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Net Zero Banking

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Contd. on Page No. 56

CONTENTS

Content Page

Special Features

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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.

Mr. Biswa Ketan Das
Chief Executive Officer,
IIBF, Mumbai

As we observed World Environment Day on June 5, it is essential to recognize that environmental and financial responsibilities are not mutually exclusive, rather they are interconnected. Organizations must strive to achieve profitability while taking care of the environment as they are not only contributors to climate change but also significantly impacted by its consequences. Central banks and financial regulators have acknowledged the financial stability implications of climate change. In this regard, Central banks and financial supervisors of different countries have come together to accelerate the scaling up of green finance through Network for Greening the Financial System (NGFS). Considering the growing importance of sustainable finance, we are publishing this issue of Bank Quest on the theme, "Net Zero Banking".

Financial sector plays an important role in the global transition to a low-carbon economy by mobilizing and reallocating capital towards sustainability. Highlighting the evolution and growth of integration of sustainability in the financial sector, the first article is on "The evolving landscape of sustainability in Indian Banking" by Mr. Deepak Kumar, Deputy General Manager (ESG), Union Bank of India. The author has well-described the initiatives of banks towards sustainability.

Climate change is a global challenge that demands a shared and collective responsibility. No single country can achieve sustainability in isolation, therefore, it is imperative to study the initiatives and progress towards sustainability within a global context. Our next article "Greening Banking Sector: Central Banks' Responses" jointly penned by Mr. Labanya Jana, Sustainable Finance Specialist, Institute for Energy Economics and Financial Analysis & Visiting Senior Fellow, London School of Economics and Political Science and Dr. Trilochan Tripathy, Professor (Finance), Xavier School of Management gives insights on the initiatives taken by Central Banks towards achieving the responsible banking.

The issue also features an article on "भारत के हरित भविष्य का निर्माण-हरित बॉण्ड" authored by Ms. Manjula Wadhwa, Former Deputy General Manager, National Bank for Agriculture and Rural Development (NABARD). This article explores the importance of Green Bonds in the transition to low-carbon economy. Despite challenges such as low liquidity, lack of unified taxonomy among others - green bonds, as innovative debt instruments, can contribute in mobilising the finance towards green and sustainable projects.

In addition to address the Climate change, another significant challenge for the financial sector is credit frauds and rising Non-Performing Assets.

Forensic Accounting emerges as an effective approach to detect, investigate and prevent such incidents. Our next article "Red Flags and Hidden Trails: Forensic Accounting as the Protective Umbrella for Banks against Credit Frauds", jointly authored by Dr. Himanshu D. Thakkar, Assistant Professor, National Forensic Sciences University and Mr. Saptarishi Datta, UG Research Scholar, National Forensic Sciences University.

The next article of this issue is jointly written by Dr. Kalpana Kataria, Associate Professor, Bharati College, University of Delhi and Dr. Abhishek Kumar Singh, Assistant Professor, Faculty of Commerce, University of Delhi on "Monitoring the Progression: Evolving Perspectives on Risk Management in Indian Banks". The article has highlighted the different types of risks that banks are facing in the present scenario.

The knowledge keeps you ahead of others. One need to learn when moving across organisations within a sector, take up different roles within an organization and even within the same role in an organisation. Recognizing the need for continuous learning and development, our next article is on "Emerging trends in Learning & Development" penned by Mr. Manodeep Sarkar, Chief Manager, Indian Bank. The author has well-described the different types of learning techniques in the article.

Research is a systematic process that involves critical thinking, data collection, analysis with the aim of generating new knowledge or deepening the existing knowledge. The outcomes of the research play a pivotal role in informed decision-making and policy-making and laying the foundation for further research. To disseminate the findings of IIBF's research projects, we are publishing the summary of a research project on "A study on the AT1 Bonds in India vis-à-vis other jurisdictions" completed by Mr. Saket Kumar, Assistant General Manager, Reserve Bank of India, under Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship.

This issue presents the articles on diverse topics related to banking and finance and we hope that readers will appreciate its depth and comprehensive coverage.

We also encourage the bankers and academicians to contribute the articles in Bank Quest.

We will be glad to receive suggestions and feedback for further improving the contents of our Journal, Bank Quest.

Biswa Ketan Das

THE EVOLVING LANDSCAPE OF SUSTAINABILITY IN INDIAN BANKING

Deepak Kumar*

Abstract

The article examines the integration of sustainability-related developments in the banking sector in India. The article traces regulatory developments across the world, including the Paris Agreement and the Task Force on Climate-related Financial Disclosures (TCFD) and their impact on banks' sustainability, climate risk and opportunities journey. On the domestic front, various steps taken by Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI) and relevant Ministries.

The governance-related aspects are well established in most banks. However, there are divergent practices related to ownership of these initiatives at the execution level in banks. In terms of strategy, the alignment between financial planning and climate risk and opportunity assessment has not yet begun. Scenario analysis, which is an important tool under strategy, is still in its nascent stage, with most banks having basic exposure through some exercises conducted by RBI.

Banks have started to acknowledge physical and transition risks, but their integration with the decision-making process is not yet mainstream. In terms of targets, some banks have set sustainability targets for their own operations. However, portfolio-related targets are still limited. Although there are a few portfolio-level targets, they lack scientific and logical backing.

Different banks are experimenting with sustainable finance using different sources of funds such as green deposits, bonds and lines of credit; and different avenues of utilization like green energy and mobility, while using instruments like sustainability-linked loans. However, these initiatives are at the initial stages and have yet to form a material part of banks' business.

The decision-making process of credit assessment has started incorporating environmental and social assessments and sustainability assessments in a few cases. However, the integration of these assessments with decision-making, pricing or rating has not yet begun.

Numerous capacity development activities are in underway. RBI has conducted several training programs and is developing standardized datasets to help banks in their scenario analysis journey. Work on taxonomy is actively progressing, with the Ministry of Finance releasing their draft taxonomy. With these efforts and the increasing understanding of banks, sustainability and climate-related assessments of risks and opportunities will become a major factor in banks' decision-making processes.

The Global Regulatory Landscape

Environmental, Social and Governance (ESG) frameworks, along with related concepts such as sustainability and climate change, have recently captured significant attention from all sections of society. The sustainability journey began when the Brundtland Commission introduced this concept in 1987, but gained substantial momentum following the 2015 Paris Agreement, which established the

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critical goal of limiting global temperature increase to below 2 degrees Celsius, with an aspirational target of 1.5 degrees Celsius below pre-industrial levels.

The impact of the Paris Agreement reached corporate boardrooms through the introduction of the Task Force on Climate-related Financial Disclosures (TCFD) in 2017. The TCFD framework established comprehensive disclosure requirements across four key pillars: governance, strategy, risk management, and metrics and targets. As sustainability reporting has matured, the International Financial Reporting Standards (IFRS) Foundation has developed IFRS S2, which builds upon the TCFD framework and IFRS S1, which focuses on the financial implications of sustainability initiatives.

Basel Committee on Banking Supervision (BCBS) published principles for the effective management and supervision of climate-related financial risks in June 2022 and issued a public consultation paper on a Pillar 3 disclosure framework for climate-related financial risks in November 2023 for banks. Today, climate risk ranks among the most significant emerging risks identified by the World Economic Forum in their risk outlook reports.

India's Regulatory Evolution

In the Indian context, the sustainability focus intensified when the Securities and Exchange Board of India (SEBI) introduced Business Responsibility and Sustainability Reporting (BRSR) requirements in 2021 which became applicable to the top 1000 listed entities.

The banking sector in India began acknowledging climate change induced challenges more systematically in 2022 when the Reserve Bank of India (RBI) published its discussion paper on climate change. This document acknowledged climate risk as a major emerging threat for regulated entities and recommended that these institutions develop methodologies for identifying and measuring climate risk within their portfolios. The paper advocates for assessing climate risk as part of Pillar 2 risks under the banking regulatory framework.

More recently, the RBI has introduced draft guidelines on climate risk disclosure aligned with International Sustainability Standards Board (ISSB) S2 standards, requiring banks to report on climate-related risks and opportunities. These disclosures are scheduled to commence from 2025-26 for governance, strategy and risk management components, with metrics and targets reporting to follow from 2027-28. Additionally, the RBI has issued guidelines on green deposits, while the Ministry of Finance has taken significant initiatives in sustainable finance by bringing "Draft Framework of India's Climate Finance Taxonomy". The proposed taxonomy has defined objectives on transition, adaptation and support transition in hard-to-abate sectors and proposes to cover sectors like power, mobility, buildings, agriculture, food and security.

Objectives

The objectives of this study are:

i. To examine the current state of sustainability integration in the Indian banking sector.

ii. Assess the current state of governance structures for sustainability and climate related across Indian banks.

iii. Identify key impediments to effective ESG and climate risk management in Indian banking.

Methodology

The methodology triangulates insights from the comprehensive review of policy documents from RBI (discussion papers on climate change, draft disclosure requirements, green deposits), BRSR guidelines, SEBI and Draft climate finance taxonomy framework, Ministry of Finance, TCFD recommendations, IFRS S1/S2 guidelines and BCBS climate risk principles, to provide a comprehensive evaluation of sustainability integration in Indian banking, contextualized within the global regulatory landscape.

Current State of Implementation

Governance Structures

In response to these regulatory developments, Indian banks have begun acknowledging climate risks and opportunities by implementing appropriate governance structures. Most institutions have established a three-tiered framework where the Board maintains ultimate responsibility while delegating operational governance to a specialized sub-committee. Additionally, banks have formed executive-level committees to manage detailed implementation.

Interestingly, the organizational ownership of climate and ESG initiatives varies significantly across institutions. Different banks have assigned responsibility to diverse departments including risk management, finance, compliance and Corporate Social Responsibility (CSR). To support these initiatives, banks have introduced various policies addressing ESG integration, climate risk management, sustainable finance mechanisms, environmental and social due diligence protocols and operational sustainability measures.

Strategic Approaches

There remains a significant disconnect between traditional financial planning cycles and the timelines necessary for addressing climate risks and opportunities effectively. There is a need to develop a clear understanding of appropriate time horizons for climate planning.

On the opportunity side, several banks have launched green deposit products, though these have achieved limited success due to various challenges. Banks typically need to price these products at lower rates to account for different implementation costs, which the current regulatory framework does not adequately accommodate. Similarly, in lending activities, some banks have secured credit lines from Multilateral Development Banks, but these initiatives have struggled due to higher borrowing costs resulting from substantial hedging expenses.

While banks have begun acknowledging climate factors, formal integration into corporate strategy remains limited. Scenario development capabilities are still in nascent stages, with most banks' primary exposure to climate scenario analysis occurring through RBI's pilot Climate Vulnerability Assessment and Stress Testing (VAST). Significant capacity building is required to develop robust climate scenario analysis capabilities that can meaningfully inform decision-making processes. The proposed Climate Risk Information System (CRIS) by RBI represents a positive step in this direction, potentially providing essential infrastructure for conducting standardized scenario analyses that improve result comparability across institutions. The initiative will provide standardized datasets for physical risk (including hazards and vulnerability) and transition risk.

Risk Management Integration

Sustainability and climate risk have gained recognition as emerging risk factors, though their formal integration into comprehensive risk management frameworks remains limited. Environmental and Social Due Diligence (ESDD) or Environmental and Social Management System (ESMS) has seen significant adoption, primarily driven by requirements from international financing agencies that link credit lines to ESDD or ESMS implementation.

Banks have begun integrating climate considerations into credit risk assessments. ESG assessment of the customers especially listed and other bigger corporates is one of the ways in which the banks have started integrating ESG in their credit assessment. However, the way ESG assessment is to be linked with credit rating is in underway. This is also important considering the fact that international ESG rating providers have divergent views on the ESG rating of the same companies. Hence, the ESG assessment is a standalone exercise being conducted by few of the banks. Also, institutions currently lack empirical data demonstrating causal relationships between increasing climate risk and subsequent credit risk elevation. A critical area for development involves building databases that identify Non-Performing Asset (NPA) root causes and potential linkages to climate factors.

Limited progress has been made in connecting climate risk to market risk assessments. For operational risk, banks' existing business continuity plans generally address climate-induced physical risk events, though more sophisticated approaches are needed. Institutions must develop specific processes to manage climate-induced reputational risks, particularly for high-value exposures vulnerable to climate impacts.

The impact of biodiversity and nature risk on companies and vice-versa is seeing a lot of attention from regulatory bodies. Task Force on Nature-related Financial Risks (TNFD) has come out with disclosure requirements related to nature risk.

Metrics and Targets

In terms of measurement and goal-setting, banks have begun establishing net-zero targets for their operational activities. Regarding financed emissions, numerous Indian banks have become signatories to the Partnership for Carbon Accounting Financials (PCAF). However, PCAF's coverage remains limited to seven asset classes, insufficient for capturing the full breadth of Indian banking sector offerings.

Available emission factors from various data providers often lack India-specific context, creating an urgent need for developing country-specific emission benchmarks to improve measurement accuracy. Recently, some banks have started declaring net-zero targets for their financed emissions, but there is a need for substantiating disclosures regarding emission calculation methodologies, sectoral emissions profiles and transition planning. With these supporting elements, net-zero target declarations risk can become more meaningful.

Transition planning, a key requirement at international levels that many global banks and corporates have embraced, remains challenging in the Indian context due to limited clarity on sectoral transition pathways. With the proposed taxonomy and more sector specific transition pathways being developed, banks would be in a better position to declare their transition plan in future.

Sustainable Finance Initiatives

On the sustainable finance front, banks have begun utilizing various resources including green bonds, green deposits and credit lines from multilateral development institutions. To enhance capital flows at competitive rates, banks require overall cost reductions through decreased hedging expenses or sovereign guarantees.

In lending activities, banks are exploring sustainability-linked loan products. However, greater clarity regarding pre-issuance and post-issuance compliance requirements is essential to mitigate greenwashing risks. A comprehensive taxonomy serves as the foundational document for identifying climate-beneficial activities. The Government of India's green bond framework and RBI's green deposit guidelines currently provide basic reference points for banks. The recent draft climate finance taxonomy introduced by the Ministry of Finance represents a positive development that will provide clearer guidelines for banks to identify mitigation, transition and adaptation activities.

Sustainability in Own Operations

Banks have started taking several steps to promote sustainability in their own operations. Most of the banks are disclosing their scope 1 and 2 emissions and increasing number of banks have started disclosing their value chain scope 3 emissions. Increasing number of banks are adopting targets related to net zero or carbon neutrality in own operations. The various strategies being used by banks to promote sustainability include adopting green building standards, energy efficiency equipment, electric vehicles, green power purchase agreements, rooftop solar and waste segregation to name a few.

Sustainability Adoption

In terms of ownership, the majority of private sector banks have either their Corporate Social Responsibility (CSR) teams or the Departments responsible for filing regulatory returns taking ownership of sustainability-related roles. Among Public Sector Banks (PSBs), the ownership is either with risk management or with an independent vertical within the Bank. Regarding net zero targets for their own operations, both PSBs and private sector banks have set operational targets. However, for financed emissions, PSBs have established targets and notably, the majority of PCAF members are PSBs.

The work related to ESDD is being undertaken by banks across both sectors when extending lines of credit. In terms of risk management, public sector banks have taken proactive steps in measuring physical and transition risks and are actively collaborating with external consultants and solution providers.

Impediments to Effective ESG and Climate Risk Management

The most significant policy bottleneck in India, at present, is the lack of a comprehensive taxonomy. The development of taxonomy, along with RBI disclosure requirements and stress testing guidelines, will accelerate ESG adoption in banks. There is also a pressing need for regulatory synchronization across different authorities.

Such alignment would benefit both the investor community by increasing the comparability of disclosures across jurisdictions and banks themselves.

The Path Forward

While sustainability has gained acknowledgment across banks, regulatory bodies and policymakers, still there is a long way to go. There is a need to establish a more coordinated regulations among regulators and policymakers to effectively manage climate risk. The integration of sustainability and climate considerations into decision-making processes is the need of the hour.

Physical risk assessments for collateral and borrowers' production facilities must be incorporated into loan sanctioning processes. Transition risks arising from emissions—where carbon taxes might serve as proxies—should inform lending decisions. The relationship between climate-related risks and opportunities requires further examination and clarification.

Scenario analysis offers a valuable tool for banks to identify potential risk areas and interventions that could transform challenges into opportunities. Banks must integrate scenario planning, financial and business forecasting, climate risk assessment methodologies and appropriate metrics and targets to effectively manage climate risk in the coming years. As this transition continues, Indian banks stand at a crucial juncture where early adoption of comprehensive sustainability frameworks could yield significant competitive advantages in an increasingly climate-conscious global financial landscape.

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GREENING BANKING SECTOR: CENTRAL BANKS' RESPONSES

Labanya Prakash Jena*

Dr. Trilochan Tripathy**

Abstract

Climate change poses a significant threat to both society and the global economy, with the potential to undermine global financial stability, including the banking system. Despite the urgent need for climate action, capital flows toward climate solutions have been largely inadequate. This calls for financial regulatory intervention as an urgent response to redirect capital flow toward climate actions, thereby, strengthening the financial system's resilience to withstand "climate-related financial risks." Financial regulators, including central banks, have undertaken various structural reforms to protect the financial system from these disruptions. This paper examines how the central banks' responses to "climate-related financial risks" protect the financial system while aligning with national efforts to achieve a green economic transition.

Introduction

Excessive human intervention through unsustainable industrial and agricultural practices without accounting for negative externalities has imposed extensive costs on the entire society. Economists and scientists now acknowledge that climate change represents a substantial economic and societal risk. It is not only the economy that is exposed to these dangers of climate change, but also the financial sector that is becoming increasingly vulnerable. Historical evidence on the correlation between the financial sector and climate change has been weak. However, in the last decade, the relationship has intensified. The growing frequency and intensity of climate-induced extreme weather events, such as storms, floods and droughts, have led to mounting business losses and strained financial assets. Such events affect the financial performance of corporations, resulting in non-performing loans and adversely affect bank liquidity and solvency.

The economic losses are already evident. The insured losses were $140 billion in 2017 due to natural calamities, compared to a 30-year inflation-adjusted average of $80 billion (Carney, 2019). Insured losses were $125 billion in 2023 and further increased to $146 billion in 2024 (Swiss Re Institute, 2025). While these risks are expected to affect multiple firms, sectors and geographies in a highly correlated manner, developing economies would be particularly vulnerable due to higher exposure and lower adaptive ability. With this background, it is important for the financial sector to integrate climate change in business practices and support Governments' initiatives to mobilise capital for climate actions, both climate mitigation and adaptation. While climate mitigation can limit global warming, subsequently lessening the intensity and frequency of natural disasters, climate adaptation can make the economy resilient to these climate change-induced extreme weather events.

Since banks are one of the most vital institutions in the financial system, they have a crucial role in these green transition efforts, particularly in a banking-

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driven economy. A growing number of central banks and regulators around the world are becoming aware of their role and potential mandate in addressing climate change and environmental risks faced by the banking and financial sector. Discussions and debates on Climate change in banking, popularly known as "green banking", have picked up after the Paris Agreement in 2015 and intensified after COVID-19. Since COVID-19, several central banks have gone ahead and incorporated 'climate change' in their policies, regulations, operations and supervisory practices. Green Banking across the global financial system has gained traction due to altruism, increasing familiarity of climate change as a risk and opportunity among bankers, investors, regulatory pressures and Government policies (Gaba, R., & Sharma, D., 2025; Rakshitha, J., & Chaya, R., 2023). Banks are lending to support green assets, including renewable energy and clean transportation; and companies are engaged in reducing carbon emissions. Some banks also declared to bring down the Greenhouse Gas (GHG) intensity of their loan books over time and reach net-zero by a specific time frame (Di Maio, C., et al. 2023). Banks also voluntarily follow global disclosure standards such as the International Sustainability Standards Board Disclosure framework (formerly TCFD) to disclose their sustainability practices. Besides, banks are also identifying, measuring and managing climate risks by quantitative and qualitative methodologies, including heat mapping, scenario analysis and stress testing. They integrate climate risks and opportunities throughout their lending operations and risk management. Commercial banks and universal banks also support green companies in raising debt and equity capital from public and private markets and underwriting green bonds. Although commercial banks are taking measures to green their banks, these have not been enough to mobilise the necessary capital for climate actions (Newell, P. 2024) and make the banking system resilient to climate change risk (Chalabi Jabado, F., & Ziane, Y. 2024). Here, central banks can nudge banks to incorporate climate change in their business practices, including decision making on loan disbursement and risk management, to protect the banking system from this material risk, while supporting efforts on green transition.

Internalising both the costs of climate change and the benefits of climate action remains a major challenge. Climate change is now described as the greatest market failure the world has seen. As carbon pricing is expected to remain low for the next several years, a sharp and rapid increase in carbon prices could trigger sudden massive financial losses, sometimes referred to as a 'Climate Minsky moment'. Hence, this risk warrants the need to address the market failures by designing financial policies and regulations that reward green investment. Hence, central banks must play a crucial role in this transition.

Objectives

Climate change is increasingly becoming a mandate of central banks, from the perspective of financial stability and supporting the Government's measures to climate action. Climate change risk can potentially harm financial stability, although not immediately, but it is critical that central banks pay adequate attention to this material threat. Climate change risk may derail central banks' monetary policy objectives, therefore, central banks should closely monitor and take necessary interventions. The objective of the paper is to bring climate change into the banking regulation and the monetary policy discussion while supporting the Government's mandate for a green transition.

Methodology

This study is a comprehensive secondary study to map the range of measures central banks have undertaken-or are currently exploring responses to climate change. In addition, this study encompassed peer-reviewed academic literature and grey literature on the operations and governance of central banks concerning climate change. This study brings insights from the working papers and policy reports from leading research institutions and international organisations such as the International Monetary Fund (IMF), Bank for International Settlements (BIS) and Asian Development Bank (ADB).

Central Banks' Response to Climate Change

Climate-related financial risk is a potential threat to the stability of the financial system and can complicate efforts to control inflation and maintain price stability. Besides, central banks also play a developmental role in supporting national policy objectives, including green transition goals. As capital mobilisation for green transition is much lower than the requirement, there is a need to bridge the financing gap. The conventional and unconventional tools can be used to address climate-related financial issues and help accelerate the flow of capital into green sectors. This paper focuses on the responses initiated or considered by central banks and banking supervisors or proposed by academicians, think tanks and international institutions to address climate change risks while supporting their country's broader green transition efforts.

Differential Capital Adequacy

The fundamental premise of banking regulation, as per the Bank for International Settlements (BIS)/ Basel Accord, is based on ensuring adequate capital against unexpected losses and appropriately pricing expected losses. Ignoring climate change risks, already recognised as a material risk, violates this principle in banking regulation and can result in higher lending rates or constrained capital allocation for green investments. The credit rating agencies or banks should have factored in climate risk in their risk assessment exercises. Lowering the risk weight of the green sector can reduce the lending rate and stimulate capital flow to the sector, while increasing the risk weight to carbon-intensive businesses would decrease transition in the banking sector.

Global institutions and some central banks suggest reevaluating current risk weights based on the risks presented by climate change. For example, studies suggested green loans have a lower Non-Performing Loans (NPL) ratio compared to conventional loans in China (Choi, J., et al. 2020). The Asian Development Bank (ADB) Institute working series paper suggests that in the long run, green factors are likely to lower long-term credit risks. Central banks in the European Union and China are considering risk weights for green lending while increasing them for carbon-intensive projects.

Embed Climate Risk into Supervisory Review Frameworks

All risks that could impact capital adequacy, including climate change risks, that might emerge suddenly or evolve gradually, directly or indirectly affecting the banks' loan portfolio to be taken into account. Climate-related and environmental risks are drivers of traditional prudential risk categories. The central banks are, thus, instructed financial institutions to embed climate risk assessments into their supervisory review frameworks, particularly Pillar II reviews, so that longer-term considerations are adequately integrated into risk management processes.

Financial supervisors in Australia, China, Japan and Malaysia have considered material environmental and social risks and asses the implications of these risks on the financial system stability. In the European Union, there are specific capital requirements for banks to incorporate a macro-prudential buffer for systemic environment and social risks.

Interest Rate Subvention for Green Lending

Subsidised financing has long been a regulatory tool for central banks to direct credit towards underserved groups, such as lower-income groups and Micro, Small and Medium Enterprises (MSMEs), as well as sectors of national importance. Given the pace of innovation and evolving business models required to tackle climate change, industries and firms that can potentially contribute towards green development and low-carbon transition are perceived as high-risk. Interest subsidies for green lending may, to a certain degree, compensate lenders for these higher risks and encourage more investment in green projects. Central banks of India, China and Bangladesh are supporting green projects through interest rate subsidies for some specific green technologies. Concessional capital for the renewable energy sector is one of the key drivers of the rapid adoption of the technology in China. Currently, in some countries, interest rate subvention are only for small-scale projects in the green sector, but this may be expanded to provide the financial support for large-scale projects as well to support their respective Governments' green transition.

Mandatory Lending

Credit quotas have long been used by central banks of some countries to channel credit flows to underprivileged sectors of the economy, as these sectors are not able to access capital from mainstream financiers like banks. As funding green sectors is essential from the perspective of social-economic development, it can be considered a priority sector for lending. Additional green credit quotas could be carved out from the existing priority sector to give an impetus to sustainable lending. Indonesia, for instance, has a system in place with a focus on its national energy security plan, while Bangladesh has implemented a mandatory 5% green lending credit quota for banks (Hossain, 2023).

Collateral Policy

Collateral policies may have an impact on the asset preferences of commercial banks. The tools such as screening, haircuts and preferential treatment to promote climate-friendly investments can be used. The European Central Bank (ECB) has integrated climate change into developing its collateral framework to support green sectors (Li, R. 2024).

Increasing Climate Risk Disclosure

Asymmetric information between borrowers and investors makes the market inefficient in assessing risks and opportunities accurately. As the companies (borrowers) do not disclose climate change risks and opportunities adequately, it is difficult for the market to respond to these risks appropriately. Misleading disclosure could lead to failure in the financial market. Current ongoing initiatives to address these asymmetric information issues could have multiple benefits: they help financial intermediaries map their climate change risks and opportunities; address the asymmetric information barriers between corporations and financiers/investors; and help the financial policy regulators assess the climate-related risks in the financial system. Several countries have undertaken regulatory measures that make it mandatory for corporations to disclose risks related to climate change. For instance, South Africa mandates climate change performance disclosures for listed companies, while in Bangladesh, banks are required to publish independent green annual reports, following the Global Reporting Initiative (GRI). The Reserve Bank of India (RBI) has issued a draft guideline on 'Disclosure framework on Climate-related financial risks, 2024' for its regulated entities.

There are regulations only for top publicly listed companies to disclose climate change and sustainability, private companies, other companies are exempted from this. Disclosure by all borrowers will facilitate banks in pricing the loan and managing risks appropriately. Here, lenders can act as advisors to these small and medium-sized companies to follow the best practices concerning climate change for the interests of both borrowers and lenders.

Use of Monetary Policy Tools

Central banks are exploring how to use monetary tools to lower the cost of credit and promote credit flows to green sectors (Schnabel, I. 2021). Monetary policies can decrease the Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR) for green projects, while determining the repo rate, reverse repo, bank rate and open-based financed-emission intensity of commercial banks. Such measures could decrease the cost of lending to green projects while supporting central banks' broader economic objectives.

Decreased credit costs for clean energy and energy efficiency could reduce reliance on imported fuels and energy requirements of countries relying on other countries for their energy needs. This step can reduce inflation volatility as transportation costs, attributed to higher fuel prices, are a key factor that increases inflation. Lower reliance on imported fossil fuels can help central banks better manage the foreign exchange market. Investment in climate-smart agriculture can mitigate the risk of hyperinflation of food prices caused by extreme weather events. Encouraging credit to climate-resilient crops, water harvesting and solar-powered cold storage projects can indirectly support central banks' mandate to control inflation.

Stress Testing

Conventional measurement of risk could be adapted to assess climate-related financial risk, as the analysis of climate-related impacts is not fundamentally different from standard scenario analysis. Since the 2008 global financial crisis, the term "stress testing" has generally been used to qualify a comprehensive and firm-wide scenario analysis. Most backwards-looking risk assessments and models are not suited to properly assess climate risks, as they fail to assess the non-linearity and deep uncertainty of climate scenarios and distributions, including extreme weather events. A climate risk stress test is an important tool to address these challenges, as it can quantify the potential impact of severe but plausible climate scenarios in the absence of historical data. Central banks have established national guidelines, though not mandatory, for climate risk integration, including stress testing.

Incorporating Climate Change Risk in Risk Management

Climate change is a material financial risk that could potentially destabilise the financial system, including banks and institutional investors. The financial institutions to assess climate risk exposure in their portfolios. Financial regulators in the United Kingdom (UK), South Africa, Bangladesh and Vietnam have taken steps in this direction. The Bank of England has launched a resilience review of the UK's financial system. Bangladesh mandates Ecological and Social Risk Management (ESRM) guidelines, which financial institutions mandatorily follow to assess the environmental and social risk impact for project finance.

The regulators may ensure to have an accurate database and modelling capability to identify climate change risk, particularly physical risks such as heat waves and floods. Usually, risk management is based on historical data, which does not capture climate change risks appropriately. The RBI has developed the "Reserve Bank Climate Risk Information System (RB-CRIS)", which can address these climate data gaps and help banks improve their climate risk management.

Moral Suasion and Forward Guidance

Central banks also use moral suasion by making rhetorical appeals to take into account climate change in lending and risk management. There are draft climate-related disclosure guidelines, meetings, workshops, documented publications and speeches from high-ranking central bank officials on climate change to influence banks and other regulated financial institutions to consider climate risk in decision-making. Climate change is now featured in monetary policy reports, highlighting its relevance to economic stability. Forward guidance is a policy instrument that central banks can use to signal upcoming policy changes concerning climate change, with specific timelines for implementing these policies, thus, encouraging financial institutions to align in advance with regulatory expectations. The Peoples' Bank of China (PBC), the Central Bank of China, followed 'window guidance'[1] to encourage its regulated banks and financial institutions to accelerate credit to green projects (Dikau & Volz 2021).

Embedding Climate Change in Corporate Governance and Oversight

Top-level leadership has the apex responsibility to plan, strategise and set the organisation's culture. The challenge for the financial sector is to prioritise environmental outcomes over financial aspects. While integration and inclusion of the climate change dimension in financial operations has made some progress in the banking sector, climate change teams often remain disconnected from financial decision-making, thereby, weakening their influence on strategies, products, investments and lending.

Conclusion

Globally, there is an increased momentum to bring climate change to the centre of financial discussions to meet the funding needs of climate actions. If climate change concerns are not integrated with financial decision-making, economies, societies and financial systems would be at great risk. Against this background, central banks must play a pivotal role, not only in bridging the green investment gap but also in accelerating the structural transition to a sustainable economy. Past precedents show that financial regulators have used financial policy to support economic activities that create positive externalities. A proactive approach from central banks can improve capital allocation and make the system more resilient to climate change risk.

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[1] Window guidance, also known as 'moral suasion' and 'jawboning'.

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भारत के हरित भविष्य का निर्माण-हरित बॉण्ड

मंजुला वाधवा*

भारत के संविधान के अनुच्छेद 48-ए में स्पष्टत: उल्लिखित है कि भारत सरकार पर्यावरण को सुरक्षित रखने के प्रति निरंतर प्रतिबद्ध रहेगी। पिछले एक दशक के दौरान केन्द्र सरकार ने इस दिशा में कई कदम उठाए हैं जैसे नमामि गंगे मिशन, प्लास्टिक अपशिष्ट प्रबंधन, राष्ट्रीय स्वच्छ वायु कार्यक्रम, पर्यावरण ज्ञान और क्षमता निर्माण; राष्ट्रीय तटीय प्रबंधन कार्यक्रम; पर्यावरण शिक्षा, जागरूकता, अनुसंधान और कौशल विकास; प्रदूषण नियंत्रण; हरित भारत के लिए राष्ट्रीय मिशन, वन्यजीव आवास का एकीकृत विकास आदि। हमारी अर्थव्यवस्था में कार्बन की तीव्रता को कम करने की अपनी प्रतिबद्धता को पूरा करने के प्रयासों के अनुक्रम में 2022-23 के केंद्रीय बजट में भारत सरकार द्वारा हरित अवसरंचना ढांचे में निवेश करने के लिए हरित बॉण्ड्स से धन जुटाने संबंधी घोषणा की गई थी (PIB, 2022)। इसी के अनुक्रम में नवम्बर 2022 में वित्त मंत्रालय ने संप्रभु (सॉवरेन) ग्रीन बॉण्ड जारी करने की प्रक्रिया की रूपरेखा को अंतिम रूप दिया। सरकार ने इस बात को समझा कि देश में कई ऐसे निवेशक हैं जिनके पास हरित बॉण्ड में निवेश को लेकर अलग से कोष है, इसी को देखते हुए हरित बांड लाने का निर्णय किया गया। उन्हें प्रोत्साहित करने से घरेलू बॉण्ड बाजार में अंतरराष्ट्रीय निवेशकों की भागीदारी बढ़ेगी। यह राशि सार्वजनिक क्षेत्र की उन परियोजनाओं में लगाई जाएगी जो अर्थव्यवस्था की कार्बन तीव्रता को कम करने में मदद करती हैं।

स्टडी का महत्व

अंतत:, भारत में टिकाऊ और दीर्घकालिक परियोजनाओं के लिए पूंजी जुटाने के लिए हरित बॉण्डस के क्षेत्र में अपार संभावनाएं नज़र आती हैं। वर्ल्ड इकॉनॉमिक फोरम (WEF) की रिपोर्ट, ''फॉस्टरिंग इफैक्टिव एनर्जी ट्रांज़िशन 2023'' के अनुसार 2020 में ग्रीन बॉण्डस में 270 बिलियन डॉलर का हुआ निवेश इस बात का प्रमाण है इन्हें बढ़ावा देने से हमारे देश को बहुविध लाभ हो सकते हैं - हमारा पर्यावरण तो सुरक्षित रहेगा ही, तेज़ी से बढ़ रहे जलवायु परिवर्तनों से निपटने में भी मदद मिलेगी। यदि समावेशी विकास को बरकरार रखना है तो हमें अपनी वित्तीय प्रणाली की विफलताओं के मूल तक जाकर विचार करना होगा। ऐसे मानकों, विनियमों और प्रथाओं को अपनाना होगा जो इसे अधिक समावेशी और टिकाऊ अर्थव्यवस्था की दीर्घकालिक आवश्यकताओं के अनुरूप बनाएँ। भारत के हरित भविष्य का निर्माण करना है तो ग्रीन बॉण्डस को प्रोत्साहित करने की दिशा में हर सही और संभव कदम उठाना बेहतर होगा।

कार्यप्रणाली

इस स्टडी को विख्यात लेखकों के आलेख, सरकारी ब्लॉग/ वेबसाइट पढ़ कर आंकड़ों व सामग्री का समेकन कर आम जन के पढ़ने हेतु आलेख तैयार किया गया है।

अवधारणा

आइए, हरित बॉण्ड की अवधारणा को समझ लेते हैं - ग्रीन बॉन्ड वे बॉन्ड होते हैं जहां जारीकर्ता, चाहे कोई संप्रभु इकाई हो या कॉर्पोरेट हाउस, पर्यावरणीय रूप से टिकाऊ परियोजनाओं के लिए आय का उपयोग करने का लक्ष्य रखता है। सरल शब्दों में संप्रभु इकाई द्वारा जारी किए गए बॉण्ड को सॉवरेन ग्रीन बॉन्ड कहा जाता है। सार्वजनिक,

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निजी और गैर-लाभकारी क्षेत्रों से सतत् विकास पहल के लिए कम कार्बन वाले, टिकाऊ और समावेशी मार्गों की ओर हरित आर्थिक परिवर्तन को बढ़ावा देने के लिए, हरित वित्त जुटाने हेतु जारी किए जाने वाले वे बॉण्ड जिनकी आय का उपयोग ऐसी परियोजनाओं और पहलकदमियों, पर्यावरण उत्पादों और नीतियों के लिए किया जाता है जो हमारे पर्यावरण के संरक्षण के प्रयासों में जुटी होती हैं। हरित परियोजनाएं या परियोजनाएं जो अक्षय ऊर्जा, ऊर्जा दक्षता, स्वच्छ परिवहन या जिम्मेदार अपशिष्ट प्रबंधन जैसे क्षेत्रों में देश के संधारणीय विकास के लिए जिम्मेदार हैं, में निवेश के लिए वित्तीय संसाधन हरित बॉण्ड के माध्यम से जुटाए जाते हैं। यहां तक कि इसके अंतर्गत निवेशकों को मूलधन और ब्याज का भुगतान करने के लिए पात्र परियोजनाओं का अच्छा कार्यनिष्पादन जैसी कोई शर्त नहीं है। हरित बॉण्ड में निवेश करने वालों के लिए कोई परियोजना संबंधी जोखिम भी निर्धारित नहीं हैं। इंटरनैशनल कैपिटल मार्किट एसोसियशन (International Capital Market Association) के अनुसार (ICMA, June 2021) हमारे हरित बॉण्ड यथा निर्धारित सभी मानकों को पूरा करते हैं, जैसे:-

- प्राप्त राशि का उपयोग सही प्रयोजन हेतु सुनिश्चित करना,
- परियोजना चयन, अनुप्रवर्तन और उसके मूल्यांकन में सावधानी बरतना,
- प्राप्त राशि का सुव्यवस्थित प्रबंधन,
- सम्बद्ध प्राधिकारियों को इसकी रिपोर्टिंग सही ढंग से करना।

अक्सर सतत् वित्त, हरित वित्त और जलवायु वित्त को एक समान समझा जाता हैं, इसलिए इनके बीच मौजूद सूक्ष्म अंतर को समझना जरूरी है।

तालिका 1: सतत् वित्त, हरित वित्त एवं जलवायु वित्त

सतत् वित्त	**हरित वित्त**	**जलवायु वित्त**
इसमें पर्यावरण, सामाजिक, अधिशासन संबंधी और आर्थिक पहलू शामिल हैं।	इसमें जलवायु वित्त शामिल है लेकिन इसमें सामाजिक और आर्थिक पहलू शामिल नहीं हैं।	यह हरित वित्त का एक उप समूह है।

भारत में हरित वित्त पर ध्यान देने की शुरूआत 2007 से हुई थी। हरित वित्तपोषण के काम में लगी एजेंसियों के लिए समन्वय निकाय के रूप में, 2011 में वित्त मंत्रालय में जलवायु परिवर्तन वित्त इकाई (सीसीएफयू) (Climate Change Finance Unit, 2023) की स्थापना की गई थी। इस संबंध में 2012 के बाद से स्थिरता प्रकटीकरण आवश्यकताओं को अपनाना मुख्य रणनीतिक बदलाव था। इसके अतिरिक्त, रिज़र्व बैंक हरित वित्तपोषण गतिविधियों को सहायता देने और उन्हें आगे बढ़ाने के लिए नीतिगत बदलाव लाने में जुटा हैं। 2015 में प्राथमिकता क्षेत्र ऋण कार्यक्रम में लघु नवीकरणीय ऊर्जा उद्योग को जोड़ा गया था।

उद्देश्य

हरित वित्त का उद्देश्य पर्यावरणीय जोखिम को कम करना है। बड़े पैमाने पर, आर्थिक रूप से मजबूत हरित वित्त प्रोत्साहन यह सुनिश्चित करने में मदद करता है कि सतत् विकास का लक्ष्य प्राप्त करने के उद्देश्य से जो परियोजनाएं चलाते हैं, उन्हें पारंपरिक निवेश की बजाय हरित निवेश में वरीयता मिले। हरित वित्त संयुक्त राष्ट्र सतत् विकास लक्ष्यों (Sustainable Development Goals) में उल्लिखित सभी सतत् विकास मानदंडों को शामिल करता है और पर्यावरणीय उद्देश्यों को पूरा करने वाली परियोजनाओं में निवेश की पारदर्शिता और दीर्घकालिक सोच को बढ़ावा देता है। इस तरह के वित्त पोषण के विस्तार के परिणामस्वरूप अधिक

रोजगार और व्यवसाय के अवसर पैदा होंगे। यह सब अंततः मानव सुविधाओं और जीवन में सुधार के साथ-साथ प्रकृति को खतरे में डाले या नुकसान पहुंचाए बिना सतत् विकास में परिणत होगा।

हरित वित्त को बढ़ावा देने की दिशा में भारत सरकार द्वारा किए जा रहे प्रयास

इस प्रकार की पहल के लिए धन की आवश्यकताओं को पूरा करने के लिए नए वित्तीय साधन, जैसे ग्रीन बॉन्ड, कार्बन मार्केट इंस्ट्रूमेंट्स (जैसे कार्बन टैक्स) और नए वित्तीय संस्थान (जैसे ग्रीन बैंक और ग्रीन फंड) बनाए जा रहे हैं। राष्ट्रीय स्वच्छ ऊर्जा कोष (National Clean Energy Fund) और राष्ट्रीय अनुकूलन कोष (National Adaptation Fund) जलवायु परिवर्तन के लिए हरित वित्तपोषण के मुख्य स्रोत हैं। जलवायु परिवर्तन के लिए राष्ट्रीय कार्य योजना के अंतर्गत आठ मिशन स्थापित किए गए हैं जिन्हें भारत सरकार से पैसा मिलता है। वित्त मंत्रालय में गठित जलवायु परिवर्तन वित्त इकाई (सीसीएफयू) जलवायु परिवर्तन वित्त पोषण से संबंधित सभी मुद्दों के लिए केंद्र बिंदु के रूप में काम करती है।

तालिका 2: निम्नलिखित वर्गों की परियोजनाएं हरित बॉण्ड जारी करने के लिए पात्र हैं

हरित परियोजना वर्ग	पर्यावरणीय उद्देश्य	पात्रता मानदंड
नवीकरणीय ऊर्जा	जलवायु परिवर्तन उपशमन तथा नेट ज़ीरो के लक्ष्य की पूर्ति	सौर, वायु, बायोमास, हाइड्रो पावर जैसी परियोजनाओं में निवेश। ऊर्जा उत्पादन व भंडारण के बीच समन्वय।
ऊर्जा दक्षता	जलवायु परिवर्तन उपशमन	सरकारी भवनों में ऊर्जा दक्षता तथा बचत के ढांचे बनाना।
स्वच्छ परिवहन	जलवायु परिवर्तन उपशमन	सार्वजनिक परिवहन को बढावा, उसका विद्युतीकरण व सुरक्षा।
जलवायु परिवर्तन अनुकूलन	जलवायु परिवर्तन उपशमन	जलवायु परिवर्तन की सूचना देने वाले उपकरण।
संधारणीय जल व अपशिष्ट प्रबंधन	जलवायु परिवर्तन उपशमन	पानी के किफायती इस्तेमाल वाली सिंचाई प्रणालियों को बढ़ावा, अपशिष्ट जल प्रबंधन ढांचे बनाना, बाढ़ सुरक्षा प्रणालियां।
प्रदूषण रोकथाम व नियंत्रण	जलवायु परिवर्तन उपशमन	वायु उत्सर्जन घटाने वाली परियोजनाएं, जल व अपशिष्ट प्रबंधन, अपशिष्ट पुनर्चक्रण आदि।
जीवित प्राकृतिक संसाधनों का संधारणीय प्रबंधन व भूमि उपयोग	जलवायु परिवर्तन उपशमन	कृषि, पशु व मछली पालन, एक्वाकल्चर आदि का पर्यावरण अनुरूप प्रबंधन।

जहाँ तक हरित बॉण्डस जारी करने के सिद्धांतों (Framework for Sovereign Green Bonds, Department of Economic Affairs) का प्रश्न है, इनसे प्रप्त धन का प्रयोग सरकारी स्तर की परियोजनाओं में ऋण, अनुदान, सब्सिडी आदि सभी रूपों में किया जाता है। कार्बन तीव्रता को कम करने वाले शोध व विकास कार्यों में भी खर्च किया जाता है। ईक्विटी केवल मेट्रो परियोजनाओं में 'स्वच्छ परिवहन' वर्ग के तहत अनुमत है, अन्य किसी में नहीं। हरित बॉण्ड जारी होने से पहले के साल भर में किए गए सरकारी खर्च ही पात्र होंगे। कोशिश की जाएगी कि प्राप्त धन 24 महीने

के अंदर विभिन्न परियोजनाओं के लिए अवंटित कर दिया जाए। अन्य किसी सरकारी योजना के अंतर्गत सहायता प्राप्त परियोजनाएं इसके अंतर्गत पात्र नहीं होंगी। राशि का संवितरण पात्र परियोजनाओं के अंतर्गत भौतिक लक्ष्यों की प्राप्ति पर निर्भर रहेगा और यह राशि चरणबद्ध रूप से अवंटित की जाएगी। 25 मेगावाट से अधिक क्षमता वाले हाइड्रो पावर प्रोजेक्ट, जीवाश्म ईंधन से जुड़ी परियोजनाएं कदापि पात्र नहीं हैं। इसके अलावा, न्युक्लीयर पावर प्रोजेक्ट, लैंडफिल प्रोजेक्ट, अपशिष्ट सीधे जलाने के काम, अल्कोहल, हथियार, तंबाकू तथा ताड़ के तेल की परियोजनाएं भी पात्र नहीं हैं। हालांकि, सार्वजनिक वाहनों में इस्तेमाल होने वाली सीएनजी (Compressed Natural Gas) परियोजनाएं इसमें शामिल हैं।

परियोजनाओं के चयन और मूल्यांकन हेतु वित्त मंत्रालय ने 'हरित वित्त समिति' गठित की है सरकार के स्तर पर वित्त विधेयक पारित हो जाने के बाद वित्त मंत्रालय रिजर्व बैंक को उन सभी मदों का ब्यौरा देगा जिन पर ग्रीन बॉण्डस की राशि निवेश की जानी है। प्राप्त राशि ट्रेज़री पॉलिसी के प्रावधानों के अनुसार भारत की समेकित निधि में जमा कर दी जाएगी। ग्रीन बॉण्डस के आगम के अवंटन और इस्तेमाल का ऑडिट भारत सरकार के महालेखा परीक्षक द्वारा किया जाएगा।

मौजूदा वैश्विक स्थिति

वैश्विक स्तर पर चल रही ग्रीन बॉण्डस की स्थिति - पूरी दुनिया का ग्रीन बॉण्ड बाज़ार पूंजीकरण 2.9 ट्रिलियन डॉलर तक पँहुच चुका है और इस क्षेत्र के बड़े खिलाड़ी अमेरिका और चीन जैसे देश हैं। 2014 से 2023 तक की वैश्विक स्थिति पर गौर करें तो पाते हैं कि संयुक्त राज्य अमेरिका ने 454 बिलियन डॉलर के ग्रीन बॉण्ड जारी किए और इस मामले में पहले स्थान पर रहा। चीन, जर्मनी और फ्रांस दूसरे, तीसरे और चौथे स्थान पर रहे (statista, 2024)। भारत को 2070 तक नेट-ज़ीरो के लक्ष्य को हासिल करने के लिए 10 ट्रिलियन डॉलर के ग्रीन बॉण्डस जारी करने की ज़रूरत है जबकि हम पूरी दुनिया के ग्रीन बॉण्डस का केवल 2.2 प्रतिशत हिस्सा ही जारी कर पा रहे हैं।

74वें गणतंत्र से मात्र एक दिन पहले यानी 25 जनवरी 2023 को भारत सरकार ने पहला हरित बॉण्ड जारी करके 80 बिलियन डॉलर (World Bank blog, 9 February, 2023) की राशि उगाही। इससे विश्व पटल पर भारत का सम्मान बढ़ा क्योंकि यह कदम वैश्विक स्तर पर दीर्घकालिक विकास के प्रति भारत सरकार की कटिबद्धता का प्रमाण था। नवीनतम कदम है, केन्द्रीय बजट 2025-26 में भारत सरकार द्वारा स्वच्छ ऊर्जा, कृषि सुधार और शहरी विकास पर जोर देकर यह स्पष्ट किया गया है कि सरकार दीर्घकालिक आर्थिक और पर्यावरणीय स्थिरता को प्राथमिकता दे रही है। बजट 2025 में क्लीन-टेक निर्माण पर विशेष ध्यान दिया गया है, जो भारत को हरित विकास की दिशा में तेजी से आगे बढ़ाने में मदद करेगा। वित्त वर्ष 2022-23 से, भारत ने आठ बार सॉवरेन ग्रीन बॉन्ड जारी किए हैं, (Policy circle, 17 February, 2025) और लगभग 53,000 करोड़ रुपये जुटाए हैं। प्रत्येक वर्ष, भारत सरकार सॉवरेन ग्रीन बॉन्ड से प्राप्त आय का लगभग 50% रेल मंत्रालय के माध्यम से ऊर्जा कुशल तीन-चरण इलेक्ट्रिक इंजनों के उत्पादन को निधि देने के लिए उपयोग करती है। वर्ष 2024-25 के लिए, सॉवरेन ग्रीन बॉन्ड के तहत पात्र योजनाओं के लिए आवंटन के संशोधित अनुमानों में इलेक्ट्रिक लोकोमोटिव विनिर्माण के लिए 12,600 करोड़ रुपये, मेट्रो परियोजनाओं के लिए लगभग 8,000 करोड़ रुपये, राष्ट्रीय हरित हाइड्रोजन मिशन सहित नवीकरणीय ऊर्जा परियोजनाओं के लिए 4,607 करोड़ रुपये और राष्ट्रीय हरित भारत मिशन के तहत वनरोपण के लिए 124 करोड़ रुपये शामिल हैं।

चुनौतियाँ

ग्रीन बॉण्ड की अवधारणा को कार्य रूप देने के रास्ते में भी अनेक चुनौतियाँ हैं। हमारे देश में निवेशक, जारीकर्ता और विनियामक, अभी तक हरित बॉण्ड की अवधारणा, इसके सिद्धांतों और लाभों के बारे में स्पष्ट नहीं हैं। निवेशकों की ओर से मांग तथा अनुपालना संबंधी मुद्दों से निपटना भी अभी बाकी है। सतत् विकास के उद्देश्यों और राष्ट्रीय निवेश रणनीति की सर्वोच्च प्राथमिकताओं के बीच का संबंध कमजोर है, हरित वित्त के लिए प्रत्यक्ष नियामक और कानूनी ढांचे का अभाव और हरित परियोजनाओं का प्रबंधन भी अभी सुचारू रूप से नहीं हो पा रहा। हमारे हितधारकों को प्रशिक्षण, जागरूकता सृजन के कार्यक्रमों की जरूरत हैं।

अगला अहम मुद्दा है- अंतरराष्ट्रीय नीतियों के अनुसार हमारे

देश में स्पष्ट मानकों और विनियमों का अभाव, इन्हीं से निवेशकों का विश्वास हमारे देश के ग्रीन बॉण्डस में आएगा और वे अधिक से अधिक निवेश करने के लिए प्रेरित हो पाएंगे। भारतीय प्रतिभूति एवं विनिमय बोर्ड ने हालांकि इनके लिए दिशानिर्देश बनाए हैं लेकिन अंतरराष्ट्रीय सिद्धांतों के साथ इनका तालमेल बिठाना जरूरी है ताकि निवेशकों का विश्वास हमारे ग्रीन बॉण्ड्स में बढ़ सके। हमारे देश में हरित बॉण्डस के लिए पात्र परियोजनाओं की कमी है। जिन क्षेत्रों में हैं भी, उनमें बैंक-साध्यता, वित्तपोषण तथा सुचारू कार्यान्वयन जैसी चुनौतियां हैं। इसके लिए ऐसी परियोजनाएं चलाने के लिए प्रेरित करने की और उनकी वित्त और तकनीक संबंधी समस्याएं हल करने की कोशिश करनी चाहिए। एक कठिनाई यह भी है कि अंतरराष्ट्रीय मानकों के अनुसार न होने के कारण ऐसे बॉण्डस का इश्यू प्राइस अधिक नहीं रख पाते। ऐसे में कुछ नवोन्मेषी तरीके शुरू करने की आवश्यकता है जैसे ग्रीन बॉण्डस की बीमा या गारंटी, रियायती वित्तपोषण, जारीकर्ताओं के लिए टैक्स या सब्सिडी का लाभ या फिर कार्बन क्रेडिट देने का प्रावधान। इस प्रकार के तरीके इन बॉण्डस को किफायती बनाकर जारीकर्ताओं को प्रेरित-प्रोत्साहित कर सकते है। जरूरत पड़ने पर ग्रीन बॉण्डस को बाजार में बेचना अन्य बॉण्डस की तरह आसान नहीं है। जरूरी यह है कि इनकी तरलता बढ़ाई जाए, इनमें अधिक पारदर्शिता और तृतीय पक्ष सत्यापन जैसे उत्प्रेरक जोड़कर निवेशकों को आकर्षित किया जाए। 5 से 10 साल की अवधि वाले हरित बॉण्डस का कूपन रेट भी उतनी ही परिपक्वता अवधि वाले अन्य कॉर्पोरेट बॉण्डस से अधिक है। ग्रीन प्रोजेक्टस की रेटिंग के दिशानिर्देशों का भी अभाव है। ग्रीन-वॉशिंग यानी किसी कंपनी या वित्तीय उत्पाद के पर्यावरण अनुकूल यानी ग्रीन होने के झूठे तथा धोखाधड़ी वाले लम्बे चौड़े दावे आज ग्रीन बॉण्ड बाज़ार की राह में बड़ी चुनौती बन गए हैं।

उल्लेखनीय है कि भारत के 'सॉवरेन ग्रीन बॉन्ड' इश्यू को निवेशकों की कम मांग के कारण गति प्राप्त करने में संघर्ष करना पड़ा है, जिससे सरकार के लिए 'ग्रीनियम' हासिल करना मुश्किल हो गया है। विदेशी निवेशकों के लिए नियमों को आसान बनाने के बावजूद, नीलामी में सीमित भागीदारी देखी गई है, जिसमें बॉन्ड अक्सर प्राथमिक डीलरों को हस्तांतरित हो जाते हैं। वैश्विक स्तर पर ग्रीनियम 7-8 आधार अंकों तक पहुँच गया है, भारत में यह अक्सर केवल 2-3 आधार अंकों पर होता है। यह 'सॉवरेन ग्रीन बांड' के व्यवहार्य फंडिंग स्रोत के रूप में विस्तार को सीमित करता है। विशेषज्ञों के अनुसार इससे जुड़ी एक प्रमुख चुनौती तरलता है। इन बांडों के इश्यू आकार कम होना और निवेशकों के लिए परिपक्वता तक बॉन्ड रखने की बाध्यता ने द्वितीयक बाजार में इनके व्यापार को रोक दिया है, जिससे उनकी अपील कम हो गई है। इसके अतिरिक्त, भारत में सामाजिक प्रभाव निधि और जिम्मेदार निवेश जनादेश के एक मजबूत पारिस्थितिकी तंत्र का अभाव है, जो अन्य बाजारों में ग्रीन बॉन्ड की मांग को बढ़ाता है। शुरुआत में, 2024-25 के लिए 'सॉवरेन ग्रीन बांड' आय से अनुमानित वित्त पोषण की आवश्यकता 32,061 करोड़ रुपये थी। हालांकि, 'सॉवरेन ग्रीन बांड' को बेचने के असफल प्रयासों के बाद, संशोधित अनुमान को घटाकर 25,298 करोड़ रुपये कर दिया गया है। साथ ही, ग्रिड-स्केल सौर परियोजनाओं को बढ़ावा देने के लिए आवंटन 10,000 करोड़ रुपये से घटाकर 1,300 करोड़ रुपये कर दिया गया है।

नवीनतम आंकडे बताते हैं कि भारत का ग्रीन बॉन्ड बाजार 2025 में ₹50,000 करोड़ तक उछल चुका है, जो खासकर सौर और पवन परियोजनाओं को फंड कर रहा है। यह आंकड़ा भारत की 'ग्रीन यात्रा' में सकारात्मक कदम प्रतीत होता है लेकिन निम्नलिखित बिंदुओं के मद्देनज़र।

नवीनतम स्थिति का विश्लेषण

• भारत ने 2030 तक 500 गीगावॉट नवीकरणीय ऊर्जा का लक्ष्य (Press Information Bureau, 05 April, 2023) निर्धारित किया है, जो अत्यधिक पूंजी की मांग करता है। इसे हासिल करने के लिए ग्रीन बॉन्ड्स एक साधन साबित हो रहे हैं। 2024 में, भारत ने 50 गीगावॉट सौर क्षमता जोड़ी और इस प्रक्रिया में ग्रीन बॉन्ड्स ने ₹20,000 करोड़ का योगदान दिया। वैश्विक निवेशक भारत को अब एक सुरक्षित ठिकाना मानते हैं। निवेशक भारत की निम्न मुद्रास्फीति दर की तारीफ करते हैं, जो भारतीय रिज़र्व बैंक को दरों में कटौती की गुंजाइश देता है, जो स्टार्टअप्स और हरित परियोजनाओं के लिए सस्ता कर्ज ला सकता है।

• ग्रीन बॉन्ड्स के लाभों को नजरअंदाज नहीं किया जा सकता, लेकिन इससे जुडा हुआ एक खतरा भी है। कुछ ग्रीन

बॉन्ड्स, जो 'हरित' परियोजनाओं के रूप में प्रचारित होते हैं, वास्तव में कोयला-आधारित परियोजनाओं को फंड कर रहे हैं। यानी स्पष्ट तौर पर ग्रीनवॉशिंग हो रही है, जिसमें कंपनियां अपने पर्यावरणीय प्रभाव को बढ़ाने के बजाय, अपने पर्यावरणीय प्रभावो के बारे में उपभोक्ताओं को गुमराह करती है। बिना सख्त ऑडिट और निगरानी के यह खतरा बढ़ सकता है।

• भारत में ग्रीन बॉन्ड्स के लिए वर्तमान नियामक ढाँचा पर्याप्त नहीं है। इसके अलावा, बुनियादी ढाँचे की कमी भी एक समस्या है - ग्रामीण क्षेत्रों में ग्रिड कनेक्शन की कमी के कारण सौर परियोजनाएं प्रभावित हो रही हैं। इससे निवेशकों का भरोसा कम हो सकता है और ग्रीन बॉन्ड्स की प्रभावशीलता भी सवालों के घेरे में आ सकती है।

• ग्रीन बॉन्ड्स के प्रभाव का मूल्यांकन करने के लिए पारदर्शिता और सख्त निगरानी ज़रूरी है। प्रत्येक ग्रीन बॉन्ड के पर्यावरणीय प्रभाव - जैसे कार्बन उत्सर्जन में कमी-को पब्लिक डेटाबेस में दर्ज किया जाना चाहिए। यूरोप की तर्ज़ पर तीसरे पक्ष द्वारा ऑडिट को अनिवार्य बनाना प्रभावी उपाय हो सकता है। सुनिश्चित किया जाना चाहिए कि ग्रीन बॉन्ड्स का फंड केवल शुद्ध हरित परियोजनाओं जैसे सौर और पवन ऊर्जा में ही निवेश किया जाए न कि हाइब्रिड परियोजनाओं में। टियर-II शहरों में मिनी-ग्रिड्स को प्रोत्साहित करने की आवश्यकता है, जैसा कि तमिलनाडु ने 2024 में किया।

अंतरराष्ट्रीय स्तर पर अपनाई जा रही उत्तम प्रथाएं

ग्रीन बॉण्डस को बढ़ावा देने के उद्देश्य से अंतरराष्ट्रीय स्तर पर अपनाई जा रही उत्तम प्रथाओं पर विचार कर उन्हें अपनाने के बारे में सोचा जाना चाहिए। यूरोपीय संघ ने सतत् वित्त प्रकटीकरण विनियमन के तहत एक व्यापक हरित वर्गीकरण और अनिवार्य प्रकटीकरण विकसित किया है, जिससे निवेशकों का विश्वास सुनिश्चित होता है और ग्रीनवाशिंग पर अंकुश लगता है। इसी प्रकार, चीन की दोहरी स्तरीय प्रणाली घरेलू और विदेशी दोनों तरह के ग्रीन बॉन्ड ढांचे की पेशकश करती है। जर्मन सरकार जो ग्रीन बॉन्ड जारी करती है उसे पारंपरिक सरकारी सुरक्षा से जोड़ती है। दोनों बॉण्डस में एक ही परिपक्वता अवधि, परिपक्वता तिथि, कूपन-दर और ब्याज-दर होती है। जर्मन ग्रीन बॉन्ड के निवेशक किसी भी समय पारंपरिक जर्मन सरकारी बॉन्ड के साथ अपनी होल्डिंग्स को स्वैप कर सकते हैं। इसी तरह ट्विन - बॉन्ड भारत में भी ग्रीन बॉण्ड जारी करने पर विचार किया जा सकता है। भारत भी जापान की भांति ग्रीन क्रेडिट सिस्टम विकसित करने पर विचार कर सकता है, इससे निवेशकों का विश्वास बढ़ेगा और ग्रीन बॉण्ड बाज़ार तरक्की कर पाएगा।

ग्रीन बॉन्ड्स के माध्यम से भारत की अर्थव्यवस्था को हरित दिशा में यकीनन मोड़ा जा सकता है, लेकिन इसके लिए ईमानदारी और मेहनत की जरूरत है। भारत का हरित भविष्य निश्चित रूप से संभव है - यह उस दिशा और प्रतिबद्धता पर निर्भर करेगा, जो हम अभी से दिखा रहे हैं।

BANK QUEST THEMES

The themes for "Bank Quest" are identified as:

1. **July - September, 2025: Strategic HRM Initiatives for Banks**

   Sub-themes: Talent Management, Succession Planning, Employee Engagement Strategy, Diversity and Inclusion Management, HR Audit

2. **October - December, 2025: Emerging Technologies in Banking**

   Sub-themes: Applications of Generative Artificial Intelligence (AI), Ethical AI, Fraud Detection and Creating Early Warning Signals, Technologies for Project Appraisal and Credit Appraisal

3. **January - March, 2026: New Avenues of Payments Systems**

   Sub-themes: UPI, ULI, CBDC- Challenges, Opportunities and Prospects, Cyber Security

4. **April - June, 2026: Financial Inclusion – The Next Phase**

RED FLAGS AND HIDDEN TRAILS: FORENSIC ACCOUNTING AS THE PROTECTIVE UMBRELLA FOR BANKS AGAINST CREDIT FRAUDS

Dr. Himanshu D. Thakkar*

Saptarshi Datta**

Abstract

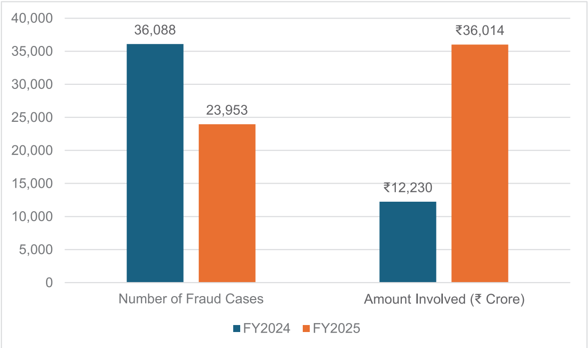
The escalating threat of sophisticated credit fraud poses a significant challenge to the stability and integrity of the banking and finance industry. Losses from credit frauds not only decrease profitability but can also significantly erode trust from the public and expose institutions to regulators. The field of forensic accounting has become integral to address each of these concerns in an accounting and investigative context. Forensic accounting has forensic technology, investigative tools and skills to address these financial crimes. This paper highlights the importance of asset tracing, one area of forensic accounting, in preventing and/or detecting credit fraud. The paper discusses basic techniques, including money trail analysis, financial analysis, data mining and public records and corporate filings, to find hidden assets. The general goal of the paper is to educate banks and finance practitioners on the principles of asset tracing and practical methods for applying asset tracing to their operational methods. This study serves to build a theoretical, practical and analytical contribution to fraud risk management in banks and the finance industry to build better asset tracing processes that can help protect institutional assets, improve recovery and protect institutional reputation.

Keywords: *Forensic Accounting, Credit Fraud, Asset Tracing, Fraud Prevention, Fraud Investigation, Banking and Finance.*

Introduction

The Loan fraud is a challenging risk with specific and immediate potential for significant financial and reputational damage to our Banking system. Over the past five years, we have all seen an increase in the number and sophistication of credit fraud schemes, including manipulated loan applications, sophisticated corporate frauds involving siphoned funds and intended defaults. The Reserve Bank of India (RBI) and other global regulators continue to issue reports documenting the escalating amount of losses attributable to bank frauds. The reality of banking fraud remains a serious issue for the Indian financial sector. Graph 1 shows an analysis of the data from the Reserve Bank of India based on the years 2023-2024 to 2024-2025, as reported in late May 2025, the number of fraud incidents and all sums involved in fraud, both recent trends.

Graph 1: Banking Frauds in India: Number of Cases vs. Amount Involved (FY24 and FY25)



Source: Annual Report 2024-25, RBI[1]

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[1]https://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/0ANNUALREPORT202425DA4AE08189C848C8846718B080F2A0A9.PDF

As described, while the number of known frauds decreased markedly in FY25 relative to FY24, the total value involved soared. This demonstrates the dynamic nature of financial crime that can change based on the higher value frauds occurring at a significant level, which can influence the total and in FY25 may in part be attributed by RBI reports to the reconciliation and new reporting of some earlier high value frauds. The impact of such frauds is not solely financial losses; it includes loss of shareholder value, loss of public trust, more regulatory scrutiny and considerable use of Management's time and effort to deal with litigation and recover losses.

In this difficult environment, forensic accounting has made the transition from a specialisation to an essential factor for financial institutions. Traditional auditing, while important, is more concerned with expressing an opinion on the truth and fairness of financial statements, while forensic accounting is strictly designed to catch, investigate and combat financial crime. Forensic accounting encompasses accounting, auditing and investigative skills to scrutinise financial records for the potential of legal action or the need to investigate fraud allegations. Forensic accounting serves two purposes: first, it can help identify systemic weaknesses and improve a financial institution’s internal controls to help mitigate fraud and secondly, it provides the tools to investigate suspected frauds, calculate losses, identify the perpetrators and establish a foundation to commence legal action and obtain a recovery of assets.

Among the many facets of forensic accounting, asset tracing is a pivotal aspect of addressing the credit fraud. Credit frauds always involve the unlawful appropriation or diversion of missing funds. A researcher or investigator must understand that identifying the fraud element is only half the issue. Recovering the appropriated funds is essential in minimizing loss. Asset tracing represents the distilled process of systematically identifying and tracking these misappropriated or unlawfully diverted funds or assets to their ultimate destination or to the current form they take, albeit disguised. This paper will showcase a special emphasis on identifying the many ways in which asset tracing techniques contribute to the successful study of credit frauds and more importantly, their contribution in the often-ignored area of proactive approaches to fraud prevention.

The purpose of this study is to undertake an extensive study of forensic accounting (especially in today’s growing asset tracing) role in combating and examining credit fraud. The article will provide banking and finance professionals with usable insights and a framework for improving their abilities in detecting seemingly unexplained and suspicious matters, tracing the flow of money involved in the fraud and recovering looted funds. The paper will start with a description of the most common types of credit fraud, followed by an orientation on forensic accounting principles that specifically support fraud management. Various methods of asset tracing include a money trail, data mining and using public records. In this article, preventive measures are included based on insight from asset tracking and give instructions for use in banking institutions.

This paper aims to provide useful and relevant information that can be used immediately by practitioners to help fortify their institutions against financial crime by providing an in-depth examination of forensic accounting and asset tracing from the perspective of credit fraud.

Review of Literature

Forensic accounting is regarded as a major aspect of combating financial crime. It encompasses accounting, auditing and investigative practices to identify financial fraud and present evidence in a legal proceeding (Akinbowale et al., 2023). From the literature reviewed, it is well established that forensic accounting is one of the best practices for detecting and preventing fraud in organizations (Agboare, 2021). Empirical evidence and the reviewed studies have also demonstrated a positive relationship between the use of forensic accounting techniques and the detection of fraudulent activities.

An extensive body of literature supports the perspective of forensic accounting being proactive. Traditionally, auditing is retrospective, while forensic accounting is proactive. Forensic accounting proactively addresses financial discrepancies, errors, anomalies or questionable transactions in the financial reporting cycle before they result in fraud (Budianto & Dewi, 2023). This is particularly relevant in the banking industry, especially with the growing trend of Non-Performing Assets (NPAs) linked to financial fraud. The shortcomings of traditional auditing practices to avert large-scale corporate frauds have highlighted a need for more than just traditional auditing procedures; rather there is a requirement for forensic accountants specialized skills, knowledge and approach (Ahmed et al., 2021).

As technology has become intertwined with financial crimes, the use of data-supported fraud detection has increased (Sousa Torres et al., 2024). There is a growing body of research indicating the increasing importance of analytics, Artificial Intelligence (AI) and machine learning in conducting forensic investigations (Kalid et al., 2024). These technologies allow forensic accountants to process large populations of data to uncover trends, anomalies and red flags that point to fraud instead of the traditional method of sampling data.

Asset tracing is a specific sub-area of forensic accounting that focuses on following the money trail ultimately to recover lost dollar amounts associated with misappropriation (Mienye & Jere, 2024). This cannot be stated enough: it is important not just to provide the opportunity for recovery of loss, but to deter potential fraudsters by outlining their options to move to recover and their complexity in moving funds. This is an arduous process which requires many components of forensic accounting, the use of the courts and possibly elements of digital forensics to trace an asset through complex corporate structures and offshore accounts.

Research Objectives

The primary objectives of this paper are:

- To explain core principles of forensic accounting and the practical application of asset tracing methodologies in the context of credit fraud.
- To provide a comprehensive framework that integrates forensic accounting and asset tracing techniques across the credit lifecycle to proactively prevent, detect and investigate fraudulent activities.

Research Methodology

This paper utilizes a descriptive and analytical approach through synthesizing secondary data including reports and papers published by the Reserve Bank of India (RBI) and articles in academic journals. The paper will provide a reactive-description, identify trends and patterns of banking fraud in the data provided by the RBI to illustrate the nature and extent of the problem and will utilize a reactive-definition, literature review, data collection and interpretive analysis by reviewing the principles of forensic accounting and the methodology of asset tracing. The subsequent review of the literature and professional standards will yield conceptual models and tables which offer a structured reference point for banking professionals to appreciate the area of fraud exposure in tandem with the credit lifecycle and the proactive and detective controls available to deal with fraud. The goal of the paper is to take a grounding and contextual approach for banking professionals who may not be familiar with issues of fraud in a practical fashion, instead of taking a grounding and hypothesis-testing approach through empirical data collections.

Understanding Credit Frauds in the Banking and Finance Industry

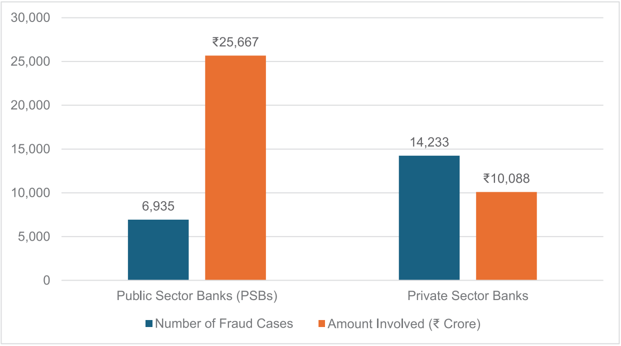
Credit fraud is a broad term that encompasses any act of purposeful deception, misrepresentation or concealment that an individual or entity follows in order to illegally gain credit or money; or other benefits from a lender or bank; or fraudulently uses money or credit that has been obtained legitimately (Aboud & Robinson, 2020). All these actions are not simply "crimes of opportunity" but are often planned activities seeking to convince the financial institution that made the lending decision, which may only have a few days to review an application, that the applicant was fraudulent. Although these actions can take the form of an amateur scammer trying to gain money, often these are much more elaborate schemes that take careful planning to facilitate. Often, the deception is far-fetched and appears crazy to the investigator but it often involves layers of deception, making it even more difficult for banks and financial institutions to detect and investigate.

Defining and Categorizing Credit Fraud

Credit fraud comes in many forms and can affect a bank's different products and processes. The main types include loan application fraud, where false or misleading information may be submitted, such as via identity theft, misrepresentation of income or forged documents (Adejumo & Ogburie, 2025). Collateral fraud is also a major type where a borrower, submitting a loan application purposely overstates the value of the collateral pledged or pledges non-existent or encumbered assets, which may have involved third-party collusion. Corporate credit fraud, which is usually committed by the borrower insider, is basically when funds are siphoned using shell companies, fictitious invoices or not genuinely related party transactions (Reddy et al., 2024). In addition, working capital frauds are often comprised of varying levels of manipulation of current assets such as working receivables or inventory, ultimately to fraudulently increase borrowing capacity or misappropriate funds (Chukwuma et al., 2023). The area of international trade is subject to trade finance frauds, against which fraudsters use documentation such as fictitious transactions or forged documentation (Devan et al., 2023). Finally, credit card fraud and online lending fraud have increased over the last decade, with fraudsters either using credit cards unauthorised or circumventing the security of online web tools and websites (Elumilade et al., 2021).

When examining the composition of bank frauds, it is also possible to delineate distinct patterns concerning value. Graph 2 illustrates the contribution to the total fraud amount reported during the financial year 2024-25 from each of the various categories, from RBI data that was available as late as May 2025.

Graph 2: Contribution to Total Fraud Amount by Category (FY25)

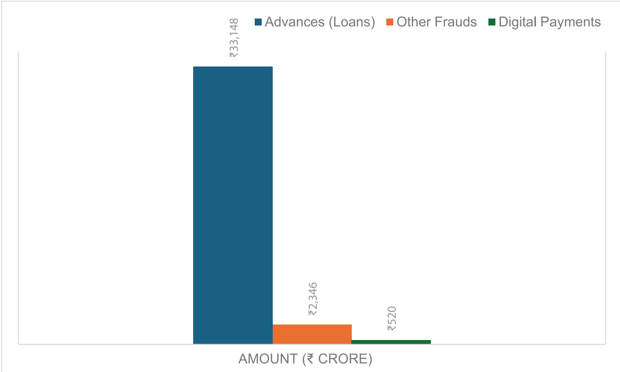


Source: Annual Report 2024-25, RBI

Graph 2 shows that the fraud linked with advances (both loans and advances) made up the bulk of the total value, which must mark this area out for fraud prevention, investigation and asset tracing efforts. Frauds occurring during digital payments occurred frequently, but relative to the overall monetary value, only a small amount occurred in this period.

Different types of banking institutions also exhibit varying distributions of banking fraud. Graph 3 shows RBI data for the financial year 2024-25 (as filed in late May 2025), indicating that private sector banks reported a greater number of individual instances of fraud.

Graph 3: Banking Frauds by Bank Type: Number of Cases vs. Amount Involved (FY25)



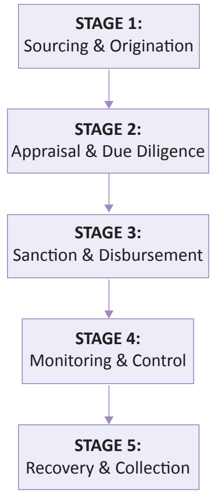
Source: Annual Report 2024-25, RBI

Yet, private sector banks held a higher total monetary value involved in fraud (see Graph 3), which suggests differences in the form and scale of fraud or differences in fraud reporting or detection between the bank sectors and reinforces a need for variance in risk management.

The Credit Lifecycle and Vulnerabilities

Credit fraud can happen at any stage of the credit lifecycle, so it is important to understand these vulnerabilities when developing controls. Based on sourcing to recovery, the credit lifecycle has several stages that introduce different points for fraud to occur. Figure 1 demonstrates the key sequential stages of the credit lifecycle.

Figure 1: Key Stages of the Credit Lifecycle



Source: Compiled by the author

Each of these stages including Sourcing & Origination, Appraisal & Due Diligence, Sanction & Disbursement, Monitoring & Control and finally, Recovery & Collection-has its vulnerabilities that could be exploited if strong controls and oversight are not put in place and maintained, as described in Table 1.

Table 1: Fraud Vulnerabilities across the Credit Lifecycle

Lifecycle Stage	Key Vulnerabilities	Examples of Fraudulent activities
Sourcing & Origination, Weak KYC/ AML checks	Identity theft	Submission of forged documents, Use of synthetic IDs
Appraisal & Due Diligence, Inadequate verification of borrower credentials	Collusion with valuers/ auditors	Overlooking financial red flags, Inflated property valuations
Sanction & Disbursement, Unauthorised sanctioning	Non-adherence to sanctioned terms	Diversion of funds at the point of release, Loans sanctioned beyond delegated authority
Monitoring & Control, Lack of robust post-disbursement monitoring	Failure to track the end-use of funds	Weak early warning systems, Siphoning of funds for unstated purposes
Recovery & Collection, Concealment of assets by defaulters	Fraudulent bankruptcy filings	Collusion to undervalue assets for sale, Transfer of assets to relatives before default

Source: Compiled by the author

Red Flags and Early Warning Signs of Credit Fraud

Detecting red flags is important for quickly recognizing a problem. Red flags can come in many formats. Behavioral red flags may include things like the borrower appearing unduly nervous or evasive, reluctant to provide certain pieces of information, overly complicated or unreasonable explanations of the business structures involved, lifestyle inconsistent with claimed income or new lifestyle changes incompatible with stated income, pressure around processing credit on an urgent basis (Mohammad et al., 2024). Documentary red flag potential indicators may also be important to consider, such as documents that appear either altered or odd, financial statements that include strange trends or unexplained changes, missing or incomplete original documentation, many addresses reported on the documents or the potential related party transactions that were not disclosed (Novita & Anissa, 2022). Finally, transactional red flags would indicate potential fraud; these can include transactions that involve sudden large value movements, where proceeds of loans are used for other purposes inconsistent with the loan application or rapidly transferring of large amounts of money to several accounts (layering), multiple amendments to loans with no legitimate business purpose or odd bank statements with unusual concentrations of business with few entities (Ezechi et al., 2025).

Impact of Credit Frauds

The effects of credit fraud are widespread and detrimental. First, institutions incur financial losses, reducing profitability through increased Non-Performing Assets (NPAs), provisions for loan losses and material costs associated with investigations and recoveries (Oguntibeju et al., 2024). The further ramifications are reputational loss, which may result in a loss of customers, investors and public trust and therefore, a loss of business (Patel, 2023). Fraud impacts institutions and will likely cause regulatory scrutiny and sanctions, which require investigations, fines, restrictions on operations and in the case of negligence or collusion, criminal charges against officials at the bank (Putra et al., 2022). Furthermore, fraud on such a large scale erodes trust in the financial system (Razaque et al., 2022). Internally, these events also create operational strain, taking management effort away from business-as-usual to deal with crisis management and protracted remediation (Saheed et al., 2022).

Recognizing these aspects of credit fraud is the first step toward creating an effective defence mechanism, of which forensic accounting and tracing of assets are important steps.

Forensic Accounting: The First Line of Defense and Investigation

Forensic accounting is more than mere number crunching - it is a field of inquiry focused on finding financial truth, often in the context of litigation, disputes or accusations of fraud. Its application in the banking and finance industry is essential as the industry must avoid financial misconduct and react appropriately when it occurs (Shalhoob et al., 2024).

Principles and Objectives of Forensic Accounting in Fraud Management

The application of forensic accounting practices includes several commonly accepted essential elements. These include objectivity and independence in arriving at conclusions based entirely on evidence, not outside influence. Consistency and relevance in outcomes are vital; professional scepticism is a vital part of forensic accounting to create a questioning mind and critically assess all the information. The investigation of the claim must use due diligence; thoroughness requires gathering potentially relevant evidence and is an important consideration. Confidentiality of sensitive information is often used in forensic accounting and is an ethical obligation. Legal and ethical standards are included for the duration of the engagement (Thakkar et al., 2025).

There are many goals of forensic accounting as part of credit fraud management. In terms of forensic accounting, the first goal is fraud detection. Fraud detection identifies the fraudulent activity that may have gone undetected in the audit process (Thakkar et al, 2025). Once fraud is suspected, the second goal of forensic accounting as part of credit fraud management is quantifying the fraud or how much was lost. Identifying the parties involved in the fraud is another goal of forensic accounting as part of credit fraud management or the perpetrators involved in the fraudulent scheme. With emphasis on asset recovery, forensic accounting is useful in providing details, information and evidence to trace and recover stolen assets (Thakkar et al, 2025). In terms of litigation support, forensic accounting plays a significant role in supporting legal counsel, providing expert witness testimony and providing financial exhibits. Based on the findings of the fraud investigation, forensic accountants will make recommendations for prevention and identify areas for improvement in internal control weaknesses to reduce or deter the occurrence of fraud.

Forensic Accounting in Fraud Prevention

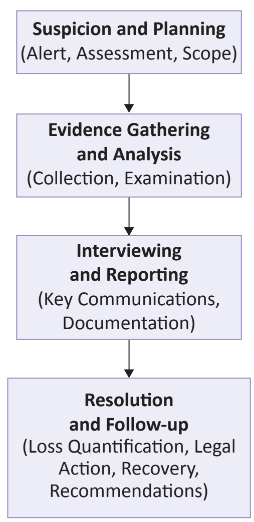
Proactive approaches are nearly always easier and cheaper than reactive ones. Forensic accountants play an important role in fraud prevention by carrying out several activities, for example, they conduct customised fraud risk assessments to point out the specific fraud risks of credit fraud present in the bank's operations, products and customer segments (Thakkar et al., 2024). This knowledge creates a path to strengthen internal controls, where forensic accountants design, implement and assess controls explicitly for credit fraud detection and prevention purposes, at specific points where the bank suffers its highest exposure and where control failures occur, e.g., at/above the entry point at the risk management policy and credit application and credit disbursement approvals.

Forensic accounting, likewise, encompasses proactive fraud detection methods. This could involve employing data analytics and continuous monitoring to analyse transactional data for anomalies and red flags, utilising approaches such as Benford's Law to assist in determining outliers or irregularities in broader financial datasets (Thakkar et al., 2024). Implementing sustainable Enhanced Due Diligence (EDD) requirements for high-risk customers and complicated transactions, as an example, may consider issues such as ultimate beneficial ownership and the source of funds, which is another opportunity. Additionally, forensic accountants can assist with preventative measures such as whistleblower measures and independent investigations of collateral allegations. Of course, we must remember that they can support employee training and education, raise awareness to explain fraud schemes, potential red flags and internal mechanisms to report fraud-whistleblowing and/or risk management and foster an anti-fraud organisational culture.

Forensic Accounting in Fraud Investigation

When fraud is suspected or detected, a systematic forensic investigation is initiated. Figure 2 illustrates the core phases of such an investigation.

Figure 2: Core Phases of a Forensic Investigation



Source: Compiled by the author

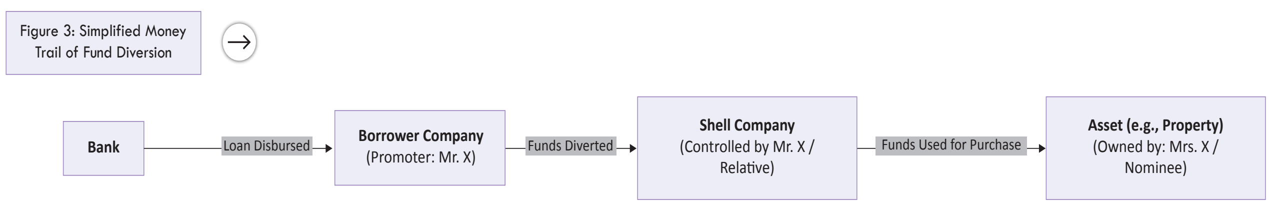
The general process starts at one end with a preliminary suspicion and scope-setting, moves through the collection of evidence and analysis, includes essential interview and reporting stages and ends with a resolution and follow-up, including assistance with asset recovery. There are several steps and techniques involved. The steps include engagement and planning, where scope, objectives, methods and legal framework are established (Udeh et al., 2024). The evidence collection stage systematically collects evidence. This may include documentary sources of evidence, like financial records and contracts, as well as electronic forms of evidence and testimonial evidence connected to interviews, which also should maintain the chain of evidence (Venigandla & Vemuri, 2022). The evidence is then the subject of careful evidence analysis, which may involve the analysis of financial statements and fund flows and linking analyses to present patterns and connections. Interviewing is an important technique involving structured engagements with witnesses, victims and potentially suspects, often using models. A very precise quantification of losses is then made to quantify the financial loss. Finally, these investigative steps must be formally documented in a forensic reporting stage, which ultimately is a detailed forensic report that sets out the engagement details, findings, evidence, conclusion and recommendations, which would help decision-making by management, things like regulatory reporting or for purposes of legal proceedings.

As such, forensic accounting provides a solid framework that is useful for understanding the depths of financial fraud and facilitating more effective and more resilient financial institutions. The focus on evidence, diligence and analysis makes forensic accounting a vital resource in today's banking environment.

Asset Tracing: Following the Money Trail in Credit Frauds

Asset tracing is a major aspect of forensic accounting, which involves systematically identifying and tracing the misused funds involved in credit fraud. This task is important because it increases the chance of recovering the stolen assets; collects vital evidence for court proceedings; identifies all persons who played a role in the fraud, either through participation or benefit; and aids in improving internal controls and risk assessment processes. The process of asset tracing is an analytical task in its entirety.

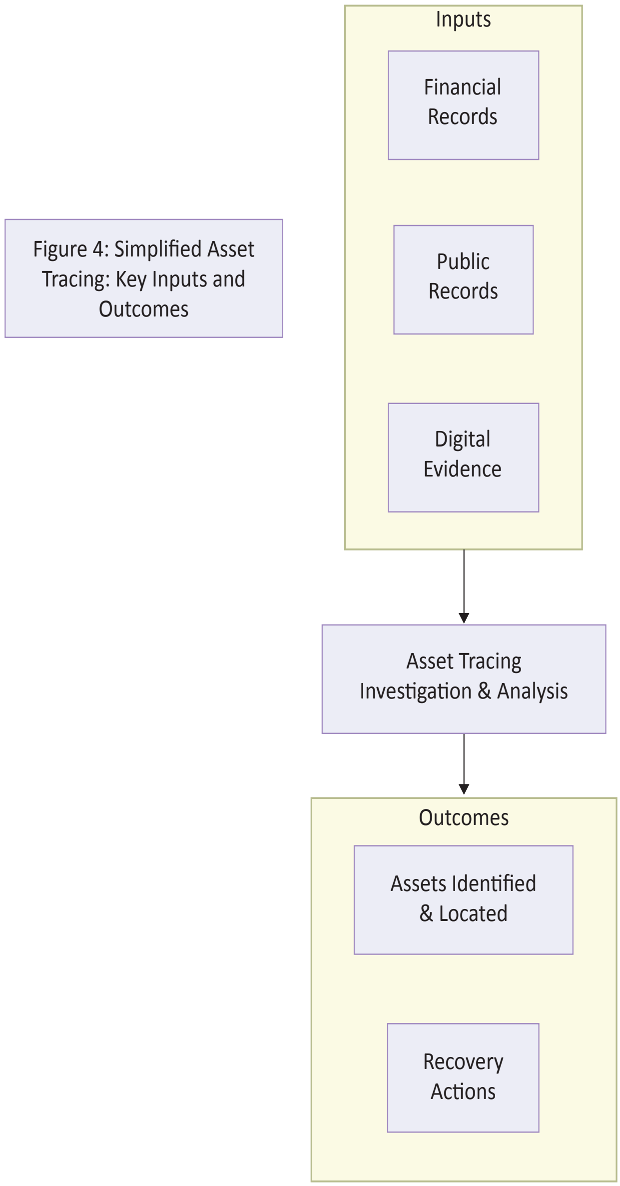
Figure 3: Simplified Asset Tracing: Key Inputs and Outcomes



Source: Compiled by the author

The common methodologies in asset tracing are extensive. The primary method involves a money trail where one can track the flow of funds from source to destination, often through third parties such as shell companies, by examining bank statements, wire transfers and loan documents.

Figure 4: Simplified Money Trail of Fund Diversion



Source: Compiled by the author

One additional core methodology is financial analysis and data mining. Forensic accountants analyse many exhibits of financial data to expose recurrent patterns, anomalies (structured deposits, funds transferred quickly by opening new accounts) or red flags for asset concealment schemes.

Table 2: Red Flags from Financial Data Mining Indicative of Asset Concealment

Category	Red Flag/Pattern	Potential Implications for Asset Tracing
Transaction Size	Multiple cash deposits/ withdrawals just below reporting thresholds (Structuring).	An attempt to evade scrutiny, funds are being siphoned off in cash.
Transaction Velocity	Rapid movement of funds through newly opened accounts or dormant accounts.	Layering activity, attempt to break the money trail quickly.
Counterparties	Frequent transactions with entities in high-risk jurisdictions without a clear business rationale.	Potential use of offshore accounts/ companies for concealment.
	Payments to shell companies or entities with no apparent business activity.	Diversion of funds through fictitious invoices/ services.
Account Activity	Significant "pass-through" transactions where funds enter and exit an account quickly.	The account is being used as a conduit in a layering scheme.
	Unexplained large one-off payments or receipts.	Possible attempt to move or hide significant sums.
Investment Activity	Sudden unexplained investments in unrelated businesses or speculative assets by promoters/ guarantors.	Diversion of loan funds for personal gain.
Loan Utilization	Disbursement of loan proceeds directly to unrelated personal accounts of promoters/ directors.	Direct siphoning of funds.

Source: Compiled by the author

Investigators also examine public and corporate filings, using publicly available information from property records, vehicle registrations, business incorporation filings and court records to study asset discovery and complex ownership. The connection between the information from these different sources establishes an asset profile.

Table 3: Public Records and their Utility in Asset Tracing

Record Type	Information Obtainable	Relevance to Asset Tracing in Credit Fraud	Source Example (India)
Property/Land Records	Ownership details of real estate, location, size, transaction history and encumbrances.	Identifies immovable assets purchased with diverted funds; confirms collateral details.	State Land Revenue Departments
Vehicle Registration	Ownership of vehicles, chassis number, engine number and hypothecation details.	Traces movable assets; can indicate lifestyle or business operations.	Regional Transport Office (Vahan Portal)
Business/Corporate Filings	Director details, shareholder patterns, financial statements, charges on assets, related party disclosures and Ultimate Beneficial Owners (UBOs).	Uncovers shell companies, benami ownership, diversion of funds to group companies and financial health.	Ministry of Corporate Affairs Portal (ROC)
Tax Filings (Limited Access)	Declared income, assets, business turnover and major expenditures.	Discrepancies can indicate undisclosed income/assets (access is legally restricted).	Income Tax Department
Court Records/ Litigation Databases	Involvement in civil/criminal cases, bankruptcy petitions, judgments and decrees.	Reveals financial distress, prior misconduct, existing claims on assets and potential hidden liabilities/ assets.	eCourts, National Company Law Tribunal (NCLT)
Intellectual Property Records	Ownership of patents, trademarks and copyrights.	Identifies valuable intangible assets.	IPO India
News Archives/ Internet	Reports on business activities, lifestyle information and associations.	Provides background intelligence and identifies potential red flags or undisclosed connections/ assets.	Online search engines

Source: Compiled by the author

Digital forensics involves recovering data from computers, handheld devices and servers to rescue unknown bank accounts, incriminating communications, cryptocurrency accounts or altered digital records. Human Intelligence (HUMINT) and source inquiries are discreet and compliant inquiries that request information from individuals who know a suspect's financial activities or known hidden assets such as former employees or whistleblowers. In cases that involve cross-border fund transfers, international asset tracing investigates differences in legal regimes, data privacy and bank secrecy, usually using a Mutual Legal Assistance Treaty (MLAT) and cooperation-focused entities. Lifestyle audits and net worth analysis compare a suspect's observed lifestyle and net worth to their established income to find differences that point to hidden illicit assets.

The asset tracing process begins with a trigger event, which will subsequently involve assessment, planning and careful information gathering. This process includes tracing the original diversion of funds, identifying any intermediaries and layers in the transactions, following the funds through to end use, organising the evidence, valuing assets and identifying your options for a legal recovery strategy. Asset tracing carries its own set of challenges including the ever-increasing sophistication of fraudsters using corporate veils and offshore jurisdictions and cryptocurrencies; the complexities of differing legal, pro-banking secrecy laws, for other jurisdictions; legal and regulatory issues, such as the asset tracing process funders and their banks would have to navigate with data privacy regulations; the need to take fast actions, where assets may be dissipating quickly; potential high costs of complete investigations; and potentially, restrictions from wrongdoing in the form of incomplete or falsified records or institutional restrictions with resources. The chances of successful asset recovery heavily depend on having a good and tightly legal framework (e.g. Prevention of Money Laundering Act, 2002, the Insolvency and Bankruptcy Code, 2016 in India); the ability for evidence collected to be admissible, where forensic reports are at the forefront of reporting as an expert testimony.

Prevention of Credit Frauds through Proactive Forensic Accounting and Asset Tracing Awareness

Engaging with forensic accounting to develop an "asset tracing mindset" is about taking a preventative approach to credit fraud and embedding that approach within each part of the credit lifecycle. This originates from viewing every stage of the credit lifecycle with an asset tracing mindset, starting with pre-sanction due diligence. We may need to enhance our Know Your Customer (KYC) and Customer Due Diligence (CDD) processes and expand them from identity verification to understanding the Ultimate Beneficial Ownership (UBO), especially regarding convoluted corporate structures or offshore entities and exploring and verifying legitimate sources and intended uses of funds.

Observations from our previous efforts in asset tracing indicate invaluable lessons for strengthening internal controls. With insight into previous advances and how an organisation could circumvent controls to move funds or hide assets, stronger and more precise controls can be created. Suppose asset tracing shows that they funnelled funds through shell companies with fake invoices. In that case, we will want to have preventative measures in place, such as vendor due diligence and independent verification of service delivery.

Table 4: Preventive Controls derived from Asset Tracing insights

Asset Tracing Insight (How assets are hidden/diverted)	Corresponding Preventive Control/Proactive Measure	Target Area in Bank
Funds were diverted to shell companies via fictitious invoices.	Enhanced vendor due diligence; Scrutiny of high-value/unusual invoices; Independent verification of service/goods delivery for large payments.	Payments, Credit Appraisal
Loan proceeds are routed through multiple layers to acquire benami assets.	Rigorous UBO identification; Scrutiny of complex ownership structures; Enhanced monitoring of transactions immediately post-disbursement.	KYC/CDD, Credit Monitoring

Asset Tracing Insight (How assets are hidden/diverted)	Corresponding Preventive Control/Proactive Measure	Target Area in Bank
Promoters are siphoning funds through undisclosed related party transactions.	Comprehensive mapping of related parties; Strictly scrutinises all related party transactions for arm's length and business rationale.	Credit Appraisal, Audit
Assets transferred to relatives/ associates just before anticipated default.	Periodic review of borrowers' financial position and asset declarations (where possible); Lifestyle checks for high-risk promoters.	Credit Monitoring, Recovery
Use of offshore accounts/ companies in tax havens for concealment.	Heightened due diligence for borrowers with significant offshore dealings; Understanding economic rationale for offshore structures.	International Banking, CDD
Overvaluation of collateral to obtain higher loan amounts.	Use of multiple independent valuers from an approved panel; Stringent review of valuation reports; Regular audits of valuers.	Collateral Management

Source: Compiled by the author

Data analytics could also be used to help with the proactive identification of concealment patterns; banks can use analytical models and continuous monitoring to observe behaviour such as unusual payment patterns to high-risk jurisdictions or fund movement that is unique and rapid, that may exhibit an effort to conceal assets.

Training and awareness are key components that must be integrated into banking processes and standards. Credit and risk professionals involved in risk assessment and management will particularly benefit from diligence, considering how common it is for assets to be concealed. Recognising specific concealment methods and the potential red flags that represent the borrower's behaviour or documentation and transaction risk will be key in identifying risks and instilling a culture of professional scepticism.

Meaningful vendor and third-party risk management is also important, as fraud can involve modifications to documents or fraudulent activity through other parties, including valuers, consultants and vendors who may have colluded in the fraud or exploited it to commit fraud. Due diligence on other parties, including an ability to review and monitor their conduct and procedures, is also necessary regarding integrity and conflict of interest risks.

Practical Implementation: A Guide for Banking and Finance Professionals

Forensic accounting and asset tracing services are becoming increasingly important resources for many Banking and Finance professionals. Although institutions are assembling in-house teams to increase institutional transparency and turnaround, it can be an expensive and independence issue for an institution. Hiring an external expert may be streamlined, not to mention removing concerns of an independent team or staff. However, there can be data security concerns associated with external parties. A Hybrid model where external party resources support a core in-house team can provide a middle ground. Standardized methodologies and standard operating procedures are essential features of the asset tracing process offered by institutions. The asset tracing process improves with establishing and defining respective roles, performing risk-based assessments and searching public records. Establishing inter-departmental collaboration with Credit, Risk, Legal, Compliance, Audit and Forensic units, with ongoing support from the fraud review committee of the institution, as well as a solid triage process, creates efficiencies in the investigation and good case management, once each unit understands its role in the process.

Technology will improve the efficiency of the asset tracing process, harnessing the capacity of data analytics, digital forensics and public record databases. However, the overall budget can reflect initial setup and investment costs. These situations suggest policies explaining how frontline staff can communicate with regulators and Law-Enforcement Agencies (LEAs), the timelines associated with mandated reporting to regulators and the information-sharing forums where industry can provide anonymous fraud intelligence to be used accordingly. The more one understands collaboration mechanisms such as Mutual Legal Assistance requests, by way of example, for international requests for searches, the better. A proactive and assured frontline workforce is pivotal to prevent losses and early intervention.

It is equally essential to ensure that these staff members have safe and protected means to talk to the organization's executive management team through the respective protocols, ask questions and disclose concerns that can be investigated and whether the organization has completed a pre-emptive asset profiling of potentially vulnerable and high-risk promoters, as asset tracing can provide priceless insight into finance.

Challenges and Future Directions

Both credit card fraud and asset tracing are still facing major issues due to modern fraud techniques, large quantities of data and multifaceted legal systems. International cooperation still poses a problem and the lack of professionals adds to the burden. Institutions must implement proactive measures, support continuous education and strengthen regional and international cooperation. Focusing on modern investigative methods and predictive approaches will increase productivity and efficiency. Prompt response to emerging risks, interdisciplinary collaboration and adaptable organizational structures will allow more effective detection, tracing and fraud prevention.

Conclusion and Recommendations

Many institutions use forensic accounting for credit fraud detection, asset tracing, financial data mining and public records investigation. The result shows that the next critical steps are developing forensic skills, strengthening KYC/CDD, using analytics and training and giving the frontline more decision-making power. A fraud risk culture focusing on prevention increases compliance, loss recovery, efficiency and institutional integrity. With the help of forensic accounting techniques, loan default cases can be investigated promptly. This can lead to timely asset tracing, which may reduce bank loan default cases.

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MONITORING THE PROGRESSION: EVOLVING PERSPECTIVES ON RISK MANAGEMENT IN INDIAN BANKS

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Dr. Abhishek Kumar Singh**

Abstract

The main objective of the study is to provide a comprehensive overview of the role of risk management innovative practices in protecting the integrity and resilience of banks and financial institutions. The study delves into emerging trends, regulatory frameworks and innovative methodologies which are poised to refine the landscape of risk management. There is requirement on part of banks to equip themselves with innovative technologies. The study also focuses on the role of integration of artificial intelligence and Environmental, Social and Governance (ESG) factors into decision-making process. This study will help in illuminating the path for banks to navigate the complexities of risks in future uncertainty and towards a more resilient and sustainable future.

Introduction

India is stepping towards in the direction of "Samrath Bharat" and on transformation from developing country into developed country by year 2047. With the change in international finance, the banking industry has been considered as a haven for stability and innovation. But along with the development aspects, it is not advisable to ignore the known or unknown risks might occur in banks. With the frequent changes in market dynamics, regulatory changes and technology breakthroughs would have a momentous effect on risk management in banking industry.

Unprecedented challenges characterize this era, including the COVID-19 pandemic's aftereffects, the digital transformation's rapid acceleration and the threat of climate change. It is now more important than ever for banks to implement strong risk management plans. In this lead, "Silicon Valley Bank" including two other major banks in 2023 attracted the attention in area of risk management (Hintze, January 3, 2024). This unexpected collapse exaggerated the analysis made by the investors and regulators of banks leads to reduction in the bank stocks. Along with this, banks are facing different kinds of unavoidable risks such as Cyber-attacks, Fraudulent activities, depositors reallocating funds for better returns and pandemics after-effects on their investments and loan portfolios. The banks are trying to minimise these kinds of risks but they are appearing in a more challenging and complexed ways. These risks are even trending in year 2024, adoption of Artificial Intelligence (AI) particularly "Generative Artificial Intelligence" has increased the cyber security risks. This demands more emphasis on part of Banks to review their risk management strategies and plans in order to adjust in the changing environment to maintain stability and resilience in the face of upcoming difficulties.

In order to mitigate risks, experts and bankers are involved in analysis of potential operational and strategic ramifications of the wave of regulatory changes, which were not expected that they will affect after 2024. The regulatory landscape that is yet to come is the biggest stressor, surpassing the immediate challenges that bankers are facing. The continuous scrutiny emphasizes the need for proactive adaptation and preparedness within the banking industry in order to effectively manage changing risks and regulatory environments. There is requirement on part of Banks to follow regulations which has been prescribed for them. Banks prepare

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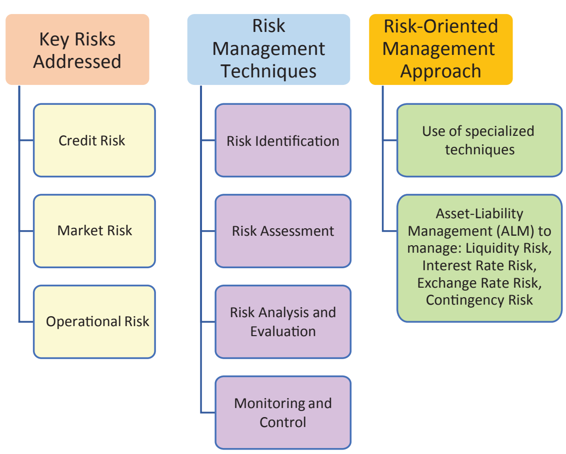
their system and provide training to the staff to comply with those requirements and regulations. But due to lack of coordination among regulators and complexity of regulations, it appears to be a difficult task to make them effective.

Risk has a wide range of possible difficulties and unpredictable abilities that could negatively impact the operational resilience and financial stability of banks and other financial institutions. One of the prominent risks is "Credit Risk" where borrowers fail to repay their loans to the banks or financial institutions. Beyond this risk, Indian banks include Non-Performing Assets (NPAs), liquidity risk, fluctuations in interest rates risk, solvency risk and asset prices and exposure of banks to potential losses on their investment and trading activities (Banerjee, Gupta & Das, 2022). The NPAs or bad loans have become major problem for Indian banks. It has been evidenced that NPA ratio increased up to 7.5% in 2021 (Santhosh, 2023). The regulators has taken steps to identify and mitigate risks with respect to Indian bank. The operational risks can be termed as risks due to internal processes, systems or human errors as well as external events like cyber attacks and frauds.

Risk Management

Figure 1: Effective Risk Management

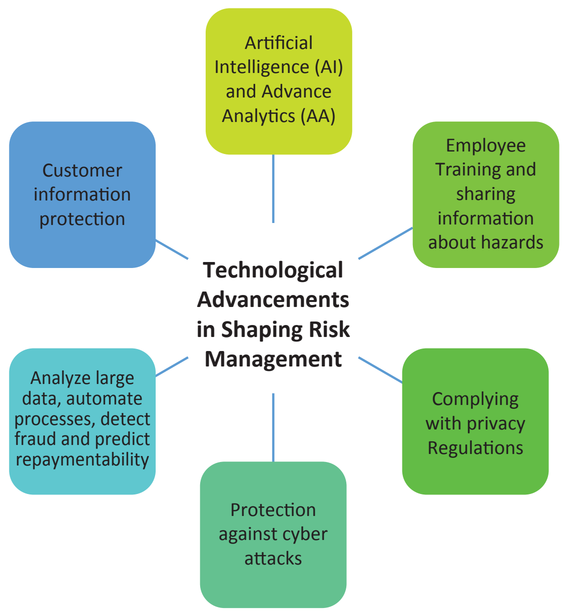


Source: Author's own work

The effective risk management principle is to ensure banks to identify, assess and mitigate the above-mentioned risks to maintain financial stability and to ensure the safety of depositor's funds. Indian banks are using techniques like risk identification, level of assessment, analysis, evaluation, monitoring and control to lessen the identified risks like credit risk, market risk and operational risk. Indian banks risk-oriented management approach helps in identifying and assessing risks through special kind of techniques and methods like Asset-Liability Management (ALM) with a focus on liquidity risk, interest rates, exchange rates, contingency risk and corporate governance, risk management process and financial stability. It takes into consideration a comprehensive risk assessment, robust risk management frameworks and regular monitoring and adaptation to shifts in the risk environment to effectively navigate uncertainties.

Technological Advancements shaping Risk Management

Figure 2: Technological Advancements shaping Risk Management



Source: Author's own work

Artificial Intelligence (AI) and Advance Analytics (AA): The way banks are managing risks by using Artificial Intelligence (AI) and Advance Analytics (AA) which can easily and quickly analyze large amount of data, can help in identification of potential issues and can also take preventive actions. This has revolutionized the risk management strategies used by banks. In this lead, artificial intelligence applications include automating time-consuming processes such as risk checking, so that staff members can concentrate on more crucial work and also analyze vast data to detect fraud trends or forecast about the loan repayment ability of borrower. These technologies would be more considerable in future for the security and effectiveness of banks.

Customers Information and Protection against Cyber Attacks: Along with this, new challenge has been raised that protection of customers' information as every information is available online. Financial institutions are investing a large sum of money in advanced defenses against cyber attacks and ongoing operations. Even in addition to this, bank have to put more efforts to comply with the strict regulations regarding privacy of the information. In response, financial institutions are investing heavily in advanced cyber security frameworks, including:

- Multi-layered firewalls.
- AI-powered threat detection systems.
- Incident response plans.
- Staff training in cyber security awareness.

Despite these efforts, there are some challenges too, which are mentioned below:

- *Complying with privacy Regulations*: Banks must now adhere to various national and international data privacy laws, which often have overlapping or conflicting requirements.
- *Climate Risk and Strategic Lending Decisions*: Banks also have serious concern towards climate change and they have to focus on how their loans might be impacted by things. Regulators are urging banks to consider how climate-related events such as floods, droughts and changing regulations on carbon emissions could impact their loan portfolios. For example, banks with high exposure to industries like fossil fuels or agriculture may face higher risks if those industries suffer from climate-related disruptions or policy shifts. Consequently, banks must:
    - Conduct climate stress testing.
    - Assess environmental impact before granting loans.
    - Develop sustainable finance policies.

Such measures not only fulfil regulatory expectations but also help banks align their operations with broader environmental and social goals. Therefore, it has become more important for the banks to approach risk in the right way. Through providing training and sharing information regarding potential hazards to the employees, it should be ensured that all employees understand the importance of maintaining security.

- *Employee Training and Risk Awareness*: Technology and regulations alone are not enough to ensure robust risk management. A key component of a successful risk strategy is the human element. All employees regardless of department should understand the importance of maintaining risk awareness and following best practices.

To promote a culture of compliance and security, banks are:

- Conducting regular training sessions on risk and cyber security.
- Sharing information about emerging threats and response strategies.
- Encouraging employees to report suspicious activities.

This cultural shift is necessary to build internal resilience against risks and to ensure that risk management becomes an organization-wide responsibility rather than the sole responsibility of a specialized department.

In conclusion, regulatory requirements significantly shape how banks manage risk. Frameworks such as Basel III, Anti-Money Laundering (AML) and data privacy laws set the standards for compliance and sound risk governance. Meanwhile, technological advancements like AI and AA enable banks to meet these standards more efficiently and proactively. However, these benefits come with challenges particularly in cyber security, data privacy and climate-related risks-that require continuous attention and innovation. To navigate this complex environment, banks must adopt a holistic approach to risk management that combines robust regulatory compliance, cutting-edge technology, employee awareness and strategic foresight. Only by doing so, banks can ensure ensure financial stability, protect customer interests and thrive in an increasingly uncertain world.

Regulatory Development and Compliance Challenges

Within the banking industry, regulatory requirements have significant influence on risk management practices. Basel III establishes new standards for liquidity and capital quality including the Net Stable Funding Ratio (NSFR) and the Liquidity Coverage Ratio (LCR), Basel III reforms and data privacy laws. The Basel III reforms were created in 2009 by Basel Committee on Banking Supervision (BCBS) with the purpose of strengthening bank supervision, regulation and risk management. A major area of concentration is operational risk management with aim to enhance data security, reduction in errors and stopping fraudulent activities (Sammer et.al, 2023). The more emphasis is placed on the significance of risk governance and supervisory standard compliance. Although the Basel III effects on the banking sector has been noted still further empirical research is required. After considering all the things, banks must make efforts to improve their risk management systems in the light if these regulatory changes in order to guarantee both regulatory compliance and efficient financial risk management.

Moreover, regulatory efforts such as "Anti-Money Laundering (AML) guidelines" and "Data privacy laws" further added to the risk management obligations of banks. AML policies are vital in preventing illegal financial activities while data privacy regulations require banks to secure sensitive customer information, adding complexity to their risk systems. Banks must demonstrate a strong internal structure that ensures compliance at all levels. Although Basel III has contributed significantly to improve the banking sector's resilience, there is still a need for further empirical research to assess its long-term effects. Ultimately, in conclusion, it can be suggested that adapting to regulatory changes are essential not only for compliance but also for maintaining effective financial risk management. Banks must proactively enhance their systems to manage emerging risks and meet evolving regulatory expectations.

Cyber security Risks and Resilience Strategies

The concept of cyber security risks and resilience strategies have become trending concern. The incorporation of digital technologies and internet connectivity has resulted into the increase in cyber threats including malware propagation, data modification, denial of service attacks and information leakage. The cyber resilience strategies are being developed to guarantee "Cyber Physical System (CPS)" (means combining sensing, processing, control, networking and physical objects and infrastructure) survival and essential operations in the event of extreme events. These tactics seek to foresee, anticipate, mitigate and adjust to the negative consequences of cyber attacks. The concept of cyber resilience is attracting the researcher's attention specially with a focus on techniques applicable to Cyber Physical system (CPS) (Analytica., 2023). The creation of thorough cyber protection systems, well defined policies & procedures, early detection and preventive actions and efficient safeguarding of vital infrastructure components are some tactics to enhance cyber resilience. The resilience of Cyber Physical system (CPS) can also be improved though implementation of risk-control and fault restoration strategies that may consider cyber risk into account.

Environmental, Social and Governance (ESG) Risks

In recent years, Environmental, Social and Governance (ESG) issues have gained substantial attention in the global financial system. Multiple studies have emphasized the growing importance of ESG considerations, especially within the banking industry. As global concerns around climate change, social justice and corporate ethics intensify, regulators, rating agencies, investors and other stakeholders are increasingly demanding that banks align their operations with ESG principles. This shift is transforming how financial institutions operate, monitor risks and report on their performance.

One of the major implications of this ESG movement is the increased compliance burden. Banks are now subject to more complex and evolving reporting requirements. Regulatory bodies are issuing guidelines that mandate disclosures related to carbon emissions, gender diversity, ethical labor practices and governance structures. International frameworks like the Task Force on Climate-related Financial Disclosures (TCFD) and the EU Taxonomy for Sustainable activities have made it clear that banks must integrate ESG risks into their traditional risk assessment models.

In response to these growing expectations, financial institutions are beginning to recognize the economic and existential implications of ESG-related risks. These include physical risks from climate change (like floods and wildfires), transition risks from shifts in regulations and market preferences and reputational risks that may arise from poor social or governance practices. A bank's failure to address ESG issues adequately can lead to reduced investor confidence, legal liabilities and even withdrawal of customers and partners. As a result, banks are working to incorporate ESG risk assessments into their risk management frameworks. This integration is crucial for aligning their operations with the Sustainable Development Goals (SDGs) and ensuring long-term resilience. Financial institutions are also moving beyond compliance and viewing ESG as an opportunity to innovate, attract sustainable investments and contribute to the broader goal of building a green and inclusive economy. Even multinational enterprises and healthcare organizations are also acknowledging the value of ESG-oriented investments. ESG rating and metrics are increasingly used in decision-making process, helping these organizations in identifying ethical, resilient and forward-thinking business partners and investment opportunities.

Previous studies have gone further to classify and identify ESG risks specific to the banking industry. These studies not only consider the impact of ESG risks on financial performance but also highlighted the responsibility of banks to foster sustainable economic growth. There is growing consensus that banks must act as enablers of a "Green Economy", channeling funds towards renewable energy, sustainable infrastructure and socially responsible enterprises. In summary, ESG considerations have evolved from being optional concerns to becoming strategic imperatives in the banking sector. By proactively managing ESG risks and embracing sustainability principles, banks not only comply with regulations but also play a central role in driving positive environmental and social change.

Future Outlook and Strategic Implications

The expected developments that will shape the practice of risk management in the future such as the need for banks to integrate risk management into their organizational culture and on the ongoing adoption of cutting-edge technologies. There are number of factors that might have impact on risk management in banking. It is imperative for banking institutions to possess effective risk management to be successful in the long run. The operational risk management is crucial which includes strengthening data security and preventing fraudulent activities (Sobanova & Kudinska, 2022). The landscape of risk management in banking will be shaped by regulatory intervention, technological developments and the globalization of financial markets. The tools of risk management equip identification, evaluation and addressing risks and managing risks promotes assets security and sound decision-making. But it is important to take comprehensive and adaptable approach to risk management's qualitative components. Additionally, banks can improve their risk management procedures by taking into consideration more comprehensive stance, recognizing inherent uncertainty and accounting for increment in complexity which will help in effectively navigating the changing landscape and preserving a competitive edge.

Figure 3: Future Outlook and Strategic Implications

Future Outlook and Strategic Implications		
Long-term vision and objectives	Strategic planning process	Implementation and adaptation

Source: Author's own work

Conclusion

The objective of the study was to sightsee the future risk management in banking industry at the time when India is moving towards "Developed Nation by 2047". The technological innovation, shifting of regulatory dynamics and new risks will define the future of risk management in banking sector. In order to cope with these upcoming and existing risks, banks need to embrace the digital transformation, improvement in the ability to comply with regulations, fortifying the cyber security defenses and incorporating ESG factors into their risk management systems. Banks can maintain the long-term success in a constantly changing environment by remaining ahead of the curve and taking a proactive approach for risk management. This will help the banks and financial institutions to capitalize on emerging opportunities and mitigate potential threats. The training and development programmes to increase the risk awareness can play a crucial role in forming the future risk culture.

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EMERGING TRENDS IN LEARNING & DEVELOPMENT

Manodeep Sarkar*

What different could we do for our employees in Learning & Development space, which they themselves could not achieve in this age of information?

The Paradox of Focus

We are living in the age of information, wherein, we could easily access and learn from resources available around us. For the entire duration, we remain awake, we are in constant mode of processing information available around us. Whether we learn from it or use it for our upskilling depends on the cost of its access in terms of time and money. It also depends on our perception of potential gain we could derive out of such learning, which further depends on our span of attention on the activity. These days, with most of our time involved in looking at some screen, mobile phones being most common, our attention spans have shrunk considerably.

According to Dr. Gloria Mark[1], a psychologist and the Chancellor's Professor of Informatics at the University of California Irvine and author of "Attention Span: A Groundbreaking Way to Restore Balance", it was found that the average attention span on any screen to be 02:30 minutes on average, back in 2004. It came down to 75 seconds in 2012 and since 2017, it has been recorded at 47 seconds on average with 40 seconds[2] being the median value within the respondents. In a separate study by researchers at Pennsylvania State University[3] and Stanford University[4], the average mobile device screen viewing session lasted roughly 10 seconds.

The research[5] by Microsoft in 2015, shows our attention span has come down to 8.25 seconds, less than even a squirrel. When our attention is disrupted, our ability to form the perception of potential gain gets impaired. We learn something when information perceived to be valuable and that information get stored in our short-term memory. Only when we engage actively with some information or activity, it moves from short-term to long-term memory. With our limited cognitive ability, when we try to multi-task or try to handle too much information simultaneously, we impair our ability to retain anything long enough in our short-term memory to successfully cement for the longer term. The studies by Dr. Gloria Mark, show that, we take 25 minutes to get back to our original task once we switch the task for the sake of multi-tasking.

Therefore, those 10-40 seconds of span of attention is all we have to devise modern day learning and development strategies for our employees to upskill. We shall not delve upon the righteousness of this situation as we shall consider this to be part of our natural evolution. Rather, we shall focus on how to engage our employees for those 40 seconds, so that they voluntarily or involuntarily stay on for that duration or even longer perceiving gain of value from their learning resources.

With this notion, let us dive into emerging trends in Learning & Development (L&D) for our evolving task-switching workforce.

Microlearning

We grow up learning things in totality. Any learning less than totality, we refer to as knowing. We study

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[1]https://www.apa.org/news/podcasts/speaking-of-psychology/attention-spans

[2]https://www.apa.org/news/podcasts/speaking-of-psychology/attention-spans

[3]https://www.psu.edu/news/research/story/human-screenome-may-give-insight-human-health-and-well-being

[4]https://news.stanford.edu/stories/2020/01/introducing-human-screenome-project

[5]https://www.scribd.com/document/265348695/Microsoft-Attention-Spans-Research-Report

subjects in schools and colleges with a definite start and finish. We learn to do daily chores not partially but totally. It could span over years, but has a start and finish, which we may or may not decide. We perceive completeness in such learning. Till the time, we feel and believe in that completeness, we are not sure whether we have learned. This feeling of completeness varies from person to person, but it is something we all seek in natural order. The trend that we are going to discuss now is theoretically in contradiction to our natural search for completeness, yet it captures our thoughts and attention span of 40 seconds to make us perceive completeness. Some call it bite-sized resources, some call it in-the-flow learning, some call it on-the-go learning. However, it refers to any learning content requiring less duration of focus and attention yet provides a sense of completeness.

So, how could we come up with such learning content or resources? Does it need to be in audio-video form just like a short video clip? Does it necessarily require a sound or visual? Should it have soothing colours? Should it be available on a portal or as a link? Are we asking to write questions to hold those 40 seconds of attention? Or, are we missing something.

The answer to all these lies in the fact that the learner must perceive gain from learning being greater than the effort put in. In the myriad of our task-switching lives, we must

- Identify the most common repetitive tasks, employees engage in every day and create microlearning content for them to access alongside such repetitive tasks.
- Employees should be able to relate to that content and find it complementing to their activities with simple and preferably single learning objective. It should be easy to understand and implement in their flow of work.
- The content should be standalone, which gives a sense of completeness when completed independently.
- Access to the content should be easy for employees to learn at their own pace in their own ambience, without considerable cost in terms of time and money.

A myriad of content options like self-paced e-learning modules, short videos, interactive quizzes and games, job aids, infographics etc. are suggested if one searches for microlearning contents on the internet. But in fact, it is not limited to that only. A simple poster near the coffee machine or water filler machine at workplace is also a microlearning content. A jingle on the public announcement system is also a microlearning content. A cartoon of a typical problem being solved with an undertone of humour is also a microlearning content. Ultimately, our perceived gain from learning should be greater than our effort to learn.

As a matter of organizational policy, our L&D professionals should devote considerable portion of their time to devise innovative microlearning content. Instead of long lecture sessions and complex presentations with unidirectional communication, we should engage our employees in interactive microlearning contents, which evokes curiosity.

Personalized Learning Journeys

Once employees start consuming microlearning contents, they must have a sense of direction. They should feel confident that the organization is serious about their learning, conducive to the requirements of their role. Transparency and clear communication of a role's expectations is the bedrock for creating that sense of direction. Their performance in their role should be connected to their learning achievements and any upshift and downshift in work performance should have a visible correlation to learning for employees to have a sense of gain. Performance in Key Responsibility Areas (KRAs), job role, proactive endeavors, time spent on learning, qualifications, age, professional achievements etc. should be variable parameters for generating personalized learning journeys for employees. The journeys should have milestones for employees to have an understanding of what to expect at each milestone. If the employee is not able to sense gain, they could give feedback and alternate content could be substituted to make the journey meaningful.

Artificial Intelligence in L&D

Now that we have an understanding of Microlearning and Personalized Learning journeys, who will be doing the hardwork to make sure that contents and journeys are ready when demanded.

In organizations, with large number of employees, it could be a daunting task for a team of human L&D professionals to deliver that with speed, accuracy and quality. With the mission to keep that 40 second attention span engaged in learning, updated contents and quicker availability of customized learning journeys is important. Artificial Intelligence (AI) could be of great help in such scenario, provided we know how to actually use it and not be mesmerized by its exotic appealing hype. We could use AI in areas of content creation and quickly generate large number of Personalized Learning Journeys, based on changes in parameters or variables of determining learning. To ease our understanding and interpretation of results of such large number of customizations, we could segregate employees in groups or cohorts, with homogeneity in one or more parameters. It is nothing but sampling our population of employees. With the advent of modern-day Gen-AI tools, which are sophisticated to not only analyze existing data but also create and fill up any missing data points, running a thorough analysis of learning journeys with their impact on performance has become easier. It is like a What-If sensitivity analysis with different combinations of learning contents to maximize correlated performance in work. AI could help with such computations, given the correct instructions from us. Data-driven analysis of sentiments and satisfaction of employee trainees, aid in planning better training programs and their delivery methods, thereby, maximizing the Return on Investment (ROI).

Immersive Learning Technologies

Imagine a trainer lecturing us on how to do a job or handle a situation and asking whether we have any questions. Imagine we are in that situation where we must act to be at peace. Which scenario will help us to learn faster and retain our learning longer? It is no wonder that unless we are immersed in a scenario, we cannot imagine or fathom a solution to an issue. But we may argue that are not we facing the issues and learning on the job? Yes, we do, but only those of us are learning who get to face such scenarios. Just because, someone does not face a situation, does not mean they do not need to know to navigate the situation. What if an organization wishes to impart experiential learning to its employees on a larger scale. The answer to this is immersive simulation-based learning technologies, where through Artificial Reality (AR) and Virtual Reality (VR), we could create an artificial ambience, where we could replicate a real-world scenario for employees to take centre-stage and act prudently. This technique is very helpful for onboarding new employees to the organization as well as those returning to customer-facing and decision-making roles after a considerable break. The immersive situation recreates the urgency and stress involved in such real-world scenarios and learners are compelled to assess the situation and act accordingly. This aids in full capture of attention, maximum retention and sense of complete learning. The initial technical setup and scenario building is a cost intensive step in this method, but when scaled up for training large number of employees, the benefits eventually surpass the costs. Input for scenarios could be frequent issues in the organization like recorded customer service issues, documented technical failures, similar kinds of frauds etc. Gamified scenarios also increase learner engagement and motivation.

Cross Training

With all the above methods, we could train the employees to perform better in their roles. But we also need employees to be skilled in case of potential workforce restructuring or significant job-role change or substitution of employees. A cross-trained employee can seamlessly step in and ensure the company operates smoothly without the need for emergency training or last-minute outsourcing. It enhances collaboration as employees tend to have working knowledge of other aspects of the organisation beyond their role. It could improve return on investment, as having a skilled internal employee is cost effective compared to external hire or outsourcing. It also improves employee engagement and acts as a business continuity measure.

Soft Skills Development

Now that we have been somehow able to capture the 40 second attention of our learners by creating microlearning content through AI and curating them into personalized learning journeys, complemented by immersive learning experience, what if our learner employees are unable to communicate their learnings. What if their body language is detrimental to their learning. Our skill and knowledge are of no use, if we do not wish to use them when required. Our usage could be flawed if our intentions are wrongly communicated to people we deal with. A skilled employee, if perceived to be unapproachable by our clients and partners, is not a valuable resource. We need to remember that even our clients and partners have that 40 second attention span. How our employees communicate verbally and non-verbally decides a lot about our dealings with clients and partners. Focusing empathy, adaptability and problem-solving should be integral to L&D programs. Soft skills aid in building better work culture by promoting active listening, constructive feedback and inclusiveness.

Stress Management

We have that 40 second attention span to engage our employees but so do other stakeholders in our organization, with their own priorities to push forward. The employee feels overwhelmed and stressed about addressing all the challenges they face. Though other priorities are focused on getting the work done by the employee, our priority is to make the employees retain learning for themselves. So, our priority is different than others and our employees must sense it. We should give them a flexible learning schedule with capabilities to resume and recap their learnings at their own pace. There should be summarized contents and some mentoring or coaching avenues to hear them out. Hybrid training programs also puts the convenience of learners on priority. The objective is that they must perceive the gain to be greater than the efforts put in. Only when our brain is relaxed, less distracted, we can focus better and perhaps for even longer than 40 seconds. Slowly, the brain trains itself to focus for more. This translates to employee well-being and is appreciated by employees though subtly.

Emotional Intelligence

A growing focus in Learning & Development (L&D) is Emotional Intelligence (EI). The various studies highlighted its role in creating resilient, collaborative teams capable of managing stress and communicating effectively. Integrating EI into L&D programs enables HR professionals to build adaptive and empathetic workplaces. Emotionally intelligent leaders understand both their own emotions and those of their teams, helping them lead with authenticity, compassion and empathy. This fosters inclusion, engagement and job satisfaction. Empathy - a core component of EI-supports strong team dynamics by promoting understanding, active listening and cooperation. L&D professionals can enhance EI across the organization through targeted training workshops that focus on self-awareness, emotional regulation, communication and empathy. These can be delivered via interactive formats such as workshops, e-learning and team exercises. Encouraging self-reflection and providing safe spaces for emotional sharing also support EI growth. Measuring outcomes like improved communication and teamwork can assess effectiveness. Far from a passing trend, EI is essential for nurturing resilient and high-performing teams in today's fast-paced work environment.

Continuous Learning Culture

Now having discussed so much, where does our learning end? The answer is nowhere. Nobody told us when to start learning and nobody could possibly tell when to end. We start learning due to requirements of survival and our curiosity. Being human, it is in our natural order to question and be curious about things around us. As organization, our L&D strategy must support that natural order.

We must encourage employees to take ownership of their professional development by providing them access to learning resources beyond directed training contents. Availability of continuous learning contents promotes growth mindset and encourages self-directed learning.

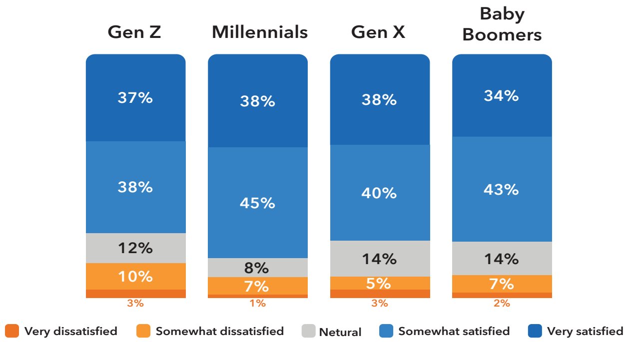
The Intuitive Learning Platform

All the things we have discussed so far could fall apart if the learner employee finds them difficult to access. The learning platform of the organization should be easily accessible anytime, anywhere and on any device. It should have capabilities to support all the above strategies and yet should track learning engagement, completion rates and learning retention matrices for L&D Managers to refine their strategies to improve training effectiveness. A 2024 LinkedIn Workplace Learning Report found that 94% of employees prefer learning while working rather than in separate training sessions. It is possible only when the learning platform is integrated with the business platform. Step-by-step walkthroughs, self-help knowledge base integration, contextual pop-ups and smart tips reinforce the learning in the flow of work for employees. All these things make the employees feel that the organization is serious about their learning and they find value or gain in learning which is directly related to their work.

Conclusion

The core job of L&D in any organization is talent management or maximizing human capital. Modern day employees, especially Gen Z and later, believe in a concept of job satisfaction, which is very different from earlier generations. They value collaboration,social learning, new working models, faster availability of information more than earlier. They are not satisfied with traditional ways. They do not believe in retiring from the same organization to which they first joined. Rather, the majority prefer not to even work for their entire working age. They prefer to retire early and venture into activities of their own, which is evident from large number of startups and alternate professions. The social structure of our country is also changing with the changing demographics, with more new age people preferring solo life or those married are working couples. These bring with them their own opportunities and challenges. L&D Managers need to improvise on all these aspects while framing the L&D policy for their organization with the latest trends in the industry.

Figure 1: Training satisfaction across generations



Source: The TalentLMS 2024 Annual L&D Benchmark Report

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Summary of Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship Project (2021-22)

on

A study on the AT1 Bonds in India vis-à-vis other jurisdictions

By:

Mr. Saket Kumar, Assistant General Manager, Reserve Bank of India.

- Additional Tier 1 (AT1) bonds are capital instruments with debt like features and act as key regulatory bail-in instruments outside the normal bankruptcy process imposing principal losses on creditors in case of firm specific events. The primary purpose of institutionalising AT1 bonds has been to enhance the resilience of banks by ensuring orderly re-capitalization and liquidation of banks without leading to any domino impact on the banking or financial system.
- Based on the stipulated features, AT1 instruments have two defining characteristics – the loss absorption mechanism and the trigger that activates this mechanism. The loss absorption mechanism occurs either by AT1 bonds converting into common equity by or through a complete or partial, permanent or temporary principal write-down, based on pre-defined trigger point, either quantitative or qualitative. The quantitative trigger is generally defined numerically in terms of a specific capital ratio/fraction of risk-weighted assets or it can also be discretionary based on supervisory assessment (statutory power or contractual terms), when the bank is assessed to be non-viable and the trigger is necessary. The write-down is also affected in cases prior to recapitalisation of a bank with public funds.
- The global AT1 market is worth roughly $969 billion as of March 2024 with Asia having the major share of around $577 billion, followed by Europe with $211 billion and preference shares in United States of America (USA) with a market of around $182 billion. Globally, the CNY is the currency with maximum share of issuance in AT1 followed by USD and EUR. With regard to the principal loss absorption mechanism, AT1 instruments with write-down feature has been observed to the prominent issuance type both in Europe as well as in Asia. However, the proportion of write-down issuance is greater in case of Asia. In the write-down category, there appears a complete contrast between the issuances in Asia and Europe. While European write-down issuances are primarily temporary write-downs, in contrast, the Asia write-down issuances are primarily permanent in nature.
- The maturity of the AT1 bonds is broadly perpetual across the globe and are mainly issued as subordinated debt. The coupon reset dates have been observed to be coincident with the first call date. As required in the Basel guidelines, dividend pusher feature is not observed in any jurisdiction globally. However, the dividend stopper guidelines are present globally in most of the jurisdictions. With respect to dividend distribution, dividends are observed to be fully discretionary (non-cumulative) and subject to distributable reserves and capital buffers.
- There is a lot of variation observed in the requirements for going concern Common Equity

Tier 1 (CET1) loss absorption triggers across the geographies. Geographies such as China, Singapore, Hong Kong, Korea, USA and Canada have no stipulated trigger requirements. However, for Australia, European Union (EU), United Kingdom (UK), India, Thailand and Switzerland, CET1 requirements ranges from 5.125% to 7%. There are also a lot of variances in the loss absorption manner wherein some jurisdictions provide only for conversion to equity while some for permanent and temporary write-downs.

- With respect to the discretionary trigger of non-viability, stipulations across jurisdictions are based on contractual agreements, statutory or both. In case of contractual stipulations, the provision of loss absorption trigger is mentioned in the AT1 contract itself. Statutory stipulation requires that in case resolution is invoked, creditor hierarchy has to be respected via "no creditors worse off than in liquidation principle". China, Australia, Korea, Thailand, India and Canada have contractual stipulations. Hong Kong, Singapore and Switzerland have both the stipulations. EU, UK and USA have the statutory stipulations.
- Globally, the major investor groups for AT1 instruments include Asset Managers, Banks, Family Office/Professional Investor/Private Bank customer, Hedge Funds, Insurer (investing policy holder liabilities), Pension Funds, Preferred Funds/ CoCo Funds and Sovereign wealth funds. Most global investors do not have any rating restrictions for making investments except for Asian markets. Relative outright value of AT1 bonds within the asset class appeared to be the most quoted reasons for investing in AT1s. Investors and banks use yields and credit spreads (Z-spreads and 5-year swap spreads) to value the AT1 bonds.
- The market expectations about issuers invariably calling the AT1 bonds at first call date has been replaced with the understanding that the issuers may prefer calling the AT1 bonds at the first call date but may choose not to if the economics are very unfavorable. Hedging with respect to AT1 bonds was not being done by majority of the investors. As a tool to reduce refinancing risk and enhancing primary market efficiency, many banks in UK and EU combine fresh AT1 capital issuances with the concurrent repurchases of outstanding AT1 capital instruments, often termed as "tender offer".
- As on March 2024, the total amount of AT1 instruments outstanding in Indian markets is ₹ 1,28,147 crores, with the issuance being dominated by Public Sector Banks. There appears to be a wide variability in the respective coupons and the spreads prior to 2020-21 which have appeared to narrowed down over the post 2020-21 period, mainly attributed to bank consolidation. There has been stability in the levels of the coupons and the reduction in the spreads appear to reflect upon the healthy condition of the Indian Banking sector, better balance sheets, as well as the overall strength of the financial sector in general. There do not appear to be any direct relationship between the issuance of AT1 bonds and Gross Non-Performing Assets (GNPAs), however, we may infer expected write-offs to be directionally related to the issuance of the AT1 bonds.
- The Indian AT1 market has seen several regulatory interventions coordinated with the Government to avoid any coupon deferral or loss to investors in these instruments. The domestic AT1 bond market is limited due to the lack of a vibrant secondary market for bonds. For the Indian markets, the AT1 bonds are invariably assumed to be called on the first call date and this has been the practical norm.
- AT1 bonds are complex instruments. Given the risks involved in investing in AT1 instruments, one key risk to the AT1 market is around investor confidence. Over the recent past,

there has been several events of the writing off of AT1 bonds issued. In case, the respective jurisdiction has statutory guidelines in terms of resolution framework or other guidelines, then the contractual terms must coincide with the statutory terms and the competent authority puts the bank in resolution simultaneously writing-down the AT1 bond. Generally, the resolution frameworks mandate the creditor hierarchy to be followed and thus, in these cases, the write-down of AT1 bonds prior to write-down of shareholders' equity is prevented.

- In cases where there are no such statutory/ resolution provisions or the contractual terms are not fully aligned with the respective statutory guidelines or the respective statutory framework, do not put specific restrictions on the wipe-out of the AT1 bonds without the wipe-out of CET1, then in these cases, the write-down of AT1 bonds prior to write-down of shareholders' equity is possible. Thus, there is considerable complexity in understanding the nuances of the AT1 bonds which would be a daunting task for any retail investor and thus, only specialised investors may be required to be allowed to invest in these instruments.
- Placement memorandum (along with term sheet) is the official document which has been prescribed for issuance of corporate bonds in India as per Securities and Exchange Board of India (SEBI) guidelines, as compared to Placement Prospectus in EU. Even though the term-sheet field list has been prescribed, variability has been observed in the disclosures provided in the term sheets particularly with respect to the write-down, exercise of call options, exercise of Point of Non-Viability (PONV) stipulations. Given the technicalities and intricacies involved in various situations in which the write-down may occur, the disclosures need to be simple and well-explained. With respect to mis-selling, the regulators may mandate nuanced and to the point disclosures in the application forms or the selling team to individually apprise the customers and getting those signed as part of the investment document, so that the product is adequately explained, all related information is provided and the investors make an informed investment decision.
- The Indian corporate bond market is still evolving. The Indian corporate bond market is completely dominated by private placement issuances and public issuances have been limited. From a ratings perspective, the corporate bond market is highly skewed by issuers which are highly rated with AAA and AA rated issuers forming the 75-80% of the issuance. Further, majority of the issuances in the corporate bond market are fixed rate issuances and the floating rate issuances are minimal. The corporate bond market is also dominated by issuances from financial corporations; however, the share of non-financial corporations has also risen over the years. There is limited trading in the secondary bond market.
- Banks along-with AT1 bonds also issue other bonds such as infrastructure bonds. Given that domestically, the bonds are issued by banks as part of the corporate bond markets, hence, the bank bond markets including the AT1s parallel the nature of the corporate bond markets. AT1 bonds are at the riskier end of the fixed income bonds as they are lower rated than more senior debt, therefore, the relative higher yield offered by AT1 bonds may be assumed to be driven by their subordination in the capital structure, rather than a reflection of the respective bank's credit quality.
- Credit rating agencies generally follow the practice of "notching", wherein the different issuances of same borrowers are rated differently based on the risk perceptions. AT1 bonds, based on loss absorption features and thereby, inherently

considered more risky are generally notched down from similar issuances of the banks. The corporate bonds are generally being priced based on the ratings with the highest ratings having the smallest coupon and the weakest ratings having the highest coupons. A comparison of the coupons with the bonds of the Banks reveal that as we go down the rating chart, the difference in the coupons become more stark.

- In the Indian context, there is a need for harmonization on the valuation aspect of the AT1 bonds which is not as what is observed globally. There is need to bring in more customer awareness with respect to the various scenarios related to the write-down/write-off of AT1 bonds. Regulators may also issue Frequently Asked Questions (FAQs) detailing all the aspects so that the customers can get an authentic information source on the AT1 bonds. The prospectus memorandum for the issuance of AT1 bonds may be made more focused with respect to the risk disclosures. The limitations of the corporate bond market which also affects the AT1 bond market such as non-availability of indices/benchmarks, lack of depth in Credit Default Swap (CDS) market, lack of depth in secondary markets, primary market being highly privately placed making effective price discovery limited, limited avenues for hedging instruments etc. are required to be addressed.

- Unlike as observed world-over, AT1 bonds in the form of contingent convertible are not allowed in India as part of capital. With the deepening of capital markets and efficient price discovery being facilitated, this aspect may also be reviewed. Further, the Perpetual Non-Cumulative Preference Shares (PNCPS) issuance in India is limited even when we have a vibrant capital market. A well-developed PNCPS market will augur well for capital raising by the banks and will add to the variety of instruments available for the same.

☯

IIBF inaugurated Professional Development Centre at Guwahati

IIBF is pleased to announce that a new Professional Development Centre (PDC) at Guwahati has been established. The PDC was inaugurated by the President of the Institute Shri. M. V. Rao on June 6, 2025. Mr. Binay Kumar Singh has joined the Institute as Head-PDC, Guwahati. For more details, please contact on head-pdcgau@iibf.org.in

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