suggested in National Guidelines on Responsible Business Conduct (NGRBC).

Source: MCA, SEBI, Companies Act, 2013, and CRISIL ESG report, 2021

What is Corporate Social Responsibility (CSR)?

Corporate Social Responsibility is a concept which integrates environmental and social sustainability concerns in the business operations while meeting the expectations of stakeholders. CSR is considered as an objective whereby the companies function to pursue the social objectives in addition to the maximization of profits.

CSR provisions are mandatorily applicable to a company based on thresholds of Profits, Turnover and

Net Worth. Every company which fulfils any one of the following three criteria is mandatorily required to have in place a CSR policy outlining the areas in which the company will spend for CSR related activities:

- Net profits of Rs. 5 Crores or more in the preceding financial year or
- Turnover in the preceding financial year of Rs. 1000 Crores or more or
- Net worth as at the end of the preceding financial year of Rs. 500 Crores or more

The mandatory required quantum of CSR spend is 2 per cent of average net profits made in the preceding three financial years or for if it has not completed three years since its incorporation, then since incorporation. There are detailed provisions in the Companies Act, 2013 and the rules prescribed thereunder namely Companies (Corporate Social Responsibility Policy) Rules, 2014 to regulate the CSR spends by the companies.

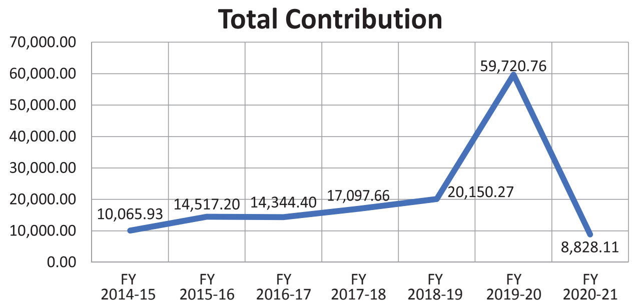
CSR contribution pattern over the seven years

CSR has been a part of business practice for over seven years since its beginning from FY 2014-15 to FY 2020-21. The CSR trend analysis will give a useful insight about contribution patterns towards Corporate Social Responsibility (CSR) initiative.

A. Momentum of CSR Contribution

The CSR contributions slowly and steadily gained momentum and in just 4 years the contribution got doubled from Rs. 10,065.93 cr. in FY 2014-15 (the first year) to Rs. 20,150.27 cr. in FY 2018-19 (the fifth year). Further, a drastic growth in contribution was seen in the sixth year FY 2019-20 with almost 3 times the amount invested in the previous year. However, with the impact of COVID-19 disaster the contribution in the seventh year FY 2020-21 fell sharply to its all-time low with Rs 8,828.11 cr.

Chart 1- Shows yearly Total CSR contribution



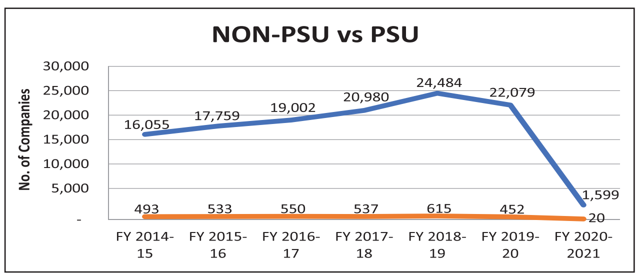
Source: https://csr.gov.in/

B. Number of participants

The number of non-PSU contributing companies were more than the number of PSU companies. The number of contributing companies has been growing consistently year on year, reaching the highest in FY 2018-19 with 24,484 nos. of non-PSU companies and 615 nos. of PSU companies investing for social cause. But wings of Covid impact was seen from FY 2019-20 and in FY 2020-21 just 1,599 non-PSU and 20 PSU companies played a part in the action.

The average contribution per participant has moved over the years from Rs. 0.61 Crore in the first year 2014-15 to Rs. 5.45 Crore in the 2020-21

Chart 2- Shows the yearly number of Companies participating in CSR contribution



Source: https://csr.gov.in/

Table 2 - Average contribution per participant

	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-2021
Total contribution (in Cr)	10,065.93	14,517.20	14,344.40	17,097.66	20,150.27	59,720.76	8,828.11
No. of contributors	16,548	18,292	19,552	21,517	25,099	22,531	1,619
Average contribution per participant (in Cr)	0.61	0.79	0.73	0.79	0.80	2.65	5.45

C. Sector Wise Contribution

A diligent observation of the table reveals that the education sector has remained the favourite sector for contribution for all the six years except the seventh year hit by COVID-19 pandemic where health care got most of the pitch-in. Other sectors which secured a place in top 5 financed sectors are rural development projects, environment sustainability and sanitation.

Table 3 - Top 5 sectors gaining highest CSR contribution

Development Sector	Education	Health Care	Rural Development Projects	Environmental Sustainability	Sanitation
FY 2014-15	2,589.42	1,847.74	1,059.35	773.99	299.54
FY 2015-16	4,057.45	2,569.43	1,376.16	796.69	631.80
FY 2016-17	4,504.91	2,491.52	1,554.78	1,076.46	421.71
FY 2017-18	5,762.68	2,776.93	1,724.07	1,301.96	460.68
FY 2018-19	6,090.64	3,603.73	2,428.45	1,361.92	506.66
FY 2019-20	7,103.54	4,825.70	2,279.20	1,457.26	518.83
FY 2020-21	2,229.23	2,559.30	604.33	445.75	131.06

Source: https://csr.gov.in/

D. State wise Contribution

Looking at the contribution table, we infer that the state of Maharashtra is most preferred. There is an increase in amount kicked in year-on-year with maximum in FY 2019-20 with Rs 3,400.48 Crore. The state of Andhra Pradesh initially showed a promising start but was overrun by Karnataka and Gujarat from FY 2016-17 onwards. However, Uttar Pradesh locked the fifth position in all the seven years.

Table 4 - Top 5 states receiving the highest contribution

States/UT	Maharashtra	Gujarat	Andhra Pradesh	Karnataka	Uttar Pradesh
FY 2014-15	1,445.91	313.44	414.27	403.46	148.90
FY 2015-16	2,052.23	551.42	1,294.28	784.66	423.79
FY 2016-17	2,492.11	870.84	753.53	887.68	328.31
FY 2017-18	2,833.41	983.77	578.22	1,161.68	442.30
FY 2018-19	3,205.17	1,091.69	668.72	1,279.98	524.33
FY 2019-20	3,400.48	988.99	714.94	1,480.63	580.80
FY 2020-21	1,100.59	582.37	446.86	434.69	361.96

Source: https://csr.gov.in/

What is Environmental, Social & Governance (ESG)?

Environmental, Social & Governance (ESG) refers to a trio of business measures used by socially conscious investors to identify and quantify the measures of a company's sustainability and societal impact, using metrics that matter to investors.

Environmental criteria consider how a company performs as a caretaker of nature. Social criteria inspect the management of relationships with employees, customers, suppliers etc. Governance handles leadership, executive pay, audits, internal controls, and shareholder rights.

1. **Environmental - Conservation of the natural world. It includes:**
   - Climate change and carbon emissions
   - Air and water pollution
   - Biodiversity
   - Deforestation
   - Energy efficiency
   - Waste management
   - Water scarcity
2. **Social - Consideration of people & relationships. It includes:**
   - Customer satisfaction
   - Data protection and privacy
   - Gender and diversity
   - Employee engagement
   - Community relations
   - Human rights
   - Labor standards
3. **Governance - Standards for running a company. It includes:**
   - Board composition
   - Audit committee structure
   - Bribery and corruption
   - Executive compensation
   - Lobbying
   - Political contributions
   - Whistle-blower schemes

Business Responsibility Report (BRR) converging to Business Responsibility and Sustainable Report (BRSR)

BRR, initially effective from the financial years ending on or after 31st December, 2012 for 100 listed entities has, thereafter, widened the scope and is currently applicable mandatorily to the top 1000 listed entities by market capitalisation. Further to integrate the concepts of "Sustainability" with BRR, SEBI has extended the latitude of this report towards the framework of "Business Responsibility and Sustainability Reporting".

The reporting under the BRSR framework is voluntary applicable to the top 1000 listed entities for the FY 2021-22, but from FY 2022-23 onwards, BRSR reporting is mandatorily applicable to top 1000 listed entities. Thereafter, reporting under BRR framework will be discontinued from FY 2022-23 and will be replaced by the enhanced framework of BRSR. For entities other than the top 1000 listed entities, reporting under the BRSR framework is voluntary.

Overview of BRSR framework

The new BRSR framework is introduced by SEBI circular dated May 10, 2021, which attempts to form a connection between the financial performance an entity with its ESG performance enabling the stakeholders including regulators, investors to assess and evaluate the business stability, growth and sustainability on ecological and social performance parameters in addition to financial parameters. The circular prescribes the format of the BRSR report vide Annexure I, along with the guidance note vide Annexure II to enable the companies to understand and interpret the scope of disclosures.

The BRSR format is divided into three sections namely:

Section A - General Disclosures

Under this section, the detailed disclosures are prescribed for the following:

- Details of the Listed Entity
- Products / Services
- Operations
- Employees
- Holding, Subsidiary and Associate Companies (including Joint Ventures)
- CSR Details
- Transparency and Disclosures Compliances

Section B - Management and Process Disclosures

Under this section, disclosures are aimed at helping Companies to demonstrate the structures, policies and processes put in place towards adopting the NGRBC (National Guidelines on Responsible Business Conduct) Principles and Core Elements.

Section C - Principles wise Performance Disclosures

Under this section, "disclosures are aimed at helping entities demonstrate their performance in integrating the principles and core elements with key processes and decisions. The information sought with respect to indicators that are categorized as "Essential" and "Leadership". The essential indicators are to be disclosed mandatorily by every company liable to file this report, whereas the leadership indicators are voluntarily disclosure by entities which aspire to progress to a higher level in their quest to be socially, environmentally and ethically responsible."

Key disclosures required with respect to the following 9 principles are :

i. The businesses must perform operations with integrity, and must be ethical, transparent and accountable.

ii. The sustainable and safe means and methods must be employed to produce goods and services.

iii. Businesses should respect and promote the well-being of all employees, including those in their value chain.

iv. Businesses should respect the interests and be responsive to all its stakeholders.

v. Business must show respect and endorse Human Rights.

vi. Steps must be designed to protect and restore the environment.

vii. Responsible and transparent means must be adopted in influencing public or regulatory policy.

viii. Inclusive growth and equitable development should be main motive for all activities.

ix. Business should show accountability and value to their customers.

Environmental, Social & Governance (ESG) vs Corporate Social Responsibility (CSR)

Where CSR represents a company's efforts to have a positive impact on its employees, consumers, the environment, and community. It's a form of reporting that most large companies perform annually. ESG, on the other hand, measures these efforts and activities to show up a more explicit assessment of a company's actions. CSR impacts internal processes and culture of the company, whereas ESG is a measurable set of company affairs that collaborators and investors examine during evaluation of a company. ESG describes and highlights a company's moral values and ability to spot, evaluate and estimate its risks and opportunities. The purpose of ESG is to consider how ethically a company performs its activities, putting sustainability and moral principles above profit. Such measurable elements are valuable both for investors and company management in making strategic decisions.

Thus, ESG is the quantifiable measure of a company's sustainability and societal impact, using metrics that matter to investors as more and more millennial investors are choosing to back socially responsible organisations reflecting societal changes.

Why has ESG suddenly become so important?

ESG issues are important to business unit that aim at sustainability and future collaborators who not only need to see the financial aspect but are also assess how a company is ethically run, how it serves the society and impacts the environment. These factors cumulatively determine the target company's overall performance, thus, becoming critical for risk and compliance managers. If investors and lenders can see that a company is running well and is managing risks, they have confidence that there is a lower risk of default thus, leading to a risk of losing investors due to lack of ESG awareness.

Now-a-days consumers are willing to pay extra for sustainable products. Purchase decisions are being made after examining the moral values and assessing the socially responsible operations of a company. Thus, companies in addition to maintenance of the quality and cost of their products, are also expected to establish sustainable means and methods in order to win and retain customers.

The aftermath of the COVID-19 pandemic has given businesses a vision to re-examine their operations and its impact on mother nature. Consequently, ESG compliance has picked-up as Governments are now committed to a 'green' recovery.

ESG approach is more than just a strategy, and it focuses on creating practical plans and actions to achieve real results. It aims at incorporating the sustainable approach by combining resources and technology together rather than just pointing on disclosures alone.

ESG with its measurable value has a transforming impact and makes actual change whether operational, functional, cultural and ethical actions happen as per the needs of society and community.

ESG reporting is designed for clear and transparent disclosures with facts and figures which eliminates ambiguity and increases trust in the company for long run.

These factors and advantages display the need for companies to provide more ESG-related disclosures.

Board, Management, Audit Committee and the Role of the Auditor

The ESG journey requires commitment and engagement across the business.

Directors in order to effectively perform their oversight duties must understand the ESG approach of the company and the pattern in which it is integrated into operations and strategy, along with the key metrics in reporting requirements.

Management of the company including the CEO, CFO, and COO, should clearly define ESG goals and transform organization functioning to align with their operations to meet their ESG objectives.

Audit committee members are responsible for examining the reporting of material information to investors. Audit committees should aim to cross-question about the strategy, processes and controls followed over measuring data and reporting and improve and maintain the quality and standards.

Auditors are best resort to support maintaining the quality of ESG reporting. They assess whether measurement parameters are transparent and consistently followed, assure the design and implementation of policies and procedures for data collection and reporting and validate the numbers reported.

Conclusion

Starting with the initial initiative in 2009, India has travelled quite a distance with respect to ESG, though a lot more needs to be done to meet the Sustainable Developement Goals (SDGs) by 2030.

ESG is going to play a transformational role in how the environment is managed going forwards. ESG needs to be embeded in the functioning at all levels, through design, building, decision making and disposal. As the world recovers from COVID-19, investors, consumers, managers and employees require clear, transparent, ethical business practices form the basic motive and to align business with community concerns and sustainability.

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Indian Banks adopting to ESG Practices: An exploratory study based on D-SIBs

Dr. Kratika Shrivastava*

Introduction

The concern and sensitivity towards environment, people and collective growth is the central theme of deliberations in various national and international forums. India has also taken a step forward and announced to achieve net-zero emissions by 2070. Under the Paris Agreement, India is prepared to achieve twin objectives of (i) reducing the emissions intensity by 33-35% of GDP below the 2005 level by 2030; and (ii) to increase the share of non-fossil energy in total power generation capacity to 40%.

According to World Economic Forum's Global Risk Report 2021, Environmental, Social & Governance (ESG) risks accounts for four of the top five risks. OECD's report on 'ESG Investing: Practices, Progress and Challenges' state that ESG Investing may improve existing Risk Management practices and may lead to returns that are better than traditional investments.

Banks never work in silos. Any impact on the economy at large, whether directly or indirectly exposed to ESG risks, will have a definite impact on banks' performance. Embedding ESG into bank's strategic plans will lead to long term sustainability of the respective bank, environment and society at large. This research paper explores the existing practices of Domestic Systemically Important Banks (D-SIBs) of India and attempts to map them with ESG factors. Also, this paper will identify certain ESG Parameters and study their impact on profitability of D-SIBs.

Objectives of the study

i. To map the existing practices of D-SIBs related to Environmental, Social & Governance (ESG) factors.

ii. To identify the ESG parameters and study their impact on profitability of D-SIBs.

Literature Review

(European Banking Authority, 2022) The Pillar 3 framework of European Banking Authority (EBA) on prudential disclosures on ESG risks will help institutions to provide meaningful and comparable information on how ESG-related risks and vulnerabilities, and in particular climate change, may exacerbate other risks in their balance sheet. Apart from Risk Disclosures & mitigating actions, the EBA in its draft on Implementing Technical Standards on prudential disclosures on ESG Risks had also provided templates to disclose information regarding Green Asset Ratio (GAR) & Banking Book Taxonomy Alignment Ratio (BTAR).

(Schuller, Brosens, & Kosonen, 2022) Schuller et al. suggests that availability of data will be the major challenge for banks when meeting the BTAR disclosure requirements, particularly considering the difficulties smaller companies will face in their attempts to provide banks with information on their taxonomy eligible activities and their taxonomy alignment.

(Ghosh, Nath, Narayanan, & Das, 2022) Indian banks are exposed to electricity, chemicals, and automobiles firms which are heavily dependent on fossil fuels. In the quest to achieve net-zero emissions, these sectors have to suitably modify their production processes which in turn may have spill over impact on banks.

(Lee & Eastman, 2021) MSCI concluded in its report on '2022 ESG Trends to Watch' that by next decade

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most of the investors and companies may deliver as per their net-zero pledges. However, it will be a challenging task to achieve net zero emissions target. The report also discusses the role of Board Level Engagement on climate related risks as a factor under study for arriving at ESG Scores.

(CRISIL ESG Gauge, 2021) Acknowledging the relevance of ESG factors in decision making of policymakers, corporates and others CRISIL had published ESG Scores in 2021 on select companies. The report suggests that 70% of academic studies on ESG have positive relationship between ESG scores and financial returns like profitability, valuation & equity returns.

(Task Force on Climate Related Financial Disclosures, 2021) TCFD recommends organisations to effectively assess and disclose the financial impact of their climate related risks and opportunities. These include securing approval to publicly disclose the results, challenges around organizational alignment, attribution of impacts in financial accounts and longer climate horizons as compared to business horizons. The Task Force recommends to categorise climate related risks & opportunities as Short, Medium & long term.

(Torre, Leo, & Panetta, 2021) The relationship of ESG Performance and Corporate Financial Performance was studied to verify whether it is prudent for banks to adopt an ESG based approach. The findings of this study supports current approaches of banks towards focusing on ESG Risks than on ESG opportunities. This research also recommends that there is scope for regulatory impulses that may encourage bank managers to envision a long horizon with sustainable growth.

(Svartzman, 2020) Bank for International Settlements (BIS) has identified climate change as a source of monetary and financial instability via supply and demand side shocks. This report suggests the one of the solution to address climate change is 'Carbon Taxation'. A new taxation policy requires consensus from Government & Central Banks, however, to ensure financial stability and increase stakeholders awareness, Central banks may take a lead and provide suitable guidance.

(Network for Greening the Financial System, 2021) NGFS recognises climate and environmental - related risks as a source of financial risks and suggests that central banks and supervisors should therefore ensure that the financial system is resilient to these risks. NGFS recommended the integration of climate-related risks into micro-prudential supervision and have given set of 5 recommendations for Banking and Insurance regulators. NGFS has also shared its concern as climate based financial risks are not fully reflected in asset valuations

(Whelan, Atz, Holt, & Clark) Whelan et al. concluded that there is a positive relationship between ESG and financial performance for 58% of the "corporate" studies focused on operational metrics such as ROE, ROA, or stock price. Their study also suggests that ESG investing may provide downside protection, especially during an economic or social crisis. Further, they found that sustainability initiatives appear to be more promising in delivering better financial performance due to mediating factors such as improved risk management and more innovation.

Research Methodology

The Reserve Bank of India has identified following banks as Domestic Systemically Important Banks (D-SIBs):

i. State Bank of India

ii. ICICI Bank

iii. HDFC Bank

D-SIBs are the large banks which may be considered as the face of the Indian Banking System. Also, these banks are generally considered as pioneers for adopting to the changing needs of the industry and have started disclosing information regarding their prevalent ESG practices & GHG Emissions.

D-SIBs may set precedence for other banks to realign their practices to the demand of the situation. Also, considering the fact that any impact on these D-SIBs has a potential to affect the overall financial stability of the nation, we have focused this study on the sample derived from above 3 D-SIBs.

This study is based on the secondary data available from 2018-21. To address first objective of the study and on the basis of the study of Annual reports of D-SIBs from 2018-21 and the Literature Review done in this respect, existing practices of D-SIBs were studied in-relation to ESG factors. To address the second objective of the study, one parameter was mapped for each dimension of Environmental, Social & Governance (ESG) and its impact on the profitability of D-SIBs were studied.

The following factors were identified and accordingly mapped with ESG dimensions:

ESG dimensions	Parameter
Environmental (E)	GHG Emissions
Social (S)	Amount Spent on CSR
Governance (G)	No. of Board Meetings conducted

Hypothesis

i. There is no significant impact of GHG emissions on the profitability of banks.

ii. There is no significant impact of Amount Spent on Corporate Social Responsibility (CSR) on the profitability of banks.

iii. There is no significant impact of No. of Board Meetings on the profitability of banks.

Mapping existing practices of D-SIBs with ESG factors

Collevecchio Declaration on Financial Institutions advised financial Institutions to adopt its 6 principles[1] which reflect civil society's expectations of the role and responsibilities of the financial services sector in fostering sustainability.

ESG may be further broken into sub-components to better understand D-SIBs existing practices which are either already aligned to bank's responsiveness towards ESG factors or have scope to be explored further in this regard.

Sub-component 1: Environmental or E Factor

This includes banks approach towards estimating & reducing the carbon emissions. The GHG Protocol Corporate Standard classified Green House Gas (GHG) emissions into **three scopes**. Scope 1 includes GHG emissions from direct sources which are in control or owned by organisations. Scope 2 includes indirect GHG emissions resulted from the consumption of purchased electricity. Scope 3 is an optional reporting category that includes all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. With respect to D-SIBs in India, Scope 2 amounts to highest contributor of GHG emissions.

Apart from monitoring and reducing GHG emissions, D-SIBs have been actively involved in other environmental friendly practices like planting of trees, migrating to digital practices from paper based approaches, efficient waste management & investing in building energy efficient infrastructure.

Banks are also extending loans towards financing renewable energy. Reserve Bank of India has also encouraged banks to extend finance towards renewable energy. RBI has identified 'Renewable Energy' as one of the categories under its Priority Sector Lending mandate. Banks are also investing in Green bonds/funds.

Sub-component 2: Social or S Factor

India is one of the pioneer countries to make Corporate Social Responsibility (CSR) a legal mandate for specified companies. As per the guidelines laid by Ministry of Corporate Affairs, Government of India, the companies which fulfils any of the following conditions have to spend 2% of their average net profit for the past three years on Corporate Social Responsibility[2]:

[1] Commitment to: Sustainability, 'Do No Harm', Responsibility, Accountability, Transparency & Sustainable markets and Governance.

- Net-worth of Rs 5 Crores or more
- Turnover of Rs. 1,000 Crores or above
- Net-profit of Rs 5 Crores or more

CSR is a board driven strategy to ensure that organisations, being a part of the society are also contributing for social benefits. D-SIBs are currently under taking various CSR activities under their ambit like their initiatives to support Girl education, Health Care, Women Empowerment & Promotion of Sport activities. Still, to ensure active engagement of D-SIBs with its social environment, they may consider to widen the scope of CSR activities rather than restricting most of them as timely donations.

The scope of ethical code of conduct may also be enlarged to ensure D-SIBs are not only nurturing wise employees but also responsible members of society at large. Also, responsiveness towards present and prospective customers may be improved.

Sub-component 3: Governance or G Factor

Focus of board on organisational objectives in line with external sphere plays a crucial role in development of organisational policies which are beneficial for sustainable development. Many countries have adopted to Stewardship codes to address the concerns of market towards appropriate governance.

In Indian context, Insurance Regulatory & Development Authority of India and Pension Fund Regulatory and Development Authority have also issued guidelines on Stewardship codes. SEBI has mandated Stewardship code with ESG monitoring since 2020. These codes monitor institutional investors investment and their association with investee companies on governance related matters. The code emphasises on the fact that the investors should have an independent perspective while casting their votes and during shareholders' meetings. Board should play an active role in foreseeing the risk and opportunities as well as accessing its impact on overall business performance.

Board should ensure a robust audit and compliance system is at place to ensure laid guidelines are followed in true spirit. Also, it will check any deviations and recommend for corrective measures to limit the impact of damages. As per the report of the Committee on Corporate Governance it was proposed that the board of directors shall meet at least once a year to specifically discuss ESG, strategy, budgets, risk management, board evaluation and succession planning.

Data Analysis & Interpretation

In order to test the hypothesis formulated under this study, the data was collected and tabulated from Annual Reports/Sustainability Reports/ESG Reports of D-SIBs about the selected parameters - GHG emissions[3], Amount Spent on CSR & No. of Board Meetings conducted from 2018-21. Mean Values were calculated on all the 3 parameters (Table 1), which were further subjected to t-test at 0.05 significance level.

Table 1: Mean Values of ESG Parameters of D-SIBs selected under study

Parameters	GHG Emissions (in tCO2e)	No of Board Meeting	Amount Spent on CSR (in Rs Crs)	NP (in Rs crs) after tax
2020-21	536556.3	14	327	22573
2019-20	536535.3	11	232.2733	16203.38
2018-19	587761.7	14	184.1533	8434.49

Table 2 depicts the result of Test conducted to test the Hypothesis (i). The results of the test show that the value of $p = 0.000532$ which is less than 0.05 so the null hypothesis is rejected. This infers that there is a significant impact of GHG emissions on profitability of banks.

[2]As per the Reserve Bank of India's guidelines, SBI requires to spend upto 1% of its previous year's profits towards its CSR efforts as it was not set up under Companies Act.

[3]GHG Emissions exclude Scope 3.

Table 2: t-Test - Two-Sample Assuming Unequal Variances		
	NP (in Rs. crs) after tax	GHG Emissions (in tCO2e)
Mean	15736.98	553617.8
Variance	50138006	874353971
Observations	3	3
Hypothesized Mean Difference	0	
df	2	
t Stat	-30.6404	
P(T<=t) one-tail	0.000532	
t Critical one-tail	2.919986	
P(T<=t) two-tail	0.001063	
t Critical two-tail	4.302653	

Table 3 depicts the result of Test conducted to test the Hypothesis (ii). The results of the test show that the value of p = 0.030717 which is less than 0.05 so the null hypothesis is rejected. This infers that there is a significant impact of number of board meetings conducted during a year on the profitability of banks.

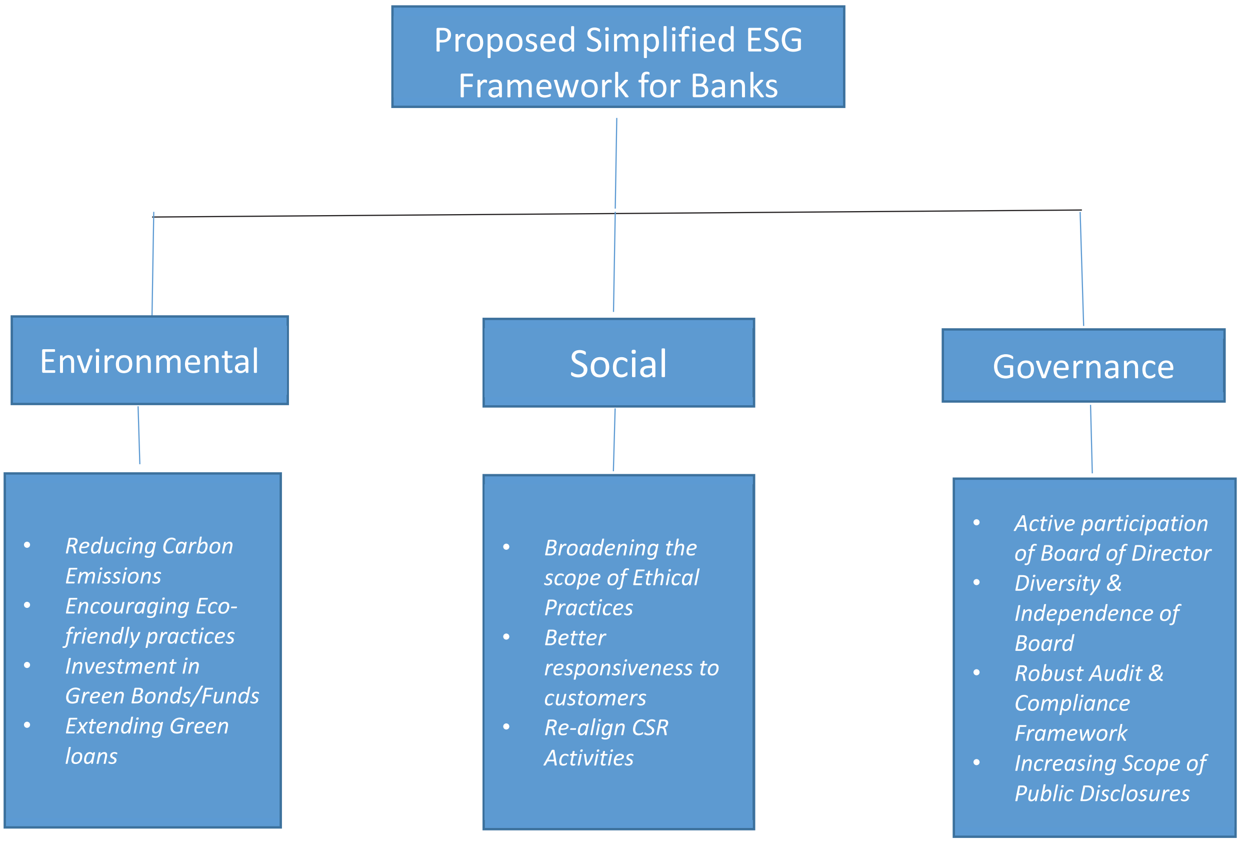
Table 3: t-Test - Two-Sample Assuming Unequal Variances		
	NP (in Rs. crs) after tax	No. of Board Meeting
Mean	15736.98	13.11111
Variance	50138006	3.37037
Observations	3	3
Hypothesized Mean Difference	0	
df	2	
t Stat	3.846241	
P(T<=t) one-tail	0.030717	
t Critical one-tail	2.919986	
P(T<=t) two-tail	0.061434	
t Critical two-tail	4.302653	

Table 4 depicts the result of Test conducted to test the Hypothesis (iii). The results of the test show that the value of p = 0.030717 which is less than 0.05 so the null hypothesis is rejected. This infers that there is a significant impact of amount Spent on CSR during a year on the profitability of banks.

Table 4: t-Test: Two-Sample Assuming Unequal Variances		
	NP (in crs) after tax	Amount Spent on CSR (in Rs Crs)
Mean	15736.98	247.73
Variance	50138006	5263.584
Observations	3	3
Hypothesized Mean Difference	0	
df	2	
t Stat	3.788652	
P(T<=t) one-tail	0.03157	
t Critical one-tail	2.919986	
P(T<=t) two-tail	0.063141	
t Critical two-tail	4.302653	

The complicated review procedures, lack of consistent methodologies and high cost of reporting are hurdles for corporates to integrate ESG criteria in their business models. On the basis of this study, a simplified ESG framework is proposed for banks (Figure 1). This model enlists the key factors that must be studied under each parameter of (E) Environmental, (S) Social & (Governance) framework.

Figure 1: Proposed ESG Framework for banks



Conclusion

As we embark our journey to understand the complexity of risks in banking sector, it is pertinent to realise that adaptation to the changing environment plays a key role in minimising the overall impact of risk in the business. While adaptation may come in many forms, it is necessary to understand three important aspects - Why are the changes required? What are the changes required and the most important of all - How to access the impact of the change? This paper attempts to understand the existing practices of Domestic Systemically Important Banks (D-SIBs) in India in relation to the impact of ESG factors on profitability of D-SIBs. The present study finds that there is a significant impact of ESG parameters under study on the overall profitability of bank. This suggests that there is scope of integrating an ESG framework to overall productivity of banks. However, at the same time "Transition Risks" associated with migration from traditional practices to the ESG sensitive framework may not be overlooked.

The Environmental, Social & Governance (ESG) related risk is a prospective matter of concern for Indian banks, as being in a regulated framework most of the reporting done by banks are based on mandatory requirements, however, Domestic Systemically Important Banks in India have started disclosing information related to their preparedness for the challenges posed by ESG.

The International Financial Reporting Standards (IFRS) Foundation is establishing an International Sustainability Standards Board (ISSB) to develop a baseline global sustainability reporting standard, built from the Task Force on Climate-related Financial Disclosures (TCFD) framework and the work of an alliance of sustainability standard setters. However, there is a need for improving the level of disclosures for greater consistency and comparability.

Hopefully, with effect from 2022-23, when filing of Business Responsibility and Sustainability Report (BRSR) shall be mandatory for the top 1000 listed companies, more companies will come forward with disclosures on their practices aligned with ESG related factors which will enable investors and other stakeholders to make informed decisions.

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बैंकिंग में साइबर अपराधों की प्रकृति और सुरक्षात्मक उपाय

संजय कुमार*

अर्थ मनुष्य के लिए हमेशा से महत्वपूर्ण रहा है, क्योंकि अर्थ के द्वारा ही उसकी समस्त क्रियाएं संचालित होती हैं। अर्थ की इसी महत्ता को देखते हुए राजा भर्तहरि ने कहा था- सर्वे गुणा: काञ्चनमाश्रयन्ति'।[1] अर्थ का इतिहास जितना पुराना है, उतना ही पुराना अर्थ और अपराध का संबंध भी है। पुरातन काल में जब विनिमय का माध्यम अनाज या गायें हुआ करती थीं, उस समय इन चीज़ों की चोरी होती थी। जब सोने-चाँदी और बहुमूल्य रत्नों का दौर आया तो अधिकतर लूटपाटें इन बहुमूल्य धातुओं और उनसे बने आभूषणों, बर्तनों, सिंहासनों आदि को हथियाने को लेकर होती थीं। मुग़लकाल में बादशाहों ने जब सोने-चाँदी के सिक्के चलाए तो लोगों ने उनसे मिलते-जुलते नकली सिक्के चलाने शुरू कर दिए। जब काग़ज़ी मुद्रा का चलन शुरू हुआ तो धोखेबाजों ने जाली मुद्रा चलानी शुरू कर दी। कहने का आशय यह है कि धन-दौलत को अनुचित तरीके से हड़पने का सिलसिला उतना ही पुराना है जितनी कि मानव सभ्यता। हालांकि अब तक के सफर में जो खास बात थी वह यह थी कि धन-दौलत हड़पने के लिए आक्रांता/लुटेरे को धन तक भौतिक पहुँच बनानी पड़ती थी, किन्तु जबसे डिजिटल लेनदेन का दौर शुरू हुआ, अपराधियों को मौके पर जाने की ज़रूरत भी न रही। वे दुनिया के किसी भी कोने से घटना को अंजाम देने में सक्षम हो गए। साइबर अपराधों की इसी गंभीरता को देखते हुए सिस्को के भूतपूर्व सीईओ जान चेंबर्स कहते हैं - "केवल दो प्रकार के संगठन हैं, एक वे जो हैक कर लिए गए हैं और दूसरे वे जो यह नहीं जानते कि उन्हें हैक कर लिया गया है"।[2] चूँकि बैंक विशुद्ध रूप से अर्थ से जुड़ा कारोबार करते हैं, अतएव, उनका और उनके ग्राहकों का साइबर अपराधियों के निशाने पर होना लाज़मी है। बैंकों में होने वाले साइबर अपराधों के स्वरूप पर विस्तार से चर्चा करने के पहले साइबर अपराध का आशय समझ लेना प्रासंगिक होगा।

साइबर अपराध क्या है?

'साइबर' शब्द की उत्पत्ति 'साइबरनेटिक्स' से हुई है, जो मूलत: जीवित प्राणियों और मशीनों के बीच संचार और नियंत्रण प्रणालियों के अध्ययन की एक शाखा थी। समय के साथ-साथ 'साइबर' की संकल्पना में बदलाव आया और अब इसका आशय 'सूचना प्रौद्योगिकी' से है। वर्तमान समय में कोई भी चीज़ जो कम्प्यूटिंग और इंटरनेट से संबंधित है, साइबर की श्रेणी में रखी जा सकती है। वहीं, साइबर अपराध का आशय ऐसे गैर-कानूनी कृत्यों से है जो सूचना प्रौद्योगिकी का इस्तेमाल करके अंजाम दिए जाते हैं । इसमें कम्प्यूटर या कम्प्यूटर नेटवर्क, अपराध करने का उपकरण या लक्ष्य दोनों हो सकता है।

शुरू-शुरू में साइबर अपराध शरारती तत्वों द्वारा शौकिया तौर पर किए जाते थे, पर आजकल ये उदंड राष्ट्रों द्वारा प्रायोजित भी होते हैं, और इन अपराधों का प्रमुख मकसद धन हड़पना, किसी प्रणाली को ध्वस्त कर देना, सिस्टम को हैक कर लेना और फिरौती मांगना, बदनाम करना, काबलियत साबित करना, शोहरत पाना आदि होता है। बैंकिंग जगत में ये अपराध मुख्यत: धन हड़पने की लालसा से किए जाते हैं। अकेले वर्ष 2020 में साइबर अपराध के

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[1]भर्तृहरि, नीति शतकम्
[2] https://dynamicbusiness.com

50,035 मामले सामने आए जिनमें सबसे अधिक 60.2% मामले वित्तीय धोखाधड़ी से संबंधित थे।[3]

बैंकिंग में साइबर अपराधों की प्रकृति और सुरक्षात्मक उपाय

प्रौद्योगिकी ने जहाँ एक ओर "कभी भी, कहीं भी बैंकिंग" का सपना साकार किया है, तो वहीं जोखिम की संभावना भी हर समय और हर जगह से पैदा की है। यदि बैंकों में साइबर अपराधों के स्वरूप की बात की जाए तो इसके कितने स्वरूप हो सकते हैं यह निश्चित तौर पर नहीं कहा जा सकता, क्योंकि प्रत्येक नई घटना एक नए स्वरूप को उजागर करती है। तथापि ज्ञात मामलों के आधार पर साइबर अपराधों की प्रकृति का एक सामान्य खाका अवश्य खींचा जा सकता है। इन अपराधों का विश्लेषण हम ग्राहक और बैंक के परिप्रेक्ष्य से अलग-अलग करेंगे तथा प्रत्येक स्वरूप के वर्णन के साथ ही उससे बचाव के तरीकों का भी ज़िक्र करेंगे।

1. ग्राहकों को लक्ष्य कर किए जाने वाले साइबर अपराध

ग्राहकों के साथ होने वाले साइबर अपराधों से हमारा आशय ग्राहकों के साथ होने वाली साइबर धोखाधड़ी से है, जो प्राय: निम्नलिखित तरीकों से अंजाम दी जाती है :

ई-मेल के द्वारा : इस प्रकार की धोखाधड़ी को साइबर की भाषा में 'फिशिंग' कहते हैं। इसमें ग्राहक को ई-मेल भेजे जाते हैं जो देखने में अधिकृत संस्था/बैंक द्वारा भेजे गए लगते हैं। भेजे गए मेल्स में पढ़ने वाले को संलग्न 'लिंक', जो आधिकारिक वेबसाइट/बैंक की प्रतीत होती है, पर 'क्लिक' करने के लिए प्रेरित किया जाता है। जैसे ही पढ़ने वाला संलग्न लिंक को 'क्लिक' कर लागइन पश्चात अपनी व्यक्तिगत पहचान का विवरण भरता है, उसी समय उसकी सारी सूचनाओं की ऑनलाइन चोरी हो जाती है और वह धोखाधड़ी का शिकार हो जाता है।

सुरक्षात्मक उपाय

- हमेशा बैंकिंग लेनदेन हेतु बैंक के अधिकृत URL लिंक को ब्राउज़र के एड्रेस बार में टाइप करें। अन्य किसी लिंक अथवा गूगल जैसे सर्च इंजन का इस्तेमाल बैंक URL खोजने के लिए ना करें।
- लॉगिन आईडी और पासवर्ड डालने से पूर्व यह सुनिश्चित कर लें कि साइट 'https://' से शुरू होती है और उसमें पैडलॉक दिखता है।
- लॉगिन आईडी, पासवर्ड जैसे विवरण कंप्यूटर/मोबाइल पर संचित न करें।
- अपने ब्राउज़र से 'आटो कम्पलीट' विकल्प निष्क्रिय कर दें।
- जिस पीसी/लैपटोप/मोबाइल से लेनदेन करते हों, उसमें 'स्क्रीन शेयर' जैसे ऐप डाउनलोड न करें।
- साइबर कैफे/सार्वजनिक वाई-फाई से नेट बैंकिंग सुविधा का इस्तेमाल न करें।

फर्ज़ी फोन कॉल के द्वारा : इस तरह की धोखाधड़ी को साइबर की भाषा में 'विशिंग' कहते हैं। आम ग्राहक सबसे अधिक शिकार इसी धोखाधड़ी के होते हैं। इसमें साइबर अपराधी ढोंगी बैंक-अधिकारी बनकर ग्राहक को फोन कर उसके डेबिट/क्रेडिट कार्ड के निकट भाविष्य में निष्क्रिय हो जाने की जानकारी देते हैं तथा कार्ड को सक्रिय रखने हेतु कार्ड संख्या, 'सीवीवी', 'पिन' और 'ओटीपी' जैसे विवरण उपलब्ध कराने को कहते हैं। इंटरनेट बैंकिंग का इस्तेमाल करने वाले ग्राहकों से सिस्टम आदि के अपडेट होने का बहाना बनाया जाता है एवं सुविधा की निरंतरता रखने के लिए लॉगिन आईडी, पासवर्ड जैसे विवरण मांगे जाते हैं। विवरण मिलते ही ग्राहक का खाता खाली कर दिया जाता है। इस श्रृंखला में एक नया झुकाव 'केवाईसी अपडेशन' का है। केवाईसी अपडेशन के नाम पर धोखेबाज़ पहले ग्राहक को एक संदेश भेजते हैं "KYC updation in your

[3] The Hindu (New Delhi), 15 Sep. 2021.

account is pending, failing which your account will be freezed". फिर इस हेतु फोन लगाकर ग्राहक से आधार, पीएएन (PAN), आयु, पता आदि का विवरण पूछने के साथ-साथ कार्ड और नेट बैंकिंग की गोपनीय सूचना भी पूछ लेते हैं। इसके पीछे एक और संदेश भेजा जाता है "Your KYC is being updated, you will receive an OTP. Pl share it with your Bank Officer for successful completion of KYC". इन संदेशों से ग्राहक के मन में रही-सही शंका भी दूर हो जाती है और वह बैंक दवारा प्राप्त ओटीपी धोखेबाजों को दे बैठता है। ओटीपी किसलिए आया है; यह जानने की कोशिश भी नहीं करता।

सुरक्षात्मक उपाय

- अपने बैंक खाते की गोपनीय जानकारी कभी भी किसी के साथ साझा न करें।
- अपने बैंक के मेसेज कोड (जैसे-एसबीआई के मामले में BP-SBIINB, AD-SBIINB आदि) को पहचानें और मेसेज को पूरी तरह पढ़कर ही प्रतिक्रिया दें।
- विभिन्न प्रायोजनों हेतु कार्ड/नेट बैंकिंग की दैनिक सीमा निर्धारित कर लें।
- फोन को लॉक रखें ताकि आपकी अनुपस्थिति में कोई अन्य सदस्य फोन पर आए 'ओटीपी' को साझा न करें ।
- बैंको को भी इस तरह मेसेज प्रारूप "<OTP is 2986 for a transaction of Rs ….>" से बचना चाहिए क्योंकि इस मेसेज में ओटीपी शुरू में होने के कारण मोबाइल का स्क्रीन लॉक खोले बिना ही दिख जाता है। इसके बजाए "For transaction of Rs … your OTP is….." जैसा प्रारूप उचित होगा।

एसएमएस के द्वारा : इस तरह की धोखाधड़ी को साइबर की भाषा में 'स्मिशिंग (एसएमएस+फिशिंग)' कहते हैं। इसमें ग्राहक के फोन पर एक के बाद एक कई संदेश भेजकर पहले तो उसे विश्वास में लिया जाता है, फिर बड़ी चालाकी से उसके बैंक विवरण, पासवर्ड जैसी गोपनीय सूचनाएं हासिल की जाती हैं अथवा प्रेषित किए लिंक पर क्लिक करने हेतु प्रेरित किया जाता है। स्मिशर के पास गोपनीय सूचनाएं पहुँचते ही, ग्राहक को नुकसान हो जाता है।

सुरक्षात्मक उपाय

- अपरिचित स्रोतों से आए संदेशों पर प्रतिक्रिया करने से बचें।
- किसी संदेश में दिए गए 'लिंक' से किसी 'ऐप' को इंस्टाल न करें। यदि कोई ऐप इंस्टाल करना ही है तो केवल आधिकारिक ऐप स्टोर से करें।

वायरस के द्वारा: वायरस के द्वारा भी बैंकिंग धोखाधड़ी को अंजाम दिया जाता है। वायरस के डिलीवरी चैनल अलग-अलग हो सकते हैं ताकि वे फायरवाल से बचकर ग्राहक के सिस्टम में दाखिल हो सकें। वे किसी ई-मेल के अटैचमेंट, सॉफ्टवेयर, पेनड्राइव अथवा किसी छद्म वेबसाइट पर क्लिक करने और कुछ इस तरह के सुरक्षा संदेशों कि "आपके कंम्प्यूटर में वायरस है और आपको नया सॉफ्टवेयर डाउनलोड करने की आवश्यकता है", के जरिए भेजे जाते हैं। जैसे ही ग्राहक इन पर क्लिक करता है, वह वास्तविक वायरस डाउनलोड कर लेता है। आज ट्रोजन हॉर्स, वर्म जैसे कई प्रोग्राम हैं, जो की-स्ट्रॉक्स को कैप्चर कर लेते हैं और उसे मनचाहे एडरेसेस पर प्रेषित कर देते हैं।

सुरक्षात्मक उपाय

- हमेशा नामचीत कंपनी का एंटी वायरस प्रयोग करें।
- अपने वेब ब्राउज़र में 'pop-up blocker' सक्रिय कर लें।
- किसी भी अपरिचित लिंक/अटैचमेंट को न खोलें।
- पाइरेटेड सॉफ्ट्वेयर का इस्तेमाल न करें।
- कंप्यूटर के आपरेटिंग सिस्टम को निरंतर नवीनतम रखें ।

फर्ज़ी प्रलोभन के द्वारा: साइबर ठगों द्वारा लोगों को ई-मेल, संदेश भेजकर लॉटरी निकलने, इनाम जीतने, किसी संपत्ति का लकी वारिस चुने जाने की खबरें दी जाती हैं और ऐसी इनामी राशि को आपके नाम जमा करने के लिए आपसे खाता विवरण एवं अन्य गोपनीय जनकारिया एकत्रित कर ली जाती हैं। जो लोग प्रलोभन में आ जाते हैं, वे अपनी जमा पूँजी गवाँ बैठते हैं।

सुरक्षात्मक उपाय

- अपने लालच को नियंत्रित रखें एवं भाग्य से अधिक कर्म पर विश्वास करें।
- इस चीज़ में प्रबल विश्वास रखें कि खैरात में कुछ भी नहीं मिलता।

2. बैंक, ग्राहक और अन्य भागीदारों की संयुक्त विफलता से जुड़े साइबर अपराध

बैंक में साइबर अपराध के कुछ मामले एक से अधिक पक्षों की लापरवाही के कारण घटित होते हैं। इस संबंध में प्रतीकात्मक कार्य-पद्धतियाँ दृष्टव्य हैं ।

एटीएम स्किमिंग/कार्ड क्लोनिंग: स्किमिंग/ कार्ड क्लोनिंग एक उच्च तकनीक का तरीका है जिसमें आपराधिक तत्व एटीएम/पीओएस पर एक स्किमिंग डिवाइस लगा देते हैं जो कार्ड की चुम्बकीय पट्टी की सारी सूचनाएं नकल कर लेता है। फिर इन सूचनाओं को नए कार्ड की चुम्बकीय पट्टी में स्थानांतरित कर दिया जाता है और नकली कार्ड तैयार करके पैसा निकाल लिए जाते है।

सुरक्षात्मक उपाय

- यदि आपको एटीएम के कार्ड स्लॉट में कुछ अजनबी चीज़ दिखे तो कार्ड का इस्तेमाल न करें।
- कम रोशनी वाले और बिना सुरक्षा-गार्ड वाले एटीएम का प्रयोग करने से बचें ।
- यदि एटीएम पर लेनदेन सफल होने की सूचना के बाद भी रुपए न निकलें तो सतर्क हो जाएं और कैश स्लॉट सहित आस-पास की संरचना पर भी नज़र दौड़ाएं।
- भुगतान हेतु कार्ड को अपने सामने इस्तेमाल करवाएं और देखें कि कार्ड पीओएस टर्मिनल के सिवाय अन्यत्र कहीं और इस्तेमाल न किया जाए।
- एटीम कार्ड की पिन किसी और के सामने उजागर न हो।
- बैंक को अपने एटीएम पर यथासंभव सुरक्षा गार्ड लगाने चाहिए और एटीएम में किसी भी प्रकार की छेड़छाड़ रोकने हेतु एक अलार्म सिस्टम विकसित करना चाहिए। कैश भरने वाले वेंडर को एटीएम के इंटरफेस की नियमित जाँच का दायित्व भी सौंपा जा सकता है।

फर्ज़ी ग्राहक सुविधा केन्द्र (कस्टमर केयर) के द्वारा धोखाधड़ी: हाल ही में साइबर धोखाधड़ी का एक ऐसा मामला सामने आया जिसमें नेट बैंकिंग का इस्तेमाल करने वाले एक ग्राहक ने अपनी मियादी जमा (FD) की भुगतान प्रक्रिया पर खोज की। साइबर अपराधियों ने सर्च इंजन ऑप्टीमाइजेशन (SEO) के द्वारा इस नंबर को सर्च हिस्ट्री में सबसे ऊपर रखा था। इस नंबर पर फोन करने पर हिंदी के लिए '1' दबाएं, अंग्रेजी के लिए 2 दबाएं.... से गुज़रता हुआ जब ग्राहक फोन बैंकिंग ऑफिसर तक पहुँचा तो छद्म फोन बैंकिंग ऑफिसर ने कहा कि वेबसाइट पर फिलहाल एफडी भुगतान का विकल्प नहीं है, इसके लिए आपको एक लिंक भेज रहा हूँ, उसमें दिए गए फार्म में आप अपनी एफडी एवं अन्य का विवरण भरकर जमा (सबमिट) कर दीजिए। इस फार्म में अन्य जानकारी के साथ यूज़र आईडी और पासवर्ड का विवरण भी भरना था। जैसे ही ग्राहक ने उक्त फार्म सबमिट किया, धोखेबाज़ ने ग्राहक के खाते में दर्ज मोबाइल नंबर बदल कर अपना मोबाईल नंबर दर्ज करवा दिया तत्पश्चात ग्राहक के खाते की राशि विभिन्न खातो में स्थानांतारित करवा दी। इस घटना में जहाँ ग्राहक ने यूज़र आईडी, पासवर्ड उजागर करने की लापरवाही की, तो सर्च इंजन ने गैर-सत्यापित टोल-फ्री नंबर प्रदर्शित करने की। सबसे बड़ी प्रणालीगत त्रुटी बैंक के स्तर पर हुई जिसने नेट बैंकिंग के द्वारा खाते में मोबाइल नंबर बदलने की

इज़ाजत दी। फर्ज़ी ग्राहक सेवा कन्द्र (कस्टमर केयर) नंबर पर धोखाधड़ी के एक अन्य मामले में साइबर अपराधी ने शिकायतकर्ता से उसके कार्ड का पूरा विवरण प्राप्त कर उसे विश्वास दिलाया कि शिकायत दर्ज हो गई है। शिकायत नंबर प्राप्त करने के लिए भेजे गए लिंक से ऐप डाउनलोड कर लें। ऐप डाउनलोड करते ही ओटीपी अपराधियों को भी दर्शित होता था और धोखेबाज शिकायतकर्ता के खाते से पैसे निकाल लेते थे।

सुरक्षात्मक उपाय

- किसी भी बैंक का ग्राहक सेवा केन्द्र (कस्टमर केयर) नंबर केवल बैंक की आधिकारिक वेबसाइट से प्राप्त करें और इसे हमेशा अपने मोबाइल में सुरक्षित रखें ताकि समय रहते सूचना देकर नुकसान को कम किया जा सके।
- सर्च इंजन और प्रिंट व इलेक्ट्रॉनिक मीडिया को भी गैर-सत्यापित नंबर प्रकाशित नहीं करने चाहिए।
- बैंक-खाते में मोबाइल नंबर या ईमेल जैसी संवेदनशील सूचनाएं कम से कम दो स्तरों के अधिप्रमाणन के बाद ही बदलने की अनुमति होनी चाहिए।

ई-कामर्स साइट एवं बिल भुगतान पोर्टलों के जरिए साइबर धोखाधड़ी: वर्तमान समय में जनोपयोगी सुविधाओं और ऑनलाइन शॉपिंग हेतु डिजिटल भुगतान एक लोकप्रिय विकल्प है। पर कुछ ऐसे मामले प्रकाश में आए हैं जहाँ तथाकथित सुविधा प्रदाताओं की वेबसाइटों/ई-कामर्स साइटों पर बिल के भुगतान के दौरान ग्राहक का पैसा गलत जगह स्थानांतरित हो गया। इतना ही नहीं, 'ट्रांज़ेक्शन फेल्ड' का मेसेज आया और वे पुन: भुगतान कर बैठे।

सुरक्षात्मक उपाय

- वेबसाइट पर प्रदर्शित लिंक के माध्यम से भुगतान प्राप्त करने वाले विभागों/ई-कामर्स कंपनियों को अपनी भुगतान प्रणाली का नियमित फारेंसिक ऑडिट अनिवार्य होना चहिए।
- ऑनलाइन भुगतान करते समय प्रत्येक चरण को बारीकी से जाँचते हुए आगे बढ़ना चाहिए।

3. बैंकिंग संस्थानों को निशाना बनाकर किए जाने वाले साइबर अपराध बैंकों को निशाना बनाकर किए जाने वाले अपराधों में प्रमुख हैं:

हैकिंग/रैनसमवेयर: रैनसमवेयर एक ऐसा साइबर अपराध है जिसमें मालवेयर के जरिए टारगेट कंप्यूटर/सिस्टम को या तो लॉक कर दिया जाता है अथवा सुरक्षित फाइल्स को एनक्रिप्ट (विशेष कोड में रूपांतत्रित) कर दिया जाता है। फिर उन्हें अनलॉक/डिक्रिप्ट (सरल भाषा में परिवर्तित) करने के बदले में एक मोटी धनराशि की मांग की जाती है। यह एक तरह से अपहरण और फिरौती की मांग जैसा है। रैनसमवेयर आज दुनिया के सामने एक बड़ा खतरा बनकर उभरा है। इसकी भयावहता का अंदाजा इसी बात से लगाया जा सकता है कि वर्ष 2014 में जे.पी. मार्गन डाटा ब्रीच मामले में मालवेयर व सोशल इंजीनियरिंग के जरिए तकरीबन 83 मिलियन ग्राहकों की गोपनीय सूचनाएं हैक कर ली गई थीं। फरवरी 2016 में साइबर अपराधियों ने ड्राइडेक्स मालवेयर के जरिए बंग्लादेश बैंक के स्विफ्ट नेटवर्क पर अनुदेश भेजकर 81 मिलियन डालर अमेरिकी फेडरल रिज़र्व में स्थानांतरित कर लिए थे। 12 मई 2017 को 'WannaCry' और 'Notpetya' नामक रैंसमवेयर हमले में बैंकों, एटीएम नेटवर्क और कार्ड भुगतान प्रणालियों को प्रभावित करते हुए लगभग 10 बिलियन डॉलर का नुकसान हुआ था । वर्ष 2018 में पुणे स्थित कॉसमॉस को-ऑपरेटिव बैंक पर हुए मालवेयर हमले में हैकरों ने बैंक के एटीएम सर्वर को हैक कर वीज़ा और रुपे कार्डधारकों का विवरण प्राप्त किया तत्पश्चात् कार्ड क्लोनिंग के द्वारा रु.94.42 करोड़ का नुकसान बैंक को पहुँचाया ।

सुरक्षात्मक उपाय

- बैंक को आवाश्यक डाटा के कम से कम दो बैक-अप रखने चाहिए और अपने नेटवर्क संचार, डेटा सेंटर, क्लाउड सुरक्षा संरचना की नियमित लेखा परिक्षण कराना चाहिए।

- आपरेटिंग सिस्टम और सॉफ्टवेयर निरंतर अपडेट रखें।
- बैंक की इनफरमेशन सिस्टिम (आईएस) पॉलिसी और एक्सेस मैनेजमेंट पॉलिसी का कड़ाई से पालन सुनिश्चित करें।
- कर्मचारियों को साइबर अपराधों के प्रति जागरुक करें और उन्हें उचित प्रशिक्षण दें।
- प्रणाली की भेद्यता (vulnerability) परखने के लिए एथिकल हैकर्स की सेवाएं ली जा सकती हैं।
- व्यावहारिक डिज़ास्टर रिकवरी प्लान तैयार रखें, परिणामस्वरूप कम से कम समय में वैकल्पिक प्रावधानों से परिचालन शुरू किया जा सके।

डीडीओस अटैक (Distributed Denial of service):

इस प्रकार के साइबर अपराध में किसी कंप्यूटर या नेटवर्क पर कई स्रोतों/स्थलों, विशेषकर बाट्नेट्स (संक्रमित कंप्यूटरों का एक बड़ा नेटवर्क) से हमला किया जाता है। चूँकि इनकमिंग ट्रैफिक हज़ारों जगह से आ रहा होता है, अतएव, कंप्यूटर सिस्टम के लिए किसी खास आईपी एड्रेस को ब्लॉक करना मुश्किल होता है, और इसी क्रम में हमलावर ट्रोजन जैसे खतरनाक वायरसों को प्रवेश कराने में सक्षम हो जाते हैं। दूसरे, इतने अधिक ट्रैफिक के कारण बैंडविड्थ खत्म हो जाती है, जिसके कारण ऑनलाइन बैंकिंग सेवाएं या तो धराशायी हो जाती हैं अथवा बेहद मंद पड़ जाती हैं।

सुरक्षात्मक उपाय

- नेटवर्क की बैंडविड्थ पर्याप्त रखनी चाहिए।
- बॉटनेट्स रिमूवल टूल्स की भी मदद ली जा सकती है ताकि वे बॉटनेट्स की पहचान कर उन्हें रिमूव कर सकें।

अंत में, सारांश के तौर पर कहा जा सकता है कि डिजिटल बैंकिंग समय की मांग है। इसके कारण बैंकों और ग्राहकों के समय, श्रम और संसाधनों की बचत हो रही है। चूँकि बैंकिंग से जुड़े साइबर अपराधों में अपराधियों को सीधे तौर पर वित्तीय लाभ पहुँचता है, अतएव यहाँ अपराधों की संभावना काफी प्रबल है। इसलिए प्रौद्योगिकी आधारित बैंकिंग को सतत सुरक्षित रखने के लिए बैंकों को साइबर सुरक्षा पर विशेष ध्यान देना होगा। साइबर सुरक्षा पर किया खर्च एक तरह का निवेश होगा, जो उन्हें भावी हानियों से बचाने में सहायता करेगा। साइबर अपराधों की रोकथाम के लिए घटनाओं की समय से रिपोर्टिंग भी महत्वपूर्ण है क्योंकि इससे जहाँ इंस्टीट्यूशनल मेमोरी तैयार होती है, वहीं नियामक के दण्ड से भी बचा जा सकता है। समय से रिपोर्टिंग अपराधियों तक पहुँचने और फंड की वसूली में भी मददगार हो सकती है। जागरुकता हर समस्या के निवारण की दिशा में सबसे कारगर औज़ार होता है। अतएव, डिजिटल लेनदेन की सावधानियों तथा साइबर अपराधों की प्रकृति के बारे में ग्राहकों, कर्मचारियों, हितधारियों को जितना अधिक जागरूक किया जाएगा, वे उतने ही सावधान रहेंगे और उतनी ही कम घटनाएं होंगी। बैंकिंग में साइबर अपराध की घटनाएं रोकने में उन पक्षों की भी अहम भूमिका है, जो प्रत्यक्ष या परोक्ष रूप से बैंकिंग गतिविधि को सहारा दे रहे हैं। उदाहरण के लिए यदि पैन, वोटर कार्ड, मनरेगा कार्ड जैसी आईडी जारी करने वाले विभाग पहचान का विधिवत सत्यापन किए बिना इन्हें जारी कर दें और इन फर्ज़ी आईडी पर खाते खुल जाएं अथवा कोई टेलीकॉम कंपनी केवाईसी का समुचित सत्यापन किए बिना सिम जारी कर दे या किसी को किसी अन्य का डुप्लीकेट सिम जारी कर दें तो साइबर ठगी भी होगी और अपराधियों तक पहुँचना भी मुश्किल होगा। ध्यान रहे कि साइबर ठगी का पैसा विविध खातों, वालेट्स, ई-कामर्स साइटों से होता हुआ ही अंतिम पड़ाव तक पहुँचता है, और यदि शृंखला से जुड़े सभी पक्षकार अपनी ज़िम्मेदारी का निष्ठा और ईमानदारी से निर्वहन करें तो साइबर अपराध की घटनाएं काफी हद तक कम हो सकती हैं।

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1st Prize :
Micro Research, 2021-22

Central Bank Digital Currency - Way Forward

Thiruppathy V*

The form of money has evolved over time. Digitalization has further revolutionized the money and the payment system. In simple terms, Central Bank Digital Currency (CBDC) is nothing but the digital form of normal fiat currency. But why are the central banks around the world in the race to launch their own digital currency? Shortly, we will be at the cusp of a monetary and fiscal era. This global race started in Japan where Satoshi Nakamoto, an anonymous founder, invented the crypto currency named "Bitcoin". World's vision towards bitcoin has taken a sharp change after the many ransomware cyber-attacks and terror financing started demanding the bitcoins. Till that point, bitcoin was a mere crypto currency that was used for investing the private wealth. Government and Central Banks around the world have come to understand the unregulated nature of the bitcoin and other crypto currencies. They have been thinking about the regulatory framework and, many countries are even thinking to ban the cryptos as a whole. In recent times, with the advancement of technology and fintech startup ecosystems CBDC emerged as the hottest topic in financial markets.

All the peers of currency in the financial system, be it bonds, securities, shares, etc., everything updated its characteristics and presence in the digital world. But, currency is moving in its old paper format. Usage of physical cash also reduced to quite an extent with the exemplary rise in digital payment gateways. The driving force for the idea of introducing CBDCs are:

- To meet the Central Bank policy objectives.
- To carry the legitimate benefits of virtual currencies to the people.
- To match the changing functionalities of retail transactions.
- To create a niche in payment methods.

CBDC will change the payments and monetary interactions across the physical border in the long term. The advent of CBDC has the potential to reshape the nature of currency transactions and the international monetary policy frameworks too. Wechat's and Alipay's dominance in China, Facebook's decision to launch the new digital currency called 'Libra', Paytm and GPay's dominance in the Indian retail payment markets may further speed up the decision making process of introducing the CBDC.

Finally, in the past decade, hundreds of crypto currencies were maintained by unknown record keepers and the fluctuation in its values has made a permanent seat for CBDC in the global monetary decision making process. China was the first large economy which announced to introduce its CBDC called e-CNY in a phased manner and even introduced it in some areas of government payments. RBI has also rolled out the plan to introduce digital rupee.

Let us dive deep into the CBDC and its way forward.

CBDC and its Architecture

BIS suggests three model of CBDC architecture:

1. ***Direct CBDC*** - Central bank will hold a direct claim on CBDC and also handle all the payments in real time. Central bank, acting like a general bank, will allow people to open accounts and transfer the amounts. The primary target in this model is retail payment structure which has slowly

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started to be taken over by crypto currency. This will convert the crypto currency market to a well legalised and regularised CBDC market.

2. ***Hybrid CBDC*** - Central bank will hold a direct claim on CBDC, payments in real time will be handled by intermediaries or token[1] based variant. A normal commercial bank does all the transactions like paper currency.

3. ***Intermediated CBDC*** - Central bank runs the wholesale ledger or restricted token based variant. It is only for the wholesale market for interbank transactions or security settlements.

The various key design features of CBDCs include availability, peer-to-peer transfer and interest bearing nature. Many central banks are working towards the feasible and desirable introduction of CBDC. The vast majority of central banks are working towards the introduction of Hybrid/Intermediated models. In the future, it is very important to think of a more realistic model to extract the real benefits of CBDC in the economy.

CBDC and central bank's role in issuing and reconciliation:

1. Central bank should maintain the database of each and every currency note mined in Distributed Ledger Technology (DLT) platform including (i) Sequential number (ii) Denomination (iii) Cryptographic hash value (iv) Timestamp value of mining (v) Identity of the receiver (vi) Transaction attributed to the blocks.

2. Each currency chest should have the database of digital currency it received and distributed to the banks/account holders.

3. E-wallets should be developed and managed by the respective central banks. Bulk customers of central banks including Government should provide the mega wallet that should be maintained by the Central bank itself.

4. Central bank should also have the data of each and every wallet downloaded and the transactions of the inter and intra wallets.

5. Once the receiving wallet credit with the CBDC, system should check the correctness of the currency from the cryptographic hash value and the transactions should be recorded in the blocks of the blockchain.

6. Wallet can be recharged in the bank / ATMs / Central bank designated centres.

7. The money which get refilled from the above centres should be reconciled directly from/to the ledger books of the central banks.

8. If central banks want to demonetise the old digital notes, the central bank can automatically take back the notes of the old sequence number to the new one, in which the reconciliation entry happened at the backend server.

9. Central bank may give the option for two factor authentication including the payer and payee during the large value transactions by the way of OTP.

10. Any fraudulent transactions that happens should be routed through the currency chests of the central bank and forensic audit should be initiated.

CBDC and Wallet Mechanism

E-wallet is an important constituent of the CBDC banking. Some of the features which may be incorporated as follows:

1. Customer's letter of opening a wallet should be forwarded to Central bank and the user can download the wallet when he is permitted by the Central bank.

2. Wallets can be signed in using the credentials of the user and the amount can be filled/refilled at any time. If a user wants to transfer a said amount, the wallet can be moved close to another e-wallet. With the private key and public key authentication, amount can be transferred. Direct digital payment from the wallet can also be done directly to the receiver's bank account number.

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[1]A token is a digital string representing a value in particular currency.

3. For merchant sites, e-wallet can be used as a Point of Sale (PoS) device but the reconciliation would happen in Central bank's ledger.

4. Loss of the wallet is an important question in the terms of CBDC. Once the e-wallet is lost, the user should file an immediate complaint with the Central bank. As the e-wallet can be traced by the International Mobile Equipment Identity (IMEI) and mobile number, the central bank can block the same and can find the person using the IMEI number.

5. Wallet and mining of the CBDC will be much less expensive than normal printed money. A terabyte storage of a wallet costs less than $5.

6. An overseeing and Appellate body should be created in the Central bank to oversee the functions and resolve the customer complaints of the e-Wallets.

CBDC and Macro-economic Policy

When the Central banks issue the interest bearing CBDCs, it will obviously increase the cost of general deposits of normal banking channels. This will impact the deposit holders in a positive manner. So, the general banks pass on the cost of increased remuneration of their deposit to the borrowers which will negatively impact the investment and new loan creation. Technically, the Central bank can easily pay the interest to the CBDC, which means all the funds of the central bank can now bear the same interest rate i.e the same Rate of Interest (ROI) for both financial institutions and general public. At the macro-economic level, CBDC will increase the competition in the banking sector as a whole. CBDC will provide the tools for the central bank to participate in the retail payment ecosystems. When the central bank issues CBDC directly and holds the Government debts against it, it can help the macro-economics in two ways: 1) Interest margin can directly be given back to the Government 2) More sustainable capital formation of the whole banking arena. At the macroeconomic level, CBDCs are also going to change the pattern of taxation as the Government reaps the benefits of interest leverage by the central bank's direct issuance. As we discussed above, once the CBDCs are introduced, it will change the substantial portion of retail transactions from the commercial banks deposits, thereby making the commercial banks financing to depend on the wholesale market at the high interest. Therefore, this part of interest evolution must be carefully studied in a formal and quantitative manner. Overall, real deposit interest rates will reduce after the introduction of CBDC and it will also imply the positive benefits in the economy.

Macro-economic implications of CBDCs are further understood from the Dynamic General Stochastic Model of market based competitive economy. Unlike cash, these models consider the CBDC as an interest bearing liability of the central bank. These model identify the two potential benefits of CBDCs (while attaining the level of 30% of GDP):

- Increase in the GDP level by 3%.
- Making available second policy instrument that controls either the quantity or price of the CBDC and contributes to the stabilization of business cycle.

According to the Rogoff model, the existence of interest bearing CBDC will benefit the Central banks to overcome the deflationary pressure by adopting the negative interest rate. CBDC, in its macro-economic benefits, also includes the transparency in the transactions which in turn benefit the Government by the way of direct tax collection. CBDC will make the export and import easier in the world forex market because of the elimination of settlement and other risks associated with the forex market.

All the attempts to study the macro-economic benefits of CBDCs face a unique problem of complete absence of empirical data and no historical experience to draw on. So, the introduction of CBDCs in a phased manner will solve the problem as well.

CBDC and Monetary Policy

The innovation of digital products in the financial system will help in strengthening the market expectations and hence, the monetary policy too. The effectiveness of a nation's monetary policy is sometimes affected by the time lag in resource allocation, as is happening in the physical currency world. In the present system, there is no direct relationship between need and funding for the financial system. Central banks benchmark rate movements sometimes create the financial bubble in the present system and sometimes it leads to a financial crisis and social problem as well.

The defect in the present physical world will be replaced by a well-equipped CBDC which has in-built features of traceability and a programming nature, thanks to the underlying principle of block chain technology. If the monetary system adopts the alternative mechanism of payment denominated in the private currencies, it will result in a collapse of the economy as a whole. The Central Bank can accurately designate the currencies to a need based one unlike the physical currency. The targeted monetary policy which can be encouraged by the CBDC will help the financial system in the credit creation across the needy sectors/individuals. This will also ease the difficulties of statutory reserves of the banks, interest rate, policy rate, liquidity adjustments, counter cyclical mechanism and social welfare measures as well. People's Bank of China is getting success in the above parameters in the phased introduction of their E-Yuan. The characteristics of the CBDC lies in its targeted and precise monetary policies that we have never seen before.

CBDC can also help the central bank in directly intervening the administration of commercial banks in the money circulation. The speed of digital monies circulation will also enhance the effectiveness of monetary policy as tool for economic development of a nation. Thus, CBDC will enable the smarter monetary policy that in turn, will enhance the governance for the welfare of the people.

CBDC and Fiscal Policy

CBDC can not only transform the stimulus of payment but it can also unlock the various options towards the nation's fiscal policy. In the event of an adverse economic downturn, CBDC would help in the money financed fiscal stimulus with its targeted and recorded payment system. Most of the central banks around the world are paying the interest rate for the reserves of the commercial banks. CBDC will change this trend, which will increase the surplus of the Central banks and in turn advances. Since all the transactions are being recorded using the DLT, tax deduction at sources can be increased to the greater extent. With the permissioned digital format, all the anonymities corresponding to the physical currency can be eradicated completely and each and every individual corresponding to a CBDC can be easily identified which will result in a reduction in the illegal transactions. It will decrease the black money market altogether in coming years. A significant reward given by the CBDC towards fiscal policy is taxation. For example, no one can open a new Fixed Deposit (FD) account in many commercial banks, as a universal customer ID can be created in the CBDC era. So, no one can escape from the tax bracket. Benami transactions and corruption will be reduced to near zero in the coming decades and that will be a game changer in fiscal policy of the Government as the taxation burden can shift from needy to needed one. CBDC will enable the Government in the spending decision towards the welfare schemes in the real time basis. It will change the Direct Benefit Transfer into a speedy and highly efficient one all around the world, because universally everyone will come into the banking ecosystem. Double spending towards the particular welfare scheme will be eliminated directly as all the transactions will have the time stamp and recordings. Inflation and deflation pressure can be easily identified which reduces the unnecessary time in collection of data in the physical currency environment. Economic stimulus measures during the time of emergencies will become an easier one.

CBDC and Block Chain Technology

Blockchain technology is the foundation for the extraordinary growth of the digital currency market. Blockchain enables the CBDC as a forerunner in the payment diverse market, especially in the wholesale market. Others uses of blockchain in CBDC are:

- Low cost
- Efficiency
- Security and privacy
- Controllable regulation
- Resilience and verifiability
- Scalability
- Distributed Ledger technology (which is most important for the digital currency)
- Programmability
- Multi-tier system and nodal points
- Future financial innovation
- Increasing the offline capability of the payment system
- Token based system

Only the confirmed transactions are recorded in the block and it allows one to change the block once all the nodes in the network access. Since all the nodes in the blockchain are recorded and time stamped, all the transactions can be verified which is not possible in the physical currency. With the hash cryptographic techniques blockchain helps the CBDC as a tamper proof currency, which is missing in current paper monies.

With the increase in the study of permissioned consortium blockchain, central banks are starting to test their CBDC on a large scale. The main feature of the consortium blockchain towards the CBDC is interoperability. The project "Jasper" of the Central bank of Canada and project "UBIN" of Singapore explores the more benefits of the blockchain technology in CBDC.

Blockchains usage in CBDC

1. Hyper ledger concept of blockchain will ensure the decentralized behaviour of CBDC for better privacy.
2. Smart contracts can be made for the targeted usage of CBDC.
3. Cross border settlement and multi-currency payment system.
4. Additions of various participants.
5. Network distribution in the retail payment model.
6. Rights confirmation based on registration.
7. Decentralized Ledger.

In the blockchain based CBDC, the Central bank is the guardian for the superchain which can protect the privacy of the individual blocks and information. It can help in analysing the data and thus, in preventing the double spending of the same money. Blockchain is having a future of auditability which can ensure the better regulation of CBDC than paper currency.

However, blockchain technology will also have some demerits which is tedious in delaying the implementation of CBDC. Performance of the blockchain is still lower than the traditional model of central banking. Different blockchains may use different encryption, different consensus algorithms, different hashing that may slow the large scale adoptability of CBDC in the starter stage.

With the rise in new age minds, fin-tech startups and unicorns around the world, the block chain will surely overcome all the obstacles in its way to develop CBDC.

CBDC and Digital Literacy

While talking about the CBDC and digitization, an important thing to look after is literacy, especially the digital one. Digital literacy plays a vital role in taking the CBDC to every corner of the world. Without engaging the pros and cons of digital literacy, CBDC will not achieve its goal of replacing the physical currency. The immediate challenge which is placed before the CBDC is digital divide in many poor nations.

So, the role of a central bank will not stop at the introduction of their digital money itself. Central banks should coordinate and cooperate with the Governments and governance procedure to help in overcoming the digital divide. Lack of digital literacy will change the course of CBDC into the most dangerous one.

Ways to improve the digital literacy while incorporating the CBDCs are as follows:

1. Enhancing the role of central banks and all other commercial banks in the digital literacy areas also.
2. BIS should evolve a full proof policy for implementing the CBDCs along with the digital literacy to the commoners.
3. Targeted use of digital money at the earliest stage, even it may even be used only for the wholesale payment systems alone for time being.
4. Offline usage should be encouraged to overcome the digital divide, as the internet penetration is not equal around the world especially in the African and South Asian countries.
5. Banking with physical money should be removed as a whole only after a full-fledged introduction of digital money, so that digitally illiterate people are not alienated from the monetary system around the world.
6. Encouraging the use of existing technological solution rather than introduction of a new one, so that digital literacy will take over the world in a short span of time.
7. Interests of the various stakeholders including the telecommunications operators, Governments and citizens also taken into the account of the design and operation parameters of the digital money.
8. A specialized agency at the UN level to introduce to overcome the creation of another discrimination at the global level.

CBDC and Cyberspace

The main and the important concern over the introduction of CBDC is cyber threat and digital fraud. The major cyber threats of CBDC as follows:

- Username/password theft using hacking- As discussed above, CBDC is going to use blockchain as its underlying technology, but multi signature wallets of blockchain are not user friendly as normal app based platforms. But normal app based platform is more prone to credentials theft with the large scale impact on the public payments.
- Double spending is another important cyber threat in the CBDC. Normal digital payment ecosystem itself has the issue of double spending, but CBDC will be directly affected by the process of double spending.
- Increased usage of quantum computing will impact the financial sector as it has the ability to encrypt the data at an unbelievable speed. Future quantum computers may also break the hashed cryptographic of the current blockchain technology.

How to overcome the cyber risks?

1. Security must be a conscious thing to design the CBDC.
2. A hybrid and a multi-level security system that rely on a centralised/distributed system but risk of confidentiality should be nil.
3. A permissioned DLT should also include the additional level of the security at the both offline and online payment modes.
4. Localisation of data including all the personal/non personal data.
5. Front end and back end dedicated devices should be secure, private and the most resilient one.
6. Synchronization of the on device analytics with the trusted verification service run by the Governments should be used.

7. Continuous support system all around the clock to boost the confidence at the ground level
8. Cyber disaster recovery servers should indulge in the designing parameters of CBDC systems.
9. Homographic encryption along with white box cryptography will enhance the cyber security of the CBDC.
10. Crypto agility that describes the long term operational security of the CBDC and quantum hardness with standalone cloud computing methodologies will make the CBDC as a low risk replacement of physical monies.

Failure to implement a strong cyber space could reduce the public confidence over the usage of the CBDC. Cybersecurity and a strong technical governance with the localisation of data can strengthen the functional ability of a CBDC.

CBDC and Legislation

Success of the CBDC lies with the legislation and legal backup of the respective Government. The proposal for the CBDC should be backed by the country's banking regulator to give the impetus to its growth. Despite having the potential of being the long term change in the financial environment, digital money can realise its full power only by the legal framework. At present, most banking/currency laws around the world do not support the CBDC. Jurisdiction around the world have already started to explore the legal provisions of digital assets. The law, one which is going to be drafted, should cover some of the most important functionaries which includes the power of issuing digital currency, power to allow account opening with the central banks, and the payment system function. Another important feature to be decided in the new law will be the nature of storage of CBDC i.e. either by a way of wallet mechanism or in the form of deposit like present scenario. Legal features should be well designed and understood as well.

Important provisions to be discussed before drafting the law will be as follows:

- Existing legal provisions on the issuance of currency and bank notes.
- Existing Central Bank law influences the issuance of the private crypto currencies and external executive actions regarding the private crypto currencies should get the complete analysis.
- Existing monetary laws.
- Existing fiscal policy related laws.
- Any indirect provisions regarding the issuance of digital money, if any.
- Privacy, Cyber security and Electronic media laws should be redefined to adopt the new features of banking system.
- Existing foreign currency regulation acts and settlement of payment acts.
- Regulation of commercial banks in the digital currency ecosystem.

Important provisions to be added in the new law should be as follows:

- Legal tender status for CBDC.
- Definition of the digital money/currency, CBDC.
- Definitions of private crypto currencies and its regulations.
- Definition of digital assets in private environment including cryptos.
- Distribution of the CBDC and its architecture should be included in the new law.
- Financial stability aspects of CBDC and the wallet mechanism in storing the digital money.
- Insurances for deposits of CBDC.
- Validation of CBDC mechanism.
- Underlying technology usage i.e. blockchain/any other.
- Private key encryption and cryptographic functions.
- Financial surveillance mechanism with the CBDC.
- Token based CBDC relationships.

- Types of account holders and types of payment mechanism with CBDC.
- Retail payment and wholesale payment mechanism including the statutory reserves of commercial banks.
- Cross border payment and settlement.

CBDC had already raised many questions regarding the existing Central bank and monetary laws. Legislation of CBDC not only helps digital money but also the financial paradigm of the world. Technology and information act of the concerned country should be strengthened to implement the CBDC. The legal design of the CBDC will change the growth pattern of CBDC in a well-defined way.

CBDC and Changes to Normal Banking

Sooner or later, CBDC will change the normal banking business in many ways. CBDC has all the ability to do so. Changes in the normal banking with the arrival of CBDC are as follows:

1. Cash transactions at the bank level will be reduced to zero.
2. With the reduction in the paper currency, currency management would evolve into a newer format, as such the chest management too. Thus, resulting in the reduction of operating expenses of the commercial banks to some extent.
3. Banking business itself changes its definition from "taking deposits to giving loans" to "managing deposits to give loans". So, banking can efficiently increase its credit portfolios and hence, economic development. As the CBDC methodology eliminates the deposits with the commercial banks, customers' behavioural response towards the banking will surely increase as the risk towards the deposits reduces.
4. Need for Inter-bank settlements become nil as the digital currency transactions is the final one.
5. Transparency and traceability of the financial transactions becomes easy for the banking environment.
6. In credit portfolios, digital money will become a game changer, usage of the money can be easily detectable. For example, in the case of a housing loan, in the physical currency loan it is very difficult to find the usage of the loan. With that difficulty many loans become NPA. In digital money we can easily find the usage of each and every penny at zero error.
7. Elimination of third party payment gateway will boost the customer confidence in retail payment mechanism.
8. CBDC is going to eliminate the statutory reserve concept as the depositor's risk will be eliminated in the new system. So, the usage of the full capital of the bank can spur not only the economic development but also the commercial banks success as the net interest income will increase.
9. Forex risk as well as the settlement risk will reduce for the common banking.
10. Inclusive banking becomes the reality with the introduction of CBDC

Converting the paper money with its digital counterparts will surely come with its own complexities and confusion to the banking work. Banking Sector's biggest challenge with the introduction of CBDC is the adaptability with the new system. But there will be a revolution in the banking environment as the CBDC will change the banking core functionalities from A to Z.

CBDC and Cross border payment

If CBDC has one important benefit, that should be the cross border payment in relation to Export and Import of a country. Cross border payment is the one which is frequently criticized for their low speed, high cost, limited access to the various stakeholders and especially insufficient transparency. CBDC can be used for cross border payment in different ways. For example, interoperability of the various CBDC can be used for facilitating the frictionless cross border payment with minimum settlement risk. The Bank of England has already started the study on the possibility of linking the various CBDC.

Another way of easing the cross border payment mechanism is allowing the various CBDCs to operate in a single platform i.e. universal payment channel like SWIFT methodology through the normal banking course. By the universal payment channel, off-ledger payment may also be one possible as the on-ledger payment requires more time and more data space. While considering CBDC for the cross border payment, we have to outline some critical elements which includes:

- Building blocks for redeeming the forex conversion.
- Roles and responsibilities of commercial banks and central banks around the world.
- Key design feature in covering the data, privacy and technology over the border.
- Overall governance framework

The macro-economic success of the CBDC in cross border payment will depend largely on the international adoption of digital money. Adoption again depends on the design and the collaboration of the various partners in the chain of technology. The Integration of the capital market with the CBDC will increase the forex stability across the world economy. Programmability of the CBDC should nurture the low cost capital and forex flows between the countries.

Before implementing the CBDC in cross border payment, the Central bank must explore and investigate all the risks, possible design and benefits across all the sectors of the economy. While CBDC has unique features, in achieving the financial goals in the cross border payment, gradual encouragement and development of regulation, supervision and overseeing framework in digital money should be consistent.

CBDC and Fintech Sector

Fintechs around the world not only support the development and innovation of the CBDC but also help in fighting against the challenges and odds in the CBDC environment. Fintechs will play the key role in designing the policy framework for the implementation of CBDC in the real life scenario. These sectors are also going to help in minimizing the errors in post implementation of CBDC and answering all the important queries too. Fintech roles have already achieved success in the digital payment world. Government and Central banks should take the necessary step in encouraging these Fintech startups both in human capital and financial capital. Recently RBI has started the Fintech department to explore the CBDC and its aligned fields.

CBDC and Universal Institutions

Growth of CBDC also implies the efforts and support given by the universal institutions. Bank for International Settlement will play a very major role in the world's capacity to adapt to the sudden changes of the financial and banking sectors. FATF and the similar institutions will benefit from the CBDC in many ways. CBDC has also helped the other global bodies which are working towards the smuggling and trafficking of illegal goods. Now, the UN should release the draft CBDC methodology to inform all the countries of the world about the new digital technology. BIS has already released many papers regarding various test cases of CBDC. Thus, CBDC and global bodies are interlinking in lot of ways for a smoother shift to a new technology.

Conclusion

Evolution is the process we cannot stop at any time. But, how well we adopt those evolutions will help us in many ways. CBDC is one such thing. It will act as an adhesive in the fragile financial sector which joins all the stakeholders with a single bridge. CBDC will have its own risk ranges between privacy, cyber space, digital literacy, technological and legal risk. But it has more potential benefits which we can see in many areas in future. With the CBDC, all the citizens of a nation can come into the bracket of formal economy. So everyone can claim all the financial and economic advantages. CBDC can eliminate the risk of default by counterparty as well as the Money laundering and tax evasion which are major threats to many developed and developing nations. CBDC will support the global aim of base erosion and profit sharing as all the transactions are going to be recorded at some or many places. CBDC will become an important pillar in Minimum Corporate Tax which is a hot topic in the present developing world. Strict and controlled supply of CBDC will change its nature into a global accepted phenomenon. With a long way forward, CBDC will evolve into many forms and have to fight against many odds and challenges too.

Let's make a change!

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Central Bank Digital Currency - Way Forward

Ishan Katyal*

Abstract

In the recent times, Central Bank Digital Currency or CBDC has emerged as a highly sought after topic in the financial sector. Governments, Banks, Institutions are researching the feasibility and potential of introducing a new form of money. This form of currency has a plethora of benefits and hence, countries across the world are actively trying to map its potential. The present paper initially explains the concept of currency and the need posed for implementing a digital currency. Due to the benefits stated in the matter, different countries are at different levels of maturity in implementing CBDCs. The paper then deliberates on options for implementing such an alternative in India and based on pros and cons posed in the Indian context, the kind of category of CBDC which may be better suited. The key attributes and system design required for implementation is accordingly selected and explained further. It finally closes by stating the preparations which are required for a successful user buy-in and the challenges or threats which may be faced in successfully adopting this new form of currency.

I. Introduction

Central Bank Digital Currency or CBDC is an electronic form of money that can be used for making digital transactions and to store value[1]. It offers three focal elements -

i. Digital Currency/ Electronic format

ii. It is issued by the Central Bank

iii. It is universally accessible

If a country issues a CBDC, its government shall consider it to be legal tender, just like paper currency; both CBDC and cash would be legally considered as a form of payment and act as a claim on the central bank or the government. In a digital society, the usage of physical coins or notes may be gratuitous, and all money can be exchanged in a digital format. If a country wants to become a cashless society, a digital currency with a central bank backing is a strong alternative.

The pressure on governments to adopt CBDC is heavy, as the market for private electronic money is increasing. One of the triggers for the need of this alternative has been the rising usage of Bitcoin and other similar offerings. Since the privatized electronic money providers aim to maximize their own profits instead of the general public at large, issuing a CBDC would give governments legitimacy over private electronic money.

Barring currency notes, all other types of modern financial systems such as bonds, securities, etc. have been replaced by their digital versions. The usage of the physical cash is also on a decline in recent years. Post COVID-19, this trend seems to be further strengthening. For such reasons and other specific policy related aspects, CBDC is a strong contender for carrying the benefits of virtual currencies while avoiding the plausible negative socio-economic consequences.

II. Currency

A currency is a medium of exchange for goods and services. In other terms, it is money in any form,

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[1]Investopedia. 2022. The History of Money: From Barter to Banknotes. [online] Available at: <https://www.investopedia.com/articles/07/roots_of_money.asp>

when in use or in circulation it is used as a medium of exchange. It is a system of money for common use[2].

Money allows people to trade goods and services, by communicating the value or the price, and it provides the individual to store their wealth for a longer term. It is valuable because everyone knows that it will be accepted as a form of payment. Money is inherently an intangible concept, while currency is the tangible manifestation of the intangible concept of money.

Initially, bartering was a way of trading goods and services, for example, trading mangoes for shoes. However, these exchanges took time since the party should be in demand for what the counter-party has to offer. This is known as coincidence of wants. Also the standardization of value was an aspect missing from this methodology, like the number of mangoes required in exchange of shoes and so on. Due to this slow and inefficient method, a type of currency involving easily traded items such as animal skins, salt, weapons, etc. developed over the centuries. The barter got standardized.

Around 770 B.C., the Chinese moved to miniature replicas of the same objects. These became sort of first coins. In 600 B.C., the first coins came into being where the denominations were stamped. This system matured over the years to metal currencies. Gold and silver coins had the features of the barter in terms of an intrinsic value and the features of money which is the standardized representation of value. Further, the paper money came along. Eventually, the bills of exchange became a common part of the world economy. A bill of exchange is a written order that a party will pay a specified amount of money on demand to the counterparty. A bill of exchange can be used to settle international trades, which was one of the early uses.

[3]Money may be treated as either commodities (with intrinsic value) or as debt instruments. In case there is no intrinsic value, it should represent the title of commodities that carry that value. Paper currency is such a representative money hence, it is used as a debt instrument. The owner of the currency knows the underlying liability and who owes him. There is always an issuer of such representative money.

Money is issued by a sovereign backing. It is a legal tender. Private money, although existed previously, however, it was not sustainable owing to two main reasons:-

i. Being a debt instrument, it is completely dependent on the credit of the issuer. Since private currency can have multiple issuers, the currency becomes unstable. Public currency is backed by a sovereign guarantee hence, it has a better credit standing, making it stable.

ii. Paper currency has seignorage – the difference between the intrinsic value and the representative value. This seignorage should be used for public spending and public good.

Hence, currency is a form of money that is a legal tender, a liability of the sovereign issuer and an asset to the holding public.

III. Central Bank Digital Currency

A central bank digital currency (CBDC) is a legal tender issued by the central bank in a digital or electronic format. It is backed by the full faith and credit of the issuing government and the nation's monetary authority. It is a different format of issuance, and still appears as a liability on the central bank's balance sheet. They are supposed to be exchangeable at par with cash.

Need of CBDC

[4]The implementation of monetary policy and Government functions shall be simplified through CBDCs. [5]Wholesale settlements between banks, cross border remittances, capital and security market transactions shall be positively affected through the usage. A direct connection can also be created

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between the central bank and the consumers through retail CBDCs. Functions such as benefit distribution, collection of taxes can be done seamlessly for Governmental policies.

The disbursement of money through third party poses a risk. Liquidity issues, bank runs, and other such triggers can potentially upset the monetary systems. A CBDC eliminates these risks. The only risk lies with the central banks, which is sustainably much lower.

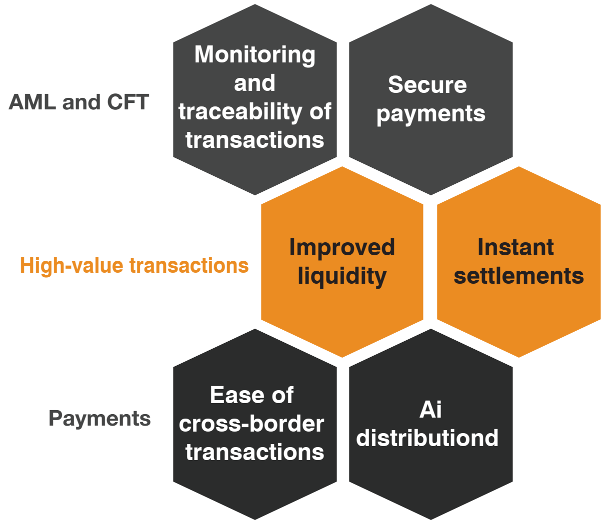
Since payments using a CBDC are final, the settlement risk is reduced in the financial system. The need for interbank settlement disappears. It's a real time and a cost effective globalization of payment systems. An importer can pay an exporter using digital dollars, without the need of an intermediary. There would be no 'Herstatt Risk' as the time difference won't matter in the currency settlement.

Privacy and security features can be integrated with this type of a currency. Since the currency is essentially a type of data trail, the tracking of illicit activity becomes easier and more robust. Public ledger make it easy for a central bank to track money in its jurisdiction, thereby preventing illegal activity and transactions by using CBDCs. Additionally, security and privacy features can be integrated at the account level, thereby ensuring transactions as genuine.

It will also improve monetary policy transmission as interest bearing CBDCs can transmit policy rates directly to the households.

Since CBDCs can be used as a direct connection between the consumers and the central banks, the large unbanked population can be provided access to the financial system, without developing costly banking infrastructure. It will also lead to lower cost of cash distribution and management in general.

Benefits of CBDC



Source - PwC report on Central Bank Digital Currency in the Indian context

Implementation across the World

Central banks are exploring the CBDCs because of the following primary reasons[6] -

i. It supports digitization of economies.

ii. It streamlines the current payment systems.

iii. It enhances policy making.

iv. It improves financial inclusion.

[7]In countries like Sweden, the paper currency is on a decline, hence CBDC is being looked as a viable alternative. To make issuance more effective due to significant use of physical cash, countries like Denmark, Germany and Japan are exploring these electronic forms.

More than 60 central banks are exploring the viability of CBDCs at varying levels of maturity. 14% are moving forward to development and pilot arrangements. Bahamas Sand Dollar, Bakong Cambodia, and Eastern Caribbean DCash are already live. The Sand Dollar has already facilitated convenient monetary transactions across its vast archipelago.

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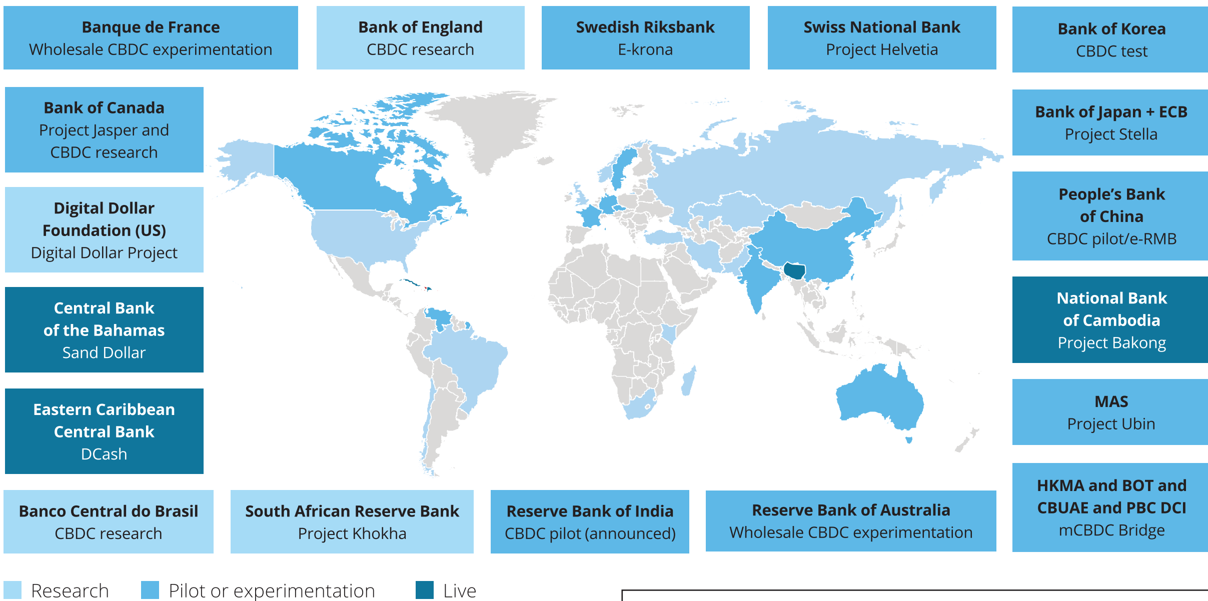
[6]Deloitte United States. 2022. What are Central Bank Digital Currencies?. [online] Available at: <https://www2.deloitte.com/us/en/pages/financial-services/articles/cbdc-central-bank-digital-currency.html>

[7]Rbi.org.in. 2022. Reserve Bank of India - Speeches. [online] Available at: <https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1111>

Sweden's Riksbank has been exploring the issuance of a digital currency in its economy since 2017; People's Bank of China has deployed a special task force to research and implement digital Yuan; Bank of England has been a pioneer in initiating CBDC; Bank of Canada, Central banks of Uruguay, Singapore, Thailand, etc. are all exploring the same.

As per the Deloitte report on financial services and Central Bank Digital Currency, the following countries are experimenting with the idea.



As of April 2021.

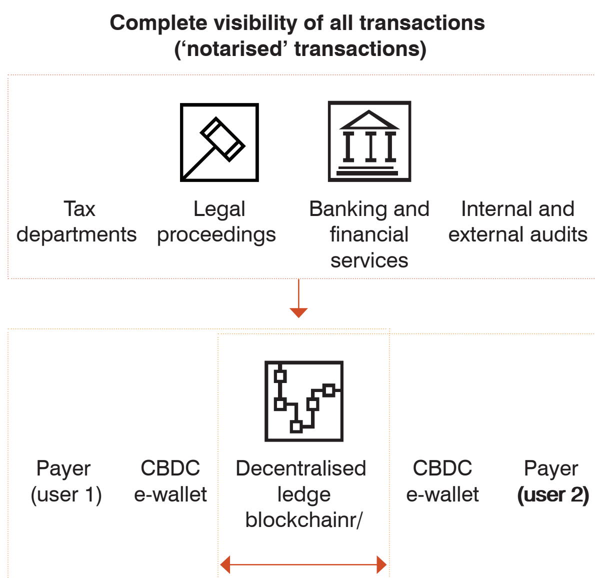
Alternatively, in a survey conducted by the Bank for International Settlements (BIS) in 2021, it was revealed that 86% of central banks around the globe were actively researching the potential for CBDCs, 60% were experimenting with the technology and 14% were deploying pilot projects[8].

IV. CBDC in India

The multiple facets of CBDC have a strong potential to be utilized across India. Some of the use cases are as appended below.

[9]One of the possible use case is for targeted payments in the country, such as social benefits and direct benefit transfer. The programmable aspect can lead the central bank to pay only the intended beneficiaries. For example, pre-programmed CBDC could be issued for LPG subsidies as direct benefit

Major use cases of CBDC



Source - PwC report on Central Bank Digital Currency in the Indian context

[8]Bis.org. 2022. BIS Innovation Hub work on central bank digital currency (CBDC). [online] Available at: <https://www.bis.org/about/bisih/topics/cbdc.htm>

[9]2022. [online] Available at: <https://www.pwc.in/industries/financial-services/fintech/dp/central-bank-digital-currency-in-the-indian-context.html>

transfer. It could be accepted at only authorized LPG agencies and would be declined for use at other points of payment. Similarly, subsidies for fertilizers, employee expenses including food and telecom, industrial supply chains, taxation, etc. can be directly targeted to the beneficiary. It will ensure correct usage of the money transferred.

For faster cross-border remittances via international collaborations among the major economies, the necessary infrastructure can be created for interoperability of these digital currencies, ensuring a quick real time transfer of money.

Retail payments could be made through CBDC - Consumer to Consumer exchange (transfer between their wallets), Consumer to Business (paying for products and services) and Business to Business (Corporate account transfers). Instant settlement and lower risk of clearing of payments are strong use cases for this alternative mode of payment. Additionally, the ownership record of the transfer can be used as a proof to authenticate the settlement.

Instant lending to Micro, Small and Medium Enterprises can be done through this by accurately drawing the borrower risk profile, to meet the finance requirements of the sector. This transparency and quick disbursement of funds in requirement, can lead to better sustainability and growth of the sector.

Using Near-Field Communication (NFC) technology, the offline transfer through wallets can be enabled, creating a potentially large opportunity to enable areas with limited connectivity to transfer payments across digital wallets, without the need of internet.

India currently has a high currency to GDP ratio. The large cash usage can be replaced by CBDC, thus leading to drop in cost of printing, transporting, storing and distributing currency.

The advent of private virtual currencies has also been seen in the recent times in India. If recognition is gained by such currencies wherein international currencies can be interoperated, national currencies with limited convertibility can be threatened. The operability of these currencies in US Dollars for example can be limitedly threatened as the private virtual currencies are operating in US Dollars, however for India, the value of Rupee can be negatively volatized. As per the BIS Annual Report, "Central banks have a duty to safeguard people's trust in our money. Central banks must complement their domestic efforts with close cooperation to guide the exploration of central bank digital currencies to identify reliable principles and encourage innovation."

Hence, not only because of the desirable benefits of the digital currency, but also in order to safeguard the general public at large from the volatility of private virtual currencies, CBDC becomes a strong use case in the Indian context.

V. Implementation - Design Considerations

A CBDC can be divided into 2 major categories based on usage[10]

i. Wholesale CBDC

ii. Retail CBDC

Wholesale CBDC is generally used for trade between central bank and banks within the country. This makes the entire financial system faster, safer and economical. It will allow the central bank to interface faster with its intermediaries and help in improving the real time gross settlement systems. It can also facilitate cross border transactions between Wholesale CBDCs of other countries, which can be done by creating a 'bridge' or a network with an operator node run jointly by the central banks of the participating countries. It helps in making the cross-border settlements across the participating central banks much faster and safer.

Retail CBDC acts as a digital format of the fiat currency meant for the general public and used for day-to-day financial transactions. It is usually based on Distributed Ledger Technology (DLT) which can be managed by the government/ central bank to trace transactions while maintaining anonymity. It also helps reduce the involvement of private parties, thus preventing any illicit activity, like money laundering or fraud.

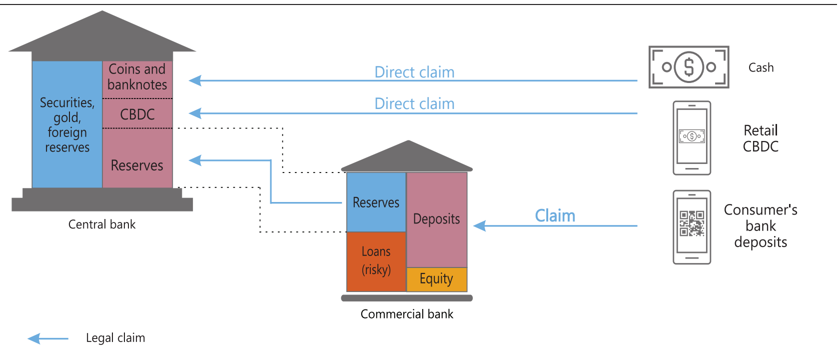
Retail CBDC can be issued directly to the public by the central bank. This form of issuance is called direct issuance. Alternatively, retail CBDC can be issued to intermediaries (which can be banks) who then issue it to the public like paper currency. This indirect method of distribution is called indirect issuance or intermediated issuance, and it forwards the risk

[10]2022. [online] Available at: <https://www.pwc.in/industries/financial-services/fintech/dp/central-bank-digital-currency-in-the-indian-context.html>

[11]Bis.org. 2022. [online] Available at: <https://www.bis.org/publ/work976.pdf>

towards regulated third parties/intermediaries. A third issuance method, called hybrid issuance, has retail CBDC issued to intermediaries, however the central bank periodically updates its own ledger with retail balance records.

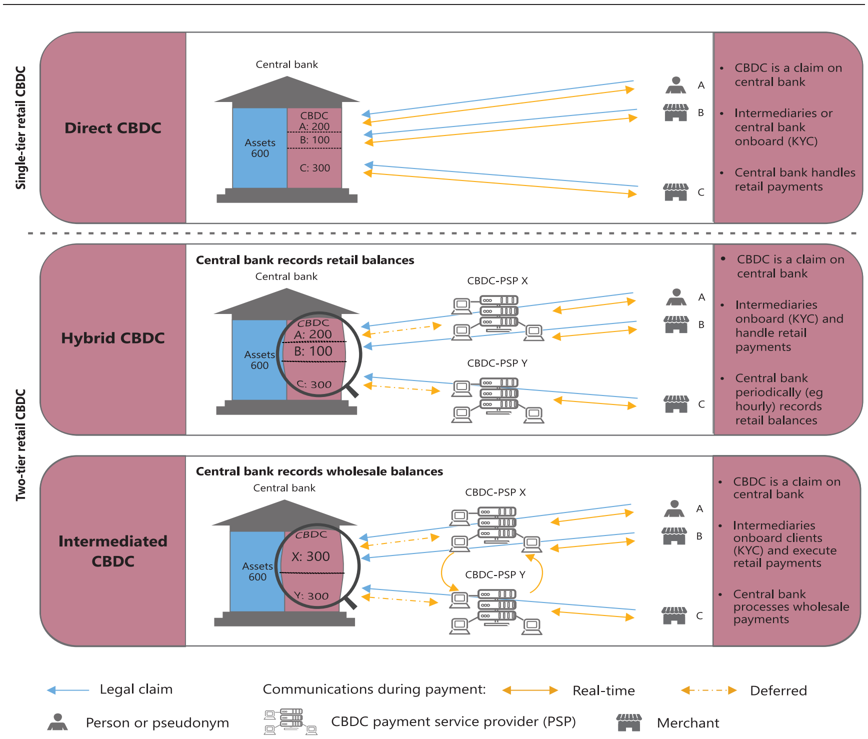
The monetary system with a retail CBDC Direct claim Graph 1



Source - Auer and Bohme (2021)

In a direct issuance model, CBDC has a direct claim on the central bank, which also handles payments in real time and keeps a record of all holdings. In a hybrid issuance architecture, CBDC has a direct claim on the central bank, however the real time payments are handled by intermediaries or banks. Periodically the ledger is also updated of all retail holdings with the central bank. An indirect or an intermediated issuance architecture is closely regulated and supervised to communicate with the Central bank to add up or sum up the retail accounts.

Retail CBDC architectures and central bank-private sector cooperation Graph 4

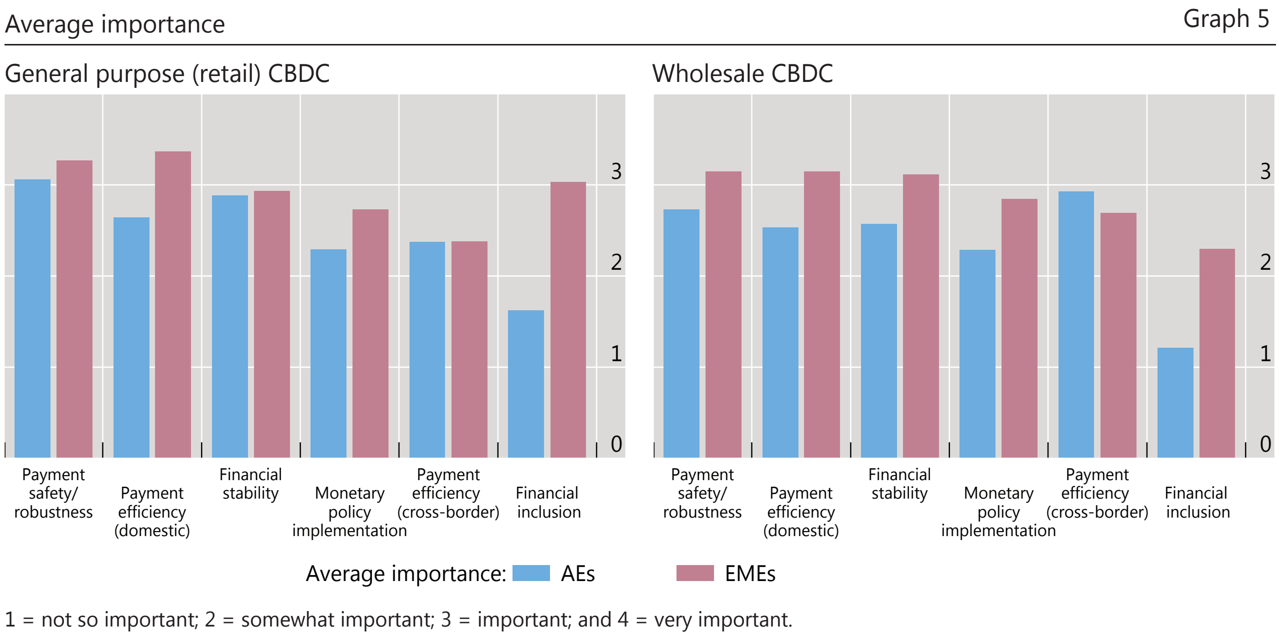


Source - BIS working paper No. 976 – Central Bank Digital Currencies; Motives, Economic implications and the research frontier

Design Considerations for India

[12]Based on a survey conducted by central banks of the BIS Committee on Payments and Market Infrastructures (CPMI), Boar and Wehrli (2021) show that in advanced economies CBDCs are being researched for robustness and safety or for domestic payment efficiency. It is seen as an opportunity to make the digital payments safer, to reduce costs and for smooth functioning of retail and wholesale payments. However, in emerging market economies such as India, financial inclusion is an important motivation. It is seen as an enhancement to provide access to the unbanked population.

Based on the said survey, CBDC retail projects are more advanced where the informal economy is larger - consistent with the notion that the data trail of transactions can formalize the informal activities. Wholesale CBDC projects are found to be more advanced with markets with greater financial inclusion, which may have a higher demand for more efficiency in payment services. The other factors are appended in the following graph, wherein the comparative importance in selecting a category of CBDC has been stated.



Source - CPMI survey of central banks; Boar et all (2020)

For India, apart from the strong use case for utilizing Retail CBDC in alignment with the requirement of financial inclusion of the unbanked population, as mentioned above, other factors which nudge higher to implement Retail CBDC are:-

i. The intermediary risk is eliminated since the central government backed digital currency is directly transferred to the consumers. The risk that the banking institution will become illiquid or that the depositor funds may sink is not faced[13].

ii. Wholesale CBDC is better suited for advanced economies where the payment systems are efficient, most of the population is a part of those payment systems. To improve their efficiency, wholesale CBDC is a strong alternative.

iii. Tracing of depositor transactions with data trails will lead to formalization of illegal transactions.

iv. The central bank can collaborate with mobile technology providers to reach out to the population directly, where even the banks do not have the required infrastructure. Bank accounts are not required in such a case.

There are certain limitations to choosing Retail CBDCs over Wholesale CBDCs, which are,

i. Banks will have a concern that their role as an intermediary will be impacted.

[12]Bis.org. 2022. [online] Available at: <https://www.bis.org/publ/work976.pdf>

[13]Investopedia. 2022. Central Bank Digital Currency (CBDC). [online] Available at: <https://www.investopedia.com/terms/c/central-bank-digital-currency-cbdc.asp>

Various countries have decided between retail and wholesale projects based on their use cases as appended below.

Category	Country	Key motivations (s)
Wholesale CBDC	**Saudi Arabia & The United Arab Emirates** Saudi Central Bank & Central Bank of the UAE	Explore the technical viability of dual-issued CBDC/ Improve efficiency for cross border payments
Wholesale CBDC	**Singapore** Monetary Authority of Singapore	Explore the capabilities of DLT and concepts of CBDC for different use cases and future commercial solutions
Wholesale CBDC	**Australia** Reserve Bank of Australia	Explore the capabilities of DLT for interbank settlement
Wholesale + Retail	**South Africa** South African Reserve Bank	Explore the capabilities of DLT and implications of CBDC
Wholesale + Retail	**Canada** Bank of Canada	Explore the capabilities of DLT/ Low cash usage/ Rise of alternative payment service providers/ Preserve domestic payments safety
Retail CBDC	**Eurozone** European Central Bank	Low cash usage/ Reduce overall costs and ecological footprint/ Innovation/ Adoption of other payment methods
Retail CBDC	**Sweden** Riksbank	Explore the capabilities of DLT/ Low cash usage/ Rise of alternative payment service providers/ Preserve domestic payments safety
Retail CBDC	**Bahamas** Central Bank of the Bahamas	High cash usage/ High financial exclusion and intermediation/ High smartphone penetration/ Encourage usage of local currency
Retail CBDC	**China** People's Bank of China	Decreased cash usage/ Rise of alternative payment service providers/ Rise of digital currencies/ High financial exclusion/ Reaching international reserve status for China's Yuan
Retail CBDC	**Jamaica** Bank of Jamaica	Drive financial inclusion for the unbanked/ Create opportunities for the launch of complementary innovative products and systems on CBDC/ Enhance payment efficiency/ Reduce costs of cash

Source – The way forward for retail central bank digital currency in Thailand, Bank of Thailand

ii. Wholesale CBDC system is easier to implement within the existing infrastructure.

iii. Integration with other platforms such as securities and forex platforms is easier.

Despite certain drawbacks, Retail CBDCs have some clear strong cases for implementation. The intermediation of banks by choosing a two-tiered retail CBDC may ensure the implementation within the existing infrastructure.

VI. Implementation - Retail CBDC in India

Key Attributes for Implementation

1. [14]**Interest rates** can be initially set at zero to replicate cash. At later stages, either a positive or a negative interest rate can be imposed, depending on the use case.
2. To encourage usage for mainly transactional purposes and not to have an impact on banking intermediation and hence bank runs, the **holding and transaction limits** can be decided.
3. To ensure that the adoption is maximum, the **end users** should not bear any **costs** of implementation. The cost bearing of other system participants can be explored.
4. Other payment system providers and intermediaries should be allowed to add any **innovative** features to the CBDC, as this may lead to value addition and encourage buy-in from a diverse country like India. However, adequate system regulations and standards are to be defined in order to ensure privacy, security and other related aspects.
5. User **identities** to be **verifiable** up to a certain extent to ensure that the major concerns of illegal activities, tax evasion, terror financing, etc. can be attended to. Additionally, the data trails shall help in building up credit profiles and better customized financial services. This would also help in better monetary policy decisions since the granular data will enhance decision making. However, a balance of maintaining sufficient privacy and anonymity will have to be explored.

System Architecture

To design the **issuance** aspect of system architecture, an account based CBDC can be considered for implementation, since in account based, similar to bank accounts, the records of the balances, transactions and users will be available for verification. This will ensure that the illicit activities are deterred. The token based issuance, similar to bank notes shall help in maintaining privacy and anonymity, however the user authentication shall be impacted. Hence, a hybrid wherein the intermediaries or the system participants have a limited access to the data, however authentication is ensured, is to be explored.

For **distributing** the currency, a two-tiered retail CBDC may be a better suited alternative rather than the direct issuance owing to majorly 2 reasons –

i. The role of financial intermediaries shall be preserved, as it will allow more effective utilization of the existing resources and infrastructure. Banks and payments systems have a developed IT system along with customer onboarding capabilities.

ii. Mainstream adoption can be streamlined since the accessible public is more accustomed to using financial services through financial intermediaries.

For **settlement** deliberation, while Centralized Technology offers scalability and performance, decentralized technology (DLT) offers greater security. For the first tier transactions between the central bank and the intermediaries, the centralized technology can be explored for implementation, since that shall provide the necessary scalability, and for second tier transactions between end users and the intermediaries, DLT shall ensure adequate privacy.

Preparation Required for Successful Implementation

For adopting a retail CBDC at a national scale, there are 3 major requirements for a successful implementation[15]

i. User Accessibility

ii. Digital Infrastructure

iii. Legal/Regulatory Frameworks

[14]Bot.or.th. 2022. [online] Available at: <https://www.bot.or.th/Thai/digitalcurrency/documents/bot_retailcbdcpaper.pdf>

[15]Bot.or.th. 2022. [online] Available at: <https://www.bot.or.th/Thai/digitalcurrency/documents/bot_retailcbdcpaper.pdf>

User Accessibility

Retail CBDC should strive for maximum participation. Building knowledge capacity and accessibility to compatible devices are of high importance. The first aspect which needs to be targeted is the digital literacy. Since retail CBDC is a digital representation of cash which is mainly accessible through digital wallets and smart devices, steps should be undertaken to ensure that the end users are comfortable with using such devices.

In this regard, UNESCO's Digital Literacy Global Framework project[16] suggests measuring the following 5 key areas –

i. Information and data literacy
ii. Communication and collaboration
iii. Digital content creation
iv. Safety
v. Problem solving

Although the smartphone penetration in India has substantially increased over the years, however, susceptibility to online frauds occur through these channels. Hence, raising awareness about cybersecurity and digital literacy in general, is required.

Financial literacy will play another crucial role in successful adoption and ensuring user acceptability. A user friendly, highly accessible system should be designed for a better buy-in. Additionally, financial literacy programs, awareness, consumer protection, etc. are some of the aspects which also require deliberation. Education regarding the products and services should be provided by either the intermediaries, third parties or the issuer.

Accessibility to acquire compatible devices, internet coverage, reliable connections are pre-requisites for a successful roll-out. However, as gaps still exist in digital infrastructure, design of retail CBDC should be made in such a way that it works with a minimal featured, no frills, affordable, offline compatible smart device. Also the custody should not be dependent on the device, but rather the user.

Digital Infrastructure

For a successful retail CBDC implementation, a proper digital infrastructure will be required in place. Firstly, strong broadband and mobile coverage is essential in issuance, distribution and access which majorly would occur online. Secondly, processing a large volume of transactional data will require high powered infrastructure. It is also to be ensured that since it will involve sensitive personal data of the users, data security becomes a key concern. Hence domestic cloud infrastructure shall be required. Lastly, KYC is required for facilitating user onboarding to authenticate the users. Digital identity verification and management will be required.

[17]Legal and Regulatory Frameworks

An enabling legal framework will be required for introduction of CBDC since although the currency usage may be similar to banknotes, the legal provisions are currently made for paper currency. Modifications shall be required in RBI Act, 1934 in respect of denomination (Section 24), form of banknotes (Section 25), status of legal tender (Section 26(1)), etc. It will also require other legal amendments in acts such as The Coinage Act, 2011, FEMA, 1999, Information Technology Act, 2000 etc.

In addition to the points mentioned above, certain other considerations for a successful design are as appended below -

i. CBDC should not drastically interfere with the overall public policy objectives of currency, at least initially. The general public should be allowed to use it interchangeably.

ii. CBDC should co-exist or complement other existing forms of currency. It should be in harmony with the fiat currency.

iii. It should constantly innovate and evolve to better efficiency. This can be done with the support of third party service providers, banks and other intermediaries. Innovation should be further boosted.

Challenges and Risks

1. **Banking Disintermediation -** It could lead to deposit outflows and reduced bank lending, if it is made sufficiently attractive.

   Solution - CBDC to be designed for usage as a means of payment rather than a store of value. It can be done by putting cap on conversion into CBDC or paying lower interest on CBDCs as compared to bank deposits.

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[16]Uis.unesco.org. 2022. [online] Available at: <http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

[17]Rbi.org.in. 2022. Reserve Bank of India - Speeches. [online] Available at: <https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1111>

2. **Bank Runs -** A perceived flight of money in case of an economic turmoil may lead to a systemic bank run. This may further lead to a transfer of bank funds at a very fast pace into digital form. The banks may have to keep higher amount of liquidity.

   Solution - Withdrawal or holding limits can be set to inhibit convertibility from bank deposits. Additionally, bank's capital and liquidity requirements can be adjusted.

3. **Public Trust -** General public should have trust in the CBDC and its technological back-end.

   Solution - Development of clear standards, regulations, guidelines, governance structures, etc. of the system should be done. Example - CBDC may be asset backed similar to issue of paper currency. Adequate awareness in public about the implementation, adoption should be ensured. The roles and responsibilities of the service providers, third party vendors and other stakeholders are to be fixed so that accountability is defined.

4. **Data Privacy and Security -** The transactional data could be tracked leading to serious concerns of security and data privacy. Appropriate guidelines and technology should be put in place to ensure governance.

   Solution - Token based design to limit exposure instead of account based authentication (to be explored further since this will be difficult to authenticate. A middle way to be devised). Establishing safeguards to protect the user information. Appropriate consent to be taken before collecting or processing data.

5. **Capital Flow Management –** Since it can be utilized as a borderless transaction, foreign exchange becomes a field which needs to be appropriated with required safeguards in order to ensure that the capital volatility is controlled. It could also lead to internationalization of rupee, leading to exchange rate de-stability.

   Solution - CBDC transaction limitations on foreign exchange to prevent speculations. Regulatory and supervisory compliance to be made for oversight.

6. **Public Adoption -** User buy-in will be a huge challenge and hence the best user experience, ease of usage, proper incentivization for adoption should be deliberated. It should be universally acceptable and interoperable with other payment systems. Digital and financial literacy will also play major roles in this aspect.

   Solution - To be designed for wide range of devices. Adequate knowledge building to be done to ensure adoption.

7. **Central Bank's Balance Sheet –** Remuneration of CBDC will impact the balance sheet of the central bank. The liability of the central bank will depend on the fact that interest is paid on the currency. If no interest is paid then it would function similar to cash, however, if positive interest rate is paid, the seignorage will be reduced proportionately.

   Solution - Strategic plans with appropriate use cases to be deliberated before finalizing the interest rates and hence its impact on the balance sheet may be studied.

VII. RBI's Approach on CBDC[18]

Central Banks across the world are exploring CBDCs and a few countries have already introduced pilots. A High Level Inter-Ministerial Committee was constituted by Ministry of Finance, Government of India in November 2017 to deliberate on the policy and legal framework for regulating crypto currencies. RBI has also been exploring the feasibility of CBDCs.

RBI is currently working towards a phased implementation strategy without major disruptions. Some aspects which are under examination relate to the scope (wholesale or retail), centralization or decentralization, validation mechanism (token or account), architecture, degree of anonymity, etc.

VIII. Conclusion

CBDC is one of the biggest innovations in the financial sector. With a wide range of benefits, it is the next milestone in the fast developing digital economy. Countries across the world are exploring its feasibility. Similarly, India also has a strong use case for implementing this virtual currency. For a country like India, the retail two tiered CBDC poses a strong argument for its implementation. However, successful

[18]Rbi.org.in. 2022. Reserve Bank of India - Speeches. [online] Available at: <https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1111>

implementation of such a disruptive technology comes in with a wide variety of risks and challenges which needs conscious attention. For a mass buy-in as well, planned preparations should be put in place. It is also to be ensured that the data security and privacy is maintained of the users. However, with short term challenges and long term benefits, the implementation of CBDC seems to be a promising avenue.

IIBF releases the "Banking and Finance Yearbook"

IIBF releases the "Banking & Finance Yearbook" updated up to December, 2021. It is a comprehensive digest of all major developments, trends, expert views and regulatory changes across different verticals in Banking & Finance domain including the extracts of important speeches rendered by senior officials of RBI, select articles published in IIBF's journal Bank Quest for giving the reader a wholesome reading experience. The book is available on Amazon both as a paperback and as a Kindle edition. The book will also be available in the retail outlets of our publisher, M/s Taxmann Publications (Pvt.) Ltd.

BANK QUEST THEMES

The themes for "Bank Quest" are identified as:

1. July - September, 2022: Fintech challenges for Banking Industry
2. October - December, 2022: Growing importance of co-lending in Financial Intermediation
3. January - March, 2023: Increased footprints of Financial Planning and Wealth Management
4. April - June, 2023: Competence based Human Resources Management in Banks
5. July - September, 2023: Digital disruption - Challenges and Opportunities

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In future we need banking not banks…

Sridhaar R. R.*

Introduction

In the Banking Regulation Act, 1949, one can refer to the Section 5 (b) to understand the statutory definition of banking and Section 5 (c) for banking company. A banking company is defined as the company which conducts the banking services i.e. a company that performs the function of **accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise**, **and withdrawal by cheque, draft, order or otherwise**. In 1949, when Banking Regulation Act was enacted, it was delivered known that availing banking services was impossible without a brick-and-mortar bank and its branches as defined in the Section 5 (cc). In 1960s, world's first ATM machines were introduced. These were the first signs for the technology to influence banking, wherein the service of 'dispensing' cash was possible while 'dispensing' the need to visit a bank. And half a century later, there were new possibilities mulled with the advent of technology and concomitant regulatory amendments. There were other harbingers of the digital banking era in India:

- As of 2020, rural India had 299 million internet users and urban India had 323 million internet users.
- As of April 2021, Unified Payments Interface (UPI) recorded 2.73 billion transactions worth Rs. 4.93 lakh crore (US$ 67.31 billion).
- By 2022, the country is expected to have 820 million smart phone users.
- By 2025, rural part of the country is projected to have more internet users than urban areas.
- Almost two-thirds of nearly 7.5 lakh panchayats have optical fibre connection.

Evolution of Banks

When very first banks came into existence, the purpose was to finance the wars. The banks in England and Italy had served the interests of the Monarchy. Merchant banking was the harbinger of modern banking wherein the commodities were traded. The goldsmiths were also considered as bankers for some time because the businessmen and traders trusted them for safekeeping of precious elements like gold and silver in exchange for a small fee. The first modern bank in India was established in 1806 under the British rule in one of its presidencies called Bank of Bengal. The name 'bank' which is used to refer to the institutions that offer the banking services today is etymologically derived from Italian word 'Banca' which literally translates to a bench used for holding, transferring and loaning currencies by the creditors.

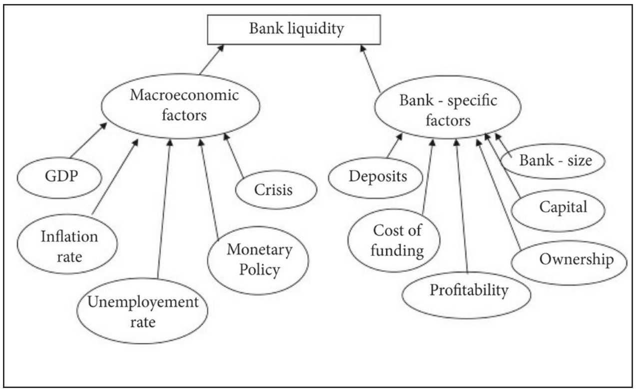
Factors affecting banking

The factors affecting a financial system are related to demand and supply and digital literacy in the populace. The factors mentioned in Figure-1

*Manager, The Karur Vysya Bank ltd.

determine the 'health' of a banking company. Here, the term liquidity means the ability of the bank to convert the assets into cash, in order to pay-off short-term business and financial obligation.

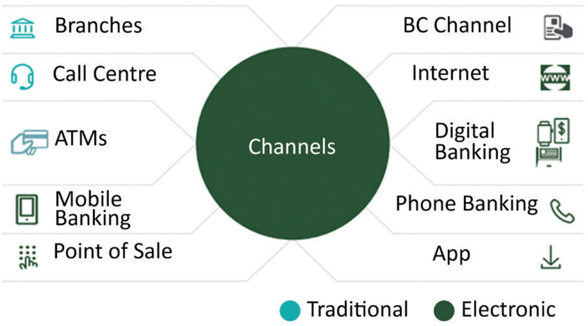
Figure - 1



However, in the 21st century, modernization of the bank through digital transformation would affect all the bank-specific factors because harnessing the data generated by a bank for automating business processes and cost reduction plays an important role in achieving competitive edge. The source of such high velocity and high volume data are various digital touch points enabled by various devices held by the customers and their digital literacy. The Omni-channel presence of the bank can be further supplemented with artificial intelligence, machine learning and cloud technology.

The Omni-channel usually refers to the digital mediums such as mobile phone, laptop and other handheld devices, however, brick-and-mortar branch of the bank also forms a part of omni-channel. Despite the advancement in digital economy, the trust on a particular bank is attributed to its physical presence and the long-standing reputation of the bank. The RBI's Master Circular titled "Mobile Banking Transactions in India - Operative Guidelines for Banks" issued in 2015 also asserts this criterion for digital banking service provider to have a physical presence.

Figure - 2



Sin qua non for Neo Banks

The contemporary Neo-banks have constraints for establishing themselves in India as the financial regulatory framework is not in their favour to operate as an individual organisation. They usually partner with an established bank for increasing the customer base in order to provide value-added services. A Neo bank typically acts as a facilitator for providing the banking services and verify KYC data received.

The partnership arrangement between a non-bank and bank is expected to abide by the RBI Guidelines, 2006 on 'Managing Risks and Code of Conduct in Outsourcing of Financial Services by banks' as well as the RBI Guidelines, 2010 on 'Financial Inclusion by Extension of Banking Services - Use of Business Correspondents (BCs)'. Neo Banks are currently targeting the MSME sector for providing credit to the underserved market, as the credit gap is expected to be 20 - 25 trillion. Neo banks made the corporate loan disbursal process seamless, which is usually considered as complicated and long process owing to the underwriting requirement.

The value added services provided by the Neo bank is appreciated by the tech-savvy and young customers because these services can be effortlessly availed through different channels. Some of the notable features and services offered are:

- Opening savings / current account
- Operating savings / current account with a licensed bank
- Access to loan offers or applying for loans
- Issuance of co-branded cards
- Payment gateway facilities
- Personal finance
- Expense management
- Invoice generation
- Accounting
- GST compliance
- Payroll management
- Enterprise resource planning

Progress of Far-east Neighbours

Countries such as Singapore and Taiwan have already made remarkable progress in creating a framework for digital only bank. For instance, Monetary Authority of Singapore (MAS) has devised a framework delineating the phases which a prospective digital bank has to go through to attain the status of autonomous fully functioning digital bank. Success of regulatory sandboxes in launching a digital bank has been witnessed by the Monetary Authority of Singapore.

Full Digital Bank

Entry Point	Progression

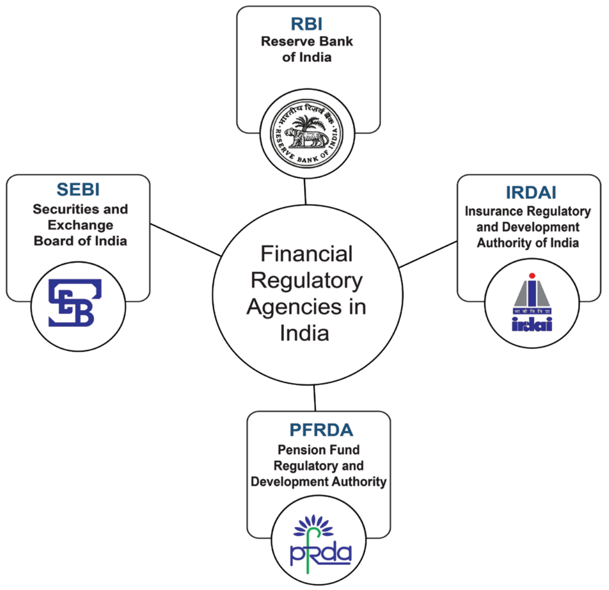
Minimum Paid-up capital	S$15m	progressively increase	To S$1.5bn
Deposit caps	**Aggregate deposit cap**: S$50m deposits Only can accept deposits from limited scope of depositors **Individual depositor cap**: S$75k	**Aggregate deposit cap**: To increase subject to meeting MAS' criteria **Individual depositor cap**: S$75k	**No deposit cap**
	Covered by Deposit Insurance Scheme		
Capital and liquidity rules	**Capital**: Same as local banks **Liquidity**: 16% minimum liquid assets		**Capital**: Same as local banks **Liquidity**: Same as local banks
Business restrictions	Offer simple credit and investment products 4 Banking operations in not more than 2 overseas markets	No business restrictions after meeting MAS' criteria	Full functioning bank
	• Physical place of business only • No minimum account balance and fall below fees • Compliance with unsecured credit rules •Allowed to offer cashback services through electronic funds transfer at point of sale (EFTPOS) terminals at retail merchants, but no access to automated teller machines ("ATMs") or cash deposit machines ("CDMs") network		

Regulatory bodies

The main objective of governmental institutions pertaining to BFSI (Banking, Financial Services and Insurance) sector is to ensure the following:

- Financial Stability
- Consumer Protection
- Market Confidence
- Controlling the rate of financial fraud/Crimes

Figure - 3



Among the major institutions in a country, a Central bank like Reserve Bank of India (RBI) is entrusted with the task of coordinating with other regulatory bodies and formulating broad policies related to banking and monetary stability.

RBI is also expected to supervise banks of varied functions. RBI monitors and regulates the Financial Technology (FinTech) in India. It initially played a superficial role but is gradually becoming holistic regulator. The central bank had also issued an Ombudsman scheme for handling complaints related to digital transactions on January 31, 2019. The concern of security is also considered by the RBI which is evident by the multiple clauses formulated for limiting the liability of the retail customer.

National Payments Corporation of India (NCPI) is another quasi-regulatory body in the digital payment space in the retail sector. It is a very successful initiative of IBA and RBI with the objective of developing a reliable retail payment and settlement infrastructure.

Unique Identification Authority of India (UIDAI) is a statutory body that governs the way Aadhaar is employed by the companies in the FinTech realm for on boarding new customers.

Smart phones are expected to be a medium for gauging and enhancing the e-governance initiatives of the institutions like **Ministry of Electronics and Information Technology (MEITY)**. It has the objective of promoting e-Governance by ensuring inclusive and sustainable growth of electronics, Information Technology and Information Technology enabled services in the country.

Incumbent frameworks that govern the FinTech:

- **Payment and Settlement Systems Act (PSS Act) -** This governs the entire payment lifecycle with RBI as the Authority.
- **Prepaid Payment Instruments (PPI) Master Direction** - This was issued on October 11, 2017. It contains the criteria for PPI issuers and operational protocols to be followed and inter alia definitions.
- **NPCI guidelines for UPI payments** - This framework allows only the licensed banks to integrate with the UPI platform for offering payment and digital money transfer services.
- **Master Directions, NBFC, P2P lending platform directions, 2017** - It prescribes the Peer to Peer lender exposure norms and aggregate borrowing limits along with operational protocols.
- **Guidelines for governing payment aggregators** - Payment Intermediary Guidelines were released

on March 17, 2020 for governing payment intermediaries on their baseline technology recommendations.

- **Data Privacy -** The Informational Technology Act, 2000 and IT Rules, 2011 govern the perception of personal data. Justice Srikrishna Committee recommended some points to strengthen Personal Data Protection Bill, 2019, which was critiqued by Joint Parliamentary Committee.
- **Data Protection** - Personal Data Protection Bill is derived from an international regulatory framework General Data Protection Regulation (GDPR) of European Union (EU) which is known for its 7 principles viz. Lawfulness, Fairness and Transparency, Purpose limitation, Data minimisation, Accuracy, Storage limitation, Integrity and Confidentiality (Security) Accountability.

Regulatory Sandbox

RBI had issued a 'Draft Enabling Framework for Regulatory Sandbox' in 2018 which in turn was refined into 'Enabling Framework for Regulatory Sandbox' in 2019 after receiving comments and feedback from the general public.

RBI employs regulatory sandbox technique for assessing the performance of new financial innovations and test its acceptance among the target customers or general public. This regulatory sandbox was used as preliminary test for issuing licenses to Small Finance Banks and Payment Banks. Similarly, RBI must take adequate steps for easing the mandatory criteria of having minimum physical branches for issuing full-fledged digital banking licenses.

The eligibility criteria for a startup or a new financial product to be a part of regulatory sandbox:

(I) Net worth of at least INR 1 million

(II) Satisfactory credit score/history of promoters and directors

(III) Promoters and directors of the applicant entity meeting the prescribed 'fit and proper' criteria

(IV) Demonstrated ability to comply with personal data protection laws

(V) Adequate IT infrastructure and safeguards to protect against unauthorised access, destruction and disclosure.

Future Institutions and Regulation

Regulatory equity

The regulatory framework should devise in a manner to ensure that they do not serve as a nemesis to the emerging FinTech players and innovative features in the market place. The financial statutes may strive to keep in check the integrity and consumer security.

De facto regulation

A methodical imposition of regulation i.e. considering the gradual increase in stringency or intensity of regulation and its scope. The regulatory requirement must be backed by technological principles rather than rules for barring a particular function or a service provider instead it must be flexible to the innovations that does not directly comply with the statutes imposed by the Institutions.

Neo Banks and the banks of the future

The modus operandi of the banks will see a paradigm shift. Banking will be collaborative in the future. They are changing the face of FinTech and could one day eclipse traditional banks. Neo banks exist virtually and is purported to serve the customers who expect convenience and digital features which the physical branches lack. For now, the Neo banks collaborate with major banks with licenses to offer certain services because the Reserve Bank of India (RBI) does not authorise full-fledged digital banking.

Neo banks are agile as opposed to the traditional banks i.e they are capable of executing any new visions pertaining to the services and can supplement them with the partnerships with ease. These banks can reach those underserved customers in the retail and SME sectors.

Innovation and differentiation are the core factors in achieving competitive edge in any sector, especially in BFSI realm. The customers of the traditional BFSI companies have a perception of banking services in lines of a commodity. Thus, Neo banks or 'banks of the future' will exhibit high competitive spirit to meet the high standards of individual customers which in turn would lead to constant improvement in the quality of customer service available in the market.

Digital Literacy

45% of India's populace have found their way online. The incumbent digitalisation is also corroborated by the Financial Inclusion Index of RBI which is at 53.9 as of March 2021. Thus, online businesses are expected to proliferate to harness Indian Government's active involvement in nurturing the nation's financial inclusion goal. An ASSOCHAM - PwC, 2019 study revealed that by 2023 the country's online transaction value is expected to increase by 100% to $135 billion. However, further incentives are required for fuelling the use of digital finance features, many barriers across economy and social strata are expected to be overcome.

The digital inclusion has been made feasible through digital literacy; digital literacy and digital payment adoption in turn is dependent on various factors that enable the acceptance of technology few factors are listed below:

- User Interface and User experience (easy-to-use mobile application)
- Perceived usefulness
- Multiple regional language modes
- Speed
- Trust

New-generation NBFCs are leveraging partnership networks across the value chain of lead generation, client on boarding, underwriting, credit/loan disbursement, and collection more than ever before.

Financial Inclusion

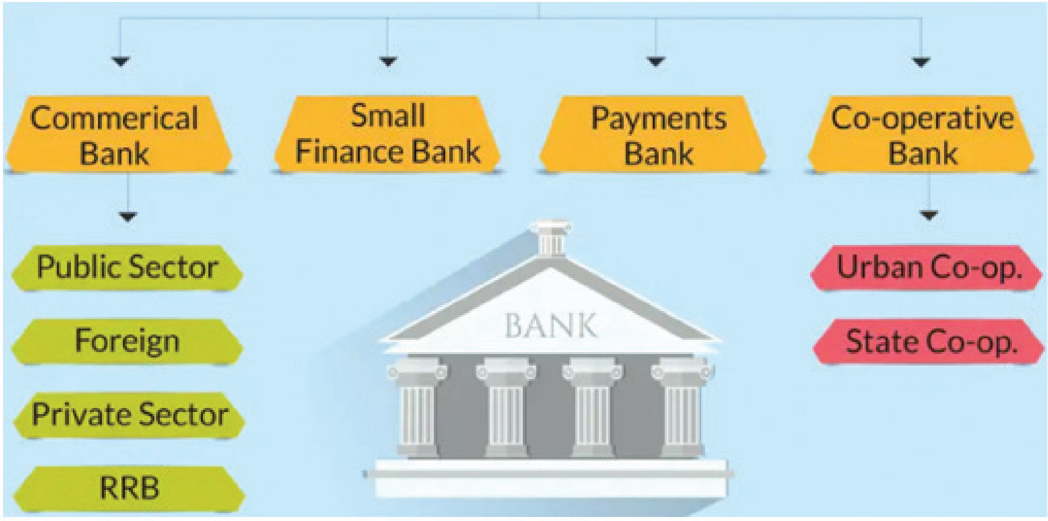
Indian economy is ranked 2nd among the nation where digital finance and banking has not made significant strides. RBI's Financial Inclusion Index of 53.9 points highlights the fact that many people in the country are not exposed to digitalisation process. Indian Government has categorically recognised the importance of financial inclusion for reaching new highs in the productivity, initiatives such as 'Aatmanirbhar Bharat' aims to make India a 5 trillion economy. COVID-19 pandemic has proved that rural Indian economy can adapt to the plight by adopting digital payment mode when the situation was dire. Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched in 2014 with the objective of nurturing financial inclusion by making the financial services more accessible and affordable to the underserved and remote communities.

JAM trinity (Jan Dhan, Aadhaar and Mobile) is another pivotal initiative of the Government for acquiring the trust of public. Here, Jan Dhan accounts, created for the beneficiaries of the Direct Benefit Transfer (DBT) programs, are linked with Aadhaar and mobile numbers. This initiative has increased the trust of the public on Government and the digital economy because it controls the frauds related to Government subsidies. There are close to 430 million bank accounts valued at 1.46 trillion, where 67% of account holders are from rural and semi-urban part of the country. It is to be noted that country's 65% of the population reside in the rural India and they are ones in need of digital literacy. JAM initiative yielded because the credit gap has gotten covered significantly and many Liability Groups (JLGs) and Self-Help Groups (SHGs) have raised funds.

Nascent and promising FinTechs of India

The new FinTech startups are specialising in a unique way on various functions of different classes of banks viz.

Fiqure - 4



- Co-operative Banks
- Commercial Banks
- Regional Rural Banks (RRB)
- Local Area Banks (LAB)
- Specialized Banks
- Small Finance Banks
- Payments Banks

They are not issued licences by the RBI to operate solo, so they partner with licenced banks and financial institution for KYC and ratification of documents.

Startup	Established in	About
Lendingkart	2014	Working capital loans to MSE with minimal documentation. The USP is funding for entrepreneurs at their fingertips.
MoneyTap	2015	It is an NBFC which collaborates with the institutions regulated by RBI. Moderate cash loans, quick mobile credit and flexible EMIs. Signing-up and eligibility check in less than 15 minutes.
Instamojo	2012	A platform for startups, SMEs for expanding the business using a gamut of applications for handling finance, credit, logistics and e-commerce digitally (Mobile and Web)
Shiksha Finance	2014	A platform for educational institutions to raise funds. Amount ranging between Rs.10,000 and Rs. 30,050 for a tenure of 6 - 10 months.
ZestMoney	2015	A top platform for digital financing featuring artificial intelligence based recommendation system.

Many accelerators and incubators for growing the startups in FinTech realm are established and funded by several Governmental agencies and private trusts.

Centre for Innovation, Incubation & Entrepreneurship (CIIE.CO) is a one such renowned incubator of IIM Ahmedabad which houses the Financial Inclusion

Lab endorsed by Bill & Melinda Gates Foundation, J. P. Morgan, Michael & Susan Dell Foundation, MetLife Foundation, Omidyar Network, and runs in collaboration with MSC Consulting.

Conclusion

The Banking Regulation Act has defined a Banking company as any company which transacts the business of banking. Thus, a bank is a prerequisite for providing banking services, however its physical presence is optional. The perception of word 'banking' will undergo transformation, customer service, a differentiating factor among the FinTech players will be given more importance than the expected rate of return. The technology would enable a strong and persistent networking with its customers, although not in person. Tech savvy customers would prefer to avail banking services from any place through their handheld devices. The clarity and intuitiveness of the user interface would play a pivotal role in experiencing a reliable banking services because banking will be embedded into a lifestyle. The future will certainly pave way fully digital bank, but the time period which needs to be lapsed to reach that future is hard to determine and it is contingent to the rate of digital literacy and its percolation across the social strata along with the acceptance of financial company which has been established online.

The Regulatory frameworks that governs the launch and sustenance of new financial products also needs to be framed in such a manner that it does not mandate outright prohibition of financial innovations for small transgressions against few clauses. Regulatory sandboxes are very functional when it comes to assessing a new FinTech establishment and the newly launched products. The regulators such as IBA can increase the accessibility easily through digital means rather than establishing brick-and-mortar banks in remote locations. IBA should consider this and conduct an exercise and decide where banks should have a physical presence and where we are able to serve customers even without physical branch.

The era of digitalisation and financial inclusion has changed the battle ground for the players in the BFSI sector. FinTech companies are gaining prominence because of their esoteric knowledge which involves financial strategy in combination with the processing power of the computer. Bespoke applications and features can only be developed with the help of information technology and since personalisation becomes an important factor in providing satisfactory customer service, confluence of finance and technology will be appreciated for times to come.

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Legal Decision Affecting Bankers

Prakhar Galaw*

Appellant(s) : **Indian Overseas Bank**

Vs.

Respondent(s) : **RCM Infrastructure Ltd. and Anr.**

Court : **Supreme Court**

Bench Strengh : **2**

Bench : **L. Nageshwar Rao, J**
B. R Gavai, J

Citation : **2022 Scconline SC 634**

Relevant Provision of Law

1. Section 13 (2), (4) & 14 of Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 hereinafter referred to as SARFAESI and rule 8 and 9 of Security Interest (Enforcement) Rules, 2002.
2. Section 10 of the Insolvency and Bankruptcy Code, 2016.
3. Section 238 of the Insolvency and Bankruptcy Code, 2016.
4. Section 65 of the Insolvency and Bankruptcy Code, 2016.

Brief Facts of the Case

1. The appellant bank granted some credit facilities to the respondent corporate debtor. The corporate debtor continuously defaulted the repayment of installment due towards his loan account consequent to which his account was classified as Non-Performing Asset (NPA) on 13th June 2016 as per the NPA classification norms of the Reserve Bank of India.
2. The appellant bank was then served a demand notice under Section 13 (2) of the SARFAESI Act to the respondent but the same was not complied by the respondent. Aggrieved by the non-compliance of the demand notice the appellant enforced his security interest and took symbolic possession of the mortgaged properties of the respondent under Section 13 (4) SARFAESI Act read with Rule 8 of Security Enforcement rules, 2002 and an e-auction notice came to be issued on 27th September 2018 by the appellant bank to recover the loan amount availed by the corporate debtor.
3. The corporate debtor then preferred a corporate insolvency resolution application under Section 10 of the Insolvency and Bankruptcy Code, 2016 (hereinafter referred to as IBC) on **22 September 2018**. Meanwhile the appellant bank did not receive any bids in the first e-auction held on 6th November 2018. In the second e-auction held on 12th December 2018 three bidders were successful and jointly offered to purchase the property for Rs. 32.92 crore. The successful bidders deposited 25% of the bid amount i.e

*Advocate, High Court of M.P, Principal Seat, Jabalpur.

Rs. 8.23 crore including the earnest money deposit and the appellant directed the auction purchaser to deposit the remaining 75% of the amount by 28th December 2018. But the auction purchaser could not arrange the remaining 75% of the bid amount and sought some extension from the appellant. The appellant considering the representation of the auction purchaser gave three month extension up till 8th March 2019 to the auction purchaser as per Rule 9(4)(a) of Security Interest Enforcement Rules, 2002.

4. That, the learned NCLT Hyderabad vide its order dated 03rd January 2019 admitted the application filed by the ex-promoter of respondent company and declared a moratorium under Section 14 of the IBC and appointed an Interim Resolution Professional (hereinafter referred to as IRP) to take over all the asset and business affairs of the corporate debtor. The appellant bank filed its remaining claim of 75% i.e Rs. 24.69 crore with the IRP as the same was the unrealized bid amount, which was allowed by the IRP. The appellant bank submitted its revised claim on 11th March 2019 and informed the IRP about the confirmation of sale of the securitized asset. The corporate debtor filed an interim application to set aside the sale of the mortgaged property in favour of auction purchaser as the same being barred by Section 14 read with Section 238 of the IBC, 2016 and to injunct the appellant bank from the further security realization.

5. The NCLT Hyderabad vide its order dated 15th July 2020 allowed the application of the corporate debtor and quashed the sale of the property. The said orders of the NCLT were challenged in NCLAT which was also rejected by the tribunal on 26th March 2021 being aggrieved by the same appellant had then preferred an appeal before the Supreme Court.

Legal Issues before the Supreme Court

Whether sale certificate issued in favour of the auction purchaser on partial payment of bid amount gives an undisputed title to the auction purchaser with respect to the property being auctioned as per the security interest enforcement rules, 2002 is legal. Given the fact that till the payment of final bid amount by the auction purchaser, an application for voluntary corporate insolvency resolution was filed by the corporate debtor which was admitted prior to the payment of the final bid amount and moratorium was declared to that effect.

Contentions of the Appellant and Respondents

1. The counsel appearing for the appellant contended that the voluntary insolvency resolution application filed by the corporate debtor was malafide as per Section 65 of the IBC, 2016 and was filed just to derail the securitization proceedings initiated by the appellant bank. The counsel appearing on behalf of the appellant bank submitted that the respondent debtor had filed an appeal under Section 17 of the SARFAESI Act, 2002 which was dismissed and the respondents were directed to deposit an amount Rs. 12 crore subject to which the sale of the mortgaged property would be stayed temporarily. The respondent did not deposit the said amount, but preferred an application under Section 10 of the IBC just to derail the securitization proceedings initiated by the bank and the ground of malafide proceedings under Section 65 of the IBC, 2016 was not considered by the NCLT. It was also contended that the NCLT had ordered to liquidate the corporate debtor thus, the moratorium ceased to subsist and secured creditor were allowed to realise their security interest. It was also contended that the bar created under Section 14 (1)(c) of the IBC, 2016 is prospective in nature and cannot undo

the actions which have already been completed under the SARFAESI Act, 2002.

2. The counsel appearing on behalf of the auction purchaser contended that the corporate debtor had indulged into forum shopping with malicious intent. And the auction purchasers were bonafide purchaser and his possession should not be disturbed. And as per Section 13 (8) of the SARFAESI Act, 2002 the corporate debtor has lost his right to redemption on issuance of public notice for auction. The counsel also contended that the corporate debtor and IRP maliciously not impleaded the auction purchaser in the proceedings initiated by the corporate debtor.

3. The counsel appearing for the corporate debtor opposed the submissions made by the counsel appearing for the bank and auction purchaser on the ground that the mortgaged property cannot be conveyed merely on partial payment of bid amount and confirmation of sale in favour of the auction purchaser was illegal. He contended that the title would pass only on payment of full consideration. It was also contended that upon approval of resolution plan under Section 31 (1) of the IBC, 2016 all debts get legally altered and gets novated into a new contract. The obligations under the old contract gets dissolved/novated. The same would be applicable in the instant facts and circumstances, the mortgage created in favour of the bank would get converted into a security interest for the bank. It was also contended that once the IRP proceedings are started it would have an overriding effect on all the proceedings including the proceedings initiated under the SARFAESI Act, 2002 as per Section 14(1)(c) read with Section 238 of the IBC, 2016. It was also contended from the respondents that the appellant have themselves submitted to the proceedings of the IBC, 2016 by filing claims with the IRP. So, the appellant cannot use multiple forums to recover their due amount.

Observations and Decision

1. The Supreme Court observed that once the moratorium under Section 14 of the IBC, 2016 is invoked all the actions to forclose, recover or enforce any security interest are prohibited including actions taken under the SARFAESI Act, 2002.

2. The Supreme Court observed that the IBC is complete code in itself and has an overriding effect on the all other acts. The same has been held in numerous landmark cases.

3. The Supreme Court observed that the appellant have contended that the sale in question was complete on 13th December 2018 and the voluntary insolvency petition was admitted on 03rd January 2019 by the NCLT would not affect the sale. It was also contended that merely because a part payment was received after the admission of the insolvency petition it would not affect the sale. The Supreme Court held that the sale in question was statutory sale as per Rule 8 and 9 of the Security Interest Enforcement Rules, 2002 and as per the said rule the sale is only completed after the full payment of the due amount, which was done on 8th March 2019 much after the admission of the insolvency petition filed by the corporate debtor and declaration of moratorium. Accordingly, the contention of the appellant does not hold ground.

4. The Supreme Court also observed and held that the ground as regards to the malafide proceedings under Section 65 of the IBC, 2016 was devoid of any merit and substance and thus, required no interference of this Court on that ground alone.

Summary of Macro Research Report

A Study on Issues and Challenges in MSME Financing in the State of Bihar

By: Dr. Vipul Kumar Singh, Assistant Professor, National Institute of Industrial Engineering (NITIE), Mumbai & Dr. Santosh Kumar, Assistant Professor, Chandragupt Institute of Management, Patna

The developing world is full of entrepreneurs and visionaries, who with access to education, equity, and credit, would play a key role in developing the economic situations in their countries.

~ Muhammad Yunus ~

Bihar is the third most populous state in India and enjoys a rich demographic dividend as 58% of the state population is below 25 years of age. However, a rural population exceeding 89% of the total state population, coupled with one of the lowest urbanization rates in India, offers limited full-time service class employment opportunities to all. To tackle the situation, the State Government of Bihar in line with Central Government initiative have brought radical policy measures to boost the growth of micro, small, and medium scale enterprises. Most importantly, 95% of the industries operating in Bihar fall under MSME; thus, the industry serves as the lifeline and is core to the economic prosperity of the state. The employment opportunities generated via MSMEs are bridging the income divide and thus serve as a vehicle to foster social equity.

Despite all the combined efforts, MSMEs suffer umpteen hurdles. One such major issue hampering operations of MSMEs is access to finance. In our research focusing around the financing related issues with the MSMEs operating in Bihar, we observe the credit supply to remain smooth and unbiased irrespective of the industry, sector type, and the type of ownership of an MSME operating in Bihar. However, the real bottleneck arises with the working capital management of the sanctioned, the onus of which falls under the discretion of an MSME applicant. The findings showcase poor management of working capital by allocating more share to short term loans by MSMEs applicants with lower education and digital awareness level. Since the early launch phase of a new venture is characterized by negative cash flows and marginal profit, the likelihood of repayment of short-term debt is abysmally low. It further endangers sustainable business operations of the enterprise in the long run, and the fallout of such ventures in futures can have cascading effects on the banks, resulting in piling up of NPAs in the coming future.

Hence, the need of the hour is to put a special impetus on education precisely, financial literacy and vocational training. It should be further coupled with digital awareness campaigns to be organized in collusion with banks, with the state acting as an enabler by facilitating penetration of such programs at grass root levels. Another important observation is MSMEs operating in rural and allied services shooting up in the state of Bihar. With the nation already struggling with low agricultural productivity, special emphasis has to be given to MSMEs operating in such sectors. Most importantly, stimulated effort from Central and State Government and banks have streamlined the credit supply to new ventures at grass-root level. However, an ill-equipped and less trained worker would further lead to diminishing returns, thus crippling the economy further. The findings pave the way to explore further the working capital management in MSMEs that have attained healthy cash flows and are operative at a later stage of the business cycle. Noteworthy, an optimal short term to long term debt would sufficiently provide enough leverage to enterprises and sustain business operations in the long run.

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   Articles should generally be around 2000-3000 words in length.

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   A title of, preferably, ten words or less should be provided.

3) **Autobiographical note and photograph:**

   A brief autobiographical note should be supplied including full name, designation, name of organization, telephone and fax numbers, and e-mail address (if any), or last position held, in case of retired persons. Passport size photograph should also be sent along with the submission.

4) **Format:**

   The article, should be submitted in MS Word, Times New Roman, Font Size 12 with 1½ line spacing. A soft copy of the article should be sent by e-mail to admin@iibf.org.in

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   Use of tables, wherever essential, should be printed or typed on a separate sheet of paper and numbered consecutively using Arabic numerals (e.g. Table-1) and contain a brief title. In the body of the article, the position of the table should be indicated on a separate line with the words 'Insert Table 1'.

7) **Picture/photos/illustrations:**

   The reproduction of any photos, illustration or drawings will be at the Editor's discretion. Sources should be explicitly acknowledged by way of footnote, all computer-generated printouts should be clear and sharp, and should not be folded.

8) **Emphasis:**

   Words to be emphasised should be limited in number and italicised. Capital letters should be used only at the start of the sentences or for proper names.

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36	Advance Wealth Management Course	English	Introduction to Financial Planning	2017	M/s Taxmann Publications Pvt. Ltd.	Rs.390/-
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38	Advance Wealth Management Course	English	Investment Planning, Tax Planning & Estate Planning	2017	M/s Taxmann Publications Pvt. Ltd.	Rs. 420/-
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