



ICMAI

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

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Mission Statement

“The CMA professionals would ethically drive enterprise globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.”



Vision Statement

“The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprise globally.”

About The Institute

The Institute of Cost Accountants of India is a statutory body set up under an Act of Parliament in the year 1959. The Institute as a part of its obligation, regulates the profession of Cost and Management Accountancy, enrolls students for its courses, provides coaching facilities to the students, organises professional development programmes for the members and undertakes research programmes in the field of Cost and Management Accountancy. The Institute pursues the vision of cost competitiveness, cost management, efficient use of resources and structured approach to cost accounting as the key drivers of the profession. In today’s world, the profession of conventional accounting and auditing has taken a back seat and cost and management accountants are increasingly contributing toward the management of scarce resources and apply strategic decisions. This has opened up further scope and tremendous opportunities for cost accountants in India and abroad.

After an amendment passed by Parliament of India,

the Institute is now renamed as *“The Institute of Cost Accountants of India”* from *“The Institute of Cost and Works Accountants of India”*. This step is aimed towards synergising with the global management accounting bodies, sharing the best practices which will be useful to large number of transnational Indian companies operating from India and abroad to remain competitive. With the current emphasis on management of resources, the specialized knowledge of evaluating operating efficiency and strategic management the professionals are known as *“Cost and Management Accountants (CMAs)”*. The Institute is the largest Cost & Management Accounting body in the world, having approximately 5,00,000 students and 1,00,000 members all over the globe. The Institution headquartered at New Delhi operates through four regional councils at Kolkata, Delhi, Mumbai and Chennai and 112 Chapters situated at important cities in the country as well as 11 Overseas Centres. It is under the administrative control of Ministry of Corporate Affairs, Government of India.

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Chairman's Message



Dear Members and Esteemed Readers,

It gives me immense pleasure to present the April 2026 edition of the BFSI Chronicle, a knowledge initiative of the Banking, Financial Services and Insurance Board of the Institute of Cost Accountants of India. In a rapidly evolving financial landscape, where complexity, innovation and regulation converge, the need for informed, analytical and practice-oriented insights has never been greater. This Chronicle is intended to serve precisely that purpose – as a curated platform that translates emerging developments into meaningful professional understanding.

The BFSI sector today stands at a critical intersection of transformation. Digitalisation, evolving regulatory expectations, changing credit dynamics, sustainability considerations and global economic uncertainties are collectively redefining how financial institutions operate, assess risk and create value. Traditional boundaries between banking, insurance and financial services are gradually dissolving, giving way to integrated ecosystems driven by technology, data analytics and customer-centric innovation. In such an environment, professionals are expected not only to understand change, but to interpret it, manage it and lead it.

This edition of the Chronicle reflects that very spirit. It brings together a range of perspectives that are both relevant and forward-looking – spanning credit risk management, emerging financing models, regulatory developments, sustainability-linked finance and evolving business practices. The focus is not merely on theory, but on application – enabling readers to draw practical insights that can be implemented within their respective domains. The intent is to bridge the gap between regulatory frameworks and operational realities, thereby strengthening professional effectiveness.

A key underlying theme across the BFSI sector today is the increasing importance of disciplined financial management and risk awareness. Whether it is credit underwriting, project financing, insurance structuring or investment decision-making, the emphasis is shifting towards data-backed evaluation, transparency and long-term sustainability. This shift places greater responsibility on finance professionals to uphold standards of governance, ensure accuracy in reporting and contribute to informed decision-making processes.

On April 27, 2026 RBI Directions on Asset Classification, Provisioning and Income Recognition mark a decisive shift for commercial banks, introducing the ECL-based provisioning framework with effect from April 1, 2027, while strengthening credit risk governance, transparency and consistency across the banking system. This development makes our earlier Special 23rd Chronicle on ECL even more relevant, as it has already helped members understand the practical implications of the transition for provisioning,

model governance and reporting. For CMAs and the banking fraternity, this is a timely and highly significant regulatory milestone that will shape the future of credit appraisal, monitoring and financial discipline in Indian banks.

In this context, the role of Cost and Management Accountants assumes heightened significance. CMAs are uniquely positioned to bring analytical depth, cost intelligence and governance discipline into financial systems. Their expertise in areas such as costing, budgeting, performance evaluation, risk assessment and internal control enables institutions to operate more efficiently and responsibly. As financial institutions navigate new challenges, the contribution of CMAs in strengthening credit quality, improving profitability and ensuring compliance will be increasingly valuable.

We would be starting with two value added course namely Certificate Course on Project Financing from 2nd May, 2026 and Certificate Course on Cost Control in the Banking Sector in June, 2026 and with the other Bouquot of courses we have a platform for capacity building for the members and the students. We have also lined up with the pipeline the various webinars in the diverse subjects of the BFSI sector and we request to kindly refer to our new website and check the BFSI segment for updates and changes. We would be soon releasing the Guidance Note on ECL and restructuring publication along with update on the MSME handbook released at the time of COVID.

The BFSI Board continues to focus on capacity building and knowledge dissemination to support this evolving role. Through specialised publications, skill-building programmes and professional engagements, the Board is committed to equipping members with the tools required to meet contemporary demands. The Chronicle forms an integral part of this effort, acting as both a knowledge resource and a platform for thought leadership.

As we move forward, it is essential for professionals to remain agile, informed and forward-thinking. The ability to adapt to change, while maintaining core principles of integrity and discipline, will define success in the BFSI sector. I am confident that this edition of the Chronicle will contribute meaningfully to that journey.

I commend the editorial team and contributors for their efforts in bringing out this insightful publication and trust that it will serve as a valuable reference for all readers.

With best wishes,



CMA Chittaranjan Chattopadhyay

Chairman

Banking, Financial Services & Insurance Board

The Institute of Cost Accountants of India

From the Desk of the Department

In an increasingly volatile global environment, economies are being shaped by a complex interplay of geopolitical tensions, monetary policy shifts, technological interventions, and institutional resilience. India, while relatively stable, is not insulated from these developments. The evolving stance of the Reserve Bank of India (RBI), coupled with global crises and market reactions, demands both policy prudence and professional foresight—particularly from Cost and Management Accountants (CMAs).

To strengthen financial security, the RBI's push for two-factor authentication (2FA) has significantly enhanced digital security by mandating additional verification layers for electronic transactions. This measure has reduced fraud risks and bolstered consumer confidence in digital banking. As India steadily progresses toward a less-cash economy, such robust authentication frameworks reinforce trust and ensure systemic stability.

The ongoing geopolitical tensions in West Asia have introduced substantial uncertainty in global markets. Supply chain disruptions, increased defence expenditures, and volatility in energy prices have cascading effects on emerging economies like India. These tensions heighten investor risk perception, often triggering capital outflows and exerting pressure on currency stability.

This environment of uncertainty has contributed to increased stock market volatility. Markets, which thrive on predictability, tend to react sharply to geopolitical and economic disruptions. Fluctuations in crude oil prices, shifting interest rate expectations, and movements of foreign institutional investors (FIIs) have led to intermittent corrections in Indian markets, despite strong underlying fundamentals.

A major consequence of these developments is the oil crisis and its adverse impact on the Indian economy. India's heavy dependence on crude oil imports makes it particularly vulnerable to price shocks. Rising oil prices increase import bills, widen the current account deficit, and fuel inflationary pressures. This, in turn, affects fiscal stability, reduces disposable income, and raises input costs for industries, ultimately constraining economic growth.

In response to such pressures, businesses are increasingly adopting cost compression techniques as a strategic imperative. These include process optimization, lean management practices, renegotiation of supplier contracts, and the adoption of digital tools to improve efficiency. When implemented effectively, these measures not only protect profit margins but also enhance long-term competitiveness.

The RBI's recent neutral monetary policy stance reflects a balanced and calibrated approach. By maintaining equilibrium between inflation control and growth support, the central bank avoids aggressive tightening or loosening of rates. This stance enables macroeconomic stability while retaining the flexibility to respond to evolving global and domestic conditions, signalling cautious optimism amid uncertainty.

In this challenging landscape, CMAs play a pivotal role in crisis management. Their expertise in cost control, financial planning, risk assessment, and performance management positions them as key strategic advisors. They contribute by designing cost optimization frameworks, improving budgeting and forecasting accuracy, supporting investment decisions under uncertainty, and strengthening internal controls and governance structures.

Recent developments, including ceasefire announcements in conflict regions, offer a glimmer of hope. However, sustained resilience requires a coordinated and forward-looking approach. Key mitigation measures include continued policy vigilance by the RBI and government to manage inflation and fiscal discipline, diversification of energy sources with increased investment in renewables, adoption of digital transformation and resilient supply chains by corporates, and effective utilization of CMA expertise for data-driven and sustainable decision-making.

In conclusion, while global uncertainties persist, India's institutional strength and professional capabilities provide a solid foundation for resilience. The synergy between prudent policymaking and strategic financial management will be crucial in navigating the road ahead.

Strengthening MSMEs Through Pre-packaged Insolvency

(A Timely Policy Imperative)



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Abstract:

The Micro, Small and Medium Enterprises (MSME) sector forms the backbone of India's economic structure, contributing significantly to employment, manufacturing output, and exports. However, ongoing geopolitical tensions, particularly involving Iran, Israel, and the United States, have disrupted global supply chains and energy markets, causing cascading effects across multiple sectors of the Indian economy. In this context, the Pre-packaged Insolvency Resolution Process (PPIRP), introduced under the Insolvency and Bankruptcy Code, 2016, emerges as a timely and effective mechanism to prevent financial distress in MSMEs from escalating into large-scale insolvency.

The MSME sector plays a pivotal role in India's socio-economic development by providing employment to millions, supporting rural industrialisation, and contributing substantially to exports and Gross Domestic Product. These enterprises operate in tightly interconnected value chains where disruptions in one sector quickly transmit to others. In times of global uncertainty and domestic supply constraints, MSMEs are particularly vulnerable due to limited financial buffers, dependence on external credit, and reliance on steady logistical and input support.

The current geopolitical environment has exposed these vulnerabilities, underscoring the urgency of strengthening institutional mechanisms that can preserve viable enterprises while ensuring financial discipline.

Geopolitical Tensions and Their Economic Transmission Channels:

The conflict involving Iran, Israel, and the United States has created volatility in global crude oil markets and disrupted shipping routes, thereby affecting fuel availability and transportation costs. For an economy like India, which relies heavily on imported energy, such disruptions have immediate and far-reaching consequences.

Petrol, diesel, and liquefied petroleum gas (LPG) shortages have affected not only transportation but also production, distribution, and workforce mobility. As fuel is a fundamental input across sectors, its scarcity has resulted in delayed deliveries, increased logistics costs, and production bottlenecks, thereby reducing operational efficiency and profitability.

The Central Role of the Transport Sector in Economic Continuity:

Transportation acts as the circulatory system of the economy, connecting agricultural producers, manufacturing units, service providers, and consumers. A shortage of petrol and diesel disrupts the movement of raw materials, intermediate goods, and finished products. MSMEs, which often lack alternative logistical arrangements or financial reserves, face severe operational challenges when transport systems are constrained.

The impact is also visible in labour mobility. Workers who rely on public or private transport face difficulties reaching their workplaces, resulting in reduced workforce availability and interrupted production schedules. This challenge extends across sectors, from agriculture and construction to services and manufacturing.



Ripple Effects Across MSME-Dependent Sectors:

The MSME sector is deeply integrated into supply chains. The output of one MSME frequently becomes the input for another. Therefore, disruptions in fuel availability and logistics create a cascading effect across multiple layers of production and distribution.

Hotels, restaurants, small manufacturing units, and retail businesses are particularly affected by shortages of LPG and transport fuel. These enterprises depend on uninterrupted energy supply and timely delivery of goods. When these conditions are not met, they experience revenue losses while fixed costs such as rent, wages, and interest payments continue to accumulate.

In the real estate and construction sectors, labour shortages caused by transport constraints delay project timelines, leading to cost overruns and liquidity stress for developers and contractors, many of whom operate within the MSME category.

Operational Challenges in Financial and Banking Services:

The banking and financial services sector, which supports economic activity through credit and financial intermediation, also experiences operational disruptions during fuel shortages. Bank officials and financial institution

representatives often need to travel for loan appraisals, asset inspections, and borrower verifications. When transportation is restricted, these essential functions are delayed, affecting credit flow and recovery processes.

Such operational constraints can lead to delayed loan disbursements, slower restructuring decisions, and inefficiencies in monitoring stressed assets, ultimately increasing the risk of loan accounts slipping into non-performing asset (NPA) categories.

Emerging Financial Stress and Liquidity Mismatches:

As revenues decline due to supply chain disruptions and rising input costs, MSMEs face liquidity mismatches between inflows and outflows. While their income streams become uncertain, their financial obligations, such as loan repayments, statutory dues, and employee wages remain fixed. This imbalance gradually erodes working capital and pushes otherwise viable businesses toward financial distress.

Export-oriented MSMEs face additional challenges due to disruptions in global shipping routes and delays in importing raw materials. These factors affect order fulfilment and damage long-term business relationships, compounding financial stress.



Need for Temporary Regulatory Relief and Moratorium Measures:

Given the extraordinary nature of these disruptions, there is a strong case for temporary regulatory relief in the form of a moratorium on initiating legal proceedings related to NPAs and liquidity stress. Such a measure would provide breathing space to businesses facing short-term disruptions rather than structural insolvency.

A carefully designed moratorium would prevent the premature classification of stressed accounts and avoid a sudden surge in insolvency proceedings, which could overwhelm adjudicating authorities and erode asset values. However, such relief should be time-bound and accompanied by monitoring mechanisms to prevent misuse.

Pre-packaged Insolvency Resolution Process:

A Strategic Tool for MSME Protection: The Pre-packaged Insolvency Resolution Process (PPIRP), introduced through amendments to the Insolvency and Bankruptcy Code, 2016 during the COVID-19 pandemic, offers a hybrid model combining out-of-court negotiations with formal legal backing. It allows debtors and creditors to agree on a resolution plan before approaching the adjudicating authority, thereby reducing time and costs associated with traditional Corporate Insolvency Resolution Processes (CIRP).

For MSMEs, which often lack the resources to withstand prolonged insolvency proceedings, PPIRP provides a faster and value-preserving alternative. It also enables promoters to retain a role in the resolution process, subject to creditor approval, which is particularly important for small enterprises where business knowledge is closely tied to the promoter. PPIRP reaches a resolution faster than CIRP, specifically within 120 days without any extensions, making it more advantageous for MSMEs.

Why the Present Economic Climate Calls for Aggressive Promotion of PPIRP:

The current combination of geopolitical instability, fuel shortages, supply chain disruptions, and liquidity stress mirrors the extraordinary circumstances that led to the introduction of PPIRP during the COVID-19 pandemic. Many MSMEs are not fundamentally unviable but are experiencing temporary distress due to external shocks.

Promoting PPIRP at this stage would help in early detection and resolution of financial stress, prevent asset deterioration, and maintain employment levels. It would also reduce the burden on banks and financial institutions by enabling structured and negotiated settlements rather than forcing

them into lengthy recovery proceedings.

Addressing Practical Challenges in the Implementation of PPIRP:

Despite its potential, the adoption of PPIRP has been limited due to lack of awareness, procedural uncertainties, and hesitation among financial creditors. Many lenders remain more familiar with traditional recovery mechanisms or standard CIRP procedures.

The government, in coordination with regulatory bodies, should issue detailed operational guidelines, conduct awareness programmes, and provide standardised documentation to simplify the process. Capacity building among insolvency professionals, bankers, and MSME promoters is essential to ensure that PPIRP is used effectively.

Role of Regulatory Institutions in Strengthening the Framework:

Regulatory coordination is critical for the success of PPIRP. The Reserve Bank of India, the Insolvency and Bankruptcy Board of India (IBBI), commercial banks, and non-banking financial companies (NBFCs) must align their policies and operational frameworks to encourage the use of pre-packaged resolutions.

Banks and NBFCs should be encouraged to treat PPIRP as a proactive restructuring tool rather than as a last resort. Clear regulatory guidance on asset classification, provisioning, and reporting during PPIRP would reduce hesitation among lenders and improve participation.

Reducing Dependence on Emergency Credit Support:

During the COVID-19 pandemic, the government introduced large-scale credit guarantee schemes and emergency funding programmes to sustain businesses. While these measures were effective in the short term, they also increased contingent liabilities and fiscal pressure.

By promoting PPIRP as a primary resolution mechanism, the government can shift from a strategy of repeated financial bailouts to one focused on structured and market-driven restructuring. This approach would preserve fiscal space while maintaining financial discipline in the corporate sector.

Real-time Examples of How Geopolitical Tensions and Fuel Disruptions are impacting the Indian Economy:

Textile and Garment MSMEs-Tirupur Knitwear Cluster:

One of the most severely affected segments is the **textile**

and garment manufacturing MSME sector, particularly the knitwear cluster in Tirupur, Tamil Nadu. Tirupur houses thousands of small and medium export-oriented units that depend heavily on uninterrupted supplies of liquefied petroleum gas (LPG) for dyeing, processing, and finishing operations.

Recent disruptions in LPG imports due to geopolitical tensions in West Asia have created a severe supply shortage, forcing several units to reduce production or consider temporary shutdowns. The Tirupur exporters' associations have warned that continued fuel scarcity could halt production and disrupt export commitments, thereby affecting employment and foreign exchange earnings.

This example clearly demonstrates how energy supply shocks can threaten the viability of otherwise competitive MSME clusters integrated into global value chains.

Hospitality and Food Service MSMEs-Small Restaurants, Hotels, and Eateries:

Another highly affected segment is the **Hospitality and Food Service Industry**, which consists largely of micro and small enterprises such as local restaurants, dhabas, bakeries, and catering units. These establishments rely almost entirely on commercial LPG cylinders for daily operations.

Due to supply disruptions linked to geopolitical tensions, many restaurants across India have experienced irregular LPG availability, forcing them to reduce menu offerings, shorten operating hours, or temporarily shut down. Industry estimates suggest that a very large proportion of restaurants are vulnerable to even short-term LPG supply interruptions, as they lack alternative cooking infrastructure or fuel sources.

This sector is particularly sensitive because it operates on thin margins, employs large numbers of informal workers, and contributes significantly to urban service economies.

Why These Two Segments Are Important Illustrative Examples:

These sectors provide strong illustrative value because:

- ✓ Both are **labour-intensive MSME segments**, contributing significantly to employment.
- ✓ Both are **directly dependent on fuel availability**, making them highly sensitive to geopolitical disruptions.

- ✓ Both are part of **larger economic supply chains**, textiles in exports and hospitality in domestic consumption, creating multiplier effects across the economy

Conclusion:

Building a Resilient MSME Ecosystem Through Proactive Insolvency Frameworks. The current economic challenges arising from geopolitical conflicts and energy shortages have once again highlighted the vulnerability of MSMEs to external shocks. While temporary relief measures such as moratoriums may provide short-term stability, long-term resilience requires robust institutional mechanisms for early and efficient resolution of financial stress.

The Pre-packaged Insolvency Resolution Process represents a forward-looking tool capable of preserving enterprise value, protecting employment, and stabilising the financial system. This is, therefore, an opportune moment for policymakers, regulators, and financial institutions to actively promote and refine PPIRP so that it becomes a mainstream instrument for safeguarding the MSME sector and, by extension, the broader Indian Economy.

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Rise of Data Centres in India and Emergence of a 'New Asset Class' for Bank Financing



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Abstract:

The rapid proliferation of digital technologies, spanning cloud computing, artificial intelligence (AI), 5G connectivity, and big data analytics, has driven an unprecedented surge in demand for data processing and storage capacity globally. In India, this digital transformation is being underpinned by a dramatic expansion of data centre infrastructure. The country's growing digital economy, favourable regulatory reforms, sovereign data localization mandates, and increased participation by global investors have positioned data centres as critical national assets. Concurrently, data centres are emerging as an attractive new asset class for institutional and bank financing, characterized by long-term revenue visibility, structural demand drivers, and resilience to economic cycles.

The global economy is being reshaped by digital technologies. From e-commerce and fintech to AI-driven services and 5G-enabled connectivity, digitalization has become a linchpin of economic growth, productivity, and competitiveness. Central to this transformation are data centres, facilities that house critical computing and network infrastructure enabling storage, processing, and distribution of digital information.

In India, data centres have transitioned from an ancillary element of ICT ecosystems to a strategic national priority. The confluence of rapidly rising internet users, cloud adoption, mobile broadband penetration, and data localization policies has fuelled exponential demand for data centre capacity. Estimates by industry bodies project that India will require tens of millions of square feet of additional data centre space in the coming decade.

For the banking sector, this trend presents both opportunities and challenges. Traditional bank financing models have emphasized real estate and corporate lending, yet data centres do not fit neatly into either category. They combine elements of real estate, technology risk, long-term

contracted revenues, and capital-intensive infrastructure. Their structural characteristics make them increasingly appealing as an infrastructure-like investment opportunity, albeit one that demands specialized risk assessment and financing frameworks.

Macroeconomic & Technological Drivers of Data Centre Growth:

a. Digital Economy Expansion:

India's digital economy has experienced sustained expansion, driven by widespread mobile adoption, increasing internet penetration, and the proliferation of digital services. Government initiatives such as Digital India, Startup India, and Make in India have facilitated digital adoption across sectors. The global pandemic further accelerated the reliance on digital platforms for commerce, communication, and consumption.

✓ **Mobile and Internet Penetration:** India has over 800 million internet users, a number projected to grow with ongoing affordability of smartphones and mobile data. Increasing broadband speeds, combined with 4G and



emerging 5G deployments, fuel real-time data creation and consumption.

- ✓ **E-commerce & Digital Payments:** The explosion of e-commerce and digital payment systems has significantly increased data traffic and storage needs. The adoption of UPI (Unified Payments Interface) and digital wallets has generated large volumes of data requiring secure and resilient infrastructure.

The cumulative effect of these trends is the generation of massive amounts of digital data, necessitating storage and processing capabilities that far exceed legacy capacity.

b. Cloud Adoption and Enterprise Digital Transformation:

Cloud computing represents a paradigm shift in enterprise IT architecture. Organizations are moving away from on-premise servers to cloud-based solutions offered by hyperscale providers such as AWS, Microsoft Azure, and Google Cloud. The benefits include scalability, cost efficiency, and enhanced interoperability. However, cloud services require significant data centre infrastructure localized near end users to meet performance and latency requirements.

- ✓ **Hybrid Cloud Models:** Enterprises are adopting hybrid models, combining cloud, edge, and on-premise deployments. This increases demand for localized data centre capacity.

- ✓ **AI and Machine Learning:** AI workloads are compute and data intensive. AI adoption across sectors such as healthcare, finance, and logistics contributes to surging demand for high-performance infrastructure.

The trend toward cloud predominance implies a structural, persistent need for data centre space proximate to Indian digital ecosystems—a factor central to forecasting sustained growth.

c. Connectivity & 5G Rollout:

The rollout of 5G networks will significantly enhance data transmission speeds and enable new use cases such as autonomous systems, IoT, and real-time analytics. India's telecom operators are investing billions in 5G deployment, triggering increased data traffic and further elevating the requirement for data centres.

- ✓ **Edge Computing:** 5G fuels edge computing, where data processing occurs closer to the source to minimize latency. This necessitates smaller, distributed data centres, expanding the universe of facilities in need of financing.

Thus, connectivity advancements intensify infrastructure requirements across the data value chain.

Regulatory & Sovereign Imperatives:

a. Data Localization Policies:



India’s regulatory landscape increasingly emphasizes data sovereignty. Policies such as the Personal Data Protection Bill and directives from the Reserve Bank of India (RBI) mandate that certain categories of data (particularly financial data) be stored within national borders. This has significant implications:

- ✓ **Localized Infrastructure Need:** Multinational corporations (MNCs) and domestic firms alike must maintain onshore data storage, driving demand for India-based data centre capacity.
- ✓ **Risk Mitigation:** Sovereign concerns around cross-border data transmission, cybersecurity, and control over critical information reinforce the strategic importance of domestic data centres.

For banks, these legal imperative underscores predictable demand patterns and long-term utilization prospects for data centre investments.

b. Sector Classification & Incentives:

In recent years, Indian policymakers have introduced tax incentives, special economic zone (SEZ) classifications, and dedicated data centre policies to attract investment. These measures include:

- ✓ Goods and Services Tax (GST) rationalization.
- ✓ Custom duty exemptions on select equipment.
- ✓ Capital expenditure incentives under state data centre policies.

Such regulatory support reduces entry barriers, enhances project viability, and bolsters investor confidence.

Data Centres as an Emerging Asset Class:

a. Defining the Asset Class:

Traditionally, banks have financed core real estate, industrial assets, and infrastructure projects such as roads and power plants. Data centres exhibit features of multiple asset categories:

Feature	Infra-structure	Real Estate	Technology Asset
Long-term contracts	✓	✓	✓
Tangible assets	✓	✓	Partial
Scalability	Medium	Medium	High
Tech obsolescence risk	Low-Medium	Low	Medium-High

Data centres differ from pure real estate because their

utility and value are derived not just from location, but from power capacity, cooling systems, network connectivity, and technological adaptability. Unlike volatile technology startups, their revenue base is often anchored in multi-year contracts with enterprise and hyperscale tenants, providing cash flow visibility.

b. Structural Demand Persistence:

Several demand drivers underscore why data centres constitute a resilient asset class:

- ✓ **Digital Consumption Patterns:** As digital services proliferate across sectors, volume of data and uptime requirements remain non-cyclical.
- ✓ **Cloud Migration:** Continued migration to cloud architectures ensures long-term consumption of data centre capacity.
- ✓ **Enterprise Outsourcing:** Corporate IT departments increasingly outsource data operations, enhancing predictable tenancy models.

These structural dynamics contrast favourably with other asset classes that may be more sensitive to economic cycles.

c. Revenue Models & Cash Flow Visibility:

Data centre operators typically generate revenue through:

- ✓ **Colocation Services:** Leasing space, power, and connectivity to third parties.
- ✓ **Managed Services:** Providing ongoing technical support and infrastructure management.
- ✓ **Wholesale Leasing:** Long-term contracts with hyperscale cloud service providers (CSPs).

The prevalence of take-or-pay contracts, staggered lease expirations, and ability to re-tenant capacity lends high visibility to future cash flows, a key consideration for banks.

Bank Financing Frameworks for Data Centres:

a. Assessing Project Viability:

Banks evaluating data centre financing must adapt traditional credit assessment frameworks to this asset’s unique characteristics. Key considerations include:

- ✓ **Site Selection and Connectivity:** Proximity to Fiber-optic networks and power grids.
- ✓ **Power Redundancy and Cost:** Assessing energy sourcing and backup systems.

- ✓ **Cooling Infrastructure:** Efficiency is critical to operational costs and reliability.
- ✓ **Tenant Quality and Contract Tenure:** Contract structure, counterparty credit strength, and revenue diversification.
- ✓ **Technical Scalability:** Capacity to accommodate upgrades and emerging technology requirements.

These factors directly influence risk assessments and pricing decisions.

b. Structuring Loans and Credit Facilities:

Given the long-term nature of data centre projects, banks should consider:

- ✓ **Longer Tenors:** Align financing maturities with contracted cash flows, typically in the 7–15-year range.
- ✓ **Syndicated Financing:** For larger builds, syndication helps distribute risk across institutions.
- ✓ **Project Finance Structures:** Ring-fencing assets and cash flows to enhance recoverability.
- ✓ **Mezzanine and Hybrid Instruments:** To cover capital stack requirements where equity contributions are limited.

Adapting to these structures will require banks to develop internal competencies in infrastructure and technology underwriting.

c. Risk Mitigation Strategies:

- ✓ **Key risks in data centre financing** include technology obsolescence, power cost volatility, and counterparty concentration. Banks can mitigate these through:
- ✓ **Stress Testing Cash Flows:** Modelling adverse scenarios such as tenant churn or power cost surges.
- ✓ **Insurance and Guarantees:** Procuring policies against downtime, cybersecurity breaches, and natural disasters.
- ✓ **Performance Covenants:** Tying loan terms to operational benchmarks (e.g., energy efficiency ratios).

By proactively embedding risk controls, financiers can improve portfolio resilience.

Strategic Benefits to Banks:

a. Portfolio Diversification:

Data centre financing enables diversification across industry sectors, reducing concentration risk inherent in traditional

credit portfolios. The asset class also exhibits lower correlation with cyclical sectors such as manufacturing and commercial real estate.

b. Fee-Income Opportunities:

Banks can derive ancillary revenues through advisory services, syndicated loan arrangements, and foreign exchange services tied to global investors entering Indian data centre markets.

c. Long-Term Relationship Building:

Financing data centre infrastructure can catalyse deeper relationships with technology firms, digital enterprises, and global institutional investors, enhancing cross-sell opportunities.

Regulatory & Supervisory Considerations:

a. Basel Framework and Capital Treatment:

Financing data centres involves capital allocation decisions influenced by risk-weighting parameters under Basel standards. Banks must engage with regulators to ensure that innovative financing structures are appropriately capitalized.

b. Domestic Policy Support:

India's regulatory ecosystem is increasingly supportive of digital infrastructure financing. Initiatives such as infrastructure lending categories, priority sector adjustments, and sovereign guarantees for strategic assets can reduce financing costs and enhance bank participation.

c. Climate & ESG Integration:

Data centres are energy intensive. Banks must integrate environmental, social and governance (ESG) criteria into credit evaluations. Encouraging renewable energy procurement and green power purchase agreements can align data centre projects with sustainability mandates.

Global Comparisons:

While specific proprietary examples are outside the scope of this article, global trends indicate:

- ✓ **U.S. & Europe:** Major banks routinely finance hyperscale data centre builds, often alongside institutional partners.
- ✓ **Southeast Asia:** Similar digital infrastructure financing has catalysed regional growth.

These precedents demonstrate the viability of treating data centres as a dedicated asset class within institutional and bank financing portfolios.



Challenges & Roadblocks:

Despite compelling demand drivers, banks face challenges:

- ✓ **Technical Expertise Gaps:** Underwriting data centre projects requires specialized knowledge often absent in traditional credit teams.
- ✓ **Valuation Complexities:** Standard real estate appraisal models may not capture technology performance and scalability value.
- ✓ **Risk of Overcapacity:** Aggressive build-outs without demand matching could compress pricing and occupancy.

Addressing these challenges necessitates capacity building and collaboration with industry experts.

Conclusion:

The rise of data centres in India reflects a broader global shift toward a digital economy underpinned by robust digital infrastructure. India's expanding internet ecosystem, cloud adoption, 5G rollout, and data localization mandates have created structural, long-term demand for data centre capacity. These facilities are no longer peripheral components of the technology stack; they are essential infrastructure enabling economic resilience, innovation, and competitiveness.

For the Banking Sector, data centres represent an emerging asset class with attractive risk-adjusted returns, resilient demand fundamentals, and growth potential. However, harnessing this opportunity requires banks to evolve their credit frameworks, adopt tailored financing structures, and enhance risk assessment capabilities. By doing so, banks can not only support the nation's digital transformation but also diversify their portfolios and secure new revenue streams.

Strategic engagement, regulatory alignment, and operational expertise will determine how effectively banks can integrate data centre financing into their long-term growth strategies. As India cements its position as a global digital hub, the data centre financing opportunity stands as a testament to the intersection of technology, infrastructure, and finance.

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Evolution of RBI and Government Policy Enabling Bank Finance to Data Centres

(Infrastructure Status, Digital India, State Policies, Incentives)



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Abstract:

The exponential growth of India's digital economy has created unprecedented demand for secure, resilient, and scalable data storage and processing infrastructure. Data centres once viewed as specialized IT real estate have rapidly evolved into critical national infrastructure supporting financial systems, e-governance, digital payments, cloud computing, artificial intelligence, and emerging technologies. Recognizing their strategic importance, the Government of India and the Reserve Bank of India (RBI) have progressively developed a comprehensive policy ecosystem that enables institutional finance, particularly bank lending, to this capital-intensive sector.

India's transformation into a digital economy has fundamentally reshaped infrastructure priorities. Banking, governance, commerce, healthcare, education, and communication systems increasingly depend on uninterrupted data processing and storage. Data centres form the backbone of this ecosystem, hosting cloud platforms, digital payment systems, artificial intelligence workloads, and critical databases.

The scale of growth is remarkable. India's data centre capacity has been expanding rapidly, driven by digital adoption, cloud migration, and AI deployment. Operational capacity is projected to exceed 2,000 MW by 2027, supported by investments exceeding ₹ 40,000–45,000 crore in the near term. Additionally, the market is expected to reach several gigawatts of capacity by the end of the decade, reflecting sustained structural demand.

Historically, banks were reluctant to finance data centres due to high capital costs, technology risks, long gestation

periods, and lack of regulatory recognition as infrastructure. Over the past decade, however, policy interventions by the Government of India and the RBI have systematically reduced these uncertainties. Data centres are now recognized as essential infrastructure critical for national security, economic growth, and digital sovereignty.

Digital Transformation and Emergence of Data Centres as Critical Infrastructure:

Drivers of Data Centre Demand:

Several structural factors underpin the surge in demand:

- ✓ Rapid internet penetration and mobile data usage.
- ✓ Expansion of digital payments and fintech.
- ✓ Cloud computing adoption.
- ✓ Artificial intelligence and big data analytics.



- ✓ E-governance initiatives.
- ✓ Online education and telemedicine.
- ✓ Streaming, gaming, and social media.

India already hosts hundreds of millions of internet users, and data consumption per user is among the highest globally. This massive digital footprint requires domestic storage capacity to ensure speed, security, and regulatory compliance.

Importance for the Banking Sector:

For banks, data centres support:

- ✓ Core banking systems.
- ✓ Digital payment platforms.
- ✓ Fraud detection and cybersecurity.
- ✓ Regulatory reporting.
- ✓ Customer data management.
- ✓ Disaster recovery systems.

The financial sector's dependence on real-time digital operations makes resilient data infrastructure indispensable. Consequently, RBI regulations emphasize stringent standards for data security, availability, and localization.

Role of Digital India Programme:

Vision of Digital India:

The Government of India's Digital India programme aims to transform India into a digitally empowered society and knowledge economy. Key pillars include:

- ✓ Digital infrastructure as a utility.
- ✓ Governance and services on demand.
- ✓ Digital empowerment of citizens.

Large-scale digitization of government services has dramatically increased data generation, necessitating robust storage and processing facilities.

Impact on Data Centre Investments:

Government initiatives such as Aadhaar, Unified Payments Interface (UPI), digital identity systems, and e-governance platforms generate enormous volumes of data. These systems require secure domestic hosting environments, thereby creating stable demand for data centres.

Additionally, public sector entities increasingly prefer domestic facilities to ensure sovereignty over

sensitive information.

RBI's Role in Driving Data Centre Demand:

Data Localization Mandate:

One of the most significant regulatory drivers has been RBI's mandate that payment system data relating to Indian customers must be stored within India. This policy dramatically increased the need for domestic data centre capacity, especially for banks, payment operators, and fintech firms.

- ✓ Localization enhances:
- ✓ Data security.
- ✓ Regulatory oversight.
- ✓ Consumer protection.
- ✓ National security.
- ✓ Reduced dependence on foreign infrastructure.

Regulatory Emphasis on Security and Resilience:

RBI guidelines require financial institutions to maintain robust disaster recovery mechanisms, high availability systems, and secure data storage frameworks. This has encouraged banks to use Tier III or higher facilities, which provide redundant power, cooling, and network connectivity.

RBI's Own Digital Infrastructure Initiatives:

The central bank itself is investing in next-generation data infrastructure and cloud platforms to strengthen financial system resilience. These initiatives underscore the institutional recognition of data centres as systemic infrastructure.

Grant of Infrastructure Status to Data Centres:

Policy Decision:

A landmark policy development occurred when data centres were included in the Harmonised Master List of Infrastructure Sub-sectors. This recognition transformed the sector's financing landscape.

Implications for Bank Financing:

- ✓ Infrastructure status enables:
- ✓ Access to long-term bank loans.
- ✓ Lower interest rates.
- ✓ External commercial borrowings.



- ✓ Infrastructure bonds.
- ✓ Viability gap funding (where applicable).
- ✓ Priority consideration in policy frameworks.

Most importantly, infrastructure classification aligns project cash flows with long-tenure financing structures suitable for capital-intensive assets.

Data centres were formally included in the infrastructure list in October 2022, facilitating easier bank financing.

Evolution of Government Policy Framework:

Draft National Data Centre Policy:

The Government of India proposed a national policy framework to promote data centre development, focusing on:

- ✓ Investment promotion.
- ✓ Regulatory clarity.
- ✓ Energy efficiency.
- ✓ Skill development.
- ✓ Domestic manufacturing ecosystem.

Although implementation has largely occurred through sectoral measures and state policies, the draft policy signalled strong national commitment.

Data Protection Legislation:

The Digital Personal Data Protection framework enhances trust in domestic data processing and encourages businesses to host data locally. Strong privacy regulation supports sustainable growth of the sector.

Strategic Importance for Digital Sovereignty:

Domestic data storage reduces vulnerability to geopolitical risks and cross-border regulatory conflicts. Governments worldwide increasingly consider data centres strategic assets, similar to telecom networks and energy infrastructure.

State Government Data Centre Policies:

Recognizing the economic potential, multiple states have introduced specialized policies to attract investments.

Key States with Data Centre Policies:

Several states including Maharashtra, Tamil Nadu, Uttar Pradesh, Telangana, Karnataka, Odisha, and West Bengal have announced targeted frameworks offering fiscal and non-fiscal incentives.



Fiscal Incentives:

Common incentives include:

- ✓ Subsidized land or land allotment.
- ✓ Stamp duty exemptions.
- ✓ Capital subsidies.
- ✓ Electricity duty waivers.
- ✓ Power tariff concessions.
- ✓ Interest subsidies.
- ✓ Tax reimbursements.

Such incentives significantly reduce project costs and improve bankability.

Non-Fiscal Incentives:

States also provide:

- ✓ Single-window approvals.
- ✓ Relaxed building norms.
- ✓ Faster environmental clearances.
- ✓ Dedicated data centre parks.
- ✓ Infrastructure support (roads, power, connectivity).

Power-Related Incentives:

Since power accounts for a major portion of operating costs, states offer:

- ✓ Exemption from electricity duty.
- ✓ Subsidies for renewable energy.
- ✓ Concessional transmission charges.
- ✓ Support for captive generation.

These measures directly enhance project viability.

Land and Infrastructure Support:

Land acquisition is a major barrier for large campuses. State policies often provide:

- ✓ Preferential land allotment.
- ✓ Reduced lease premiums.
- ✓ Exemptions from conversion charges.
- ✓ Infrastructure connectivity support.

Emergence of Data Centre Parks and Regional Clusters:

Several states are developing dedicated data centre parks

with ready infrastructure. For example, Uttar Pradesh has planned multiple parks with substantial investment commitments, reflecting strong investor response to policy incentives.

Similarly, major investments are being announced across regions, including large-scale projects in coastal cities due to connectivity advantages.

Economic Characteristics of Data Centre Projects:

Capital Intensity:

Data centres require substantial upfront investment in:

- ✓ Land and buildings.
- ✓ Power infrastructure.
- ✓ Cooling systems.
- ✓ Networking equipment.
- ✓ Security systems.
- ✓ Redundancy mechanisms.

Long Gestation Period:

Construction and commissioning may take several years, especially for hyperscale facilities.

Stable Long-Term Revenues:

Revenue streams typically arise from long-term contracts with cloud providers, enterprises, and telecom companies, making them suitable for infrastructure financing.

Low Demand Volatility:

Digital services are essential utilities, reducing cyclicity compared to traditional real estate.

Banking Perspective on Financing Data Centres:

Transformation from Real Estate to Infrastructure Lending:

Earlier, banks treated data centres as commercial real estate projects, limiting loan tenures and exposure limits. Infrastructure status has shifted this approach toward project finance models similar to power plants or highways.

Risk Assessment Parameters:

- ✓ Banks evaluate:
- ✓ Sponsor strength.
- ✓ Anchor clients and tenancy agreements.
- ✓ Technology obsolescence risks.
- ✓ Power supply reliability.

- ✓ Regulatory compliance.
- ✓ Cybersecurity standards.
- ✓ Environmental sustainability.

Collateral Structure:

Typical security includes:

- ✓ Project assets.
- ✓ Assignment of receivables.
- ✓ Escrow arrangements.
- ✓ Sponsor guarantees.
- ✓ Charge on land and buildings.

Financing Instruments:

Funding sources include:

- ✓ Term loans from banks.
- ✓ Consortium lending.
- ✓ Infrastructure debt funds.
- ✓ Bonds.
- ✓ External borrowings.
- ✓ Private equity participation.

Role of Data Localization and Regulatory Demand:

Mandatory domestic storage of sensitive data, particularly financial and payment information creates a captive demand base. Banks, fintech companies, and payment operators must maintain domestic infrastructure, ensuring long-term occupancy for data centre operators.

This regulatory demand reduces market risk and improves creditworthiness from lenders' perspective.

International Investment and Private Sector Participation:

Global cloud providers, hyperscale's, and infrastructure funds are heavily investing in India's data centre sector. The industry has already attracted billions of dollars and is expected to receive massive capital inflows over the coming decade.

Public-private partnerships are increasingly common, combining domestic market knowledge with global technology expertise.

Sustainability and Energy Considerations:

Energy consumption is a critical issue. Modern policies emphasize:

- ✓ Renewable energy integration.
- ✓ Energy-efficient design.
- ✓ Water conservation.
- ✓ Waste heat management.
- ✓ Carbon reduction targets.

Some state policies offer incentives specifically for renewable energy usage, aligning with India's climate commitments.

Future Policy Directions:

- ✓ **AI and High-Performance Computing:** Artificial intelligence workloads require high-density infrastructure, increasing demand for advanced facilities.
- ✓ **Edge Data Centres:** Growth of 5G and IoT will lead to decentralized "edge" facilities closer to users, creating new financing opportunities.
- ✓ **Integration with Smart Cities:** Urban digital infrastructure will increasingly rely on distributed data processing systems.
- ✓ **Financial Sector Cloud Initiatives:** Central bank-supported cloud infrastructure may further stimulate sector growth and standardization.

Challenges and Risks:

Despite strong policy support, several challenges remain:

- ✓ High power consumption.
- ✓ Environmental concerns.
- ✓ Technology obsolescence.
- ✓ Cybersecurity threats.
- ✓ Land acquisition issues.
- ✓ Skilled workforce shortages.
- ✓ Regulatory uncertainties.

Banks must carefully structure financing to mitigate these risks.

Conclusion:

The evolution of policy frameworks enabling bank finance to data centres in India reflects a broader transformation of the national economy toward digital infrastructure-driven growth. What began as specialized IT facilities has matured into a strategic infrastructure sector comparable to power, telecom, and transportation.



Key policy milestones including the Digital India programme, RBI's data localization mandate, grant of infrastructure status, supportive regulatory environment, and proactive state government policies have collectively created a robust ecosystem for investment and financing. Infrastructure classification has been particularly transformative, allowing banks to extend long-tenure project finance suited to the sector's capital-intensive nature.

For the banking industry, data centres represent a new class of high-quality infrastructure assets characterized by stable cash flows, long-term contracts, and structural demand driven by digitalization. As artificial intelligence, cloud computing, and digital services continue to expand, financing requirements will grow exponentially.

Going forward, coordinated policy actions especially in energy supply, sustainability, cybersecurity, and regulatory clarity will determine the pace of development. With

continued support from both the Government of India and the RBI, data centres are poised to become one of the most significant infrastructure financing opportunities for Indian banks in the twenty-first century, underpinning the nation's transition into a global digital powerhouse.

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Project Finance Structures for Data Centres

(Opportunities and Challenges for Banks)



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Abstract:

The rapid digitization of economic activity has elevated data centres from a supporting infrastructure to a core asset class in the global economy. Fuelled by exponential growth in cloud computing, artificial intelligence (AI), and data storage needs, the data centre sector now commands significant capital investment, presenting banks with new opportunities for structured financing. However, the unique operational, technological, and market risks associated with data centres pose challenges for traditional project finance frameworks. This Article examines the financing structures most suitable for data centre development, evaluates risk allocation models, and assesses the strategic implications for banks as financiers. By critically analysing debt and equity mechanisms, credit enhancement tools, contractual structures, and sector-specific risk factors, including technological obsolescence, power costs, and regulatory constraints, this Article offers an evidence-based roadmap for banks seeking to engage in data centre finance. The paper concludes by proposing best practices in risk assessment, contractual design, and portfolio diversification to balance opportunity and risk.

Keywords: Project finance, data centres, structured finance, risk allocation, banks, capital markets, credit enhancement, infrastructure investment.

Data centres are physical facilities that house computing and networking equipment for storage, processing, and dissemination of digital information. Once considered low-profile infrastructure, data centres have become central to the digital economy. From hyperscale facilities operated by cloud service providers to edge computing hubs supporting low-latency applications, data centres are now recognized as critical infrastructure.

For Banks, this shift presents both a significant financing opportunity and a set of complex challenges. Traditional project finance techniques, long used in sectors such as energy, transportation, and utilities are evolving to support data centre projects. The distinct characteristics of data centre investments necessitate specialized structures that can deliver adequate risk-adjusted returns to lenders while accommodating technological and market uncertainties. This Article explores the development of project financing

structures tailored to data centre investments, analyses associated risks, and assesses the role of banks as strategic financiers in this space.

The Growth of the Data Centre Sector:

Global Demand Drivers:

The demand for data centre capacity has risen sharply over the past decade due to multiple technological and economic drivers:

- ✓ **Digital Transformation:** Enterprises across sectors are migrating operations to digital platforms, increasing demand for storage and processing capacity.
- ✓ **Cloud Adoption:** Major cloud service providers (CSPs) such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud have driven hyperscale data centre development.



- ✓ **AI & Machine Learning:** AI workloads require large-scale data storage and high-performance computation, reinforcing data centre growth.
- ✓ **Edge Computing:** The rollout of 5G and latency-sensitive applications demands edge data centres closer to end users.

These factors have converged to make data centres a dynamic and high-growth asset class with significant investment capital flowing from institutional investors, private equity, and infrastructure funds.

Industry Investment Trends:

According to industry research, global data centre investment reached record levels in recent years, with billions channelled into new facilities, expansions, and upgrades. This growth reflects not only operational demand but also evolving business models such as colocation services, wholesale leasing, and managed hosting solutions.

Project Finance Fundamentals:

Project finance is a financing technique in which lenders extend credit to a project based on the project’s cash flow

rather than the sponsor’s balance sheet. Key characteristics include:

- ✓ **Special Purpose Vehicle (SPV) Formation:** A project company is established to isolate assets and liabilities.
- ✓ **Non-recourse or Limited-recourse Debt:** Lenders have recourse primarily to project cash flows and assets.
- ✓ **Risk Allocation via Contracts:** Offtake agreements, construction contracts, supply contracts, and concession agreements allocate risk among stakeholders.
- ✓ **Credit Enhancements:** Guarantees, insurance products, and reserve accounts improve credit quality.

Project finance has been traditionally used in infrastructure sectors such as power generation, transportation, and natural resources. Data centres, with their predictable revenue streams from long-term leases, can be structured similarly, but with key differences.

Data Centre Revenue Models and Cash Flow Characteristics:

Unlike conventional infrastructure such as toll roads or power plants, data centres may support diverse revenue streams:

- ✓ **Colocation Services:** Leasing rack space and connectivity to tenants.
- ✓ **Wholesale Leases:** Leasing large capacity to major CSPs on long-term contracts.
- ✓ **Value-added Services:** Managed services, remote hands support, and cloud interconnects.

These models generate revenue streams of varying predictability and duration. For project finance purposes, **long-term, stable cash flows** are more conducive to debt financing, whereas shorter, variable contracts may require hybrid financial structures.

Key Financing Structures for Data Centre Projects:

Traditional Project Finance Debt:

In a typical project finance transaction:

- ✓ Senior Debt is provided by banks and institutional lenders.
- ✓ Debt service is funded by project cash flows.
- ✓ Sponsors may provide equity and subordinated debt.

For data centres, senior debt often covers up to 60–70% of total capital expenditure (CapEx), with the remainder funded by equity sponsors or private investors.

Advantages:

- ✓ Enables banks to leverage stable cash flows.
- ✓ Risk is largely confined within the SPV.

Challenges:

- ✓ Cash flow predictability depends on contract terms and occupancy rates.
- ✓ Rapid technology changes can affect revenue assumptions.

Hybrid Financing (Mezzanine and Preferred Equity):

To bridge the gap between senior debt and equity, project structures may include:

- ✓ **Mezzanine Debt:** Subordinated to senior debt but senior to equity.
- ✓ **Preferred Equity:** Offers preferential return but not contractual debt obligations.

These instruments can increase overall leverage while

providing higher yields to investors willing to take on incremental risk.

Green and Sustainability-Linked Financing:

Data centres are energy-intensive, making sustainability financing relevant:

- ✓ **Green Bonds or Sustainability-Linked Loans** can align financing terms with environmental targets (e.g., power usage effectiveness (PUE), renewable energy commitments).
- ✓ These structures may offer pricing advantages if performance targets are met, but require stringent monitoring and reporting.

Export Credit and Multilateral Financing:

In cross-border projects or in emerging markets, export credit agencies (ECAs) and multilateral institutions (e.g., World Bank, regional development banks) can provide risk mitigation through guarantees or direct lending.

Tax Equity and Infrastructure Funds:

In jurisdictions with favourable tax incentives, tax equity investors can contribute capital in exchange for tax benefits, enhancing overall returns for project sponsors.

Key Risks in Data Centre Project Finance:

While data centres offer attractive revenues, they carry distinct risks that banks must evaluate.

Technology and Obsolescence Risk:

Data centres face rapid technological change:

- ✓ Compute and storage technologies evolve quickly.
- ✓ Older facilities risk becoming non-competitive without upgrades.

This risk affects asset valuation and depreciation assumptions.

Demand and Utilization Risk:

Project viability often depends on achieving and sustaining high utilization rates. Under-utilization can impair cash flows, making scheduled debt service difficult.

Power and Operational Costs:

Power supply and costs are critical:

- ✓ Data centres consume large amounts of electricity.
- ✓ Energy cost volatility and availability of renewables



affect operating margins.

Contracts may need **power cost pass-through mechanisms** or **power purchase agreements (PPAs)**.

Regulatory and Environmental Compliance:

Regulatory frameworks around land use, emissions, and energy sourcing vary by jurisdiction. Compliance adds cost and complexity.

Counterparty Risk:

Long-term offtake agreements with tenants or service receivers introduce counterparty credit risk, especially for non-investment-grade counterparties.

Construction and Delivery Risk:

Large data centre projects involve significant construction risk, including:

- ✓ Delays and cost overruns.
- ✓ Performance issues with mechanical and electrical systems.

Mechanisms such as **fixed-price, date-certain EPC (Engineering, Procurement, and Construction)** contracts and **performance guarantees** are critical.

Allocating and Mitigating Risks in Financing Structures:

Effective financing structures allocate risks to parties best able to manage them.

Use of Long-Term Contracts:

Master Lease Agreements with reputable tenants.

- ✓ Take-or-pay contracts to ensure stable income streams.
- ✓ These reduce demand risk for lenders.

Credit Enhancement Mechanisms:

Banks may require:

- ✓ Debt Service Reserve Accounts (DSRAs).
- ✓ Completion Guarantees.
- ✓ Parent company guarantees.
- ✓ Insurance products (e.g., political risk, construction performance).

Power Supply and Offtake Contracts:

Securing stable power through PPAs with price stability provisions can mitigate operational cost volatility.

Technology Upgrade Funds:

Establishing capital expenditure reserve accounts can ensure funds are available for technology refresh cycles.

Portfolio Diversification:

Banks can manage exposure by financing a diversified portfolio of data centres across geographies, operators, and customer types.

Valuation and Underwriting Considerations:

Project valuation for data centres must integrate:

- ✓ Discounted Cash Flow (DCF) analysis with scenario testing.
- ✓ Comparable lease rate analysis based on market data.
- ✓ Risk-adjusted return metrics, such as the weighted average cost of capital (WACC) specific to data centre assets.

Underwriters should also consider macroeconomic factors like interest rate environments, which influence cost of capital and debt servicing capacity.

Strategic Implications for Banks:

Revenue Diversification:

Data centre financing offers banks:

- ✓ Long-dated lending opportunities.
- ✓ Fee income from structuring and advisory services.
- ✓ Potential for cross-selling treasury and risk management products.

Building Sector Expertise:

Banks must invest in specialized technical and market expertise to assess data centre projects credibly.

Collaboration with Alternative Investors:

Large data centre projects often involve institutional co-investors, infrastructure funds, and sovereign wealth funds. Banks should position themselves as relationship managers capable of coordinating syndicates.

Regulatory Capital and Risk Weights:

Project finance exposures attract specific risk weights under banking regulations. Banks should optimize capital usage through diligent structuring and, where appropriate, risk transfer mechanisms.

Examples of Financing Structures:

While specific transaction data may be proprietary,

representative structured finance features include:

- ✓ **Hyperscale Data Centre Facility:** Senior bank group financing 65% of CapEx, with equity sponsors and a subordinated mezzanine tranche; long-term master lease with a global hyperscale.
- ✓ **Colocation Build-to-Core Project:** Use of green bonds tied to PUE improvements and renewable energy procurement; multi-currency debt to match revenue streams.
- ✓ **Emerging Market Data Centre:** ECA guarantees covering political and currency risk; blended financing from domestic banks and multilateral lenders.

These examples underscore the adaptability of project finance models when tailored to operational realities.

Best Practices for Banks in Data Centre Finance:

To successfully engage in data centre financing, banks should:

1. **Develop Sector-specific Due Diligence Tools:** Include technology, energy, and demand-forecasting expertise.
2. **Structure Cash Flow Support Mechanisms:** Reserve accounts, take-or-pay clauses, and periodic covenant tests.
3. **Incorporate Environmental and Social Governance (ESG) Criteria:** Tie financing to measurable sustainability outcomes.
4. **Engage in Syndication:** Distribute risk across institutional partners.

5. **Monitor and Report Continuously:** Use real-time data feeds where possible to monitor performance metrics.

Conclusion:

Data centre infrastructure offers compelling opportunities for banks to deploy project finance structures that generate stable, long-term returns while supporting the digital economy. However, the sector's technological dynamism, operational complexities, and demand uncertainties require bespoke financing frameworks. Banks must adapt traditional project finance tools—such as SPVs, long-term contracts, and credit enhancement instruments—to the unique characteristics of data centre investments. Through rigorous risk assessment, active structuring, and collaborative financing approaches, banks can effectively support data centre development while managing exposure. By doing so, they not only unlock a growing asset class but also reinforce their strategic relevance in a rapidly digitizing world.

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Classification of Data Centres as Infrastructure Implications for Bank Lending

(Banking Perspective & Policy Framework)



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Abstract:

India's rapid digitalisation, exponential growth in cloud computing, artificial intelligence (AI), fintech ecosystems, and data localisation requirements have catalysed unprecedented investment in data centre infrastructure. The Indian data centre industry is projected to more than double capacity to about 2–2.3 GW by FY2027, driven by digital transformation and rising data consumption.

This structural shift has triggered policy discussions on whether data centres should be formally classified as “infrastructure” for financing purposes—similar to power, transport, or telecommunications networks. Infrastructure classification has historically enabled access to long-tenure bank finance, relaxed provisioning norms, eligibility for external commercial borrowings (ECB), and structured financing tools such as take-out financing.

Recent regulatory developments indicate a broader push to revitalise infrastructure credit. The Reserve Bank of India (RBI) has eased provisioning requirements for infrastructure loans to encourage financing, requiring only about 1% provisioning during construction, significantly lower than earlier proposals.

This policy orientation signals a recognition that infrastructure financing must evolve alongside the digital economy.

Traditional infrastructure, roads, ports, power enabled industrial growth. Today, digital infrastructure enables knowledge-based growth.

Data centres serve as the backbone of cloud services, digital payments, e-commerce, telecom networks, and AI-driven analytics.

India's digitalisation push, combined with enterprise migration to cloud environments and AI adoption, is expected to sustain strong demand for data storage and processing capacity. Unlike conventional real estate, data centres exhibit characteristics similar to utilities:

- ✓ High upfront capital expenditure.
- ✓ Long asset life cycles.

- ✓ Stable annuity-style revenue streams.
- ✓ Strategic national importance.

These traits align closely with infrastructure asset profiles traditionally financed by banks and development finance institutions.

Evolution of Infrastructure Lending Framework in India:

Regulatory Definition of Infrastructure: The RBI historically aligned infrastructure lending eligibility with the Government of India's “Master List of Infrastructure Sub-Sectors,” ensuring harmonised classification across financial institutions. Eligible sectors include transport, energy, water systems,



telecommunications, and social infrastructure such as hospitals and educational institutions.

The scope has periodically expanded—for instance, hotels and convention centres above specified project thresholds were later included under “social and commercial infrastructure.”

Policy Insight: Infrastructure classification in India has always been dynamic, evolving to accommodate emerging economic enablers. Data centres represent the next logical extension.

Renewed Regulatory Push to Stimulate Infrastructure Credit: Infrastructure lending in India slowed amid regulatory tightening and project risks. Credit to the sector contracted modestly during FY2024–25, reflecting lender caution.

To revive investment, RBI has:

- ✓ Reduced provisioning for under-construction infrastructure loans to encourage lending.
- ✓ Proposed calibrated risk-weight structures tied to operational performance to optimise capital allocation.

These measures aim to balance prudential regulation with growth financing.

Why Data Centres Merit Infrastructure Status:

Capital-Intensive, Long-Gestation Nature: Data centre projects require:

- ✓ Large investments in land, power systems, cooling infrastructure, and connectivity.
- ✓ Long development cycles.
- ✓ High dependence on debt financing.

Industry expansion will require substantial capex funded increasingly through debt, though cash flows are expected to remain stable due to strong demand.

This mirrors financing structures used in power plants, telecom towers, and airports.

Strategic Role in Digital Sovereignty: Data localisation regimes, cybersecurity frameworks, and AI adoption increasingly require domestic data storage and processing



ecosystems. Academic analysis of India’s digital regulatory environment highlights gaps in governance for AI-enabled telecom and data systems, underscoring the need for stronger institutional infrastructure around digital networks.

Thus, data centres are not merely commercial assets, they underpin national digital resilience.

Predictable Revenue Models Comparable to Utilities: Long-term colocation contracts, hyperscale leasing, and enterprise service agreements generate stable annuity-like income streams, making data centres well suited to structured project finance models (similar to toll roads or transmission assets).

Implications for Bank Lending:

Exposure Norms and Capital Allocation: Infrastructure classification allows banks to treat lending under specialised exposure frameworks rather than general commercial real estate limits. Regulatory recalibration—such as differentiated provisioning and risk weights—seeks to encourage banks to expand infrastructure lending portfolios.

Banking Impact:

- ✓ Lower provisioning improves return on capital.
- ✓ Risk-sensitive weights align capital charges with project performance.
- ✓ Enhanced viability of large-ticket loans.

These changes are designed to “support loan growth” in infrastructure sectors.

Long-Tenure Financing Structures: Infrastructure status enables:

- ✓ Longer amortisation schedules aligned to asset life.
- ✓ Structured repayment linked to cash flows.
- ✓ Reduced refinancing risk.

Traditional infrastructure assets often require 15–25-year financing tenures—an approach equally relevant for data centres with long operational lives.

External Commercial Borrowings (ECB) Access: RBI policy

has historically permitted infrastructure companies to raise ECBs with minimum average maturities (typically five years) and specified hedging requirements.

ECB eligibility:

- ✓ Expands funding sources beyond domestic banks.
- ✓ Enables lower-cost global capital access.
- ✓ Allows NBFC-Infrastructure Finance Companies to on-lend to projects.

Extending similar treatment to data centres would significantly deepen funding pools.

Take-Out Financing and Risk Redistribution: Infrastructure lending traditionally employs take-out financing, where:

- ✓ Banks fund construction phase.
- ✓ Long-term investors refinance operational assets.

This mechanism mitigates asset-liability mismatches for banks while enabling long-term funding from insurance or pension capital.

Given data centres' predictable post-commissioning cash flows, they are ideal candidates for such refinancing structures.

Risk Considerations for Banks:

While classification offers benefits, banks must recognise sector-specific risks.

Technology Obsolescence Risk: Unlike roads or bridges, digital infrastructure faces faster technological change cycles. Financing structures must incorporate upgrade capex and flexible refinancing mechanisms.

Energy Dependence and Sustainability Exposure: Data centres are energy-intensive assets, creating operational and environmental risk considerations that must be factored into credit appraisal.

Regulatory and Data Governance Risk: Digital infrastructure intersects with cybersecurity, privacy, and AI governance—areas still evolving in India's regulatory landscape.

Banks must integrate techno-legal due diligence into project evaluation.

Emerging Policy Signals Supporting Digital Infrastructure Financing:

Recent regulatory actions reflect a broader philosophy: enable credit expansion to productive infrastructure sectors while managing systemic risk.

- ✓ RBI's calibrated provisioning norms aim to stimulate project financing without compromising prudential oversight.
- ✓ Revised infrastructure lending rules are expected to revive sectoral credit growth.
- ✓ Co-lending frameworks between banks and NBFCs (effective 2026) strengthen risk-sharing models in large projects.

These developments collectively create a conducive environment for financing new-age infrastructure such as data centres.

Comparative Characteristics: Traditional vs Digital Infrastructure:

Parameter	Traditional Infrastructure	Data Centres
Capital Intensity	High	High
Revenue Profile	Regulated/annuity	Contracted/annuity
Asset Life	Long	Long (with tech refresh)
National Importance	Physical connectivity	Digital connectivity
Financing Model	Project finance	Project finance compatible

Strategic Opportunities for Banks:

Portfolio Diversification: Digital infrastructure loans provide:

- ✓ Lower correlation with traditional industrial credit.
- ✓ Stable yields.
- ✓ Opportunity to build specialised infrastructure-tech verticals.

Development of New Financing Products: Banks can innovate through:

- ✓ Green financing for energy-efficient data centres.
- ✓ Structured leasing models.
- ✓ Infrastructure Investment Trust (InvIT)-style refinancing.
- ✓ Co-lending with NBFC-IFCs under RBI's updated framework.

Alignment with India's Digital Growth Agenda: Financing data infrastructure directly supports:



- ✓ Digital public infrastructure.
- ✓ Financial inclusion ecosystems.
- ✓ AI-enabled productivity growth.

Policy Recommendations:

Formal Inclusion in Infrastructure Master List: Government may explicitly include data centres under “Digital/ Telecommunication Infrastructure” to remove classification ambiguity.

Creation of Sector-Specific Lending Guidelines: RBI could issue:

- ✱ Standard appraisal templates
- ✱ Technology risk assessment norms
- ✱ ESG-linked financing incentives

Development Finance Participation: DFIs such as NaBFID may anchor long-tenure funding, enabling bank participation without balance-sheet strain.

Encouraging Global Capital via ECB: Extending ECB eligibility will attract international infrastructure investors and reduce domestic funding pressure.

Way Forward for the Banking Sector: The classification of data centres as infrastructure is not merely a regulatory technicality, it represents a paradigm shift in how banks perceive the foundations of economic growth.

Banks must:

1. Build sectoral expertise combining project finance and technology evaluation.
2. Develop long-term liability structures aligned with digital infrastructure lending.
3. Integrate sustainability, cybersecurity, and operational resilience into credit models.
4. Collaborate with NBFCs, DFIs, and global lenders to structure hybrid financing platforms.

The transformation mirrors earlier shifts when telecom towers and renewable energy were first recognised as infrastructure—sectors that now form core banking portfolios.

Conclusion:

India stands at the intersection of physical and digital infrastructure transformation. Data centres, once viewed as specialised real estate, now function as mission-critical national assets supporting finance, governance, commerce, and innovation.

Regulatory trends already indicate a shift toward enabling infrastructure credit through relaxed provisioning, revised risk frameworks, and co-lending structures. Simultaneously, the rapid scaling of India’s data ecosystem demands sustained capital investment, much of which will depend on bank financing supported by long-tenure, infrastructure-style funding models.

Recognising data centres as infrastructure would:

- ✓ Unlock diversified funding channels, including ECBs.
- ✓ Enable structured, long-term lending frameworks.
- ✓ Reduce asset-liability mismatches for banks.
- ✓ Align financial regulation with the realities of a digital economy.

For the banking sector, this transition represents both an opportunity and an imperative—to evolve from financing physical assets alone to underwriting the digital backbone of India’s future growth.

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Why Data Centres Are the ‘Next Infrastructure’ Frontier for Indian Banks

(Banking Perspective & Policy Framework)



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Abstract:

The transformation of India’s financial ecosystem into a digitally driven architecture has redefined the strategic role of infrastructure within banking. While roads, power, and telecommunications have historically served as foundational economic enablers, data centres are increasingly emerging as the core infrastructure of the digital economy. This Article argues that data centres represent the next infrastructure frontier for Indian Banks, not merely as operational necessities but as long-term investible assets capable of generating stable and predictable cash flows. By comparing data centres with traditional infrastructure classes, the study examines their economic characteristics, regulatory context, investment potential, and systemic importance. The Article further outlines a policy framework for recognizing data centres as strategic infrastructure assets within India’s Banking and financial system. It concludes that proactive engagement by banks, through direct investment, partnerships, or infrastructure vehicles, can enhance resilience, regulatory compliance, innovation capacity, and sustainable profitability.

Keywords: *Digital Infrastructure; Data Centres; Banking Strategy; Infrastructure Finance; Data Localisation; Financial Stability; Policy Framework; Long-Term Assets.*

JEL Classification Codes:

G21 (Banks; Depository Institutions; Micro Finance Institutions).

G28 (Government Policy and Regulation).

L86 (Information and Internet Services; Computer Software).

O33 (Technological Change; Choices and Consequences).

Infrastructure has historically defined the trajectory of economic development. In India, investments in road networks, electricity generation, and telecommunications have catalysed trade, industrial expansion, financial inclusion, and regional integration. Banks have functioned both as beneficiaries and financiers of these infrastructure ecosystems. However, the rapid digitisation of financial services has shifted the locus of economic productivity from physical connectivity to digital interconnectivity.

The Indian Banking Sector now operates within an ecosystem characterised by real-time payments, digital lending platforms, artificial intelligence-based credit underwriting, cloud computing, and regulatory technology (RegTech). These developments require robust, secure, and scalable digital infrastructure. Data centres form the foundational layer of this transformation.

This Article posits that data centres are analogous to roads,



power grids, and telecom networks in their economic function, systemic importance, and capital characteristics. Furthermore, they present long-term, stable cash flow opportunities comparable to traditional infrastructure investments. The conversation proceeds by examining infrastructure comparisons, economic attributes, regulatory dimensions, investment characteristics, and policy implications relevant to Indian banks.

Infrastructure Evolution: From Physical Networks to Digital Backbone:

Roads: Transaction Efficiency and Market Integration:

Road infrastructure reduces transaction costs, connects markets, and stimulates commerce. Toll-based and annuity models have historically offered predictable revenue streams supported by government guarantees or usage patterns. For banks, road development facilitated geographic expansion and reduced operational frictions.

The defining features of road infrastructure include:

- ✓ Long asset life cycles.
- ✓ High capital intensity.
- ✓ Stable and often regulated cash flows.
- ✓ Strategic national importance.

These characteristics established roads as a core infrastructure asset class attractive to institutional investors.

Power Infrastructure: Productivity Enabler:

Electricity networks underpin industrial growth and service sector expansion. The banking sector depends on uninterrupted power for branches, ATMs, and digital operations. Power assets typically operate under regulated tariff frameworks that provide predictable returns over long concession periods.

Similar to roads, power infrastructure is characterised by:

- ✓ Essential service designation.
- ✓ Policy oversight.
- ✓ Long-term revenue certainty.
- ✓ Strong asset-backed financing structures.

Telecommunications: Connectivity Revolution:

Telecom infrastructure marked the first major digital leap in India's infrastructure narrative. Mobile penetration and broadband connectivity enabled digital banking, financial inclusion, and the growth of Unified Payments Interface (UPI)

transactions.

Telecom assets demonstrated:

- ✓ Strong recurring revenue models.
- ✓ High initial capital expenditure.
- ✓ Demand elasticity linked to data consumption.
- ✓ Rapid technological evolution.

Telecom infrastructure effectively bridged physical and digital economies.

Data Centres: The Emerging Core Infrastructure:

Data centres now serve as the foundational layer of digital infrastructure. Unlike telecom, which enables data transmission, data centres enable data storage, processing, analytics, and secure management. In an era where banking transactions are increasingly digital, data centres have become mission-critical.

Key infrastructure-like attributes include:

- ✓ High capital intensity.
- ✓ Long operational lifespan.
- ✓ Stable multi-year lease contracts.
- ✓ Strong demand growth driven by digital adoption.
- ✓ Systemic economic importance.

In the digital economy, data centres are as indispensable as roads were in the industrial era.

Strategic Relevance for Indian Banks:

Digital Banking and Scalability:

Indian banks process billions of transactions annually across UPI, internet banking, mobile applications, and digital lending channels. Scalability and low-latency processing are essential to maintain service reliability.

Modern data centres provide:

- ✓ High-availability architectures.
- ✓ Redundant backup systems.
- ✓ Real-time processing capabilities.
- ✓ Cloud integration.

Legacy infrastructure, often fragmented and geographically limited, is insufficient to meet future digital scale requirements.



Regulatory Compliance and Data Localisation:

The Reserve Bank of India (RBI) has emphasised data localisation requirements for payment systems and financial data. Compliance necessitates local storage and processing infrastructure.

Investment in domestic data centres enables banks to:

- ✓ Ensure regulatory compliance.
- ✓ Enhance auditability.
- ✓ Reduce jurisdictional exposure.
- ✓ Improve supervisory transparency.

Regulatory alignment further strengthens the case for data centres as strategic domestic assets.

Operational Resilience and Risk Mitigation:

Cybersecurity threats, natural disasters, and operational disruptions present systemic risks to banks. Data centre infrastructure strengthens resilience through:

- ✓ Disaster recovery mechanisms.
- ✓ Geographic redundancy.
- ✓ Zero-trust security models.
- ✓ Physical and logical access controls.

Operational continuity is increasingly a regulatory expectation, making data infrastructure central to risk governance frameworks.

Innovation and Revenue Diversification:

Data infrastructure enables advanced analytics, AI-driven underwriting, open banking ecosystems, and embedded finance platforms. Banks can monetise data insights and offer platform-based services.

Potential revenue streams include:

- ✓ Fintech ecosystem hosting.
- ✓ Platform-as-a-Service offerings.
- ✓ Data analytics services.



- ✓ Cross-border digital banking support.

Data centres thus support both defensive (compliance, resilience) and offensive (innovation, revenue growth) strategies.

Data Centres as Long-Term Stable Cash Flow Assets:

Demand Stability:

Demand drivers include:

- ✓ Growth in digital payments.
- ✓ Cloud migration.
- ✓ Regulatory mandates.
- ✓ AI and big data applications.
- ✓ Enterprise digitalisation.

These secular trends suggest structural demand rather than cyclical growth.

Contractual Revenue Models:

Data centre operators typically rely on:

- ✓ Long-term colocation agreements.
- ✓ Managed service contracts.
- ✓ Interconnection fees.
- ✓ Capacity-based billing.

Such arrangements create predictable income streams comparable to toll roads or power purchase agreements.

Institutional Investment Appeal:

Globally, data centres have attracted pension funds, sovereign wealth funds, and infrastructure private equity due to:

- ✓ Inflation-protected pricing.
- ✓ Strong renewal rates.
- ✓ High switching costs.
- ✓ Stable occupancy.

Indian banks may participate as lenders, equity investors, or co-developers.

Capital Structuring Opportunities:

Banks may structure exposure through:

- ✓ Infrastructure bonds.

- ✓ Infrastructure Investment Trusts (InvITs).
- ✓ Real Estate Investment Trusts (REITs).
- ✓ Structured project finance.

These mechanisms diversify income sources and enhance return on capital.

Policy Framework for Data Centres as Infrastructure:

Infrastructure Status Recognition:

Granting formal infrastructure status would:

- ✓ Lower cost of capital.
- ✓ Enable tax incentives.
- ✓ Improve access to long-term financing.

Such recognition aligns digital infrastructure with national economic priorities.

Public-Private Partnership Models:

Collaborative investment between:

- ✓ Government agencies.
- ✓ Public sector banks.
- ✓ Private infrastructure funds.

Can accelerate deployment while ensuring systemic oversight.

Standardisation and Certification:

Regulatory frameworks should mandate:

- ✓ Tier-based classification standards.
- ✓ Periodic cybersecurity audits.
- ✓ ESG compliance benchmarks.
- ✓ Energy efficiency standards.

Standardisation enhances investor confidence and systemic stability.

ESG and Sustainability:

Data centres are energy-intensive. Banks must integrate:

- ✓ Renewable energy sourcing.
- ✓ Efficient cooling technologies.
- ✓ Carbon-neutral commitments.

Sustainable infrastructure investments align with global ESG

frameworks and green finance initiatives.

Risks and Mitigation Strategies:

Capital Intensity:

High initial capital costs require structured financing and co-investment models.

Technological Obsolescence:

Adopting modular, scalable designs mitigates obsolescence risk.

Cybersecurity:

Advanced encryption, real-time monitoring, and regulatory coordination are essential.

Policy Uncertainty:

Clear regulatory guidance reduces investment hesitation.

Conclusion:

Data centres represent the next strategic infrastructure frontier for Indian banks. As the digital economy expands, the ability to store, process, secure, and analyse data becomes central to competitiveness and resilience. Like roads, power, and telecom networks before them, data centres underpin economic activity and attract long-term capital.

For Indian Banks, the opportunity is twofold: ensuring operational robustness and participating in a stable, infrastructure-like asset class. Strategic investment, supported by enabling policy frameworks, can generate predictable cash flows, enhance compliance, and foster innovation. Recognising data centres as core infrastructure is not merely a technological shift but a strategic redefinition of banking's role in India's digital economic future.

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New Area of Financing by Indian Financial Institutions / Banks

(Finance to 'Data Centres')



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Abstract:

The rapid expansion of India's digital economy has positioned data centres as critical infrastructure supporting cloud computing, digital payments, e-governance, artificial intelligence, and data-driven enterprises. This transformation has created a new and emerging area of lending for Indian Financial Institutions / Banks, finance to data centres. These projects are highly capital-intensive, geographically concentrated near coastal regions due to undersea cable connectivity, and require long-term financing with extended repayment horizons.

Data centres have emerged as a foundational pillar of India's digital economy, enabling secure data storage, real-time connectivity, and uninterrupted digital services across sectors. With increasing reliance on cloud platforms, fintech applications, artificial intelligence, and data localisation requirements, the demand for large-scale, reliable data centre infrastructure has grown exponentially. This development has opened a **new and strategic area of financing for Indian Financial Institutions / Banks**, positioning data centres alongside traditional infrastructure sectors such as power, telecom, and transportation.

The rapid digitisation of the Indian economy has elevated data centres from being niche technology assets to becoming critical national infrastructure. With the exponential growth of cloud computing, fintech platforms, artificial intelligence, e-governance, e-commerce, and digital payments, the demand for secure, scalable, and reliable data storage has grown manifold. In this context, data centres represent the physical backbone of India's digital ambitions. Recognising this strategic importance, Indian Financial Institutions / Banks have begun to view finance to data centres as a new

and emerging area of long-term lending, comparable to traditional infrastructure sectors such as power, roads, ports, and telecommunications.

General Issues of Financing:

a) Geographic Location and Undersea Cable Connectivity:

One of the defining characteristics of large-scale data centres is their dependence on global connectivity through high-capacity fibre-optic cables. A significant portion of international data traffic flows through undersea cables that originate in foreign countries and terminate along India's coastline. As a result, data centres are typically located in coastal regions such as Mumbai, Chennai, Kochi, and Visakhapatnam, where these cables land. Proximity to landing stations reduces latency, enhances data transmission efficiency, and lowers operational risk. From a financing perspective, this geographic concentration introduces location-specific risks and opportunities that financial institutions / banks must factor into project appraisal and long-term credit exposure

b) Water Resource Management:

In addition to power, water resources play a critical role

in data centre operations, particularly for cooling systems that use water for heat dissipation. Efficient water use and recycling systems are increasingly incorporated into project design, not only to meet operational requirements but also to satisfy environmental norms and mitigate resource risk. Responsible water management further strengthens compliance with ESG standards and supports long-term sustainability.

c) Power Consumption and Energy Solutions:

One of the major operational considerations for data centres is **high power consumption**, driven by energy-intensive cooling systems and continuous server operations. As power cost forms a significant portion of operational expenditure, developers and lenders focus heavily on energy solutions that balance reliability and cost efficiency. Renewable energy, particularly solar energy, helps reduce reliance on conventional fossil fuels and alternative sources, cutting costs while contributing to sustainability goals.

d) Diversification with Nuclear Energy:

Beyond solar, nuclear energy is also emerging as a viable option to lower energy costs for large-scale data centre operations. With stable power output and minimal carbon emissions, nuclear power offers predictability and aligns with India's broader energy diversification strategy. Financial Institutions / Banks increasingly consider such alternative energy integrations as part of their credit appraisals, given the direct impact on operational cost and long-term sustainability.

e) Importance of ESG Compliance:

Environmental, Social, and Governance (**ESG**) standards have become central to financing decisions in this sector. Lenders assess data centre projects not only on financial returns but also on ESG performance metrics, including carbon footprint, energy sourcing, waste management, and community impact. Adhering to robust ESG principles enhances a project's credibility and aligns with international financing norms, attracting both domestic and foreign investment.

f) Capital Intensity and Loan Structure:

Data centres are fundamentally capital-intensive ventures that require substantial upfront investment in land, construction, cooling systems, and high-end servers. To support such needs, financial institutions / banks extend infrastructure loans that are repaid over time through equated monthly instalments (EMIs). Financial institutions structure these loans with longer maturities and competitive interest rates to align with the long-life cycle and stable cash flows typical of data centre businesses. This financing model allows operators to

deploy world-class facilities without straining initial capital.

f) Strategic Category-Infrastructure Loans:

Given their economic significance, scale, and impact on digital infrastructure, data centres are categorised under infrastructure loans by Indian financial institutions / banks. This classification enables specialised financing terms, including longer tenors, tailored risk assessments, and structured repayment mechanisms. Infrastructure status also encourages broader participation from institutional investors and government-linked funds, enhancing capital availability for data centre expansion.

g) Revenue Model and Cash Flow Predictability:

The economic viability of data centres is underpinned by their consistent revenue generation model. Clients pay data preservation fees for storage, processing, and uptime guarantees, which provide a predictable stream of cash inflows over time. Notably, data stored by users in data centres typically remains for about **30 years**, dovetailing neatly with the financing tenor. This alignment between data retention duration and loan tenure strengthens the credit profile for lenders and supports long-term debt servicing.

Role of Government:

a) Strategic Importance for National Data Sovereignty:

The location of data centres within Indian territory, particularly near undersea cable landing points, has implications far beyond commercial considerations. Data sovereignty, national security, and regulatory oversight are increasingly tied to where and how data is stored. Domestic data centres ensure compliance with Indian laws relating to data localisation, privacy, and cybersecurity. Consequently, financing data centres is not merely a commercial lending activity but a strategic investment in national digital resilience. Indian financial institutions / banks, by financing such assets, indirectly support the country's control over its digital infrastructure and reduce dependence on foreign jurisdictions.

b) Alignment with National Digital and Economic Goals:

A well-defined policy framework from NITI Aayog would ensure that data centre development aligns with national priorities such as Digital India, Make in India, and Atmanirbhar Bharat. Data centres support domestic innovation, enable Indian startups, and attract global hyperscale's to invest locally. By providing policy direction, the government can ensure that financing extended by Indian financial institutions / banks contributes not only to commercial returns but also to broader economic growth, employment generation, and



technological self-reliance.

c) Government Role in Defining Scope and Locations:

Another critical policy intervention required is for the Government of India to finalise the scope and geographic distribution of data centres across the country. Currently, development is concentrated in a few metropolitan and coastal cities, leading to regional imbalances. A planned approach identifying potential locations based on connectivity, power availability, disaster resilience, and regional development goals would ensure balanced growth. Clear identification of locations also helps financial institutions / banks assess location-specific risks more accurately.

d) Decentralisation and Regional Development:

Strategically dispersing data centres across multiple states can promote regional economic development and reduce systemic concentration risk. Tier-II and Tier-III cities can benefit from employment generation, infrastructure upgrades, and increased investment. From a Financial Institution / bank perspective, geographically diversified projects reduce correlated risks and enhance portfolio resilience. Government-led planning in this area would therefore directly support prudent credit expansion.

e) Budgetary Support and Fiscal Incentives:

Based on funding estimates, the government may consider targeted budgetary allocations, viability gap funding, or

fiscal incentives to attract private investment. Tax incentives, accelerated depreciation, and reduced duties on specialised equipment can significantly improve project viability. Such measures reduce credit risk for lenders and enhance debt service capacity, making data centre financing more attractive for Indian financial institutions / banks.

f) Public-Private Partnership (PPP) Opportunities:

Data centre development also lends itself to Public-Private Partnership (PPP) models, particularly for government and strategic data storage. PPP structures can combine public oversight with private sector efficiency, while enabling financial institutions / banks to finance projects with sovereign or quasi-sovereign backing. This further strengthens credit quality and reduces default risk, encouraging broader participation by financial institutions.

g) Role of Government Policy and NITI Aayog:

The Government of India has a critical role to play in nurturing the data centre ecosystem. Through NITI Aayog, the government should formulate a comprehensive national policy that positions data centres as strategic infrastructure assets. Such a policy should address land allocation, power availability, water access, taxation, environmental clearances, and regulatory approvals. Policy certainty reduces execution risk, enhances investor confidence, and directly improves the bankability of data centre projects, thereby facilitating smoother financial closure.

h) Estimation of Funding Requirements by NITI Aayog:

For effective implementation, NITI Aayog should estimate the total funding required for developing data centre infrastructure over the medium to long term. This estimation should account for land acquisition, power infrastructure, connectivity, cooling systems, and ancillary facilities. A clear assessment of funding needs would enable the government to plan budgetary support, incentives, and policy interventions. It would also provide financial institutions / banks and investors with a clearer view of the scale of opportunity and risk.

Role of Reserve Bank of India:

a) Growing Lending Potential and the Need for RBI Guidelines:

Given the enormous scale of investment required in this sector, the **potential exposure of the Financial Institutions / Banking System to data centre financing is substantial**. Individual projects can involve capital expenditure running into thousands of crores, with long gestation periods and extended repayment horizons. In view of this growing systemic exposure, it is essential for the **Reserve Bank of India (RBI)** to issue comprehensive guidelines to Financial Institutions / Commercial Banks. Such guidelines should address risk assessment norms, exposure limits, project appraisal standards, and sector-specific prudential requirements to ensure orderly growth and financial stability.

b) Regulatory Clarity and Uniform Lending Practices:

The absence of standardised regulatory guidance can lead to inconsistent lending practices across Financial Institutions / Banks. Some institutions may treat data centres as real estate projects, while others may classify them as IT or infrastructure assets. Clear RBI guidelines would bring uniformity in classification, enable consistent capital adequacy treatment, and facilitate better monitoring of sectoral credit risk. Furthermore, regulatory clarity would encourage more financial institutions / banks to participate confidently in data centre financing, thereby improving credit availability and pricing efficiency.

Role of Financial Institutions / Banks:

a) Emergence of Data Centre Financing in India:

In recent years, Indian financial institutions / banks have identified data centres as a new and strategic area for financing, aligning with the country's accelerating digital transformation. Characterised by large capital requirements and long investment horizons, data centres increasingly attract term loans from financial institutions. These loans typically offer extended tenures of up to **30 years**, enabling

developers to match financing costs with long-term revenue streams and ensuring viability for such infrastructure-intensive projects.

b) Consortium Lending as the Preferred Financing Model:

Due to the high project costs and exposure limits prescribed by NBFCs / Banking regulations, most data centre loans should be sanctioned through **consortium lending arrangements**. Consortium lending allows multiple NBFCs / Banks to jointly finance a project, thereby distributing credit risk and complying with individual exposure ceilings. This approach also brings diverse expertise into the appraisal and monitoring process, improving credit discipline and project governance. For NBFCs / Banks, consortium structures reduce concentration risk while still allowing participation in a high-growth infrastructure segment.

c) Risk Sharing and Credit Monitoring in Consortia:

Consortium lending enhances transparency and accountability through shared documentation, common security arrangements, and collective decision-making. Lead NBFC / Banks typically undertake detailed due diligence, while participating financial institutions / banks rely on shared appraisal frameworks. In the context of data centres where technological, operational, and regulatory risks coexist, such collective oversight is particularly valuable. Effective consortium mechanisms ensure that risks related to power supply, connectivity, environmental compliance, and client concentration are continuously monitored.

d) Asset-Liability Management (ALM) Challenges for Banks:

One of the most critical financial concerns in data centre financing is the **Asset-Liability Management (ALM) gap** faced by commercial banks. Data centre loans typically have very long tenures, often extending beyond 20–25 years, whereas bank liabilities largely consist of short- to medium-term deposits. Financing such long-duration assets with short-term liabilities can expose banks to significant maturity mismatches, interest rate risk, and liquidity stress. This structural constraint limits the extent to which commercial banks can independently finance large data centre projects.

e) Long-Term Implications for the Banking Sector:

Financing data centres represents a paradigm shift for Indian banks from short- to medium-term corporate lending to long-duration infrastructure financing linked to the digital economy. This transition requires new appraisal skills, sector-specific risk frameworks, and closer coordination with policymakers. Banks that adapt early will gain strategic advantages, including stable long-term returns and diversification of loan portfolios.



f) Role of Development Financial Institutions (DFIs):

To mitigate ALM risks, **development banks and specialised financial institutions** should play a central role in data centre financing. DFIs are better suited to provide long-term capital due to their access to long-dated funding sources and their mandate to support infrastructure development. A collaborative model involving commercial banks, DFIs, and multilateral institutions would allow risk sharing and ensure sustainable financing structures. Such participation would also relieve pressure on the balance sheets of commercial banks while enabling large-scale capital deployment.

Role of SEBI:

a) Need for a Deeper and More Mature Bond Market:

While financial institution / bank lending remains critical, the scale of funding required for data centres cannot be met by financial institutions / banks alone. To support this sector, **India's bond market must be further developed**, especially for long-tenor infrastructure bonds. A vibrant corporate bond market would enable data centre operators to raise funds directly from institutional investors such as pension funds, insurance companies, and sovereign wealth funds. This would reduce reliance on NBFC / Bank credit and provide long-term, stable funding aligned with asset life cycles.

b) Infrastructure Bonds and Credit Enhancement Mechanisms:

For bond financing to gain traction, appropriate credit enhancement mechanisms are necessary. Government guarantees, partial credit risk guarantees, and take-out financing structures can improve the credit profile of data centre bonds. Such instruments would make these bonds attractive to conservative long-term investors. Financial Institutions / Banks can also play a catalytic role by underwriting bond issuances or providing standby liquidity support, thereby integrating NBFC / Bank finance with capital market solutions.

Conclusion:

In conclusion, finance to data centres is emerging as a new and strategic area of lending for Indian NBFCs / Banks, driven by the country's digital transformation and growing data needs. The financing of data centres represents a new frontier for Indian Financial Institutions / Banks, blending economics, technology, and sustainability. With long tenures of up to 30 years, alignment with predictable revenue models, focus on energy and water resource solutions, and adherence to ESG standards, data centre financing exemplifies how modern infrastructure projects are reshaping the lending landscape.

As digital demand grows, this sector is poised to remain a cornerstone of long-term institutional investing in India. However, the scale, complexity, and long-term nature of these projects necessitate coordinated efforts by regulators, policymakers, NBFCs / Banks, and capital markets. RBI guidelines, NITI Aayog-led policy frameworks, involvement of development NBFCs / Banks, consortium lending, bond market development, and clear government planning are all essential to ensure sustainable growth of this sector.

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Securing Fiscal Sovereignty: The Role of Virtual Data Rooms in India's Union Budget Process



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Abstract:

The preparation of a national budget represents one of the most sensitive administrative and financial exercises undertaken by any sovereign state. In India, the Union Budget has historically been characterized by stringent confidentiality measures aimed at preventing market disruption and insider advantage. In recent years, the Government of India has transitioned toward a paperless and digitally secured Budget preparation process through the adoption of a Virtual Data Room (VDR). This article examines the operational, cybersecurity, governance, and financial market implications of deploying VDR infrastructure within the Union Budget framework. It situates this transition within broader themes of digital governance, cybersecurity resilience, and financial system stability.

1. Introduction

The Union Budget of India is not merely a fiscal statement; it is a macroeconomic instrument that influences taxation, capital markets, public expenditure, sovereign borrowing, and investor sentiment. Budget announcements often generate immediate movements in equity indices, bond yields, and currency markets.

Given its market moving potential, confidentiality in Budget preparation is paramount. Historically, this confidentiality was maintained through physical isolation of officials within the North Block in New Delhi.

However, the digitization wave accelerated by the COVID 19 pandemic prompted structural changes in administrative workflows. In 2021, under the leadership of Nirmala Sitharaman, India presented its first fully paperless Union Budget. Central to this transformation was the use of a Virtual Data Room (VDR) to manage and secure sensitive documents.

This development represents a significant evolution in fiscal governance and digital risk management.

2. Traditional Confidentiality Model: Physical Containment

For decades, the final stages of Budget preparation involved strict physical controls:

- ✳ Restricted access to North Block premises
- ✳ Sequestration of key officials
- ✳ On site government printing press operations
- ✳ Prohibition of external communication
- ✳ Limited telecommunication access

This approach prioritized physical containment as the primary defence mechanism against leaks. While effective in earlier eras, it presented operational inefficiencies, logistical burdens, and increased dependency on manual processes.

The increasing digitalization of financial data necessitated a more technologically integrated model.

3. Virtual Data Room: Concept and Architecture

A Virtual Data Room (VDR) is a secure digital repository



designed for confidential document storage and controlled sharing among authorized stakeholders. In the context of the Union Budget, the VDR functions as a high security internal platform for inter departmental collaboration.

Core Features

End to End Encryption: Ensures data confidentiality in transit and at rest.

1. **Role Based Access Control (RBAC):** Access permissions defined according to hierarchical authority.
2. **Multi Factor Authentication (MFA):** Strengthens identity verification.
3. **Audit Trails:** Logs every user action for accountability.
4. **Watermarking and Download Controls:** Mitigates unauthorized dissemination.
5. **Version Control Mechanisms:** Maintains document integrity during iterative drafting.

Unlike general cloud storage systems, VDR platforms are designed for high stakes financial, legal, and governmental environments where data breaches can have systemic implications.

4. Market Sensitivity and Financial Stability

The Union Budget contains policy measures with immediate capital market implications:

- ✦ Direct and indirect tax revisions
- ✦ Corporate taxation policies
- ✦ Capital expenditure allocations
- ✦ Fiscal deficit targets
- ✦ Sovereign borrowing programs
- ✦ Disinvestment strategies

Premature disclosure of such information can:

- ✦ Distort price discovery mechanisms
- ✦ Trigger speculative trading
- ✦ Create asymmetric information advantages
- ✦ Undermine regulatory fairness
- ✦ Damage institutional credibility

From a BFSI perspective, maintaining budget confidentiality

is integral to preserving **market integrity and systemic trust**.

The VDR reduces leakage probability by replacing uncontrolled physical circulation with digitally monitored access. Every interaction with budget documents leaves a traceable digital footprint, strengthening deterrence mechanisms.

5. Cybersecurity Implications

While digital systems reduce physical leak risks, they introduce cyber vulnerabilities. Therefore, the VDR must operate within a robust cybersecurity framework that includes:

- ✳ Firewalls and network segmentation
- ✳ Intrusion detection and prevention systems
- ✳ Advanced encryption standards
- ✳ Regular penetration testing
- ✳ Real time anomaly detection
- ✳ Strict endpoint security protocols

The integration of VDR into the Budget process reflects a recognition that **cybersecurity is now an extension of economic security**.

For financial institutions, this approach offers a governance model for handling sensitive internal information such as merger documentation, regulatory filings, and risk disclosures.

6. Governance and Compliance Dimensions

The adoption of a VDR enhances institutional governance in multiple ways:

6.1 Auditability

Comprehensive audit trails ensure traceability of document access and modifications. This improves internal accountability and strengthens post event forensic analysis capabilities.

6.2 Risk Mitigation

Digitally enforced access controls reduce dependency on human vigilance alone. Automated restrictions minimize insider risk exposure.

6.3 Regulatory Signalling

The digitized Budget framework signals regulatory maturity and technological preparedness to domestic and global investors.

For the BFSI sector, this model aligns with principles of:

- ✳ Data governance
- ✳ Operational risk management
- ✳ Information security compliance
- ✳ Institutional transparency

7. Environmental and Operational Efficiency

The shift to a paperless Budget also supports sustainability objectives. Thousands of printed documents traditionally distributed to policymakers and parliamentarians are now digitally accessible.

- ✳ Operational benefits include:
 - ✳ Rapid document revisions
 - ✳ Real time cross department collaboration
 - ✳ Reduced logistical overhead
 - ✳ Enhanced version accuracy

In the context of ESG (Environmental, Social, and Governance) frameworks, this digital transition contributes to environmentally responsible governance practices.

8. Comparative Perspective: Corporate VDR vs. Government VDR

Virtual Data Rooms have long been used in corporate finance, particularly in:

- ✳ Mergers and acquisitions
- ✳ Initial public offerings
- ✳ Due diligence exercises
- ✳ Legal arbitration

The government's adoption mirrors corporate best practices but differs in scale and consequence. A corporate leak may affect shareholder value; a Budget leak may influence an entire nation's economic equilibrium.

Thus, the Union Budget VDR represents a macro level adaptation of micro level financial governance tools.

9. Strategic Implications for the BFSI Sector

The institutionalization of VDR technology in sovereign fiscal processes offers several strategic insights for financial institutions:

1. **Digital first Confidentiality Frameworks** are essential in



modern risk management.

2. **Audit driven governance systems** enhance accountability.
3. **Cyber resilience must align with macroeconomic sensitivity.**
4. **Integrated security architecture reduces systemic vulnerabilities.**

Banks, NBFCs, insurance companies, and capital market intermediaries can draw lessons in secure document lifecycle management from this model.

10. The Broader Digital Governance Narrative

The integration of VDR into the Union Budget process reflects India's broader trajectory toward digital governance. From electronic tax filing systems to digital payments infrastructure, administrative processes are increasingly technology driven.

However, digitization in high sensitivity environments requires:

- ✳ Strong institutional discipline
- ✳ Continuous cybersecurity investment
- ✳ Structured access hierarchies

- ✳ Legal frameworks supporting digital evidence

The Union Budget's digital transition illustrates how technology can reinforce rather than weaken institutional confidentiality.

11. Conclusion

The adoption of Virtual Data Room technology in India's Union Budget preparation marks a significant evolution in fiscal governance. It represents the convergence of financial sensitivity, digital security, and administrative modernization.

In an era where economic data is both strategic asset and potential vulnerability, safeguarding fiscal information demands more than physical isolation. It requires encrypted systems, audit intelligence, and cyber resilience.

For the BFSI sector, this transition underscores a critical lesson: **data security is now inseparable from financial stability.**

The Virtual Data Room may operate quietly behind the scenes, but its role in protecting fiscal sovereignty is profound. As digital governance frameworks continue to mature, the VDR stands as a model for secure, accountable, and efficient management of economically sensitive information.



Digital Transformation in the Indian Banking Sector: Moving from Digitization to Sustainable Value Creation



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Abstract:

The Indian banking sector is undergoing a significant digital transformation, evolving from traditional digitization and operational automation to a strategic focus on sustainable value creation, resilience, and customer trust. Supported by India's digital public infrastructure, including Aadhaar, UPI, and the Account Aggregator framework, banks are enhancing customer experience through integrated platforms, data analytics, cloud adoption, and API-led partnerships. Simultaneously, regulatory reforms have accelerated modernization by strengthening governance, cybersecurity, and compliance frameworks. Despite challenges such as legacy systems, skill gaps, and balancing innovation with risk management, digital transformation is positioning banks to deliver hyper-personalized services, embedded finance solutions, and AI-driven operations. In this context, institutions that align technology initiatives with business strategy, regulatory expectations, and organizational readiness will be best placed to sustain growth in India's digital-first economy

Digital transformation in the Indian banking sector has reached a decisive stage. What initially began as an effort to automate operations and digitize customer touchpoints has evolved into a broader mandate focused on **long term value creation, resilience, and customer trust**. Today, technology decisions directly influence business strategy, regulatory compliance, and competitive positioning.

India's banking ecosystem operates at an unprecedented scale. Rapid adoption of digital public infrastructure such as Aadhaar, UPI, and the Account Aggregator framework has transformed how banking services are accessed and delivered. At the same time, institutions must function within a tightly regulated environment where stability and trust are non negotiable.

As digital maturity increases, the focus is shifting away from isolated technology initiatives toward **enterprise wide transformation**, where strategy, architecture, governance, and culture move in alignment.

From Digitization to Customer Centric Transformation

The early phase of digital adoption across Indian banks was largely efficiency driven. Core systems were modernized, branch processes were automated, and digital channels were introduced to support scale and cost optimization.

However, the competitive landscape has changed significantly. Digital channels are no longer differentiators; they are baseline expectations. Customers today judge banks on **speed, simplicity, personalization, and consistency across channels**. As a result, transformation efforts have moved beyond replicating traditional services online to rethinking customer journeys end to end.

Leading institutions are redesigning processes around customer needs rather than internal structures. This shift requires tighter integration between front end channels, core platforms, and data systems, enabling real-time decision making and seamless experiences.



Regulatory Environment as an Enabler of Change

India's regulatory ecosystem has played a critical role in shaping digital transformation within the banking sector. Rather than acting solely as a constraint, regulatory initiatives have often accelerated modernization while reinforcing systemic stability.

Measures such as digital KYC, video based customer onboarding, data sharing through the Account Aggregator framework, and strengthened cybersecurity guidelines have pushed banks to modernize legacy processes and adopt stronger governance models.

Compliance is no longer an afterthought. Regulatory expectations increasingly **influence technology architecture, data management practices, and operating models**. Banks that proactively embed compliance into their transformation initiatives are better positioned to scale innovation responsibly.

Cloud Adoption - A Cautious but Strategic Shift

Cloud adoption in the Indian banking sector has evolved from limited experimentation to a more deliberate and strategic approach. While concerns around data security, regulatory compliance, and operational risk initially slowed adoption, banks are increasingly recognising cloud platforms as enablers of agility, scalability, and resilience. Most institutions are pursuing **hybrid architectures**, retaining sensitive

workloads on controlled environments while leveraging cloud capabilities for digital channels, analytics, and innovation use cases. Regulatory guidance on data localisation and third party risk has further shaped adoption strategies, reinforcing the need for strong governance, workload classification, and security controls. When approached with architectural discipline rather than as a cost saving exercise, cloud adoption is proving to be a critical foundation for modernising banking operations.

Data, APIs, and Ecosystem Led Growth

Data has emerged as a strategic asset for the banking industry. With growing volumes of digital transactions and customer interactions, institutions now have access to rich data sets that can drive more informed decision making.

Advanced analytics and artificial intelligence are being used to:

- ✳ Detect and prevent fraud more effectively
- ✳ Improve credit risk assessment
- ✳ Deliver contextual and personalized offerings
- ✳ Strengthen regulatory and management reporting

At the same time, API led architectures are enabling greater collaboration with FinTechs, NBFCs, and ecosystem partners. Platforms such as UPI and the Account Aggregator framework demonstrate how secure data sharing, with

customer consent, can unlock innovation and expand financial inclusion.

This ecosystem driven approach requires banks to move from a product centric mindset to a platform and **partnership oriented model**, supported by strong API governance and security controls. Cybersecurity and the Imperative of Digital Trust

As digital adoption deepens, cybersecurity has become a board level priority across the banking sector. Banks remain prime targets for cyber threats due to the sensitivity of financial data and the critical role they play in the economy.

Modern security strategies emphasize:

- ✳ Zero Trust principles
- ✳ Continuous monitoring and threat intelligence
- ✳ Robust identity and access management
- ✳ Strong incident response and recovery capabilities

Beyond technical controls, maintaining customer trust is paramount. Digital initiatives can succeed only if customers are confident that their data, identities, and transactions are protected. Building and sustaining digital trust is therefore central to the sector's long term growth.

Organizational Readiness and Talent Considerations

While technology is a key enabler, transformation initiatives in banking often face challenges related to organizational readiness. Legacy mindsets, siloed structures, and skill gaps can slow progress and dilute outcomes.

To address this, banks are increasingly investing in:

- ✳ Agile delivery models
- ✳ Cross functional collaboration between business and technology teams
- ✳ Continuous upskilling in areas such as data analytics, cybersecurity, and digital architecture

Leadership commitment and cultural alignment play a decisive role in translating transformation programs into measurable business outcomes.

Key Challenges on the Transformation Journey

Despite notable progress, digital transformation in the banking sector remains complex and incremental. Common challenges include:

- ✳ Integrating legacy systems with modern digital platforms
- ✳ Managing multiple vendors and technology partners
- ✳ Balancing innovation with regulatory and operational risk
- ✳ Ensuring consistency across large, distributed organizations

Addressing these challenges requires a phased, well governed approach, rather than large scale disruptive change.

The Road Ahead

The next phase of transformation in the Indian banking sector will be defined by:

- ✳ Hyper personalized customer experiences
- ✳ Embedded finance across non banking platforms
- ✳ Greater use of AI driven decision making
- ✳ Increased focus on resilience, sustainability, and ESG objectives

Digital transformation will increasingly be viewed as a **continuous capability**, evolving alongside business strategy and regulatory expectations.

Conclusion

Digital transformation in the Indian banking sector has moved well beyond basic digitization. Success today is measured by customer value, operational resilience, and trust, rather than the number of technologies implemented.

Banks that align technology initiatives with business priorities, regulatory requirements, and organizational culture will be best positioned to navigate uncertainty and sustain growth. In an increasingly digital first economy, the ability to innovate responsibly will define the future of banking in India.

In India's Banking Crossroads: Between the Market, the State, and the Digital Future

(... a Comparative Perspective on India, the West, and China – and the Emerging Third Model of Global Banking)



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Abstract:

This article examines India's banking system as an emerging "third model" between Western market-led finance and China's state-directed system. It argues that India combines public-sector reach, private-sector efficiency, and digital innovation through Aadhaar, Jan-Dhan, and UPI. While strengths include inclusion, regulatory resilience, and demographic advantages, challenges remain in NPAs, shallow credit depth, and global reach. The study concludes that with governance, capital-market, and fintech reforms, India can evolve into a sustainable and globally influential banking model.

Introduction: Banking in Transition

Banking across the world is no longer confined to marble halls and paper ledgers. It is now a fusion of technology, policy, and social design. The institutions that once merely held deposits and issued loans are today engines of inclusion, innovation, and influence.

In this global transformation, India's banking system stands at a fascinating intersection.

- ✳ The West operates mature, market-driven systems emphasizing stability and consumer protection.
- ✳ China runs a state-directed banking empire, mobilizing finance as a tool of national and global strategy.
- ✳ India, by contrast, is crafting a hybrid ecosystem — blending the social reach of the state, the dynamism of the market, and the reach of digital technology.

A sincere however small effort is being made to explore where India stands today, how it compares with Western and Chinese models, which path seems most sustainable, and what reforms India must undertake to become a global

banking powerhouse.

The Present Banking Landscape in India

✓ Public Sector Backbone

Public Sector Banks (PSBs) remain the pillar of Indian banking, controlling over 60% of assets. They are the conduits for:

- ❖ Government welfare disbursements,
- ❖ Agricultural and priority-sector lending, and
- ❖ Infrastructure finance under flagship schemes.

However, many PSBs still face legacy challenges — high non-performing assets (NPAs), slower decision-making, and bureaucratic rigidity. Despite recapitalization and consolidation, the public–private efficiency gap remains evident.

✓ Private Sector and New Generation Banks

The new-generation private banks such as HDFC Bank, ICICI Bank, Axis Bank, and Kotak Mahindra Bank have emerged as the new benchmarks for operational efficiency, profitability, and customer experience. They have pioneered digital

transformation, risk analytics, and retail lending innovation, pushing PSBs to modernize.

In contrast, Foreign banks maintain a niche presence, focusing on trade finance, high-end corporate lending, and wealth management.

Digital Revolution: The India Stack Moment

India’s real breakthrough came not from brick-and-mortar banking, but from its digital public infrastructure, built around:

- ❖ Aadhaar – biometric identity for over a billion citizens.

- ❖ Jan-Dhan-Yojana – over 500 million basic bank accounts opened (as per records available).
- ❖ UPI (Unified Payments Interface) – world’s fastest real-time payment platform, processing billions of transactions monthly.

Together, these three, form the “India Stack”, enabling what economists call digital financial inclusion at population scale. Even small street vendors today transact through QR codes – something unimaginable a decade ago. (most of its credit goes to the innovation made during COVID)

Comparative Framework: India, West, and China

Aspect	Western Model	Chinese Model	Indian Model
Ownership	Private	shareholder-led State-owned	Mixed: public + private
Control mechanism	Market-driven	State-directed	Hybrid
Inclusion focus	Already achieved	Mass inclusion via fintech	Rapid inclusion via JAM & UPI
Innovation approach	Fintech partnerships	open banking Fintech giants under state oversight	Open ecosystem with RBI regulation
Global role	Capital markets	global finance Strategic sovereign lending	Emerging outward presence
Transparency	High	Moderate to low	Moderate to high
Primary objective	Efficiency & stability	Development & geopolitics Inclusion	digital empowerment

Western Banking: The Market-Driven Maturity

Western Europe and North America have developed deep, transparent, and highly regulated financial systems. Almost every citizen has a bank account; credit is widely available; deposit insurance systems protect consumers. The central banks — the U.S. Federal Reserve, the European Central Bank, and the Bank of England — maintain independence and credibility. Regulations such as Basel III and Open Banking frameworks ensure prudence and innovation coexist.

Yet, the Western model faces its own dilemmas:

- ❖ Financial access is near-universal, but income inequality and regional disparities persist.
- ❖ Large-scale corporate consolidation has made small community banking weaker.
- ❖ Innovation often comes from fintech challengers rather than traditional banks.

Still, the Western system remains the benchmark of financial

transparency and consumer protection.

China’s State-Directed Financial Engine

China’s banking system is state capitalism in action.

The “Big Four” — ICBC, Bank of China, CCB, and Agricultural Bank of China — hold enormous domestic power and international reach. Two policy banks — China Development Bank (CDB) and China Exim Bank — function as instruments of national strategy:

- ❖ Financing the Belt and Road Initiative (BRI),
- ❖ Building ports, roads, and power projects in developing nations,
- ❖ Extending geopolitical influence through credit lines.

Domestically, China has achieved near-universal financial access through fintech super-apps like Alipay and WeChat Pay, integrating payments, lending, and social commerce seamlessly. However, Chinese banking remains opaque



and politically guided, with limited public scrutiny of lending risks. The line between economic and political decision-making is blurred, and foreign borrowers often face “debt dependency” risks.

India’s Hybrid Model: The Middle Way

India borrows from both traditions but replicates neither. It retains state direction for social inclusion, yet encourages market-led competition and digital entrepreneurship.

- ❖ Like the West, India emphasizes regulation, prudence, and private-sector dynamism.
- ❖ Like China, it uses state institutions to mobilize credit for development.
- ❖ Unlike both, it champions financial inclusion as a moral and constitutional goal.
- ❖ The Reserve Bank of India (RBI) — an independent yet government-aligned regulator — has become a global model for cautious innovation.
- ❖ The Public–Private–Digital Trinity is India’s new financial identity:
- ❖ Public sector reach + private sector efficiency + digital infrastructure scale.

India’s Strengths and Challenges

✓ Strengths

- ❖ Digital Inclusion: UPI and Aadhaar-led services are unparalleled in scope and low cost.
- ❖ Sound Regulation: The RBI maintains strong prudential norms and crisis management.
- ❖ Demographic Dividend: Young, tech-savvy population accelerating digital adoption.
- ❖ Resilience: Indian banks survived both the 2008 global crisis and the 2020 pandemic shock with relative stability.

✓ Challenges

- ❖ NPA Legacy: Despite improvement, stressed assets remain a drag on PSBs.
- ❖ Credit Depth: At ~55% of GDP, credit penetration is shallow compared to China (180%) or the U.S. (150%).
- ❖ Public Sector Efficiency: Bureaucratic rigidity, risk aversion, and lag in analytics adoption.
- ❖ Global Reach: Limited outward presence; Indian banks are yet to become global players.

❖ Regulatory Balance: Need to harmonize fintech innovation with consumer protection and data privacy.

The Better Model: Who Should Follow Whom?

Aspects	Western System	Chinese System	Indian System
Transparency & Regulation	High	Nil	High
Speed of Capital Mobilization	Moderate	Very high	Moderate
Financial Inclusion	Achieved	Achieved	Expanding fast
Global Influence	Strong	Expanding via BRI	Expanding via BRI
Innovation & Digitalization	High	Very High	Very High
Innovation & Digitalization	Strong	Weak	Balanced

Thus:

- ❖ The West remains the safest and most transparent model.
- ❖ China is the most powerful and state-efficient model.
- ❖ India is the most balanced and democratic model — inclusive, digital, yet regulated.

In the long run, the Indian system appears more sustainable because it combines:

- ❖ The Western emphasis on institutional trust,
- ❖ The Chinese ability for rapid deployment, and
- ❖ Its own moral commitment to inclusion and equity.

The Road Ahead for India

To lead globally, India necessarily, move from being digitally inclusive to financially deep — from accounts to assets, from savings to investments.

Key Reforms Needed:

- ❖ Professionalize Public Sector Banks: Encourage merit-based leadership and autonomy; push for technology-driven decisions.
- ❖ Strengthen Development Finance: Revive long-term project financing through specialized institutions.
- ❖ Global Presence: Encourage Indian banks to lend and invest in Africa, South Asia, and Latin America as ethical alternatives to Chinese lending.

- ❖ Enhance Financial Literacy: Ensure digital inclusion translates into responsible borrowing and saving.
- ❖ Deepen Capital Markets: Strengthen bond markets and reduce overreliance on banks for credit.
- ❖ Unify Fintech Regulation: Protect consumers while fostering innovation.
- ❖ Cybersecurity and Data Protection: Build trust in the digital ecosystem.

If these reforms are pursued steadily, India could transform from a regional banking hub into a global financial model.

Conclusion:

- The Emerging “Third Way”
- The Western model teaches efficiency, transparency, and trust.
- The Chinese model demonstrates coordination, scale, and strategic intent.

The Indian model aspires to blend both — democracy with discipline, inclusion with innovation.

Hence, India’s banking story is no longer a derivative of either East or West; it is a distinct experiment in digital democracy. In the century ahead, banking may not be judged by the size of balance sheets, but by how deeply it reaches the common citizen and how responsibly it powers growth. In that respect, India may already be showing the world that the best banking system is not the fastest or the richest — but the most inclusive, transparent, and humane. ●

Business Rule Engines (BREs) - A Technology Tool in Lending Process of Indian Banks



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Abstract:

Over the past ten years, the lending operations of Indian Banks have experienced a major transformation due to rapid digitalization, stricter regulatory requirements, growing competition from fintech companies, and increasing customer demand for quicker and more transparent credit decisions. In this changing landscape, banks must handle large numbers of loan applications while strictly adhering to regulatory guidelines, internal risk policies, and governance standards. This has led to the widespread use of Business Rule Engines (BREs) as a core part of modern lending systems. A Business Rule Engine allows banks to externalize and automate decision-making processes related to eligibility checks, credit risk assessments, pricing, compliance verification, approval workflows, and monitoring after loan disbursement.

Lending is Central to Banking's role in financial intermediation, facilitating economic activity, wealth creation, and entrepreneurship. In India, lending covers a wide range of sectors including Retail Loans, Home Financing, Agricultural Credit, Micro and Small Business Loans, and Institutional Lending to Large Corporates. Each sector has distinct risk characteristics, regulatory requirements, and customer expectations. Over time, Indian Banks have shifted from manual, paper-based lending procedures to digital workflows. However, the complexity of decision-making, especially the consistent application of policies, risk management, and enhancing customer experience remains a constant challenge. It is in this context that Business Rule Engines have emerged as a transformative technology, reshaping how lending decisions are made, governed, and scaled.

A Business Rule Engine is "Specialized Software" that executes and manages complex decision logic separately from the core application code. By centralizing policies, risk criteria, compliance rules, pricing formulas, and operational conditions into a single decision-making layer, BREs allow Banks to quickly adapt to market developments, regulatory changes, and strategic priorities. The adoption of Rule Engines in Indian Banks' lending processes has greatly

enhanced efficiency, risk control, auditability, and customer responsiveness.

Development of Lending Decision Processes in Indian Banks:

Historically, lending decisions in Indian banks relied on manual evaluations, decentralized policy documents, and inflexible core banking systems. Loan officers would assess applications, obtain credit scores, interpret policy guidelines, and seek managerial approvals. While this method was sufficient for low volumes and straightforward products, it faced challenges in scalability, consistency, and speed. The regulatory landscape added complexity, as policies from the Reserve Bank of India (RBI), including priority sector lending mandates and provisioning standards were constantly changing. Because rules were hard-coded deep within legacy systems, updating policies required expensive development efforts and often led to discrepancies between business objectives and system behaviour.

The rise of digital channels and online loan application platforms increased the need for automated decision-making. Borrowers began expecting near-instant decisions, even for more complex products like secured loans or business credit. Traditional approaches, dependent on manual underwriting

and decentralized rule interpretation, could not fulfil these demands. To address this, banks started implementing Business Rule Engines as a centralized decision-making layer that encapsulates business logic, ensures compliance, and enhances agility in lending operations.

What Are Business Rule Engines?

A Business Rule Engine (BRE) is a software component designed to store, execute, and manage business rules explicit conditions and decision logic that determine process outcomes. Unlike hard-coded logic embedded within application software, rules in a BRE are externalized in a clear, modular format. Business users such as credit policy teams, risk managers, and compliance officers can create, update, and oversee rules with minimal IT involvement. Rules can cover a wide range of criteria, from eligibility requirements and pricing conditions to regulatory compliance checks and escalation protocols.

Using BREs in Loan Origination and Eligibility Checks:

The lending process starts with loan origination, where a potential borrower submits an application. In Indian banks, this can happen through physical branches, online portals, mobile apps, or partner platforms. At this stage, a Business Rule Engine's initial function is to verify the completeness and acceptability of the application. The rule engine automatically ensures that essential fields are completed, required documents are attached, and minimum criteria are met before proceeding further.

For numerous products, eligibility requirements typically include fundamental factors such as age, income, employment status, and KYC (Know Your Customer) documentation. Before the introduction of rule engines, branch personnel had to manually verify these details, causing delays and inconsistencies. With a Business Rule Engine (BRE), these verifications are automated, offering immediate feedback to applicants and reducing operational workload. For instance, if a home loan application lacks a credit history document or a retail loan application is missing a valid PAN or Aadhaar, the BRE identifies the issue and sends the application back to the applicant for completion.

This automated completeness verification not only speeds up the application process but also ensures that only qualified cases move forward to further risk assessment. Consistent early screening enhances the quality of applications entering credit evaluation, minimizing rework and operational challenges.

Credit Assessment and Risk Profiling:

One of the most crucial phases in lending is credit assessment, which involves evaluating the risk of lending to a particular borrower. This process includes analysing credit bureau scores, past repayment behaviour, internal scoring models, financial statements, and other relevant risk factors. In Indian banks, credit evaluation has traditionally combined automated scoring with manual judgment. Business Rule Engines serve as the foundation for integrating and implementing credit policies.

BREs encode risk segmentation rules, such as credit score cutoffs, risk weightings, and quality adjustments. They apply rules that interpret credit bureau data (from agencies like CIBIL, Experian, and CRIF), internal customer histories, debt ratios, and sector-specific risk profiles to determine a risk classification. After assessing risk, the rules can dynamically assign categories like low, moderate, or high risk, which then affect approval authority, pricing, and collateral requirements.

The advantage of using BREs in risk profiling is their consistency and flexibility. When the Reserve Bank of India (RBI) or internal risk committees update risk thresholds, for example, by tightening exposure limits for unsecured personal loans or modifying acceptable debt service coverage ratios for MSME credit, these changes can be rapidly implemented through the rule engine. Previously, such updates often required changes to application code or manual policy communication to branches, causing delays and inconsistent application. With BREs, the revised rules take effect immediately across all channels, ensuring uniform risk assessment and lowering operational risk.

Policy Compliance and Regulatory Enforcement through BREs:

Indian Banks operate under strict regulatory supervision, with the Reserve Bank of India issuing directives related to credit provisioning, priority sector lending, classification of Non-Performing Assets (NPAs), loan restructuring frameworks, and customer protection standards. Maintaining compliance represents a significant operational burden; failure to meet regulatory requirements can result in penalties, damage to reputation, and financial losses.

When regulatory requirements change, the rule engine enables banks to quickly implement updates without needing to revamp their application systems. This flexibility ensures that lending decisions stay aligned with current regulations, minimizing compliance risks and audit issues. Additionally, since rule decisions are recorded and traceable, audit teams can review decision-making processes and explain how and



why particular outcomes were reached an essential feature during regulatory reviews.

Dynamic Pricing and Risk-Based Interest Rate Setting:

Credit pricing in Indian banks is not fixed; it takes into account various factors such as funding costs, borrower risk profiles, competitive landscape, product economics, and strategic goals. Traditional pricing models, which embedded interest rate formulas directly into lending applications, made it challenging to swiftly adjust pricing in response to market changes, policy updates, or strategic shifts.

Business Rule Engines convert pricing into a flexible, controlled, and transparent decision-making layer. Pricing rules can incorporate numerous inputs credit score ranges, loan duration, collateral value, customer relationship history, product combinations, and risk premiums to calculate interest rates or fees that comply with bank policies. For example, a borrower with a high credit score, a long-term relationship, and a strong transaction record might receive a discounted rate compared to a new customer with higher risk indicators. The rule engine applies this logic uniformly across all channels, ensuring fairness and regulatory compliance.

When base lending rates change due to monetary policy or liquidity shifts, pricing rules can be updated and deployed immediately.

Document Automation and Verification:

Documentation is a fundamental part of lending proof of

identity, income verification, property papers for secured loans, valuation reports, tax returns, and legal certificates are all critical components of loan origination. In traditional processes, staff manually reviewed these documents, which often led to mistakes, missing information, and delays.

In contrast, a Business Rule Engine (BRE) automates the requirements and validation of documents. It uses rules to specify which documents are needed for each loan product and any contextual differences, for instance, extra income proof for self-employed applicants or third-party valuation certificates for certain secured loans. The BRE assesses the submitted application and documents against these rules to ensure everything is complete before moving on to underwriting. If any information is missing, the system provides clear feedback to applicants or staff about what is required.

This leads to a more efficient documentation process that minimizes errors, speeds up processing, and improves compliance. Over time, banks can also analyse documentation trends to refine their requirements and enhance the customer onboarding experience.

Automation of Decision Outcomes and Escalation Processes:

A key advantage of a Business Rule Engine is its capacity to automate decision-making. In lending, not all applications are the same. Some loans can be approved immediately based on preset criteria, while others need manual underwriting, committee review, or senior approval. Traditionally, these

decisions were made manually, causing delays and inconsistencies.

This automation significantly cuts turnaround times, especially for high-volume retail and SME loans. It also ensures that escalation and exception procedures follow established policies, reducing errors and enhancing operational control.

Post-Disbursement Monitoring and Collections:

The function of Business Rule Engines extends beyond approval and disbursement. Effective loan management involves ongoing monitoring of account performance, aging classifications, collection activities, and restructuring decisions. In Indian banks, addressing delinquent accounts and managing stressed assets are key operational focuses, particularly in higher-risk segments.

BREs support post-disbursement processes by analysing account data, aging trends, and risk indicators. For example, if a borrower's payment becomes overdue by a certain period, such as 30 days, the rules can automatically trigger actions like sending reminders, creating collection tasks, or escalating the case to relationship managers. Similarly, rules can enforce restructuring policies by checking eligibility and initiating the appropriate servicing workflows.

Governance, Auditability, and Policy Management:

An important feature of Business Rule Engines is their support for governance, auditability, and policy oversight. Rule management systems allow business users to create, update, and approve rules. The BRE keeps a repository of these rules, including audit trails, version histories, and metadata. This transparency facilitates accountability and allows for rollback if any errors are found.

Challenges in Implementing Business Rule Engines (BRE):

Despite the clear benefits, adopting Business Rule Engines within the lending systems of Indian banks presents challenges. Many banks still rely on outdated core systems that were not built to support modular decision-making layers. Integrating BREs with these legacy systems demands careful architectural planning, data standardization, and sometimes significant investments in modernization. Issues with data quality such as incomplete records, inconsistent customer identifiers, and fragmented data sources can compromise the accuracy of rules and consistency of decisions.

BREs in the Age of Digital Transformation and Artificial Intelligence:

The future role of Business Rule Engines in Indian bank lending is closely linked to broader digital transformation and the integration of Artificial Intelligence. BREs will increasingly function within hybrid decision platforms where rule-based logic works alongside predictive analytics and machine learning models. While rules enforce policies, compliance, and structural requirements, machine learning can provide probabilistic insights such as default likelihood, purchase propensity, or early warning signs of financial distress.

Conclusion:

In the fast-changing and regulated landscape of Indian banking, Business Rule Engines have become vital to lending operations. They offer a centralized, flexible, and governable decision-making layer that improves efficiency, compliance, risk management, and customer experience. From initial application screening to credit evaluation, pricing, documentation, and post-disbursement monitoring, BREs convert manual, fragmented processes into automated, consistent, and transparent workflows. Although challenges related to legacy system integration and data quality remain, the strategic benefits of BREs in enabling scalable and responsive lending far outweigh these difficulties. As banks continue their digital transformation and adopt advanced analytics, rule engines will remain the foundation of intelligent, compliant, and customer-focused lending ecosystems.

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External Commercial Borrowing Framework : Recent Amendments



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Abstract:

The Reserve Bank of India's amended External Commercial Borrowing (ECB) Framework, effective February 16, 2026, marks a shift toward a principle-based and market-aligned regime to enhance ease of doing business while preserving prudential safeguards. The reforms expand eligible borrowers and lenders, raise borrowing limits, standardize maturity norms, and remove all-in-cost ceilings in favor of market-based pricing. End-use restrictions have been liberalized for strategic corporate actions, real estate, and infrastructure, alongside easier refinancing and debt-to-equity conversion provisions. Procedural changes, including event-based reporting and flexible fund parking norms, further improve operational efficiency. Overall, the amendments modernize India's cross-border borrowing framework and strengthen access to global capital.

Recently, the External Commercial Borrowing (ECB) framework has been notified by Reserve Bank of India through the Foreign Exchange Management (Borrowing and Lending) (First Amendment) Regulations, 2026. This has been effective from February 16, 2026. These changes represent a significant shift toward a principle-based, market-aligned regulatory regime designed to promote ease of business in India while maintaining prudential safeguards.

1. Expansion of Eligible Borrower Base

While traditional entities remain eligible, the regulations now expressly clarify that Limited Liability Partnerships (LLPs) can avail ECBs. Additionally, entities under restructuring schemes or corporate insolvency resolution processes may raise ECB if expressly allowed under the approved plan. Notably, borrowers facing investigation, adjudication, or appeal by law enforcement agencies may continue to access ECB without prejudice to investigation outcomes, provided such proceedings are disclosed in Form ECB-1.

2. Recognised Lenders—Liberalised Definition

The definition of recognised lenders has been significantly liberalised. ECBs may now be availed from: (i) any person resident outside India; (ii) a branch outside India of an entity

whose lending business is RBI-regulated; and (iii) financial institutions or their branches established in International Financial Service Centres (IFSC). Notably, the erstwhile requirement that lenders be residents of FATF or IOSCO-compliant jurisdictions no longer applies, thereby widening access to global capital markets.

3. Enhanced Borrowing Limits

The ECB borrowing limits have been substantially enhanced. Eligible borrowers may now raise ECB up to the higher of: (a) outstanding ECB of USD 1 billion, or (b) total outstanding borrowing (external and domestic, excluding non-fund based credit and compulsorily convertible instruments) not exceeding 300% of net worth as per the last audited standalone balance sheet. This represents a significant increase from the erstwhile USD 750 million limit and does not apply to borrowers regulated by financial sector regulators, thereby affording financial institutions substantially greater flexibility.

4. Standardisation of Minimum Average Maturity Period (MAMP)

The amended framework establishes a uniform default MAMP of three years for all borrowers. However, manufacturing



entities are permitted to avail ECBs with MAMP between 1-3 years, subject to the outstanding amount not exceeding USD 150 million. Critically, call and put options shall not be exercisable prior to completion of MAMP. MAMP is expressly not applicable in specified circumstances, including: (i) conversion of ECB to non-debt instruments; (ii) repayment through FDI proceeds; (iii) lender waiver; and (iv) corporate actions such as merger, demerger, amalgamation, arrangement, or acquisition of control.

5. Market-Aligned Pricing and Related Party Framework

The concept of all-in-cost ceiling has been removed entirely. Cost of borrowing shall now be determined in accordance with prevailing market conditions. For ECBs with MAMP less than three years, cost of borrowing shall comply with trade credit pricing benchmarks (FCY: benchmark + 300 basis points; INR: benchmark + 250 basis points). Critically, ECBs from related parties (replacing the erstwhile Foreign Equity Holder framework) must be priced on an arm's length basis, requiring enhanced transfer pricing documentation.

6. Liberalisation of End-Use Restrictions

The amended framework introduces substantial carve-outs to previously restrictive end-use provisions:

Securities Transactions:

ECB proceeds may now be utilised for transactions in listed and unlisted securities, but only in connection with strategic corporate actions (merger, demerger, amalgamation, arrangement, acquisition of control) conducted in accordance with the Companies Act, Takeover Code, SARFAESI, and Insolvency and Bankruptcy Code, 2016, and only where such

transactions are driven by long-term value creation rather than short-term gains.

Real Estate and Infrastructure:

ECB proceeds are now permissible for: (i) purchase, sale, or lease of land for construction development or commercial/residential properties for own use; (ii) industrial parks meeting specified criteria; and (iii) construction development projects with developed trunk infrastructure. Restrictions on agricultural and plantation activities remain, except for specified crops.

7. Refinancing Framework and Debt Conversion

Refinancing of ECB is now permissible on liberalised terms, with the sole condition that refinancing must not breach the MAMP requirement applicable to the original borrowing. No additional MAMP shall apply to refinancing transactions. Conversion of ECB to equity or non-debt instruments is facilitated under this framework, though restructuring prudential regulations shall apply in instances of financial difficulty.

8. Procedural Enhancements: ECB Proceeds and Reporting

ECB proceeds may be held in designated accounts and invested in unencumbered fixed deposits (tenor up to one year) pending utilization, providing operational flexibility. For INR-denominated expenditure, proceeds must be credited to an INR account within the succeeding month; for FCY expenditure, proceeds may be held in FCY accounts in India or abroad as permitted.

9. Simplified Reporting Compliance

Monthly Form ECB-2 submissions have been replaced with event-based reporting. Form ECB-2 must now be filed within seven calendar days from the end of the month in which any drawdown occurs or debt servicing is undertaken. The regulations also introduce provisions for classifying borrowers as "untraceable" if they fail to file specified returns for four consecutive quarters, with such borrowers being reported to the RBI and Directorate of Enforcement.

Conclusion

The amended ECB framework represents RBI's commitment to modernising India's cross-border borrowing regime while maintaining regulatory prudence. By standardising key parameters, expanding eligibility, and removing prescriptive constraints, the amendments facilitate greater predictability and operational flexibility for compliant borrowers.

Turning UPI Transactions into Insights



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Abstract:

UPI has transformed India's small business ecosystem by enabling instant, secure, and cashless payments while creating reliable digital transaction records. Beyond payment convenience, UPI data can be converted into meaningful financial insights through proper reconciliation, invoice linking, cash flow monitoring, and accounting integration. Cost and Management Accountants (CMAs) play a vital role in organizing transactions, improving accuracy, preparing financial reports, and supporting credit, tax, and growth decisions. This combination of digital payments and professional financial guidance helps small enterprises reduce errors, improve efficiency, and strengthen business planning. In this context, UPI is not merely a payment tool but a catalyst for smarter financial management and sustainable growth.

Imagine running a small shop, taking dozens of payments every day, and juggling cash, cheques, and other fund transfers. Keeping track of every rupee is stressful, error-prone, and time-consuming. Today, **UPI (Unified Payments Interface)** is changing the game for small businesses across India.

From roadside tea stalls to boutique stores, entrepreneurs are now managing real-time payments and organized accounts without the old chaos of cash.

UPI, or **Unified Payments Interface**, is India's revolutionary digital payment system. It allows people and businesses to send and receive money instantly using smartphones without cash, cheques, or even bank details.

The Players in a UPI Transaction

There are four main participants:

1. **Payer (Sender)** – The person or business sending money.
2. **Payee (Receiver)** – The person or business receiving money.
3. **Bank(s)** – Both the sender's and receiver's banks process the payment.

4. **NPCI (National Payments Corporation of India)** – The central system that routes payments securely between banks.

Think of NPCI as a digital traffic controller, making sure the money goes to the right place instantly.

Transaction Flow

Let's see what happens behind the scenes when you send money via UPI:

Step 1: Initiation

- ✳ The sender opens a UPI app and enters the receiver's UPI ID or scans a QR code.
- ✳ The sender enters the amount and UPI PIN to authorize the payment.

Step 2: Request to Bank

- ✳ The sender's bank receives the payment request.
- ✳ The bank checks if there is enough balance in the account.

Step 3: Routing through NPCI

- ✳ If the balance is sufficient, the sender's bank sends the request to NPCI.

- ✳️ NPCI routes the request to the receiver's bank securely.

Step 4: Receiver Bank Confirmation

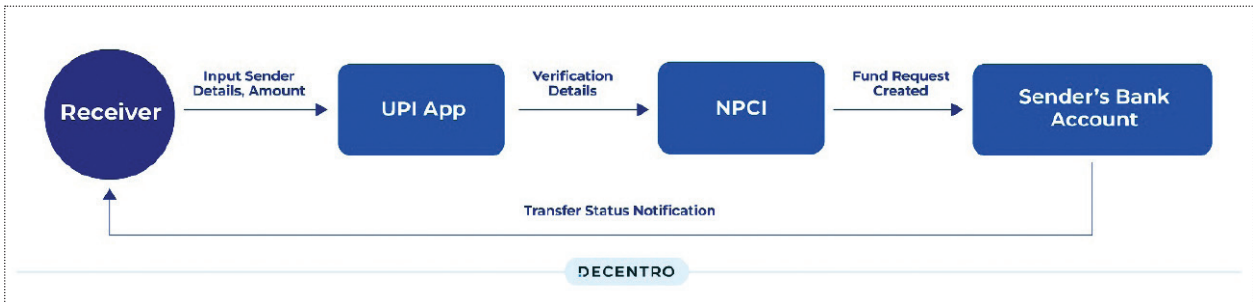
- ✳️ The receiver's bank confirms the transaction.
- ✳️ The amount is instantly credited to the receiver's account.

Step 5: Notification

- ✳️ Both sender and receiver get a payment confirmation instantly on their phones.

In simple words: UPI is like a super-fast digital bridge connecting your bank and the recipient's bank, with NPCI managing traffic in the middle to ensure the money reaches safely and instantly. Top of Form

Sender → Sender Bank → NPCI → Receiver Bank → Receiver Bottom of Form



Why UPI Is a Game-Changer

- ✳️ **Instant payments:** No more waiting for cheques to clear.
- ✳️ **Automatic records:** Every transaction is documented digitally.
- ✳️ **Better cash flow:** Money comes in faster, and tracking becomes easier.
- ✳️ **Customer-friendly:** Buyers love fast, seamless payments.

Even small businesses with limited staff are now handling hundreds of transactions a day without losing track of money.

Turning UPI Data into Organized Accounts

UPI makes payments easy, but raw data alone can get messy. This is where simple habits and CMA guidance make a huge difference:

- ✳️ **Use separate UPI IDs for business and personal transactions** - avoids confusion.
- ✳️ **Link transactions to invoices** - every payment has a purpose.
- ✳️ **Reconcile daily or weekly** - check payments against invoices for errors.
- ✳️ **Monitor cash flow trends** - track who pays late and plan ahead.
- ✳️ **Leverage accounting apps** - integrate UPI history to generate reports automatically.

A few minutes each day can save hours of headache later.

Real-World Example

Take a small garment shop that switched entirely to UPI. Earlier, the owner spent hours counting cash, chasing cheques, and updating ledgers manually. Now, after switching from cash transactions to digital transactions, the owner gets time to focus on the ways to expand his business products and to enhance the customer experience in real ways. This gives him the most of his returns including-

- ✳️ Every payment comes in instantly
- ✳️ The accounting software shows daily sales and pending payments
- ✳️ Taxes are calculated automatically

Result? More time for customers, fewer mistakes in business, and better financial visibility.

Challenges and How to Solve Them-

- ✳️ **Duplicate payments:** Check UPI IDs carefully.
- ✳️ **Unlinked invoices:** Generate invoices at the time of payment.
- ✳️ **Too many apps:** Consolidate UPI transactions in one platform.

With these small steps, even a one-person business can stay fully organized. But sometimes, without proper analysis, a flood of digital transactions can become overwhelming.



Where CMAs Make the Difference

CMAs act as the bridge between technology and strategy. They don't just record numbers, they help small businesses understand and act on their financial data.

1. Organizing Transactions

- ✳ CMAs categorize UPI payments into sales, refunds, and expenses.
- ✳ This ensures every rupee is accounted for and reduces errors.

2. Reconciliation and Verification

- ✳ They match UPI inflows with invoices and bank statements.
- ✳ Discrepancies are identified quickly, preventing future problems.

3. Cash Flow Analysis

- ✳ CMAs track how money moves in and out.
- ✳ This helps businesses plan for expenses, anticipate slow periods, and avoid cash crunches.

4. Supporting Finance Decisions

- ✳ UPI records alone don't impress banks, structured reports do.
- ✳ CMAs prepare reports that help small businesses secure loans, manage taxes, or plan expansions.

5. Strategic Insights

- ✳ Beyond daily tracking, CMAs spot trends: which customers pay late, which products bring faster cash, and where unnecessary costs exist.
- ✳ These insights guide smarter business decisions.

A Real-Life Scenario

A small bakery switched entirely to UPI. Sales doubled as the bakery team introduced variety of new recipes as a result of the time that UPI has saved. But still, the owner struggled to keep track of hundreds of daily digital transactions.

With CMA guidance:

- ✳ UPI payments were linked to invoices automatically

- ✳ Weekly reconciliations ensured accuracy
- ✳ Cash flow reports predicted low-cash periods
- ✳ Bank statements were ready for a small business loan

Result? The bakery grew smoothly without financial stress- all thanks to CMAs turning digital data into clarity and control.

Tips for Small Businesses Working with CMAs

- ✳ Use a business-only UPI ID to separate personal and business payments.
- ✳ Link every payment to an invoice with CMA help.
- ✳ Conduct weekly reconciliations to spot discrepancies early.
- ✳ Leverage CMA-prepared cash flow reports for better planning and banking discussions.

Even a tiny business can operate efficiently with the right guidance.

Conclusion

Digital banking is not just a convenience- it's a game-changer for small businesses. It makes finance faster, clearer, and more accessible. But technology works best when paired with financial discipline, planning, and professional advice.

UPI has revolutionized payments, but digital transactions alone don't create financial clarity. CMAs play a pivotal role in ensuring that small businesses track every rupee, manage cash flow, and make informed decisions.

In the digital age, CMAs are not just accountants, they are strategic partners, turning technology into growth, stability, and success for small businesses.

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Key Components of Collateral Management: Towards Smarter Risk Control

(A This article intends to provide an overview of collateral management, examining its key components, its importance in financial risk management, evolving regulatory landscape, and the challenges faced by institutions in implementing effective collateral strategies)



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Abstract:

Collateral management has become a critical pillar of modern financial risk control, enabling institutions to mitigate counterparty risk, enhance liquidity, and maintain market stability through the effective use of pledged assets. It encompasses key functions such as collateral valuation, margining, monitoring, substitution, custody, and regulatory compliance, with growing importance after the global financial crisis and Basel III reforms. As markets evolve, technology-driven solutions including automation, real-time analytics, and tokenisation are improving efficiency, transparency, and collateral mobility. However, challenges such as valuation complexity, liquidity constraints, operational risk, and fragmented regulations continue to persist. In this context, robust and adaptive collateral management frameworks are essential for smarter risk control and sustainable financial resilience

Introduction

In modern financial systems, risk mitigation plays a critical role in ensuring stability and trust among market participants. One of the key mechanisms used to manage credit risk is collateral management, a process that involves the efficient handling of assets pledged by borrowers to secure financial obligations. As financial markets have grown increasingly complex, with the expansion of derivatives trading, securities lending, and over-the-counter (OTC) transactions, the need for effective collateral management has become more definite.

Collateral management covers a range of activities including collateral selection, valuation, monitoring, substitution, and settlement. It helps financial institutions reduce counterparty risk, comply with regulatory requirements, and optimize the use of available assets. Particularly after the global financial crisis of 2008, regulatory frameworks such as Basel III have

emphasized stricter collateral practices, increasing both the volume and complexity of collateral flows across markets. Besides, with the advent of technological innovations and increasing digitalisation traditional collateral management processes have undergone significant transformations, imparting greater efficiency, transparency, and effective real-time risk assessment abilities in the related processes. However, challenges such as liquidity constraints, operational risks, and cross-border regulatory differences continue to pose significant concerns.

Collateral: Defined

Collateral refers to assets pledged by a borrower to a lender as security for a financial obligation. In the event of default, the lender has the legal right to seize and liquidate the collateral to recover losses. Collateral is widely used across financial transactions such as loans, derivatives, and repurchase agreements, forming a core part of modern risk



management frameworks.

Collateral assets are any assets that can be used by financial market participants to collateralise a creditor's claim in normal market conditions, as well as any other assets that are likely to be used as collateral in a stressed environment. A collateral market is then simply a market that involves collateral assets.

Collateral assets are a subset of all financial assets, which market participants can pledge them against borrowed funds. Degree of pledgeability of different collateral assets may be different. Total pledgeability can be thought of as the product of two components: i) the total size of a given collateral market; ii) the extent to which each individual unit of collateral can be used to generate funding.

In securities lending, an entity lends securities owned by it for some defined duration to an accredited borrower in return for a fee. The borrower would have to mandatorily pledge adequate collateral either in cash or securities to make good the lender the probable losses it might sustain if the borrowed securities are not returned within the settled timeframe, subject to certain counterparty and liquidity risks. Repo is also a type of collateralised lending wherein a set of well-defined securities acts as the collateral for the underlying liabilities. The legal title of the securities pledged passes from the seller to the buyer and returns to the original owner at the completion of the contract

Acceptance of an asset as a collateral will not solely depend on its features like clear identifiability, ability to mitigate operational and legal risk, but also on the willingness of market participants to accept or reject these assets as collateral. Such decisions are generally based on the assessment of other risks associated with the assets, including credit and liquidity risks. Therefore, what is or is not a collateral asset would be endogenous outcome of evolving market practice. Consequently, categorisation of any particular asset as collateral may change with time, jurisdiction and across market participants.

Types of Collateral

Collateral can take several forms depending on the nature of the transaction and market practices:

I. Cash Collateral

It is the most liquid and commonly used form. It is typically held in major currencies (e.g., USD, EUR, INR). Cash collaterals are preferred due to their immediate availability and zero price volatility risk.

II. Securities Collateral

These are financial instruments pledged as collateral viz., Government bonds, corporate bonds, equities. These type of collaterals are subject to market price fluctuations and conventionally discounted using haircuts to account for risk.

III. Commodity Collateral

Physical assets viz., Gold, Oil, Agricultural products are commodity collateral in use. Their values are tied to commodity markets and these collaterals involve storage and valuation complexities.

Eligible vs. Non-Eligible Collateral

Eligible Collateral are assets that meet predefined criteria set by lenders, regulators, or clearinghouses. The key characteristics are high liquidity, stable value, Clear legal ownership and easy transferability. Eligibility standards are often governed by regulatory frameworks such as Basel III.

Non-Eligible Collateral assets that are not accepted due to associated higher risk or operational limitations viz., high price volatility, poor liquidity, Legal or ownership uncertainties, Difficulty in valuation

Importance of collaterals in Financial Markets

Collateral management is critical in ensuring the stability and efficiency of financial markets, particularly in the areas of risk mitigation and liquidity management.

a. Risk Mitigation

Collaterals are second line of defence against counterparty credit risk. By requiring counterparties to pledge collateral, financial institutions safeguard themselves against potential losses. If a counterparty defaults, the collateral can be liquidated to recover exposure. The importance of collateral has become palpable in the wake of GFC 2008. GFC which exposed weaknesses in unsecured lending and derivative markets. Robust collateral frameworks now help avert contagion across institutions.

Daily margining (initial and variation margin) is being resorted to ensures that exposures are continuously value adjusted to mimic market movements, optimising the buildup of uncollateralized risk. Collateral requirements incentivize market players to maintain financial health and transparency, limiting reckless risk-taking.

b. Liquidity Management

Collateral is a key driver of liquidity in financial systems. Financial institutions use collateral to secure short-term



funding through instruments such as repurchase agreements (repos). High-quality collateral improves borrowing capacity and lowers funding costs. Effective collateral management ensures optimal allocation of assets by the economic agents using the cheapest-to-deliver collateral and preservation of high-quality assets for critical obligations.

c. Market Liquidity Enhancement:

The circulation of collateral (through the process of rehypothecation and securities lending) augments the availability of liquid assets in the system, supporting trading and investment activities.

d. Interlinkage Between Risk and Liquidity

Risk mitigation and liquidity management are intricately intertwined. While Strong collateral practices reduce uncertainty enhancing market confidence and liquidity, poor collateral management can trigger liquidity shortages, amplifying financial instability.

e. Central Bank Operations:

Central banks depend heavily on collateral frameworks while providing liquidity to the banking system, especially during periods of financial stress.

Collateral Management

Collateral management is about the process involved in management of assets pledged by one party to another to moderate credit risk and optimise the effects of probable default. Key players in this domain are banks, insurance

companies, pension funds, broker-dealers, hedge funds, large corporations, and asset managers.

Collateral management was historically viewed primarily as a back and middle office function. However, during GFC 2008 the financial institutions realised the important role being played by collateral in opening up access to much sought after liquidity and funding, particularly when the market experiences extreme stress. On realisation of the importance of collateral in the wake of framing of set of rules designed to strengthen the financial infrastructure's resilience in the aftermath of GFC its management function has been brought to the front office.

Collateral eases the financial intermediation process of channelising funds from savers to borrowers. and, thus, supports the financial system in allocation of adequate capital in support of real economic activity. In modern finance, collateral has emerged as a critical mechanism for enhancing liquidity by enabling secured borrowing, and facilitating market participation. Collateral plays important role in improving funding liquidity across banking and capital markets. However, although collateral enhances liquidity under normal conditions, it can amplify stress during downturns, necessitating balanced regulatory frameworks and prudent collateral management.

The use of collateral has been continuing to increase in the wake of the GFC as the risk management practices continue to evolve in financial institutions in their response to emerging regulatory changes. Changing market practices



and emerging regulatory landscape have triggered increase in demands for collaterals in recent years, making Collateral markets increasingly important.

In modern financial markets, collateral management is indispensable. It not only protects institutions from losses but also ensures the smooth functioning of funding markets, making it a cornerstone of financial stability and efficiency.

Principles of collateral management

These refer to the principal guidelines adhered to by financial institutions while managing assets pledged as security in transactions viz., loans, derivatives, security lending or repos. These principles are intended to ensure risk is controlled, liquidity is sustained, and obligations are met.

Key principles:

1. Risk Mitigation

Primarily collateral is used to reduce counterparty credit risk. If one party defaults, the other can fall back upon the collateral to recover losses.

2. Valuation and Mark-to-Market

Collateral must be regularly valued (often daily) based on current market prices. This is called mark-to-market and ensures the sufficiency of collateral to meet the underlying obligations.

3. Haircuts (Margining)

A haircut is a discount applied to the value of collateral to

account for price volatility and liquidity risk. Haircuts are often determined based on inherent price volatility of the relative assets.

4. Margin Calls

If the collateral value falls below required levels, a margin call is issued, requiring the counterparty to provide additional collateral to make good the shortfall.

5. Eligibility Criteria

Eligible collateral must meet criteria such as:

- ❁ High liquidity
- ❁ Low credit risk
- ❁ Price transparency

6. Diversification

Collateral pools must be diversified to avoid concentration risk (e.g., not relying on a single asset or issuer).

7. Legal Certainty

There must be clear legal agreements ensuring:

- ❁ Ownership rights
- ❁ Enforceability in case of default

8. Operational Efficiency

systems and processes are required for:

- ❁ Collateral tracking

- ❁ Settlement
- ❁ Substitution

9. Liquidity Management

Collateral should be easily convertible into cash without significant loss in value.

10. Regulatory Compliance

Collateral management must comply with regulations such as:

- ❁ Basel III guidelines
- ❁ Central bank requirements

11. Segregation and Custody

Collateral is often held with a custodian or segregated account to protect it from misuse and comingling.

12. Rehypothecation Control

This refers to whether the collateral receiver can reuse the collateral. Proper controls must be in place to manage this risk.

Evolving Regulatory Landscape in Collateral Management

The regulatory framework governing collateral management has undergone significant changes, particularly in the wake of 2008 global financial crisis which brought to the fore the critical weaknesses in counterparty risk management systems prompting the global regulators to bring about comprehensive reforms towards enhancing financial stability and reducing systemic risk.

One of the most significant developments has been the introduction of the **Basel III framework**. Under Basel III, collateral management has been brought at the centre for mitigation of counterparty credit risk. The new methodologies viz., the Standardised Approach for Counterparty Credit Risk (SA-CCR) has been prescribed towards improving the modalities of exposure measurement and incentivised greater use of collateralized transactions.

Global regulatory initiatives viz., the **Uncleared Margin Rules (UMR)** have mandated collection of both initial and variation margin for non-centrally cleared derivatives to ensure the sufficiency of available high-quality collateral to absorb potential losses in the event of a counterparty default. This has significantly increased the demand for high-quality liquid assets (HQLA) and expanded the scope of collateral usage across financial markets.

Additionally, jurisdiction-specific regulations such as the

European Market Infrastructure Regulation (EMIR) and the **Dodd-Frank Act** in the United States have reshaped derivatives markets by promoting central clearing, trade reporting, and stricter margin requirements. These regulations aim to reduce opacity in over-the-counter (OTC) derivatives markets and ensure that collateral is systematically managed to cover counterparty exposures.

Another important trend is the shift toward central clearing through central counterparties (CCPs), which has led to standardized collateral requirements and reduced bilateral risk. At the same time, regulators have imposed stricter eligibility criteria for collateral, emphasizing liquidity, low credit risk, and diversification to ensure resilience during periods of market stress.

Moreover, ongoing reforms such as the Fundamental Review of the Trading Book (FRTB) and Basel “IV” enhancements continue to refine capital calculations and risk sensitivity, further integrating collateral management with broader risk and liquidity frameworks. These changes have increased the complexity of collateral processes, requiring advanced risk models, automation, and real-time monitoring systems.

Thus, the evolving regulatory landscape has reconfigured collateral management process from a back-office function into a strategic component of financial risk management. These reforms have enhanced market transparency and stability. They have also brought in operational challenges, incremental costs, and convincingly established a greater need for technological innovation in managing collateral efficiently.

Tokenisation of Collaterals

The tokenisation of collaterals involves the process of converting physical or traditional collateral assets (like property, gold, or receivables) into digital tokens on a blockchain or similar digital system. These tokens represent ownership or rights over the underlying asset and can be used in financial transactions. Instead of pledging a physical asset in a conventional way, the asset is digitally represented as tokens, which can then be transferred, traded, or used as collateral in digital finance systems.

The process starts with identification of the asset to be collateralised and then its valuation is assessed and legally verified. Thereafter digital tokens are issued on a blockchain representing the asset (fully or fractionally). Rules for using the collateral (like loan conditions) are coded into smart contracts. For example, if a borrower owns a house worth Rs 2.00 crore instead of mortgaging it, he can tokenise it into 2,00,000 tokens each of value Rs 100/-. These tokens can



be used as collaterals to secure loans or even sold partially. Some advantages of tokenisation are improved liquidity of illiquid assets (like property) easy tradability, permissible fractional ownership, greater transparency (block chain ensures clear ownership records) and reduced paper works and intermediaries.

The process is however not free of challenges. The significant challenges are

- ➔ Regulatory uncertainty (laws still evolving in many countries)
- ➔ Valuation risks
- ➔ Security concerns (hacking, smart contract bugs)
- ➔ Legal enforceability of token ownership

Tokenization converts collateral from a static buffer into a dynamic liquidity lever. The real-world finds the appeal of programmable nature of tokenization, which has the potential to accelerate and lubricate the underlying processes by leveraging smart contracts, standards, and automation is worth to go in for.

Collateral management is at the inflection point as financial firms pursue optimization operating and risk parameters amidst fast changing regulatory and operating landscape. Risk, capital efficiency and liquidity considerations are becoming more and more complex as the cost of capital rises and Uncleared Margin Rules (UMR) are enforced in more global jurisdictions. The operating impact is more collateral is being exchanged for cleared and uncleared trades. Tokenization and digital assets will be crucial to solving these challenges, offering access to a wider pool of collateral, enhanced collateral mobility, optimization and overall standardization.

Conclusion Top of Form

Collateral management plays a critical role in strengthening financial stability, mitigating counterparty risk, and enhancing liquidity efficiency across financial markets. As regulatory frameworks evolve and market complexity increases, effective collateral practices have become significantly important for institutions in their exercise for optimization of capital usage while ensuring compliance. Technological advancements, including automation and real-time data analytics, are further transforming collateral processes, improving transparency and operational resilience. However, challenges such as collateral scarcity, valuation complexities, and regulatory fragmentation persist. Therefore, a robust, adaptive, and technology-driven collateral management framework is indispensable for ensuring sustainable risk management and supporting the overall integrity of the financial system.

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Agentic AI and Generative AI Uses in Banking



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Abstract:

The banking sector is undergoing a significant transformation driven by advances in Artificial Intelligence (AI). Among the most impactful developments are Generative AI and Agentic AI, which extend beyond traditional analytics and automation. Generative AI focuses on creating content, insights, and solutions from data, while Agentic AI introduces autonomous, goal-driven systems capable of planning, decision-making, and action execution. This article presents a comprehensive five-page discussion on the concepts of Agentic AI and Generative AI, their architectures, and their practical applications in banking. It also examines benefits, challenges, regulatory considerations, and future directions of AI-driven banking systems

1. Introduction

Banks have traditionally relied on rule-based systems and deterministic models to manage operations such as transaction processing, credit scoring, and compliance checks. With the exponential growth of data, digital channels, and customer expectations, these traditional approaches are no longer sufficient. Artificial Intelligence has emerged as a core enabler for intelligent automation, personalized services, and proactive risk management.

In recent years, Generative AI and Agentic AI have gained prominence due to their ability to handle unstructured data, generate human-like responses, and autonomously execute complex workflows. In banking, these technologies are redefining customer engagement, fraud detection, credit decisioning, compliance, and operational efficiency. This article explores how Generative and Agentic AI are applied in banking and how they complement each other to create intelligent, adaptive financial systems.

2. Overview of Generative AI

Generative AI refers to a class of AI models capable of generating new content such as text, images, code, summaries, and insights based on patterns learned from large datasets. These models include Large Language Models (LLMs), Generative Adversarial Networks (GANs), and

Variational Autoencoders (VAEs).

2.1 Key Characteristics of Generative AI

- ✦ Ability to process and generate unstructured data
- ✦ Context-aware and conversational capabilities
- ✦ Continuous learning from large-scale datasets
- ✦ High adaptability across domains

In banking, Generative AI is particularly valuable due to the vast amount of unstructured data such as customer emails, call center transcripts, policy documents, and regulatory texts.

3. Applications of Generative AI in Banking

3.1 Customer Service and Virtual Assistants

Generative AI-powered chatbots and virtual assistants provide 24/7 customer support. These systems can answer queries related to account balances, transactions, loan eligibility, and product information using natural language interactions. Unlike traditional chatbots, Generative AI systems understand context and intent, leading to improved customer satisfaction.

3.2 Personalized Banking and Marketing

Banks use Generative AI to analyze customer behavior



and generate personalized product recommendations, financial advice, and marketing content. For example, tailored investment insights or customized loan offers can be generated based on individual financial profiles.

3.3 Document Processing and Compliance

Generative AI automates the summarization and interpretation of complex documents such as loan agreements, KYC forms, and regulatory guidelines. This significantly reduces manual effort and improves accuracy in compliance and audit processes.

3.4 Fraud Detection and Risk Insights

By analyzing transaction narratives and customer communication patterns, Generative AI can generate contextual insights that support fraud analysts in decision-making. It enhances traditional fraud detection systems by providing explainable summaries and recommendations.

4. Overview of Agentic AI

Agentic AI refers to AI systems designed as autonomous agents capable of setting goals, reasoning, planning actions, interacting with tools, and adapting based on feedback. Unlike Generative AI, which primarily focuses on content generation, Agentic AI emphasizes decision-making and execution.

4.1 Characteristics of Agentic AI

- ✦ Goal-oriented behavior
- ✦ Autonomous decision-making
- ✦ Ability to coordinate multiple tasks
- ✦ Interaction with external systems and APIs

Agentic AI systems are often built using a combination of LLMs, reinforcement learning, memory modules, and orchestration frameworks.

5. Applications of Agentic AI in Banking

Agentic AI can autonomously manage end-to-end banking workflows such as loan processing, account onboarding, and dispute resolution. For instance, an AI agent can collect documents, verify information, request missing data, and finalize approvals without human intervention.

5.2 Fraud Response and Case Management

In fraud management, Agentic AI systems can detect suspicious activity, initiate investigations, block accounts, notify customers, and escalate cases to human analysts when required. This reduces response time and minimizes financial losses.

5.3 Credit Risk Assessment

Agentic AI agents continuously monitor customer financial

behavior and market conditions to reassess credit risk dynamically. Based on predefined goals, agents can adjust credit limits, trigger early warning alerts, or recommend restructuring options.

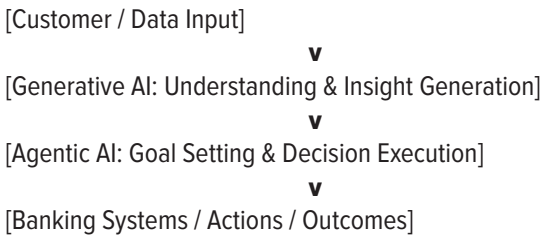
5.4 Compliance and Regulatory Monitoring

Agentic AI can track regulatory updates, assess their impact on internal policies, and recommend or execute necessary changes. This proactive compliance approach helps banks avoid penalties and regulatory breaches.

6. Synergy Between Generative AI and Agentic AI in Banking

The true potential of AI in banking is realized when Generative and Agentic AI work together. Generative AI provides understanding, reasoning, and content creation, while Agentic AI executes decisions and actions.

Figure 1: Generative AI and Agentic AI Interaction in Banking



This integration enables banks to move from reactive systems to proactive and autonomous operations.

7. Benefits of Agentic and Generative AI in Banking

- ✳ Enhanced customer experience through personalization
- ✳ Reduced operational costs and manual effort
- ✳ Faster and more accurate decision-making
- ✳ Improved fraud detection and risk management

Scalable and adaptive banking operations

8. Challenges and Risks

Despite their advantages, these AI technologies pose challenges:

- ✳ Data privacy and security concerns
- ✳ Model bias and ethical considerations
- ✳ Regulatory and explainability requirements
- ✳ Integration with legacy banking systems
- ✳ Risk of over-automation without human oversight

Banks must implement robust governance frameworks to

address these risks.

9. Regulatory and Ethical Considerations

Regulators worldwide emphasize responsible AI usage in financial services. Key focus areas include:

- ✳ Transparency and explainability of AI decisions
- ✳ Fairness and non-discrimination
- ✳ Human-in-the-loop controls
- ✳ Auditability and accountability

Compliance with guidelines from central banks and international bodies is essential for sustainable AI adoption.

10. Future Directions

The future of banking lies in fully autonomous yet accountable AI-driven ecosystems. Agentic AI will evolve to manage complex, multi-agent collaborations across banking functions, while Generative AI will continue to enhance reasoning, communication, and insight generation.

As these technologies mature, banks will transition from traditional service providers to intelligent financial partners, offering predictive, personalized, and proactive solutions to customers.

11. Conclusion

Agentic AI and Generative AI represent a paradigm shift in the banking industry. While Generative AI enhances understanding and interaction, Agentic AI enables autonomous action and execution. Together, they empower banks to improve efficiency, strengthen risk controls, and deliver superior customer experiences. Successful adoption requires a balanced approach that combines technological innovation with strong governance, ethical principles, and regulatory compliance.

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More Jobs Will Be Created Than Lost Due To AI



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Abstract:

Artificial Intelligence is poised to reshape labour markets by displacing routine and repetitive roles while creating larger opportunities in high-value, skill-intensive sectors. Historical evidence from the Industrial Revolution and the computer age shows that technological disruption often eliminates certain jobs but generates new employment through productivity gains, innovation, and expanding industries. In India, AI is expected to create demand across data science, cybersecurity, healthcare, education, manufacturing, logistics, and digital services, while enhancing professions that rely on creativity, judgment, and emotional intelligence. Global estimates from the World Economic Forum and other institutions indicate that new AI-enabled roles are likely to exceed jobs lost, resulting in a net employment gain. In this context, India's long-term success will depend on rapid upskilling, education reform, and adopting AI as a tool for augmentation rather than mere automation.

AI is not a job killer; it functions as a boost for human ingenuity.

The Industrial Revolution in the late 18th and 19th centuries replaced millions of manual artisan and agricultural jobs but led to the growth of factories, railways, and urban economies, boosting global employment. From 1870 to 1900, non-farm employment steadily increased despite mechanisation.

The computer era, from the 1970s to the 2000s, automated typewriters, making typists jobless, but also created over ten million jobs in software, IT services, and digital industries worldwide.

Technological revolutions often eliminate certain jobs while creating many new ones in emerging sectors. Worldwide, significant concerns persist about the risk of widespread job displacement, especially among workers in routine or low- to mid-skill roles, and India's capacity to adapt its workforce. AI will undoubtedly cause significant disruption and job losses, particularly in roles that involve repetitive tasks.

However, AI will also create new, higher-value jobs focused on developing and maintaining AI systems. Whether these new opportunities outweigh the losses depends on India's ability to rapidly upskill its workforce at scale and on how companies utilize AI for augmentation rather than just automation.

Some experts warn that many white-collar, non-digital jobs could be lost, potentially affecting the country's middle class. Routine tasks in manufacturing, retail, and logistics are also at high risk of automation due to robotics and AI.

The Business Process Outsourcing (BPO) sector, a major employer in India, is highly vulnerable to automation, especially for entry-level and routine back-end tasks like customer service, basic coding, and testing.

Jobs that require uniquely human skills — such as creativity, critical thinking, complex problem-solving, and emotional intelligence — like those of doctors, teachers, lawyers, and CEOs, are less likely to be replaced and more likely to be enhanced by AI.

According to a McKinsey Global Institute report, AI could automate activities equivalent to 30 crore full-time jobs worldwide by 2030, impacting about 45% of work in advanced economies, including clerical work, customer service, transportation, and manufacturing assembly.

These losses are real but temporary—similar to how ATMs reduced the number of bank tellers per branch from about 20 in 1980 to around 13 in 2010, while increasing overall access to banking.

AI is increasing the demand for highly skilled professionals in fields such as AI development, data science, machine



learning, and cybersecurity, offering a positive outlook for workers.

New job opportunities are emerging across diverse industries, including IT, manufacturing, agriculture, and transport and logistics, indicating a positive shift in the job market driven by AI.

One report cited a NITI Aayog projection that AI could create up to 40 lakh new jobs in India by 2030. Another government report projected digital interventions, including AI, would generate over two crore new jobs by 2035.

The World Economic Forum (WEF) reports suggest that, worldwide, while AI may displace 85 million jobs by 2030, 97 million new roles requiring new skills could be created, highlighting a potential net gain.

The WEF report predicts the creation of approximately 1.20 crore new jobs in emerging roles, such as AI ethicists, prompt engineers, data curators, AI trainers, machine learning operations specialists, and AI-augmented designers, utilizing Midjourney AI technologies.

According to Goldman Sachs, AI could increase global GDP by 7% (about \$7 trillion) over ten years, boosting job growth in:

Healthcare segment: AI diagnostics free doctors for complex

cases; demand for AI-integrated telemedicine rises, projected to create 500,000 jobs by 2030.

Education: Personalized AI tutors assist in content curation and edtech.

Creative/Tech: AI tools empower creative engineers similar to those at Netflix, Spotify, and Saregama.

Green Tech & Infrastructure: AI optimizes energy grids, creating jobs in sustainable AI deployment.

In the American market, OpenAI's GPT models have created over 10,000 prompt engineering jobs on platforms like Upwork. Waymo Cruise employs thousands in safety monitoring, mapping, and ethics—far exceeding the number of initially displaced truckers.

PwC estimates that AI creates one job for every 0.7 jobs lost in the UK, with a larger impact in the services sector. Manufacturing assembly line workers, robotics technicians, and AI-driven quality control contribute to a 40% increase in factory output, achieved with fewer workers and more engineers.

Legal researchers, analysts, AI lawyers, strategy consultants, creative stock photographers, AI art curators, and synthetic media producers are experiencing a 30% increase in creators using AI tools.

Ageing populations in Japan and the EU require AI solutions to address labour shortages.

AI boosts output per worker by 40% in affected tasks. The improvement reduces costs, increases demand, and funds new ventures. AI broadens the overall economy through internet-enabled e-commerce, an area that was largely unseen in 1990.

India faces a major demand-supply gap in AI professionals. More jobs will be created than lost. The transition could be uneven—requiring upskilling, but history and data support optimism.

India's education system must be upgraded immediately to meet employers' evolving needs for AI-ready talent.

AI does not just replace; it enhances humans, generating demand in fields that require creativity, oversight, and innovative applications. Several studies indicate that AI will eventually be a net job creator in India, although the new jobs will demand different skills

Optimizing Insurers' ROCE* for ITRM**

How insurers can optimize *return on capital employed for **insurance technical risk management



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Abstract:

Optimizing Return on Capital Employed (ROCE) in insurance requires a holistic approach to Insurance Technical Risk Management (ITRM), integrating underwriting, claims, reinsurance, investments, and capital allocation rather than relying on silo-based decision-making. The article highlights that insurers can enhance profitability by balancing retained losses, cost of capital, taxes, and external risk transfer through an optimized Total Cost of Risk framework. Reinsurance should be viewed not merely as expense but as a strategic source of capital alongside debt and equity. Through data analytics, actuarial modelling, retention analysis, and alternative risk financing solutions, insurers can align risk appetite with financial efficiency. In this context, Insurance Technical Risk Management Optimization (ITRMO) offers a sustainable pathway to stronger resilience, improved margins, and superior capital productivity.

That which is already known

Business Organizations have always been exposed to various types of risks such as:

- ✱ Market Risks
- ✱ Credit and Insolvency Risks
- ✱ Operational Risks
- ✱ Statutory and Regulatory Risks
- ✱ Environmental Risks
- ✱ Exchange Rate Risks
- ✱ Reputational Risks
- ✱ Risks related to bilateral, regional or international trade agreements between nations
- ✱ Risks related to politics, economic policies, environmental policies, etc.
- ✱ Risks related to Industrial Relations, general socio-economic conditions, etc.
- ✱ Other Risks specific to the lines of business pursued

Events of year 2008 had revealed the darkest manifestation of some of these risks, causing an avalanche of systemic failures, in turn resulting in a global financial meltdown. Affected Business Organizations had ignored or underestimated these latent risks only at their peril and had to pay an unprecedented price for it. Then again the COVID-19 pandemic proved to be more disastrous and long-drawn-out on a never-before-experienced global scale.

Defining Risk

The Insurance Institute of India defines that:

- ✱ Risk is the possibility of adverse results flowing from any occurrence.
- ✱ Risk is a condition where there is a possibility of an adverse deviation from a desired outcome - there is no requirement that the possibility be measurable, only that it must exist.

Managing Risk

The Insurance Institute of India defines that:

- ✱ Risk Management is the identification, analysis and economic control of those risks which can threaten the assets or earning capacity of an enterprise.

Risk Management comprises of:

- ✱ Risk Identification
- ✱ Risk Analysis
- ✱ Risk Control:
 - ♣ Physical risk control
 - ♣ Financial risk control – Retention & Risk Transfer

Methods of Risk Management

Business Organizations deploy a combination of the below-mentioned methods of risk management:

- ✱ Risk Avoidance
- ✱ Risk Retention
- ✱ Risk Reduction
- ✱ Risk Pooling
- ✱ Risk Combination
- ✱ Risk Hedging
- ✱ Risk Transfer including Insurance

It is clear from the above that Risk Transfer is only one of the methods of Risk Management and that Insurance is only one of the methods of Risk Transfer.

Insurance Technical Risks

The International Association of Insurance Supervisors (IAIS) defines that:

“Insurance Technical Risks (liability risks) represent the various kinds of risk that are directly or indirectly associated with the technical or actuarial bases of calculation for premiums and technical provisions in both life and non-life insurance, as well as risks associated with operating expenses and excessive or uncoordinated growth.

Technical risks result directly from the type of insurance business transacted. They differ depending on the class of insurance. Technical risks exist partly due to factors outside the company’s area of business activities, and the company often may have little influence over these factors. The effect of such risks – if they materialize – is that the company may no longer be able to fully meet the guaranteed obligations using the funds established for this purpose, because, either the claims frequency, the claims amounts, or the expenses for administration and settlement are higher than expected. When considering the technical risks, IAIS proposes distinguishing between “current risks” and “special risks”.

Current risks consist of the following elements:

- ✱ risk of insufficient tariffs,
- ✱ deviation risk,
- ✱ risk of error,
- ✱ evaluation risk,
- ✱ reinsurance risk,
- ✱ operating expenses risk, and
- ✱ risks associated with major or catastrophic losses or accumulation of losses caused by a single event.

As to the special risks, they can be considered to consist of the following:

- ✱ risk of excessive or uncoordinated growth, leading to a rapidly increasing claims ratio or an aggravated expenses ratio, and
- ✱ liquidation risk.”

Insurers and Reinsurers face many of the same risks that other Business Organizations face. However, for purposes of this Technical paper, we shall confine ourselves to Insurance Technical Risks or Insurance Risks as defined above for Insurers. What is stated in this Technical paper applies to a great extent also to Reinsurance Technical Risks or Reinsurance Risks faced by Reinsurers.

Insurance Risks are basically inherited through direct insurance business, inward coinsurance business and inward reinsurance business of an insurer as reduced by risks ceded through outward coinsurance business, outward reinsurance business and other means. Similarly, Reinsurance Risks are basically inherited through inward reinsurance business of a reinsurer as reduced by risks ceded through outward retrocession business and other means.

Insurance Technical Risks Analysis

The insurance business is all about risk – understanding it, minimizing it, pricing to compensate for it.

- ✱ Insurance risk analysis methods are mentioned below:
- ✱ Insurance risk factor profiling
- ✱ Insurance predictive modelling
- ✱ insurance risk modelling
- ✱ Insurance scoring
- ✱ Insurance risk-level classification
- ✱ Insurance Technical Risks Management

Presently, insurers manage insurance risks through the seven methods mentioned earlier. More particularly:

- ✱ **Insurance Risk Avoidance:** Insurers may avoid accepting certain specific risks, certain sub-lines or



lines of business altogether, or business in certain geographies or hazardous locations.

- ✳️ **Insurance Risk Retention:** Insurers may retain certain insurance risks either deliberately, through inadvertence or due to market conditions. In the first case, insurers may retain certain insurance risks found more profitable to retain, or as per the retention obligations imposed by the reinsurance arrangements, or which are not covered under the existing coinsurance or reinsurance arrangements and facultative cover is either not available or available at unacceptable rates or terms and conditions.

In the second case, insurance risk retention may be forced by inadvertently failing to make other arrangements so that the insurer is (so to say) 'left holding the baby'.

In the third case, market conditions may be adverse such that other arrangements can be made only at uneconomical rates or unfavourable terms and conditions. Hence, insurance risk is unwillingly retained.

- ✳️ **Insurance Risk Reduction:** Insurers reduce insurance risks accepted, through various mechanisms such as policy deductibles, co-pay, exclusions, warranties, terms, conditions, no claim bonus, other rewards to the insured for good claims history, requirement of material changes to be intimated, working with the insured to mitigate risk, working with loss prevention associations, working with governmental agencies, creating awareness among policyholders, and so on.
- ✳️ **Insurance Risk Pooling:** Insurers participate in pools within the country such as Indian Market Terrorism Risk Insurance Pool, Indian Nuclear Insurance Pool and Motor Third Party Insurance Pool (the last mentioned has now been disbanded). Pooling may also be regional or global.
- ✳️ **Insurance Risk Combination:** Insurers may combine a large number of small or medium, widely dispersed insurance risks in the same sub-line or line of business in their portfolio instead of a few large insurance risks. Such a combination may be relatively more feasible to retain to a larger extent. Also, they may opt for an ideal mix of insurance risks among various sub-lines and lines of business, so that adverse results in one may be offset by favourable results in others in a particular year. Further, they may combine good insurance risks (few available), average insurance risks (relatively more available) and poor insurance risks (the largest number available) in such a way that the first category is fully retained, the second category is partially retained and the last category is fully transferred.

- ✳️ **Insurance Risk Hedging:** Insurers hedge insurance risks through the operation of the Law of Large Numbers. As the number of risks increases in a portfolio, the number of losses also increase, but less than proportionately. If one out of ten factories insured reports a fire loss, it does not mean that ten out of hundred or hundred out of a thousand factories insured will report fire losses. So the insurance risk is hedged, not by taking a contrary position, but by offsetting it through a far larger number of similar risks.

Insurance Risk Transfer including Coinsurance and Reinsurance: How an insurer shifts back a certain portion of insurance risks to the insured has been discussed under "Insurance Risk Reduction". An insurer can transfer the insurance risk to third parties under the Principle of Subrogation. An insurer may share the insurance risk with other insurers through the mechanism of Coinsurance. Finally, the residual insurance risk may be transferred through Reinsurance arrangements.

Insurers also manage insurance risks through techniques including but not limited to:

- ✳️ Prudent selection of lines of business, geographies, etc.
- ✳️ Deployment of astute business processes, competent personnel and appropriate software
- ✳️ Prudent selection from business offered
- ✳️ Sound underwriting including rating, terms, conditions, exclusions and warranties
- ✳️ Guarding against risk accumulation hazards and catastrophe hazards
- ✳️ Guarding against moral hazards including insurance fraud
- ✳️ Claims investigation, salvage, subrogation, legal remedies, etc.
- ✳️ Control over expenses of administration and settlement
- ✳️ Building up of technical and other reserves
- ✳️ Optimizing investment income to supplement underwriting profits or to offset underwriting losses
- ✳️ Coinsurance and reinsurance
- ✳️ Alternative Risk Transfer (ART) including Special Purpose Vehicles (SPVs)

The Problem

Insurance Risk Management is already a few centuries old. Is it then not refined enough?

The root cause of the problem lies not only in the departmentalization of insurance companies but also

in the understandably differing mindsets of marketing, underwriting, claims, reinsurance and investment personnel and in the ingrained mentality of personal fiefdoms of key executives.

For instance, when a decision is taken to cede business to a reinsurer, rarely is the investment department consulted to calculate the opportunity cost of the investment income lost (on the premium ceded less the reinsurance commission and profit commission earned) vis-à-vis the claims likely to be paid out on the risk proposed to be ceded, if not ceded. That decision is taken in isolation, leading to less than optimum return on capital employed on insurance technical risk management.

Similarly, investment decisions are considered to be too confidential, sacrosanct and unintelligible for the uninitiated to be discussed with the likes of personnel of 'less informed' departments. Those decisions, too, are taken with utmost secrecy, leading to lack of coordination, avoidable retractions and, ultimately, less than optimum ROCE on ITRM, not to mention undoing all the good work done by sound underwriting. Events of year 2008 have given cause enough to cast serious aspersions on the so-called financial management expertise of investment experts.

This Technical paper, then, essays to dispense with this 'siloed' system of decision-making in favour of a more holistic approach to optimizing insurers' return on capital employed on insurance technical risk management.

Executive Summary

For insurers, risk can contain valuable upside, if managed effectively. An insurer that understands how risk might impact its Key Performance Indicators (KPIs) can move more effectively to seize opportunities and drive business performance.

The strategies that insurers develop for financing risk are an important part of this process. By simply reinsuring, insurers probably miss an opportunity to extract better value from their capital. Sub-optimal decisions on financing risk can impact Key Financial Indicators (KFIs) and erode margins.

Investment trend for insurers has to move towards managing risk rather than buying more reinsurance – taking greater control over their risk-related costs. By better managing their exposure to the reinsurance market cycle, through improved risk management and alternative financing arrangements, insurers are reducing the volatility of their risk financing cost base and creating value for their businesses.

Insurance Technical Risk Management Optimization

(ITRMO) describes the course of action which insurers have to follow in order to arrive at optimal risk financing arrangements, typically resulting in a sustainable and lower total cost of risk. It draws on information and people from all across the insurer's business, encouraging them to offset investment in mitigation and management strategies with a reduction in cost of risk, and to counterbalance expenditure on reinsurance with realistic retentions.

One of the guiding principles of ITRMO is to treat the use of reinsurance not as a written off commodity spend, but as a third source of capital, over and above debt and equity. As well as providing protection, it can help to optimize the cost of capital.

The case for ITRMO

Insurance Technical Risk Management Optimization (ITRMO) describes the strategic process undertaken by insurers to make balanced and objective decisions around the allocation of capital to risk. Its fundamental principles are:

- ✳ It considers the purchasing of reinsurance as only one of a number of tactics that can be deployed, as part of a broader, often more long term risk management and financing strategy. ITRMO is about more than the limits and deductibles of a reinsurance arrangement.
- ✳ It treats reinsurance and risk financing spend as a form of capital allocation, with the potential to work harder and deliver a higher return when allocated in a more optimal way.
- ✳ Ultimately it describes the matching of an insurer's buying style with its appetite to take risk, the losses it is likely to sustain and the cost of capital associated with its various financing options.

An insurer's total cost of risk (TCOR) can be calculated by adding the expected cost for the risk it chooses to retain to the cost of its reinsurance, while also accounting for the cost of capital assumed for unexpected volatility.

TCOR = cost of retained losses + cost of capital (including statutory reserves) + cost of external risk transfer + taxes

The cost of purchasing reinsurance might become more expensive in relative terms than the cost of capital for retaining the risk. There risk-adjusted return on capital (RAROC) is negative – i.e. no value is being created from purchasing reinsurance.

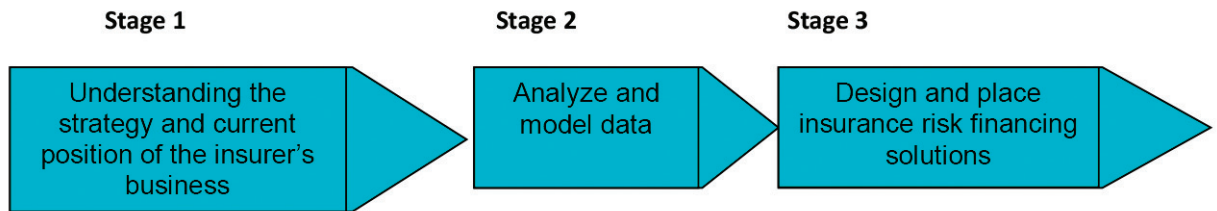
The reverse may also be true. An insurer with high retentions may find that over time a reinsurer's risk-adjusted return on capital (RAROC) is a lower cost - here it would be more optimal to transfer the risk.



Reinsurance coverage can be accurately matched to exposures and loss expectancies. Exposures not reinsurable can be identified and assessed, and alternative forms of financing arranged to manage potentially major losses. Areas

on which to focus risk improvement or management activity can be identified, with the investment budget determined by or even offset against the potential reduction in losses or savings in risk transfer.

The ITRMO process



Stage 1 – Understanding the strategy and current position of the insurer's business

The information that an insurer should gather to inform its subsequent decisions on risk would include:

- ✳ Historic claims experience
- ✳ Existing risk registers
- ✳ Benchmarked risk data from insurer peer groups
- ✳ Corporate attitudes to risk – insurer as risk-taker or risk-avoider
- ✳ Gaps in required underwriting information and develop parameters and systems for optimum data collection

Stage 2 – Analyzing and modelling data

Turning data into meaningful decision making tools forms the second, critical stage of the ITRMO process. The goal is to identify the optimal structure for the risk financing programme, against which reinsurance coverage can be overlaid.

This stage is focused not only on identifying optimum reinsurance arrangements, but also in determining the amount and type of risk that can be retained by the insurer. Typical considerations in this stage include:

- ✳ Technically reviewing current coverage, limits and exclusions, in order to stress-test the adequacy of existing reinsurance arrangements against the risks identified in Stage 1.
- ✳ Calculating risk tolerance: insurers must evaluate whether changes to their business, its strategy and its financial strength could mean that current levels of reinsurance no longer represent the best form of capital for financing risk. This stage will help determine the insurer's materiality threshold and transfer 'strike points'. A variety of indicators can be followed to determine risk

appetite and the willingness or ability of the insurer to pay for losses from their own liquid reserves. These include credit ratings, materiality thresholds, industry benchmarked retention levels or 'rules of thumb'. Besides ensuring more effective deployment of capital, this process can help insurers reduce the volatility attached to reinsurance market cycles, by buying potentially protection at higher levels.

- ✳ Using the analysis on risks, existing reinsurances and optimal retention levels, insurers are then in a position to develop actuarial models – sometimes called 'integrated loss models' – that enable them to design various programme structures, balancing a range of theoretical transfer and retention costs. The objective at this stage is to identify the lowest TCOR, allowing for self-reinsured volatility.
- ✳ Analysis of Alternative Risk Financing options, including captive feasibility studies: If a company has concluded that it is potentially overspending on reinsurance, then it might consider setting up a captive reinsurance vehicle to self-finance some of its risk.

For each class of exposure under consideration, it is necessary to define (for any level of per occurrence deductible):

- ✳ the appropriate aggregate stop loss
- ✳ the retained risk fund required at a given confidence level
- ✳ reinsurance pricing
- ✳ the cost of risk [this being the sum of (retained losses) + (reinsurance premiums ceded less reinsurance commission and profit commission) + (cost of capital including statutory reserves) and (taxes)]

This helps insurers to establish the cost benefit of each of the options generated in relation to the current basis – for each class of risk (mono-line) and as an integrated risk (multi-line)



financing programme. It then prioritises the options to define the optimum programme design.

Stage 3 – Designing and placing insurance risk financing solutions

Work done in the above two stages will now help determine the appropriate reinsurers to approach. Any work an insurer has done to identify its exposures, build an integrated risk financing strategy and potentially managing down the causes of claims, should help it obtain better terms in the reinsurance market.

Cessions to reinsurers should contain detailed and relevant data on the extent of the risks, the performance of controls and their correlation with losses and the insurer's commitment to improving risk profile. Given such available and transparent information and performance metrics, reinsurers will often offer financial incentives to insurers who implement a programme of ongoing risk improvement, by either increasing reinsurance commissions or contributing to risk management initiatives.

The reinsurance placement will be complemented by the structure of alternative risk financing and transfer solutions to ensure the overall return on capital invested in risk is optimised for the company.

Summary

As stated earlier, what is true between an insurer and a reinsurer is also true between a reinsurer and a retrocessionaire and so on. A unique domain-technical solution incorporating elements of financial modelling, actuarial science and insurance market methodologies, further customized for each specific insurer, is the all-encompassing holistic solution to optimizing insurers' return on capital employed on insurance technical risk management.

The net result of this would be sustained financial and business benefits. Needless to add, the solution needs to be reviewed for adequacy and optimality on a regular basis and changes, if required, incorporated.

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1. Definitions sourced as mentioned prior to each on Pages 1 and 2.
2. Knowledge gleaned from studies conducted by various international insurance brokers in respect of Risk Management for Business Organizations has been adapted in this Technical Paper to deal with Insurance Technical Risk Management for Insurers.

National Pension System (NPS) with increased Flexibility



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Abstract:

The National Pension System (NPS) has evolved into a more flexible and attractive retirement planning instrument following major reforms effective from October 1, 2025. Key changes include up to 100% equity allocation, multiple investment schemes under one PRAN, customized scheme options, easier switching, and more liberalized withdrawal and exit provisions. Proposed measures such as reduced mandatory annuity purchase and higher lump-sum access further enhance liquidity and investor choice. While revised charges and vesting requirements may increase costs and long-term commitment, the reforms significantly improve risk-return customization for private sector employees and individual investors. In this context, the enhanced NPS framework is likely to drive wider participation and strengthen retirement savings in India.

The central Government launched the National Pension System (NPS) from 1st January 2004, which was on the background of discontinuing the defined pension scheme for the employees joining from 1st January 2004. Initially NPS was for Central Government Employees only (excluding armed forces). Most of the State Governments offered the same to their employees immediately thereafter. However, it was made available to all citizens of India from 1st May 2009. Over the period of last 16 years PFRDA (Pension Fund Regulatory Authority) who is regulator for NPS has made various changes in NPS from time to time so as to get more and more people attracted to NPS for their retirement planning. Now NPS has become one the most suitable option for retirement planning for non-government employees and individuals. In order to increase the participation of Private Sector Employees and individuals PFRDA has made some major changes in NPS and same are effective from 1st October 2025. With these new changes NPS has become more flexible and attractive from long-term investment point of view. These changes are as under,

100% Equity Allocation:

Subscribers can now allocate up to 100% of their contributions to a high-risk equity scheme variant under the new framework. Earlier maximum equity exposure was capped at 75%.

Multiple Schemes under One PRAN:

The MSF has been introduced under which subscriber can hold and manage multiple investment schemes under a single Permanent Retirement Account Number (PRAN), across different Central Recordkeeping Agencies (CRAs). This will help subscriber to diversify the investment and at the same time keep the appropriate balance between conservative and aggressive investments.

Different schemes:

Pension Funds (PFs) can now design different schemes for different subscribers, such as self-employed professionals or corporate employees, with options including at least one moderate-risk and one high-risk variant. This will offer more personalization and better alignment with varying financial goals so as to suit to individual's risk appetite.

Scheme Reporting and consolidation:

Since MSF is under one PAN consolidated statement of investments under multiple schemes will be available irrespective of different CRAs. consolidated statement will give details of scheme wise investments.

Scheme Switching:

Subscribers can switch between schemes under the MSF after a 15-year vesting period



Proposed changes in Exit & withdrawal:

Early Exit:

Non-government subscribers may now exit the NPS after 15 years, instead of waiting until the age of 60.

Lump-sum and Partial Withdrawals:

Rules for lump-sum and partial withdrawals have been relaxed, allowing for higher limits and easier access for needs like medical emergencies or education. Subscribers can now begin their exit process up to six months before their official retirement date.

Reduced Annuity:

Proposed draft rules also suggest reducing the mandatory annuity purchase at retirement from 40% to 20%, allowing for an 80% lump-sum withdrawal.

Allow full withdrawal if the total corpus at voluntary exit is below ₹4 lakh

Revised CRA charges:

The PFRDA has revised the charges for the services provided by CRAs for all pension schemes. The maximum annual charges for Pension Fund Managers under the new MSF structure are capped at 0.30% of Assets Under Management (AUM), a significant increase from the previous 0.03% to 0.09% range for common schemes.

Impact of these changes:

Risk & return reward:

With the 100% equity allocation option, non-govt NPS subscriber can now take risk which is likely to increase return on investment considering the long-term nature of investment.

Risk management:

The MSF allows multiple investment options as such subscriber can now diversify the investment and at the same time keep the appropriate balance between conservative and aggressive investments.

Higher Costs:

The new maximum annual charge for MSF schemes could go up (reports suggest up to ~0.30% of AUM which will increase the cost.

Vesting Period:

The 15-year vesting period for MSF high-risk schemes means long-term commitment; switching too early is restricted.

In short, we can say with these new changes more particularly MSF now investor can take risk in tune with his risk appetite which is likely to give higher return and the proposed changes in withdrawal and exit will provide slightly higher liquidity than earlier. Resultantly more and more individuals and private sector employees are likely to subscribe NPS. ●

COP30 Outcomes and Challenges



Shri C. M. Khurana

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Abstract:

COP30, held in Belém, Brazil in November 2025, reinforced the global need for collective climate action amid rising climate disasters, escalating economic losses, and increasing vulnerabilities worldwide. The conference focused on strengthening multilateralism, accelerating implementation of the Paris Agreement, expanding adaptation finance, promoting just energy transition, and launching initiatives for technology deployment, resilience indicators, and tropical forest protection. India played a proactive role in representing developing nations while emphasizing that energy transition must be equitable, flexible, and aligned with national development priorities. For India, the key challenge remains mobilizing large-scale climate finance to achieve its Nationally Determined Contributions, build resilience, and accelerate green growth. In this context, robust policy frameworks, blended finance models, private investment, and effective implementation will be critical to building a sustainable and climate-resilient economy.

Background

The recent devastating natural disasters across the world are a stark reminder of lurking vulnerabilities we collectively face, directly linked to extreme weather and climate related issues. The incidents cover wide geographies with varied nature of destruction. The latest catastrophic flooding and storms in South Asia and South East Asia lead to more than 1000 lives lost. On the other end, massive wildfires struck Los Angeles and surrounding areas destroying about 16000 structures - businesses, infrastructure and homes in first half of 2025. Uttarakhand faced devastation, possibly through a glacial - lake outburst in August 2025 leading to heavy destruction and deaths. The rising frequency and severity of climate disasters - from wild fires and draughts to storms, floods and heatwaves can be seen as direct outcome of climate change acting as a 'threat multiplier'.

Average global temperatures have already increased significantly since industrialisation, exceeding the 1.5 degree celcius threshold for the first time in 2024. With further warming ahead climate related damage, which totalled more than \$ 3.6 trillion over the past 15 years, will likely substantially increase. (world economic forum Annual Report)

The collective threat needs a collective response and action

in the interest of sustainability and survival of the planet. It is in this context that the role of COP (Conference of Parties) becomes relevant and crucial. The COPs are convened under the United Nations Framework Convention on Climate Change (UNFCCC), a multilateral treaty adopted in 1992. The meetings serve as a forum where the participating Governments take decisions on ways to cut green house gas emissions and on adapting to impacts of climate change on Loss and Damage. (which refers to funding for vulnerable countries hit hard by floods, droughts and other climate disasters). COP also discusses about the means to help countries green their economies and build resilience to climate change (finance, technology and capacity building). A critical and important milestone was achieved in COP 21 in 2015 by the signing of the 'Paris Agreement' which was adopted by 195 countries. The progress in this direction is gradually evolving in the subsequent rounds of COPs. Here we discuss the outcomes of COP 30 held at Belem, in Brazil during 10th to 21st November 2025 and the challenges being faced with particular reference to India, based on official reports, discussion papers and public comments.

Broad Outcomes of COP 30:-

While the overall impression seems to be that there was a

moderate success towards achieving of the objectives and there were mixed outcomes, the spirit and central theme of 'global mutirao' - meaning collective community effort has emerged, calling for worldwide, collaborative climate action. The need for mobilizing the governments, NGOs, youth and indigenous groups has been underlined focussing on cooperation and practical solutions. Despite unprecedented geo-political tensions and a shift towards "hegemonic response", COP30 approved a package of decisions towards achieving three core objectives viz

- a) strengthening multilateralism,
- b) connecting climate multilateralism through the people
- c) accelerating the implementation of the Paris Agreement. COP30 aimed at balancing forces between North and South, developed and developing countries, energy and nature, technology and people, commitments and implementation, mitigation and adaptation.

Moving away from complex negotiations, and a new phase focused on real transformations in economies and societies is foreseen. A series of measures to accelerate implementation and international corporation were announced as under:-

a) Launch of Global Implementation Accelerator.

This will priorities actions with best potential for scale and speed in climate fight. This will involve methane emissions reduction and carbon removal but also encourage inventions in renewables, batteries, reducing cost of capital and multilateral bank reforms.

b) Tripling of Adaptation Finance -

The most vulnerable populations need to be supported - those least responsible for climate change but most affected by its impacts.

c) Just global Transition -

A new instrument to support countries in ensuring that the transition to sustainable economies is just and inclusive.

d) Adoption of Voluntary Indicators -

to measure progress in building resilience, within the the framework of the global goal on adaptation.

e) Launch of Technology Implementation Program (TIP)

with a timeline and components to strengthen the implementation of technology priorities in developing countries.

f) Launch of two -

year work program on Climate Finance, focusing on

the predictability of public resources from developed to developing countries in terms of 'Paris Agreement' Article 9.1

g) Launch of Tropical Forests Forever Facility (TFFF)

The above key points are steps in the right direction, though not delivering anything big immediately but reaffirming the conviction that only through international cooperation will it be possible to ensure safe, resilient, sustainable future for generations to come. Cop 30 showed what is possible when governments, cities, investors, indigenous people, youth and civil societies move together with a common underlying spirit.

Impact of COP30 decisions :-

The official view point is that COP30 has restored faith in multilateralism with developing countries seeing a structured process capable of holding developed nations accountable. This reiterates the global climate finance debate in terms of the actual legal obligations of developed nations under the Paris Agreement. Article 9.1 of Paris Agreement represents a Lifeline for financing climate action, especially for adaptation, resilience clean energy transition and capacity building. However the commitments made under the New Collective Quantified Goal on climate Finance (NCQG) in COP29 in 2024 are considered inadequate, as these only aim for finances of US \$ 300 billion per year by 2035, with broader multichannel mobilisation including public, private, bilateral and multilateral sources. There is a call to triple adaptation finance by 2035 .

India as a leading voice for the LMDC (like - Minded Developing Countries and BASIC (coalition of emerging economies Brazil, South Africa, India and China) groups played a significant and proactive role in building a consensus on Implementation Accelerator proposal .

The issues relating to roadmaps for the phaseout of fossil fuels in just, orderly and equitable manner, and for an end to deforestation also came up for discussion but these initiatives are outside the UNFCCC processes. India's view is that global energy transition must be just, equitable and cognizant of national circumstances, as the path for shifting away from fossil fuels cannot be uniform and must allow developing countries to ensure energy security, economic growth and poverty eradication.

Need for comprehensive strategies and effective implementation

In the context of climate action, NDCs (Nationally Determined Contributions) and NAP (National Adaptation Plans) are key planning and reporting mechanisms under the UNFCCC. NDCs are climate action plans submitted by countries under the Paris Agreement 2015 which outline how each country



intends to reduce greenhouse gas emissions and adapt to climate impacts. The NAPs are long term planning documents that focus exclusively on building climate resilience and reducing vulnerability to climate change impacts. India submitted its NDCs which interalia included the following :-

- 1) Reduce the emissions- intensity of GDP by 45% by 2030 (compared to 2005 levels)
- 2) Ensure about 50% of installed capacity comes from non - fossil (renewable or clean) energy sources by 2030 (Already achieved by 2025)
- 3) Net zero emissions by 2070
- 4) create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent by 2030 through afforestation and additional forest and tree cover .

While India is on track for the achievement of above targets, revised NDCs and a comprehensive NAP will chalk out our future strategies and effective implementation plans towards building a green economy of the future.

Challenges and Roadmap for India

As per the Annual Report (December 2025) of the world Economic Forum, the overall growth in green economy is on a positive trajectory with ample opportunities for investment and technology innovations. The steep cost of climate inaction is well recognised - delaying investments in mitigation today will cost governments and companies far more, overtime, than investing today.

Transportation and energy supply (renewable clean energy generation and storage) are central to mitigation strategies, but other fast growing areas are also emerging ,such as carbon and methane management, food agriculture and land use ,and circularity and waste management.

Financial and enabling solutions are a part of the mitigation .

The market for adaptation and building resilience will become even more material. This will include Food resilience, Infrastructure, health and water resilience besides energy and biodiversity resilience.

Providing Finance for the climate action is the biggest challenge as revealed from the above discussion. The response of the developed countries ,who are legally bound to support the developing countries is so far luke warm . A country like India will require to create its own avenues and means to ensure adequate availability of finances both for

mitigation and adaptation and resilience actions.

The Government of India announced the Draft 'Climate Finance Taxonomy in May 2025. The objective is to direct capital investments towards genuine green projects in an effective and transparent manner. The new Initiative will lead to standardised regulations and guidelines that inform the companies and the investors about the impactful investments in the desired activities which qualify as 'green investments' The idea is to prevent misrepresentation through green washing and there is a need for enhancing investor confidence. The banks and financial institutions will need to fund the genuine climate friendly projects and align the financial regulations with global standards. India requires around US \$ 2.5 trillion to meet the NDC targets till 2030 .

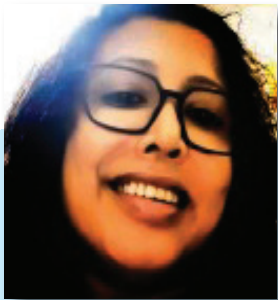
While the Government is providing incremental funds through budgetary resources and sovereign green bonds for capital expenditure, laying due further emphasis on renewable energy, battery storage and new technologies like green hydrogen, private capital will need to be attracted in a big way for fresh investments as well as for research and development for optimization of resources. De - risking of projects through guarantees, concessional capital, long term offtake agreements and stable policies will help in lowering cost of capital and attract institutional investors. Blended finance in the shape of debt, equity, venture capital and long term funds (patient capital) is all needed to meet the massive requirement. Risk mitigation has to be taken care of with lower interest rates which is a challenging task. Innovative structures will need to be evolved with contributions coming from various sources according to risk appetite and availability of funds .

Conclusion

Considering the need collective efforts required to fight the climate change risks ,as underlined in COP30, we need evolve comprehensive focused strategies with a holistic long term approach, while ensuring meticulous implementation with the desired efficiency.

To derive the full potential of growth of the green economy, the Government needs to create a comprehensive structure of incentives , subsidies and penalties to lead the investments and implementation in the desired direction which will go a long way in achieving our objectives with a win win situation for all the stakeholders.

Beyond the Pillars: Unfolding the New Era of Sustainable and Green Finance



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Abstract:

Sustainable and green finance has emerged as a transformative force that channels capital toward long-term economic growth while integrating environmental, social, and governance (ESG) priorities. Moving beyond the traditional three-pillar model of sustainability, the modern approach recognizes interconnected impacts across ecology, society, policy, and markets, making finance a critical enabler of resilient development. Instruments such as green bonds, sustainable funds, climate finance, and ESG-linked investments are supporting renewable energy, infrastructure, biodiversity, inclusion, and innovation. In India, institutions such as banks, NBFCs, DFIs, NABARD, SIDBI, and corporate leaders are advancing this transition through policy-backed financing ecosystems, sovereign green bonds, and sustainability-driven investments. In this context, robust regulation, incentives, and responsible capital allocation will be central to building a competitive, low-carbon, and inclusive economy.

A new epoch is dawning, one in which the contours of ‘sustainability’ shimmer with dynamic and prismatic complexity that embody a multidimensional and continually unfolding discourse—an intricate tapestry woven from ecological imperatives, socioeconomic dynamics and ethical considerations.

Sustainability refers to the capacity to ensure that economic growth, environmental stewardship and social well-being are maintained and enhanced over time, all while safeguarding natural resources for current and future generations. It emphasizes responsible management and long-term resilience, ensuring that development today does not compromise the ability of future generations to meet their own needs. Sustainability is evolving in response to shifting global priorities, scientific advancements and cultural narratives.

Since it is effective both as a guiding principle as well as a contested terrain that invites perpetual inquiry, adaptation and reimagination, nowadays sustainability mission has become the cornerstone of economic development.

Benefits of having a Sustainability-Focused Mission:

- ✦ Inspires employees and stakeholders.
- ✦ Enhances reputation and ESG performance.
- ✦ Guides ethical decision-making.
- ✦ Differentiates the company in competitive markets.
- ✦ A sustainability mission statement is a powerful ESG tool.
- ✦ It strengthens culture, inspires stakeholders, and positions companies as leaders in sustainable business.



THE 17 SUSTAINABLE DEVELOPMENT GOALS (SDG) OF UNITED NATIONS



[Image Source: india.un.org]

Sustainability, once resided in the rigid, well-ordered architecture of three ‘pillars’: environmental, social and economic. Yet, this orthodoxy has given way to a more evocative and flexible paradigm—a dynamic sustainability framework that acknowledges nonlinear relationships, adaptive cycles and emergent properties. Modern interpretations recognize that interventions in one domain—such as decarbonizing a nation’s energy infrastructure—ripple out into employment patterns, regulatory philosophies, cultural constructs and organizational ethics. This interconnected approach highlights the importance of considering the broader implications of sustainability interventions as below:

Nonlinear relationships:

Changes within one component of the system do not produce constant, proportional changes in another. Instead, they can lead to unexpected, sudden shifts in the entire system. E.g., a slight increase in pollution (environmental) can have an unduly significant impact on public health (social) or fishery

output (economic).

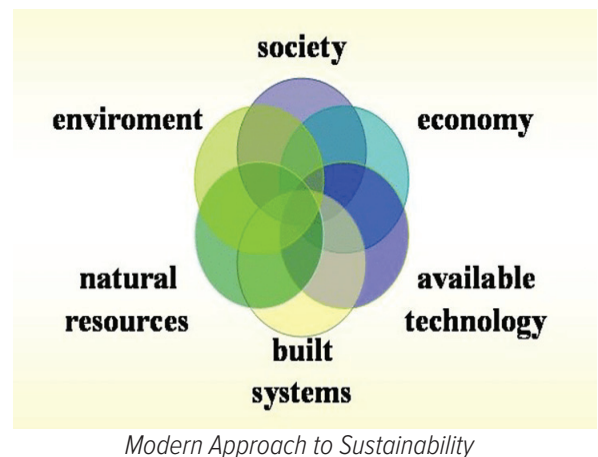
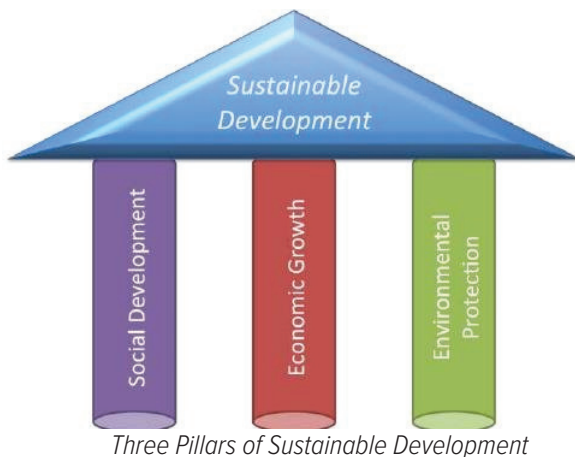
Adaptive cycles:

Complex systems, including coupled human-environment systems, undergo continuous change in predictable four-phase cycles: growth, conservation, release, and reorganization. A rigid approach can keep a system in a fragile “conservation” phase, the dynamic model, however, embraces the creative destruction of the “release” phase to allow innovation and reorganization.

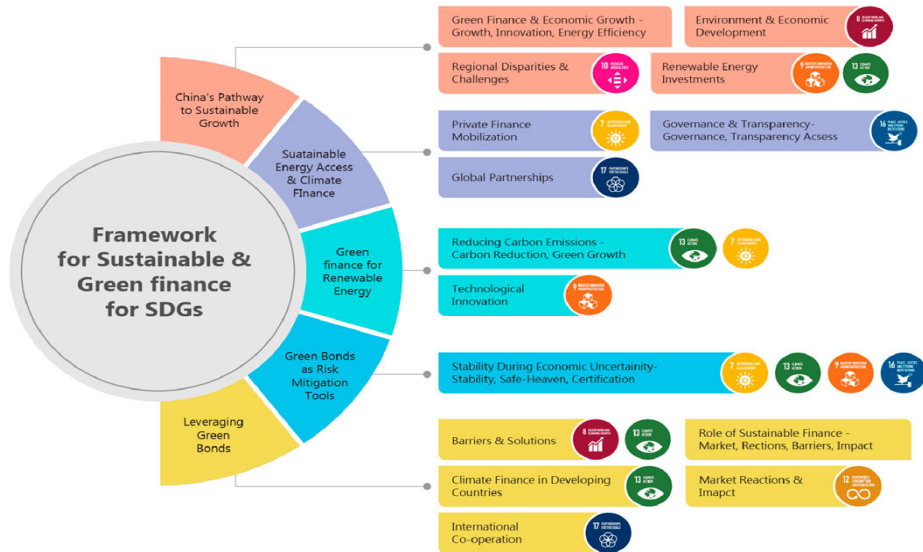
Emergent properties:

Emergent properties in complex systems are not just the sum of individual parts; they represent new qualities or behaviours that arise from the interactions between those parts. For instance, the overall reduction in car usage from a rise in ridesharing, which wasn’t centrally designed but rather emerged from technological advancements and consumer values, leads to decreased emissions and improved urban environments.

Three Pillar Model of Sustainability vis-à-vis Modern Approach to Sustainability



Sustainable Development & Sustainable Finance There exists a profound and symbiotic relationship between sustainable development & sustainable finance. Sustainable finance functions as a critical enabler, providing the necessary financial mechanisms and resources to support, advance and operationalize sustainable development initiatives. It encompasses financial practices that integrate ESG considerations to advance long-term sustainable development. Sustainable finance aims to balance profitability with long-term ecological and social responsibility, fostering resilient markets and responsible capital allocation. Few instances of sustainable finance initiatives are as below:



[Image source: frontiersin.org/journals]

Few instances of sustainable finance initiatives are as below:

- ✳ Sustainable investment funds
- ✳ Social venture capital
- ✳ Public institutional equity investing
- ✳ Green bonds
- ✳ Green loans
- ✳ Climate financing
- ✳ Biodiversity conservation
- ✳ Fostering technological innovation
- ✳ Sustainable Banking

Below is a comprehensive table summarizing the social, economic, and environmental contributions of sustainable finance:

Dimension	Key Contributions	Examples / Focus Areas
Social	Addresses vital societal challenges	i. Poverty alleviation ii. Eradicating hunger iii. Fostering sustainable communities & housing iv. Promoting gender equality
Economic	Incentivizes inclusive and resilient economic growth	i. Provision of quality education ii. Creation of decent work opportunities iii. Construction of resilient infrastructure iv. Advancement of inclusive industrialization



Dimension	Key Contributions	Examples / Focus Areas
Environmental	Plays a pivotal role in protecting and restoring the environment	i. Prioritizing climate action ii. Mitigating adverse effects of climate change iii. Combating biodiversity loss (preservation of marine ecosystems, promotion of sustainability across natural systems)

Sustainable investments often outperform traditional ones:

- ✳ In a study conducted by Fidelity Investments, the famous financial services company that helps customers plan and achieve their financial goals, found that half of ESG investments outperformed the market (1970–2014).
- ✳ The world’s biggest asset management company BlackRock reported 80% of ESG funds outperformed non-ESG portfolios during COVID-19.
- ✳ Chicago based multinational financial services firm Morningstar showed ESG-rated companies had stronger share price growth and higher dividends.

[Sources: unglobalcompact.org; knowledge.unwomen.org; onlinelibrary.wiley.com]

The Far-Reaching Impact of Sustainable Finance on Banking Institutions, Investment Strategies, and Policy Formulation:

Banking Sector -

Sustainability in banking means integrating environmental, social, and governance (ESG) considerations into all aspects of banking operations and strategy. Sustainable banks actively assess and mitigate environmental risks, promote financial inclusion and foster long-term value for stakeholders while supporting the transition to a low-carbon, resilient economy.

Investment Sector -

Sustainability in investment refers to the practice of making investment decisions that ensures ESG factors, aiming to generate long-term financial returns while advancing positive environmental and social outcomes. Sustainable finance in this context channels capital into projects and companies that contribute to climate action, resource efficiency, social equity, good governance etc. Investors seek to balance profitability with responsibility, ensuring that their portfolios support sustainable economic activities and do not deplete natural resources or harm communities.

Policy Makers -

Sustainability in finance for policy makers involves creating regulatory frameworks, taxonomies, and incentives that guide financial flows toward sustainable development goals. Policy makers play a critical role in defining sustainability criteria, enabling innovation, and safeguarding the interests of both current and future generations through responsible financial governance.

Green Finance vs. Sustainable Finance: a comparative perspective

Green finance and sustainable finance represent distinct yet complementary financial approaches that facilitate the transition to a low-carbon and sustainable economy, addressing pressing global challenges such as climate change and emerging environmental risks. Green finance is primarily concerned with mobilizing capital for projects and initiatives that yield positive environmental outcomes, including the reduction of greenhouse gas emissions and the promotion of renewable energy sources. In contrast, sustainable finance encompasses a broader framework, integrating environmental, social, and governance (ESG) criteria into investment decisions to foster long-term economic growth, social progress, and environmental stewardship. Both green finance and sustainable finance aim to drive transformative change by channelling financial resources toward activities that advance sustainability and mitigate adverse environmental impacts.

Example of green finance initiatives are as follows:

- ✳ Renewable energy and energy efficiency
- ✳ Pollution control
- ✳ Biodiversity conservation
- ✳ Circular economy initiatives
- ✳ Imperishable/renewable use of natural resources and land

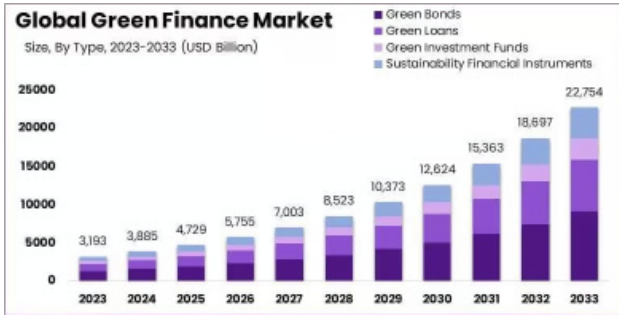


Image source: market.us]

Landscape of green finance revolution in India

Financial institutions form the cornerstone of India’s green finance ecosystem by systematically mobilizing capital for environmentally beneficial and sustainable initiatives. These entities include commercial banks, non-banking financial companies (NBFCs), development finance institutions (DFIs), and emerging, green-focused fund

Key Responsibilities:

- ✦ **Capital Mobilization:** They actively channel financial resources toward investments that deliver positive environmental impacts, such as renewable energy, waste management, and climate resilience projects.
- ✦ **Risk Assessment:** Institutions implement robust environmental risk assessment protocols to ensure financial products align with sustainability objectives.

✦ **Product Innovation:** These organizations regularly introduce and refine green finance offerings in response to evolving environmental and market priorities

Furthermore, the emergence of sector-specific green funds and green investment platforms has expanded the role of financial institutions beyond traditional banking functions. Their commitment to innovation—such as the rollout of green bonds and carbon trading solutions—ensures a continuous alignment of capital flows with national and international sustainability goals.

The growing repertoire of financial instruments in India’s green finance ecosystem reflects a dynamic response to stakeholder demands and regulatory imperatives. Green bonds, for example, represent a pivotal innovation by enabling large-scale mobilization of capital for clean energy, transport, and infrastructure projects—often at concessional rates and with high transparency requirements. These bonds have gained notable traction following favourable policy signals and incentives from the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI), culminating in the issuance of sovereign green bonds starting in 2023.

Additionally, the proliferation of sustainable investment funds—often leveraging tax, regulatory, or reputational advantages—has further energized the sector.

Key components and functions shaping India’s green finance ecosystem

Key Functions	Examples/Mechanisms
Mobilize and allocate capital; risk assessing; product innovation	SBI’s green loans, SIDBI’s clean energy funds
Provide funding and investment sources for green projects; manage risk	Green bonds, green loans, green mutual funds, ESG instruments
Implement environmentally sustainable and/or profitable solutions	Solar parks, urban mass transit, waste-to-energy initiatives
Set rules, enable incentives, enforce standards, collaborate across sectors	India’s Climate Finance Taxonomy, sovereign bonds, state policies



Role of a supportive policy environment to bloom Sustainable Finance:

A supportive policy environment is comprised of a mixture of regulations, legislative mechanisms, guidelines and incentive structures. This is so crucial for the success of sustainability mission that it is established at both the national and state levels in India. Its overarching aim is to facilitate, regulate and accelerate the deployment of green finance and the realization of sustainable development goals.

Core Elements:

A. Regulations and Standards:

Regulatory authorities, including the RBI, SEBI, and Ministry of Finance, define and prescribe standards for green taxonomy, eligibility of projects, prudential norms, and mandatory climate-related disclosures.

B. Incentive Mechanisms:

Financial and fiscal incentives—such as tax breaks, soft loans, priority lending status, interest subventions, capital subsidies, and viability gap funding—encourage both mainstream and niche actors to commit resources to green sectors.

C. Guidelines and Frameworks:

The government issues operational guidelines for integrating green finance within broader economic and development planning.

D. Collaboration and Capacity Building:

Policy initiatives increasingly emphasize knowledge dissemination, capacity building, cross-stakeholder partnerships, and data infrastructure to support evidence-based green financing decisions.

At the national level, major policy milestones include the launch of India's Climate Finance Taxonomy (informally released in 2024), the push for ESG disclosures in top-listed companies, the articulation of India's Nationally Determined Contributions (NDCs) under the Paris Agreement, and the official rollout of sovereign green bonds in various tranches from 2023 onwards.

State governments, meanwhile, complement federal initiatives with sector-specific regulations, innovative green financing schemes, and localized incentive approaches. West Bengal, for example, has pioneered performance-linked incentives for clean manufacturing, while states such as Gujarat and Tamil Nadu have established dedicated renewable energy parks and circular economy taskforces¹⁷.

Case Studies of Leading Institutions in India

I. NABARD

- ✳ Pioneered the Self-Help Group Bank Linkage Programme, now the world's largest microfinance scheme.
- ✳ Runs multiple ESG-focused programs: Climate Change Fund, Tribal Development Fund, Watershed Development, etc.

II. SIDBI

- ✳ Focuses on MSMEs with initiatives like the Samridhi Fund and 4E Financing Scheme for energy efficiency.
- ✳ Issued Women's Livelihood Bonds to support female entrepreneurs.

III. RBL BANK

- ✳ Developed an Environmental and Social Management System for credit risk assessment.
- ✳ Expanded micro banking to reach 3.3 million underserved borrowers.
- ✳ Secured climate finance from IFC and Global Climate Partnership Fund for renewable energy and sustainable agriculture.

IV. Infosys

- ✳ Achieved carbon neutrality ahead of global targets and continues to integrate renewable energy and energy-efficient solutions across its operations.

V. ITC Limited

- ✳ Recognized for its extensive sustainability initiatives, including carbon-neutral operations, water stewardship, and eco-friendly supply chain practices.

VI. HDFC Bank

- ✳ Emphasizes financial inclusion and sustainable governance, reflecting its dedication to responsible business conduct.

VII. Wipro

- ✳ Has made significant strides in reducing greenhouse gas emissions and advancing ESG initiatives throughout its corporate strategy.

The 2030 Agenda's 17 sustainable development goals guide a universal, people-centred push to "leave no one behind," with NITI Aayog and Ministry of Statistics and Programme Implementation coordinating national planning and states driving local delivery. The fortunes of the finance sector ebb and flow like the tides, inseparably linked to the rhythms of the broader economy. Much like a great river, finance is



shaped by every twist and turn along its course—navigating risks that can erode its banks yet also discovering fertile deltas where new opportunities flourish in a sustainable world. The threat of stranded assets—fossil fuels left untouched to keep global warming below 2°C—looms like fallen trees blocking the current, while unpaid agricultural loans, rooted in dwindling natural resources, can dry up streams of prosperity. To thrive, financial institutions must cultivate their landscapes with environmental, social, and governance (ESG) principles, ensuring their growth is both resilient and responsible in this new era.

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Cross- Border Payments Using UPI –Linked Systems: Digital Public Infrastructure and the Reconfiguration of Global Payment Architecture



Dr. Jyotsna Haran

Presently visiting Professor in Mumbai

Abstract:

Cross-border payments remain one of the most inefficient and fragmented components of the global financial system, despite substantial advances in domestic payment technologies. High transaction costs, delayed settlement, limited transparency, and unequal access continue to characterize international retail payments, disproportionately affecting migrants, small and medium-sized enterprises, and digitally mediated workers. This paper examines the emergence of cross-border payments enabled through India's Unified Payments Interface (UPI) as a novel model of digital public infrastructure (DPI)-led financial integration. Drawing on institutional theory, platform economics, and comparative payment system analysis, the study adopts a qualitative analytical approach based on regulatory documents, policy reports, and evidence from early UPI-linked international corridors. The paper argues that UPI-linked cross-border payment systems represent a structural shift away from intermediary-centric and privately dominated global payment networks toward a federated, compliance-by-design architecture that reconciles efficiency, sovereignty, and inclusion. By embedding interoperability, regulatory oversight, and real-time settlement into publicly governed infrastructure, UPI challenges prevailing assumptions about the organization and governance of international payments. The study contributes to scholarship on global financial architecture, fintech governance, and digital public infrastructure by extending DPI theory into the cross-border domain and demonstrating how state-led infrastructural innovation can reshape international payments without relying on platform monopolization or regulatory arbitrage.

Keywords: Cross-border payments; Unified Payments Interface; Digital public infrastructure; Global financial governance; Payment systems; Remittances; Institutional innovation

1. Introduction

Cross-border payments constitute an essential backbone of the global economy. They enable international trade, migrant remittances, tourism, education, investment, and, increasingly, digitally mediated forms of work such as freelancing and platform-based services. Yet, despite their centrality, cross-border payment systems remain strikingly inefficient relative to domestic payment infrastructures. Retail cross-border transactions are often slow, costly, opaque, and exclusionary, relying on institutional arrangements that have changed little over several decades (Bech & Hancock, 2020).

This inefficiency is particularly paradoxical in an era marked by rapid digital transformation. Over the past decade, many countries have implemented instant payment systems that allow real-time, low-cost, and mobile-first domestic transactions. These systems have fundamentally altered how individuals and businesses transact within national borders. However, similar gains have not been realized in the cross-border domain. Instead, international payments continue to rely predominantly on correspondent banking networks supported by the SWIFT messaging system, which facilitates communication but does not itself settle transactions (BIS, 2021).

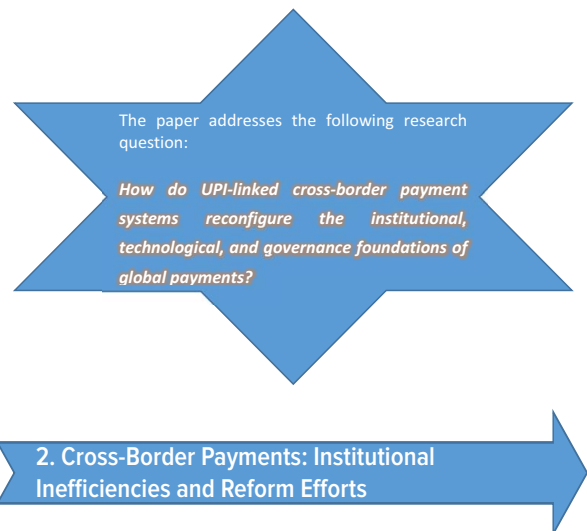
The economic and social consequences of this gap are substantial. Migrant workers sending remittances face high fees and unfavorable exchange rates; small and medium-sized enterprises (SMEs) experience liquidity constraints due to delayed settlement; and individuals participating in global digital labor markets encounter barriers to receiving timely and affordable payments (World Bank, 2023). Recognizing these challenges, international bodies such as the G20, the Financial Stability Board (FSB), and the Bank for International Settlements (BIS) have repeatedly emphasized the need to enhance the speed, cost-efficiency, transparency, and inclusiveness of cross-border payments (FSB, 2020; BIS, 2023).

Despite these initiatives, progress has been incremental rather than transformative. Most reform efforts focus on improving existing infrastructures—through standardization, extended operating hours, or enhanced messaging—rather than rethinking the underlying architecture of cross-border payments. This paper argues that such incrementalism reflects a deeper reluctance to challenge entrenched institutional arrangements and power structures in global finance.

Against this backdrop, the emergence of cross-border payments enabled through India's Unified Payments Interface (UPI) represents a significant and underexplored

development. Originally designed as a domestic real-time payment system, UPI has transformed India's retail payments landscape by enabling interoperable, low-cost, and ubiquitous digital transactions. More recently, India has begun extending UPI beyond its borders through bilateral and multilateral linkages with foreign instant payment systems and through international acceptance of UPI-based payments.

This paper advances the central argument that UPI-linked cross-border payment systems constitute a structural innovation in global financial architecture rather than a marginal technological upgrade. Unlike privately owned global payment networks or fintech platforms, UPI-linked systems are grounded in digital public infrastructure (DPI), characterized by public governance, interoperability, and regulatory embedding. By extending DPI into the cross-border domain, UPI introduces a federated model of international payments that reconciles efficiency with sovereignty and innovation with compliance.



2.1 The Correspondent Banking Paradigm

Cross-border payments have historically been organized through correspondent banking relationships, in which banks maintain accounts with foreign counterparts to facilitate international transfers. While this system enables global reach, it is inherently complex and costly. Payments often pass through multiple correspondent banks, each adding fees, compliance checks, and settlement delays (Bech & Hancock, 2020).

The SWIFT (Society for Worldwide Interbank Financial Telecommunications) network plays a central role by providing standardized messaging, but it does not move



funds itself. Settlement occurs through correspondent accounts, requiring pre-funded liquidity and sequential processing across jurisdictions. This structure generates opacity, as senders and recipients often lack visibility into fees, exchange rates, and settlement timelines (BIS, 2021).

2.2 Compliance Costs and De-risking

Over the past two decades, rising regulatory expectations related to anti-money laundering (AML), counter-terrorist financing (CFT), and sanctions compliance have increased the cost of maintaining correspondent banking relationships. Many banks, particularly in advanced economies, have responded by reducing or terminating relationships perceived as high risk, a phenomenon known as de-risking (World Bank, 2023). This has disproportionately affected developing countries and smaller financial institutions, exacerbating financial exclusion.

2.3 Global Policy Initiatives

International policy initiatives have sought to address these challenges. The G20 Roadmap for Enhancing Cross-Border Payments identifies four priority areas: cost, speed, transparency, and access (FSB, 2020). However, proposed solutions—such as harmonizing standards or improving existing infrastructures—largely preserve the correspondent banking paradigm. As a result, structural inefficiencies persist.

3. FinTech, BigTech, and the Limits of Private-Led Disruption

In response to the limitations of traditional systems, fintech firms and technology companies have proposed alternative payment rails, including blockchain-based systems, stablecoins, and proprietary digital wallets. These innovations promise faster settlement and lower costs by bypassing traditional intermediaries (Arner et al., 2020).

However, scholarly assessments of fintech-led disruption remain cautious. While such systems may reduce friction in specific use cases, they raise significant concerns related to governance, consumer protection, data privacy, monetary sovereignty, and systemic risk (Gabor & Brooks, 2017; Zetzsche et al., 2020). Moreover, many fintech solutions operate at the margins of the regulated financial system and struggle to achieve scale without regulatory endorsement.

BigTech payment platforms present a different challenge. While they can leverage vast user bases and technological

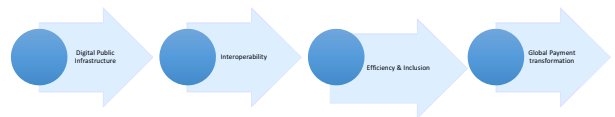
capabilities, they often reinforce platform monopolization and raise concerns about market power and regulatory capture (Parker et al., 2016). Consequently, private-led solutions have not displaced incumbent global payment infrastructures.

4. Digital Public Infrastructure as an Alternative Paradigm

4.1 Conceptualizing Digital Public Infrastructure

Digital public infrastructure refers to foundational digital systems that are publicly governed, interoperable, and designed to enable private innovation while serving public objectives (Mazzucato, 2021; Gelb & Mukherjee, 2020). Examples include digital identity systems, payment infrastructures, and data-sharing frameworks.

✳ UPI exemplifies this paradigm in the payments domain. It is not a consumer-facing application but a protocol layer that allows banks and payment service providers to offer interoperable services. Governance is shared among public institutions, including the Reserve Bank of India and the National Payments Corporation of India (NPCI).



4.2 Extending DPI Beyond Borders

Most existing research on DPI focuses on domestic applications. The extension of DPI into cross-border contexts raises novel theoretical and practical questions. How can interoperability be achieved without centralization? How can regulatory sovereignty be preserved while enabling cross-border integration? UPI-linked cross-border payments offer an empirical context to examine these questions.

5. Theoretical Framework

This study integrates institutional theory and platform economics to analyze UPI-linked cross-border payments.

From an institutional perspective, payment systems are governance structures that shape incentives, distribute power, and encode regulatory priorities (North, 1990). Traditional cross-border systems privilege large banks with



access to correspondent networks. UPI-linked systems reconfigure these arrangements by embedding compliance and interoperability into system design.

From a platform economics perspective, UPI functions as an open platform with mandated interoperability. When extended internationally, this logic produces a federated architecture—a network of national systems linked through shared standards—rather than a centralized global platform (Parker et al., 2016).

6. Methodology

The study adopts a qualitative, interpretive research design appropriate for examining emergent financial infrastructures. Data sources include regulatory documents from the Reserve Bank of India, NPCI publications, and reports by international organizations such as the BIS, FSB, and World Bank. Evidence from early UPI-linked corridors, particularly the India–Singapore UPI–Pay Now linkage, is used to contextualize the analysis. A thematic analysis approach was employed to identify patterns related to architecture, governance, compliance, and economic impact (Braun & Clarke, 2006).

7. Architecture and Governance of UPI-Linked Cross-Border Payments

UPI-linked cross-border payments operate through interoperability between domestic instant payment systems.

Transactions are initiated through familiar mobile interfaces, authenticated using standardized mechanisms, and settled through regulated banking channels that handle foreign exchange conversion.

Governance is distributed among NPCI International, participating banks, foreign payment authorities, and central banks. This shared governance model preserves national sovereignty while enabling cross-border interoperability. Importantly, regulatory compliance—covering AML/CFT, foreign exchange rules, and consumer protection—is embedded into transaction flows, exemplifying a compliance-by-design approach (Zetzsche et al., 2020).

8. Economic, Developmental, and Strategic Implications

8.1 Remittances and Financial Inclusion

India is the world's largest recipient of remittances. Even modest reductions in transaction costs generate significant welfare gains (World Bank, 2023). Faster settlement improves household liquidity, while lower fees increase effective income for recipients.

8.2 SMEs and Digital Labor

UPI-linked cross-border payments enhance liquidity and market access for SMEs and digital workers. By reducing payment frictions, these systems facilitate participation in global digital markets, particularly for firms and workers in emerging economies.



8.3 Payments as Strategic Infrastructure

Payment systems increasingly function as strategic assets in a fragmented geopolitical environment. By promoting a federated and interoperable model, UPI-linked systems offer an alternative to centralized, Western-dominated infrastructures, contributing to a more multipolar global financial order.

9. Discussion and Contributions

This paper makes three principal contributions.

First, it extends digital public infrastructure theory into the cross-border domain.

Second, it challenges dominant narratives that frame payment innovation as either incremental reform or private disruption.

Third, it provides policy-relevant insights for regulators seeking to modernize cross-border payments without sacrificing sovereignty or stability.

10. Conclusion

UPI-linked cross-border payment systems represent a reconfiguration of global payment architecture rather than a marginal improvement. By extending digital public infrastructure beyond national borders, UPI challenges entrenched assumptions about how international payments must function. Its federated, compliance-by-design model offers a scalable, inclusive, and institutionally grounded alternative to existing systems. As global demand for faster and cheaper cross-border payments intensifies, the UPI experience offers valuable lessons for the future of global finance.

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India Equity Outlook



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Abstract:

India's equity markets entered 2026 amid weak sentiment, foreign outflows, tariff concerns, and valuation corrections, leading to recent underperformance. However, improving consumption demand, strong government capex, and accelerating domestic manufacturing indicate a revival in earnings momentum. Valuations in mid- and small-cap stocks have normalized, creating selective long-term investment opportunities. Supportive macroeconomic conditions, policy reforms, and expected liquidity recovery further strengthen the outlook. Despite near-term risks, India remains well-positioned for robust equity returns over the next 2–3 years through disciplined investing.

As I write about market outlook for 2026 and beyond, Indian equity market witnessed **it's worst weekly fall of about 2.5% as on 9th Jan.** Investment sentiment is weak and fears loom large on potential US tariff escalations and fluid geopolitical situation. India market has underperformed relatively when compared to other global markets. Retail investors have seen flat to negative returns over the last 14-16 months after a high return period post covid. And there is sustained foreign portfolio outflows and weak rupee.

The declines in equity market in India has been led by several reasons that include US tariffs, geopolitics, excessive valuations across a majority of mid-small cap segment, supply of IPO paper that diverted a portion of secondary market liquidity and global capital shifting towards AI led markets.

So what is in store going forward?

Earnings Momentum Is Returning

High-frequency indicators across consumption categories suggest a clear improvement in underlying demand:

- ✳ **Automobiles:** 2-wheelers, CVs, tractors, and EVs showing high single-to low double-digit volume growth
- ✳ **Discretionary spending:** Strong recovery in jewellery retail, travel, liquor sales, and consumer durables
- ✳ **Credit growth:** Retail credit expanding at ~12–16%,

aided by lower interest rates and improved liquidity transmission

Festive demand, income tax relief, GST rationalisation, and easing financial conditions are supporting this recovery.

Government Capex Continues to Anchor Growth

India's public capex cycle remains firmly intact with sustained spending and budget allocation across **defence, roads, railways, ports, renewable energy and airports.** Infrastructure companies have reported **order books of 2.5–4x annual revenues.** Margin recovery is aided by softer input and logistics costs.

This capex cycle is now broad-based and structurally embedded, providing multi-year earnings visibility.

Manufacturing Transition Is Gaining Scale

The shift toward domestic manufacturing is moving from policy intent to execution. Electronics manufacturing has emerged as a standout, with mobile phone exports crossing **USD 15–18 billion.** India has become one of the world's largest exporters of assembled smartphones. Momentum is building across auto components, defense manufacturing, EMS (electronics manufacturing), semiconductors and specialty chemicals.

This transition enhances export competitiveness while reducing import dependence.



Valuations – correction from excess

After nearly 16 months of correction, valuations across most mid- and small-cap stocks have normalized. Many quality businesses now trade 15–40% below peak multiples of September 2024. Balance sheets are stronger, leverage is lower, and cash flows are improving. Risk-reward has meaningfully improved for long-term investors.

The market has shifted from speculative excess to offering selective accumulation. It is unwise to categorise all mid-small companies as universally expensive given a large universe of listed companies – it is better to be selective and adopt a bottom-up approach to investing.

Policy and Macro Tailwinds

India's macro framework remains supportive as Inflation remains well-contained relative to global peers. Interest rates and liquidity conditions are turning accommodative given series of recent policy initiatives from the RBI. Structural reforms in GST, credit delivery, and financial inclusion continue to compound benefits.

India retains visibility of 6–7% real GDP growth, positioning it as the fastest-growing large economy globally.

Key Risks to Monitor

In the current environment, US tariff uncertainty still remains with potential negative impact on labor intensive sectors like apparel, seafood, and gems & jewellery exports. Besides, while recent rupee depreciation has been sharp, we expect it to stabilise to ~2–3% annual depreciation, supported by India's relatively lower inflation differential v/s US inflation.

Key Triggers for CY26

1. Mean Reversion

Historically, Indian equities have rebounded strongly after periods of relative underperformance. With valuation premiums reverting toward long-term averages, conditions are favorable for a catch-up phase.

2. Liquidity Cycle Turn

Selling pressure is expected to ease through CY26. FII

could turn buyers in FY27 as earnings growth returns to double digits and global capital reallocates away from concentrated US exposure in AI stocks.

3. Corporate Earnings Revival

Reforms and capex initiatives from CY25 lay the groundwork for a broad-based earnings recovery, initially led by large caps, with wider participation as sentiment stabilises.

Sectoral Positioning

We remain constructive on domestic-facing sectors:

Capital goods, logistics, infrastructure, cement – strong order visibility and margin tailwinds along-with manufacturing impetus.

Banks and financials – improving credit growth, lower credit costs, reasonable valuations

Consumption – selective, high-quality franchises at attractive valuations

The divergence between large and mid-small cap indices should be seen as a healthy reset rather than a structural concern.

Why We Remain Constructive on India Equity Markets

India offers **diversified structural growth** across consumption, manufacturing, financial services, and infrastructure—unlike markets driven by a single AI tech theme. After a year of significant foreign outflows, India is now positioned for renewed global interest as valuations normalise and earnings momentum strengthens.

We expect **robust earnings growth over the next 2–3 years**, with scope for selective multiple re-rating. Periodic market volatility should be viewed as an **opportunity to increase allocation in equities via professionally run Mutual Funds/ PMS / AIFs**.

Keep the faith and position for much better times of solid returns in India equity markets over the next 2 to 3 years. In the current environment, it is pertinent to note that patience and discipline remain the cornerstones of long-term wealth creation.





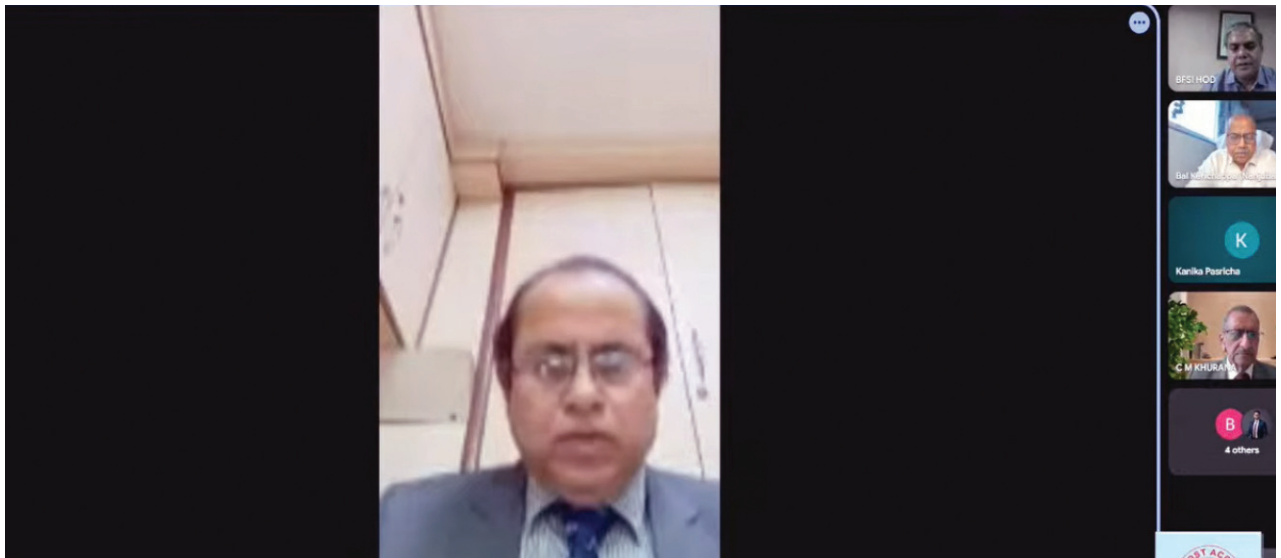
**WEBINARS
ORGANIZED
BY
THE BFSIB**

Webinar on “Impact of Budget 2026-27 on the BFSI Sector”

10th February 2026



Ms. Kanika Pasricha, Chief Economist, Union Bank of India



CMA Chittaranjan Chattopadhyay, Chairman, BFSI Board, ICMAI

The BFSI Board has organised a focused webinar aimed at knowledge dissemination and capacity building for professionals across banking, financial services and insurance. Convened to decode the implications of the Union Budget 2026-27 for the BFSI ecosystem and the common citizen, the forum assembled domain experts – **Ms. Kanika Pasricha (Chief Economist, Union Bank of India), CMA Dr. K Balu (former CGM, Bank of India),**

Sri C M Khurana (former CGM & CFO, Oriental Bank of Commerce; IFCL) and Ms. Ritika Roy (Founding Member, Fin Labs) – to present macro, sectoral and practitioner perspectives. The session opened with welcoming the chief guest, speakers and participants by **CMA Dibbendu Roy, HOD, BFSIB** and with the Institute anthem and a succinct outline of objectives: translate headline measures into operational impact for institutions, markets, MSMEs and fintech



participants.

The CMA Chittaranjan Chattopadhyay, chairman of BFSIB welcomed chief guest, speakers and participants. The Chairman's welcome framed the Budget as a medium-term, reform-oriented exercise rather than a populist one, noting several measures with direct BFSI relevance: a **10% increase in capital expenditure to ₹ 12.2 lakh crore, creation of a ₹ 10,000 crore MSME Growth Fund, an infrastructure risk guarantee fund, expansion of the insurance FDI cap from 74% to 100%, and a set of capital-market reforms** including market-making frameworks and new instruments. He flagged implementation risks – notably higher government borrowing and its pressure on bond yields – and invited participants to interrogate operational consequences.

Ms. Kanika Pasricha – Macro & sectoral reading; provided the principal macro-financial analysis. She characterised the Budget as **“Reforms over Rhetoric”**, with a fiscal deficit target of **4.3% of GDP** and emphasis on productive capex rather than consumption. Key sectoral thrusts include manufacturing clusters (biopharma, semiconductors), extended tax holidays for GIFT City and data centres, and capital-market deepening measures such as municipal and corporate bond initiatives. **Ms. Pasricha** highlighted India's favourable growth dynamics – positioning as a fast-growing large economy – while cautioning that **monetary - fiscal coordination** will be critical to manage liquidity and yields as state borrowing and capex ambitions expand.

The discussion on **infrastructure financing** **Sri C M Khurana** examined allocations and execution imperatives. With capex now at **₹ 12.21 lakh crore (~3.1% of GDP)**, the budget expands eligible infrastructure to include **data centres and energy storage**, and provides concessional funding routes (ECBs, tax incentives) and targeted instruments (HAM, municipal bond subsidies). He emphasised that **private financing, DFIs, banks, NBFCs and bond markets** must bridge the funding gap and warned of execution bottlenecks, coordination failures and limited investment readiness at local government levels. The proposed **Infrastructure Risk Guarantee Fund** and reforms to PFC/REC are intended to mitigate construction and offtake risks and crowd in private capital.

From a **banking and fiscal prudence perspective**, **CMA Dr. Balu** commended the Budget's conservative

assumptions and intergenerational orientation. He underscored the importance of the newly constituted **banking sector high-level committee** and reiterated that MSMEs remain central to equitable growth. **CMA Dr. Balu** noted that while the Budget supports structural stability (debt-to-GDP reduction targets), banks will face profitability and transmission challenges that require calibrated regulatory and institutional responses.

The fintech perspective from **Ms. Ritika Roy** underlined that fintech is now mission-critical national infrastructure. She outlined budget supports – notably a **₹ 2,000 crore subsidy for UPI/RuPay transactions** and extended tax **holidays for data centres to 2047** – while cautioning that **zero MDR** and limited subsidy quantum compel fintech firms to pursue scalable unit economics, disciplined cost accounting and governance. She positioned cost accountants and CMAs as essential architects for sustainable fintech models, responsible for modelling subsidies, depreciation, pricing and break-even analysis.

The panel assessed likely short- and medium-term effects: **immediate expansion of MSME credit flow**, improved loan processing via **single-window composite facilities**, and enhanced rehabilitation options for stressed MSMEs; medium-term gains hinge on finalisation of capital-norm reforms, establishment of SROs for NBFC oversight, and bond-market deepening. Notwithstanding positives, the session repeatedly flagged **execution risk, uneven pass-through of cost benefits, under-registration of micro enterprises (~2 crore unregistered) and a persistent unmet credit demand estimated at ₹ 25–30 lakh crore.**

The interactive Q&A clarified operational queries on exchange-rate volatility, private sector roles in infrastructure, and fintech reach into tier-2/3 markets. The organisers concluded with the release of three Institute publications and an encouragement to leverage ongoing certificate courses for capacity building.

The webinar concluded with closing remarks and a formal vote of thanks by CMA Rup Biswas, who expressed appreciation to the Chief Guest, participants, and organising team. He noted that the session successfully and CMAs and BFSI professionals are central to this translation – providing advisory, cost governance, underwriting standards, project readiness assessments and fintech unit-economics modelling that convert policy intent into sustainable outcomes

Webinar on “Certificate Course on Project Financing - A Broad Overview”

28th February 2026

The webinar on “Certificate Course on Project Financing - A Broad Overview” was organised as part of the BFSI knowledge dissemination initiative, aimed at strengthening professional competencies in infrastructure and project finance. The session commenced with formal proceedings and introduced the eminent faculty, **Shri C M Khurana**, a distinguished expert with over four decades of experience in banking, corporate credit, and infrastructure financing, having served as former CFO of Oriental Bank of Commerce and senior leadership at India Infrastructure Finance Company Limited.

The session provided a comprehensive overview of the Certificate Course, designed as a **30-hour structured programme delivered over two months on weekends**, targeting professionals from banking, NBFCs, financial institutions, CMAs, and infrastructure stakeholders. The course aims to build deep expertise in **project finance structuring, credit appraisal, risk assessment, funding mechanisms, regulatory frameworks, and ESG integration**, with a strong emphasis on practical learning through case studies and real-life project scenarios.

The speaker highlighted the growing significance of infrastructure financing in India’s economic landscape, supported by **substantial capital expenditure exceeding ₹12 lakh crore, and emphasized its multiplier effect on economic growth through strong forward and backward linkages**. A detailed explanation of project finance fundamentals was presented, underscoring its **cash flow-based and non-recourse nature**, typically executed through a **Special Purpose Vehicle (SPV)** to ring-fence project risks and financials.

Key concepts discussed included the classification of infrastructure sectors such as **transport, energy, water, communication, and social infrastructure**, along with emerging areas like **data centres and energy storage systems**. The session elaborated on **Public-Private Partnership (PPP) models, including BOT, HAM, OMT, and VGF**, highlighting their role in risk-sharing, efficient project execution, and mobilising private capital. Critical contractual and financial mechanisms such as **concession agreements, escrow arrangements, and waterfall cash flow structures** were also explained.

A significant focus was placed on **multi-dimensional credit appraisal**, covering management, technical, financial, marketing, and economic aspects. The importance of accurate project costing and financial structuring was emphasised, along with key financial metrics such as **Debt Service Coverage Ratio (DSCR), Internal Rate of Return (IRR), and Net Present Value (NPV)**, which form the backbone of project viability assessment. The session further addressed **risk identification and mitigation**, including construction, regulatory, operational, and revenue risks, supported by sensitivity analysis and structured allocation of risks among stakeholders.

The regulatory framework governing project finance, particularly **RBI guidelines**, was discussed in detail, including concepts such as **Date of Commencement of Commercial Operations (DCCO)** and early identification of stressed assets. The speaker also highlighted the importance of **continuous project monitoring, restructuring mechanisms, and early warning systems** to prevent cost and time overruns.

Emerging trends such as **alternate financing instruments like Infrastructure Investment Trusts (InvITs), bonds, and partial credit guarantee schemes** were introduced, alongside the growing relevance of **ESG and sustainable finance**, including green bonds and climate-aligned investments. **The integration of technology and AI in project management and risk assessment** was also recognised as a transformative development.

The course was positioned as highly relevant for CMAs, enabling them to play a strategic role across the project lifecycle through **financial modelling, cost optimisation, project appraisal, monitoring, and restructuring**, thereby enhancing their value proposition in the infrastructure financing ecosystem.

The webinar concluded with an interactive Q&A session addressing professional roles and technological advancements, followed by a formal vote of thanks appreciating the speaker’s insightful deliberations. The session effectively underscored the importance of capacity building in project finance, aligning professional development with India’s infrastructure growth agenda and the broader vision of **Viksit Bharat 2047**.

Webinar on “Electric Vehicles - Emerging Business and Financing Model”

18th March 2026



Shri Arun Krishnan, Program Director-Climate Finance, WRI India



Ms. Sharvari Patki, Program Head - Electric Mobility, WRI India

The webinar on “Electric Vehicles - Emerging Business and Financing Model”, organised by the BFSI Board in association with WRI India, provided a comprehensive and forward-looking perspective on the evolving ecosystem of electric mobility, with a particular focus on commercial vehicles, financing frameworks, and infrastructure development. The session brought together domain experts including Arun Krishna S., Sheroari Patki, and specialists from

the Centre of Excellence for Zero Emission Trucking (COZET), IIT Madras, who shared deep insights into the intersection of technology, policy, and finance.

The discussion commenced with an overview of India’s commercial vehicle landscape, highlighting the **highly fragmented trucking sector, where nearly 80% of fleet owners operate less than five vehicles, making financing and adoption dynamics uniquely**

challenging. It was noted that out of the annual sale of 3.5–4 lakh trucks, **20–30% are already economically viable for electrification based purely on cost economics**, indicating a strong near-term opportunity. The transition towards EVs is driven by policy push, **energy security concerns, and rising fuel costs**, supported by significant government incentives such as FAME schemes, PLI initiatives, GST benefits, and state EV policies collectively amounting to nearly **₹ 1 lakh crore support**.

A key highlight of the session was the evolving climate finance ecosystem, where instruments such as **Sovereign Green Bonds and RBI's Green Deposit Framework** are shaping funding flows into clean mobility. While green bonds have witnessed strong investor appetite, the session noted the need for deeper market participation and clearer taxonomy to scale financing. The financing landscape for EVs, particularly heavy-duty vehicles, remains complex due to **higher upfront costs (2–3 times diesel vehicles), lower loan-to-value ratios, and uncertainty in residual value**, although risks are increasingly mitigated through **OEM-backed long-term AMC contracts and battery warranties**.

The webinar provided a comparative analysis between ICE and EV vehicles, emphasizing that EVs **offer nearly 50% lower operating costs (₹ 15/km vs ₹ 30/km) and reduced maintenance expenses**, resulting in favourable total cost of ownership (TCO) over a **2–4-year horizon**, especially for **high-utilisation vehicles**. It was underscored that financial viability is usage-dependent, with EV adoption being most attractive where annual diesel expenditure exceeds ₹ 20–25 lakh per vehicle.

Significant attention was given to **charging infrastructure models**, where commercial EVs benefit from **predictable routes and depot-based captive charging systems**, reducing the complexity seen in passenger EV ecosystems. Innovations such as **battery swapping and optimized charging network design** are further enhancing operational feasibility.

The session also explored the **electric bus segment**

as a leading success model, driven by structured policy interventions, PPP frameworks, and demand aggregation strategies that have reduced costs and improved scalability. Initiatives such as the National Electric Bus Programme and Payment Security Mechanisms were highlighted as critical enablers for attracting private investment and ensuring financial sustainability.

From a financing perspective, emerging models such as **blended finance, leasing structures, credit guarantees, and demand aggregation mechanisms** are gaining traction to address the needs of small fleet operators. The discussion also emphasized the importance of **risk-sharing frameworks and policy-backed interventions** to overcome challenges related to residual value, credit risk, and infrastructure investment.

A key dimension of the webinar was the role of finance professionals, particularly CMAs, in enabling the EV transition. It was highlighted that professionals must **undertake robust cost-benefit analysis, evaluate cash flow implications, optimise capital structuring, and support sustainable financing decisions**, thereby acting as strategic advisors in the transition from conventional to electric mobility.

The session concluded with a forward-looking outlook, noting that while the **electric bus ecosystem is relatively mature**, the trucking segment is rapidly evolving with pilot projects, policy support, and technological advancements. The convergence of **policy incentives, declining battery costs, innovative financing models, and professional expertise is expected** to accelerate adoption, positioning electric mobility as a critical pillar in India's sustainable growth trajectory.

Overall, the webinar delivered a **holistic and data-driven understanding of EV business models and financing structures**, underscoring the transformative potential of electric mobility in reshaping India's transportation and financial ecosystem.



Webinar on “Credit Worthiness Check - The Conceptual Framework”

20th March 2026



CMA Sabyasachi Sengupta, Professor, XLRI - Xavier School of Management



CMA Chittaranjan Chattopadhyay, Chairman, BFSI Board, ICMAI

The webinar on “Credit Worthiness Check - The Conceptual Framework” was organised by the BFSI Board of the Institute of Cost Accountants of India, with a formal welcome hosting address delivered by CMA Rup Biswas. The session aimed to strengthen conceptual clarity and practical understanding of credit evaluation within the financial ecosystem. The programme commenced with the

institute's anthem, followed by CMA Chittaranjan Chattopadhyay, the Chairman's inaugural remarks highlighting the growing importance of **robust due diligence, disciplined credit appraisal, and adherence to regulatory expectations of RBI.**

The Chairman emphasised that credit is a **double-edged instrument**, capable of fostering growth when used prudently, but equally capable of creating systemic risks if misjudged. He underlined the need for lenders to assess borrowers beyond collateral and margins, focusing on **cash flow-based repayment capacity, behavioural patterns, and early warning signals.** The role of Cost and Management Accountants (CMAs) was also highlighted as **financial advisors and "wealth mentors"**, supporting responsible lending and borrowing practices.

The technical session was delivered by Professor Sabyasachi Sengupta of XLRI- Business school, who presented a structured and concept-driven framework for creditworthiness assessment. He began by identifying two critical errors in lending decisions: **denial of credit to deserving borrowers (Type I error) and granting credit to risky borrowers (Type II error)**, both of which carry significant financial implications. The objective of credit appraisal, therefore, is to minimise these errors through systematic evaluation.

At the core of the framework lies the assessment of two fundamental dimensions:

- ✱ Ability to Pay – the borrower's measurable financial capacity
- ✱ Intention to Pay – the borrower's willingness and integrity to honour obligations

Both aspects were emphasised as equally critical, forming the foundation of all credit appraisal models.

The speaker elaborated on the **Traditional Credit Analysis Model (5C Model)**, which evaluates borrowers across five parameters – Character, Capacity, Capital, Collateral, and Conditions. While capacity and capital represent financial strength, **character**

remains the most decisive factor, reflecting the borrower's intent and credit behaviour. The model integrates both qualitative and quantitative assessment, supported by financial statements, market references, and institutional experience.

Further, the session introduced the **Numerical Credit Scoring Model**, a more structured and data-driven approach. This model assigns weights (typically equal) to ability and intention parameters, converting financial ratios and behavioural indicators into scores. The aggregated score supports **objective decision-making** in loan sanctioning, pricing, repayment structuring, and monitoring intensity. The importance of **industry benchmarking, ratio analysis (DSCR, ROI, liquidity ratios), and scoring frameworks** was discussed in detail.

The session also highlighted practical aspects such as **credit appraisal for new entities based on projected financials, reliance on bank and vendor references, and the necessity of continuous monitoring and collateral verification.** The speaker acknowledged operational challenges in ensuring thorough due diligence amidst business pressures but stressed the need for strong governance and ethical practices.

The interactive Q&A session addressed key concerns including non-financial indicators of default, appraisal of start-ups without historical data, collateral revaluation practices, and monitoring mechanisms in volatile environments.

In conclusion, the webinar reinforced that **creditworthiness assessment is a comprehensive, multi-dimensional process** combining financial analysis, behavioural evaluation, and contextual understanding. Both traditional and numerical models play complementary roles in enhancing the quality of lending decisions. The session provided valuable insights for BFSI professionals and CMAs in strengthening **risk assessment frameworks, improving credit discipline, and contributing to a stable financial system.**

Webinar on “Impact of Global Uncertainty in International Trade”

27th March 2026



CMA Chittaranjan Chattopadhyay, Chairman, BFSI Board, ICMAI

The webinar on “Impact of Global Uncertainty in International Trade” was organised by the BFSI Board of the Institute of Cost Accountants of India, bringing together domain experts to deliberate on the evolving challenges in global trade. The session highlighted the increasing influence of **geopolitical tensions, supply chain disruptions, currency volatility, sanctions, and policy shifts** on international trade dynamics. The role of Cost and Management Accountants (CMAs) was emphasised as crucial in enabling risk assessment, cost management, and financial resilience.

In the opening remarks, the Chairman outlined the multi-dimensional impact of global uncertainty on key stakeholders. **Banks** are required to strengthen counterparty risk assessment and adopt cautious trade finance structures. **Businesses** must focus on diversification, hedging, and efficient working capital management, while **insurers** face rising claims, premium volatility, and reinsurance constraints. CMAs were positioned as strategic professionals contributing to **cost analysis, forex exposure management, compliance, and profitability protection**.

The technical deliberations by **CMA Nijay Gupta,**

Forex Expert, commenced with an in-depth analysis of **foreign exchange dynamics and macroeconomic indicators**. Key concerns included rising trade deficits, currency volatility, and dependence on foreign inflows. The discussion highlighted the importance of **RBI’s intervention in forex markets**, liquidity management, and balance of payments stability. Exporters were advised to actively adopt **hedging instruments such as forward contracts, futures, options, and pre-shipment credit (PCFC)** to mitigate currency risks. The session also underscored the need for improved transparency, realistic mark-to-market practices, and robust treasury risk management.

The impact of global uncertainty on the **insurance sector** was another major focus area. **CMA (Dr) P Siva Rama Prasad,** Former AGM of SBI deliberated Insurance plays a critical role in facilitating international trade by covering **marine, credit, and political risks**. However, geopolitical conflicts have led to increased **claims, higher premiums, exclusion of war risks, and pressure on reinsurance markets**. Strategic trade routes and shipping operations are increasingly exposed to risks, resulting in higher logistics costs and disruptions. The rising cost of insurance disproportionately affects SMEs, reducing

their competitiveness in global markets.

Further, By deliberation of CMA **Mrityunjay Acharjee** General Manager (Finance) Num Aligarh Refinery Ltd, the session explored the **reinsurance landscape**, highlighting its importance in risk-sharing and supporting large-scale trade exposures. Global uncertainties have led to **rate hardening, capacity constraints, and stricter underwriting norms**. Emerging risks such as cyber threats and infrastructure vulnerabilities are reshaping the insurance and reinsurance ecosystem. India, however, is emerging as a promising reinsurance hub due to regulatory support and growing market potential, offering new opportunities for industry stakeholders.

The webinar concluded with a synthesis of key insights,

emphasising the **interconnected nature of global trade, finance, and risk management systems**. It was highlighted that sustainable international trade in a volatile environment requires **integrated strategies involving hedging, insurance coverage, diversification, and regulatory compliance**. CMAs have a pivotal role in driving these strategies through **scenario analysis, cost optimisation, and financial planning**.

Overall, the session provided a comprehensive perspective on how global uncertainties are reshaping international trade and underscored the need for **proactive risk management, institutional resilience, and professional expertise** to navigate the evolving global economic landscape.





Brochures – Courses Offered By The BFSI Board



Brochure

Advance Certificate Course on **FinTech**

Banking, Financial Services and Insurance Board



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Behind every successful business decision, there is always a **CMA**



Advance Certificate Course on FinTech | The Institute of Cost Accountants of India



About The Institute

The Institute of Cost Accountants of India (ICMAI) is a statutory body set up under an Act of Parliament in the year 1959. The Institute as a part of its obligation, regulates the profession of Cost and Management Accountancy, enrolls students for its courses, provides coaching facilities to the students, organizes professional development programmes for the members and undertakes research programmes in the field of Cost and Management Accountancy. The Institute pursues the vision of cost competitiveness, cost management, efficient use of resources and structured approach to cost accounting as the key drivers of the profession. In today's world, the profession of conventional accounting and auditing has taken a back seat and cost and management accountants increasingly contributing towards the management of scarce resources like funds, land and apply strategic decisions. This has opened up further scope and tremendous opportunities for cost accountants in India and abroad.

International Affiliation

The Institute is a founder member of International Federation of Accountants (IFAC), Confederation of Asian and Pacific Accountants (CAPA) and South Asian Federation of Accountants (SAFA). The Institute is also an Associate Member of ASEAN Federation of Accountants (AFA) and member in the Council of International Integrated Reporting Council (IIRC), UK.

Institute's Network

Institute's headquarters is situated at New Delhi with another office at Kolkata. The Institute operates through four Regional Councils at Kolkata, Chennai, Delhi and Mumbai as well as through 112 Chapters situated in India, 11 Overseas Centres abroad, 2 Centres of Excellence, 61 CMA Support Centres and 401 Recognized Oral Coaching Centres.

Institute's Strength

The Institute is the largest Cost & Management Accounting body in the World, having a large base of about 1,00,000 CMAs either in practice or in employment and around 5,00,000 students pursuing the CMA Course.

Vision Statement

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Mission Statement

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Course Objective

The Banking, Financial Services and Insurance Board is pleased to offer "Advance Certificate Course on FinTech". It is pertinent to mention that there is a significant demand for FinTech-qualified individuals in GIFT City, Gandhinagar, and Ahmedabad. India's inaugural International Financial Services Centre (IFSC) at GIFT City offers Indian corporates expanded access to Global Financial Markets. Entities Established within the IFSC also enjoy numerous Tax Benefits. IFSCs play a Crucial Role in Fostering the development of "Fintech Hubs". Given the substantial number of Indian Professionals Working in "FinTech Abroad", India has the Potential to Emerge as a Prominent "Fintech Hub".

This Advanced Certificate Course on **FinTech** covers the following Learning Objectives:

- ▲ Foundations of Fintech.
- ▲ Deep Dive into Blockchain.
- ▲ Fintech Innovation in Banking.
- ▲ Fintech Transforming Wealth Management.
- ▲ Fintech Revolutionising Insurance.
- ▲ Exploring New Frontiers of Fintech.

Online Admission Link:

<https://eicmai.in/advsc/DelegatesApplicationForm.aspx>

CPE Credit: 10 hours

for members of The Institute of Cost Accountants of India

Course Eligibility

CMAs, Bankers (including Payment Banks, Small Finance Banks, Regional Rural Banks, Co-operative Banks, NBFCs., Scheduled Commercial Banks (Private Sectors, Public Sector and Foreign Banks), CMA Final Students, Graduates, IT Professionals.

Course Duration

- a. Classroom Learning of 2 hours per day in the Weekend through online mode
- b. 50 hours online Coaching
- c. 3 months' course
- d. Online Examination for 100 marks

Course Fees

Course Fees (including learning kit) of Rs. 10,000/- plus GST of 18%

Examination

Rs. 750 plus GST per attempt

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Detailed Course Content

1: Introduction to Fintech

- ▲ Cloud Computing and APIs.
- ▲ Opensource Architecture.
- ▲ Blockchain Technology and DApps.
- ▲ Business Intelligence: AI & ML.
- ▲ Cyber Security.
- ▲ Generative AI.

2: Technology Innovation & Fintech Evolution

- ▲ Understanding Financial Crisis.
- ▲ The building blocks of Blockchain.
- ▲ Public versus private blockchain.
- ▲ Understanding Smart Contracts.
- ▲ Web 2.0 versus Web.
- ▲ Decentralized finance.

3: Blockchain

- ▲ Fintech and Disruption in Banking.
- ▲ Banking as a Service Model.
- ▲ Loan Apps and P-2-P lending.
- ▲ Open Banking Architecture.
- ▲ Case Study.

4: Fintech and Banking

- ▲ Robo-advising: The Digital Financial advisor
- ▲ Goal Based Investing
- ▲ Disintermediation of Asset Management
- ▲ Digital transformation of Wealth Management
- ▲ Case Study

5: Fintech and Asset Management

- ▲ Usage based Insurance and Microinsurance
- ▲ Machine Underwriting and Smart Contracts
- ▲ Probabilistic to Deterministic Models
- ▲ Insuring the uninsured
- ▲ Case Study

6: Fintech and Insurance

- ▲ Global Payment Ecosystem
- ▲ Payment and Digital Wallets
- ▲ Programmable Payments

- ▲ B2B and B2C Payment services
- ▲ Case Study

7: Fintech and Payments

- ▲ iCOs, Bitcoin, and beyond
- ▲ Crypto as an asset class
- ▲ Crypto Trading Strategies
- ▲ Non-Fungible Tokens
- ▲ Case Study

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3



FINTECH

Contact for further queries

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BROCHURE

CERTIFICATE COURSE ON CREDIT MANAGEMENT IN BANKS



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Certificate Course on Credit Management in Banks



About The Institute

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The Institute has since been continuously contributing to the growth of the industrial and economic climate of the country. The Institute is the only recognised statutory professional organisation and licensing body in India specialising exclusively in Cost and Management Accountancy.

International Affiliation

The Institute of Cost Accountants of India is Founder member of International Federation of Accountants (IFAC), Confederation of Asian & Pacific Accountants (CAPA) & South Asian Federation of Accountants (SAFA). The Institute, being the only institution from India, is a member of the Accounting Bodies Network (ABN) of The Prince's Accounting for Sustainability (A4S) Project, UK and International Valuation Standards Council (IVSC), UK.

Institute's Strength

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Course Objective

The world is increasingly getting inter-connected and complex. Bank Credit mechanism has also undergone phenomenal changes in recent years. Few years ago, Credit meant only Cash Credit, Overdraft and Term Loan. Today quasi credit facilities like Letters of Credit, Bank Guarantees, Co-acceptances, Buyer's Credit and Supplier's Credit etc. are gaining predominance. Keeping in view of importance of Credit Management by banks, The Institute of Cost Accountants of India offers the **Certificate Course on Credit Management (CCCM)**.

Professionals dealing with Finance or Financial Institutions in one way or other need to possess knowledge of 'Credit Management' guidelines of Financial Institutions like Banks, so that they can provide Value Additive Services to their clients like recommending to the banks the business proposals of entrepreneurs, performing preliminary credit appraisal on behalf of the banks and collate additional supporting information required by the banks/credit institutions etc.

In addition to the above, this course is also useful to the professionals who are dealing with:

- ✓ Various assignments like Forensic Audit, Stock and Book Debts Auditor (As recognized by IBA)
- ✓ Issuance of Compliance Certificate for Banks by practicing professionals in areas like Consortium and Multiple Lending by Banks (RBI Guidelines)
- ✓ Acting as Agencies for Specialized Monitoring (As recognized by IBA)
- ✓ Assignments like 'Concurrent Audit' of Banks and 'Credit Audit' of the Banks.

The Course provides a holistic insight into the various dimensions in Bank Credit Management.

Online Admission Link:

<https://eicmai.in/advsc/DelegatesApplicationForm.aspx>

CPE Credit: 10 hours

for members of The Institute of Cost Accountants of India

Course Eligibility

FCMA/ACMA/those who have qualified Final CMA examination, Final year Students of the CMA Course/Any Graduate.

Course Duration

- a) Classroom Learning of 3 hours per day in the Weekend through online mode
- b) 50 Hours on-line Coaching.
- c) 2 months course
- d) Online Examination for 100 marks

Course Fees

Course Fees (including learning kit) of Rs. 6,000/- plus GST of 18%. Final year Students of the CMA course for an amount of Rs. 4,500 plus GST of 18%.

Special Discount for Corporates

For number of employees 5-10, discount is 15%. For number of employees more than 10, discount is 20%

Examination

Rs. 750 plus GST per attempt.



Detailed Course Content (Syllabus-2024)

1. Introduction & Overview of Credit (Module 1)

- a. **Principles of Lending:** Safety, Liquidity, Profitability, Purpose of the Loan, Diversification Risk.
- b. **Credit Policy:** Importance, Contents, Exposure Norms.
- c. **Types of Borrowers:** Individuals, Proprietorship Firms, Partnership Firms, Private & Public Limited Companies, Limited Liability Partnerships (LLP).
- d. **Types of Credit Facilities:** Various Types of Credit Facilities-Cash Credit, Overdrafts, Demand Loan, Term Loans, Bills Discounting.
- e. **Credit Delivery:** Sole Banking Arrangement, Multiple Banking Arrangement, Consortium Lending, Syndication.
- f. **Environmental Appraisal:**
Physical Risks: Flood Risk – Drought / Water Scarcity Risk – Storms Risk – Extreme Heat Risk – Wildfires Risk – Other Risks.
Transition Risks: Emissions / Intensity Risk (Scope 1 & 2) - Emission / Intensity Risk (Scope 3) – ESG – Indicators / Rating (Third Party).
- g. **Credit Appraisal:** Validation of proposal, Dimensions of Credit Appraisals, Credit Risk, Credit Worthiness of Borrower, Purpose of Loan, Source of Repayment, Cash Flow, Collaterals, Guidelines on CERSAI.
- h. **Project / Term Loan Appraisal:** Technical Appraisal, Commercial / Market Appraisal, Managerial Appraisal, Financial Appraisal, Economic Appraisal, Project Cost & Means of Finance, Cost of Production & Profitability, Sensitivity Analysis, Break-even Analysis, Capital Budgeting-Pay Back Period Method, Time Value Money, Net Present Value, Internal Rate of Return, Life of the Project.
- i. **Credit Rating:** Objective of Rating, Internal & External Rating, Model Credit Rating, Measurement of Risk, Methodology of Rating, Internal & External Comparison, Model Rating Formats.
- j. **Documentation:** Meaning, Importance, Types of documents, Requisites of documentation, stamping of different documents, Mode and time of Stamping, Remedy for un-stamped / under stamped documents, Documents of which registration is compulsory, Time limit of registration, Consequence of non-registration, Execution, Mode of Execution by different executants, Period of Limitation, Law of Limitation to Guarantor, Extension of period of limitation.
- k. **Types of Charges:** Purpose, Various types of charges, Types of Security, Mode of charge, Lien, Negative Lien, Set Off, Assignment, Pledge, Right of Banker as a Pledgee, Duties as a Pledgee, Mode of Charges, Hypothecation, Mortgage - different types of mortgages, Difference between Simple and Equitable Mortgage.

2. Analysis of Financial Statements (Module 2)

- a. **Analysis of Financial Statements:** Classification of Assets & Liabilities, Current Assets, Fixed Assets, Non-current Assets, Intangible & Fictitious Assets, Liabilities-Current Liabilities, Medium & Term Liabilities, Capital & Reserve.
- b. Analysis of Profit & Loss Account, Auditor's Note.
- c. **Ratio Analysis:** Classification of Ratios, Liquidity Ratios, Leverage Ratios, Activity Ratios, Profitability Ratios, Interpretation of important Financial Ratios, Fund Flow Statements and Cash Flow Statements.



Certificate Course on Credit Management in Banks



3. Working Capital Management (Module 3)

- Working Capital Assessment:** Concept of Working Capital, Gross Working Capital, Net Working Capital, Working Capital Gap, Components of Working Capital, Source of Working Capital, Operating / Working Cycle, Various Methods of Assessment of Working Capital, Computation of Working Capital - Turnover Method, MPBF Method, Cash Budget System, Analysis of CMA Data.
- Quasi Credit Facilities:** Advantages of Non-Fund Facilities, Various types of NFB Facilities, Various types Letter of Credits, Assessment of LC limits, Bills Purchase / Discounting under LC.
- Various types of Bank Guarantees:** Performance Guarantee, Financial Guarantees, Deferred Payment Guarantees, Types of Performance and Financial Guarantees, Assessment of Bank Guarantees Limit, Period of Claim under Guarantee.

4. Other Credits (Module 4)

- Export Finance:** Pre-Shipment Finance-Export Packing Credit in Rupees, Pre-Shipment Credit in Foreign Currency (PCFC), Post Shipment Rupee Export Finance, Purchase / Discount of Export Bills, Negotiation of Export Bills, ECGC Coverage in Export / Import Finance.

5. Monitoring, Supervision, Follow-up & Management of Impaired Assets (Module 5)

- Credit Monitoring, Supervision, Follow-Up:** Credit Monitoring-Check-list, Monitoring by using Various Statements, QIS Formats / Guidelines, Supervision & Follow Up Loans.
- Expected Credit Loss (ECL):** Introduction & Evolution of Provisioning of Banks in India- Incurred Loss Approach Vs. Expected Credit Loss Approach- "Loan Loss Provisioning based on ECL -IFRS 9-Calculation of ECL on Retail / Commercial Advances Examples.
- Management of Impaired Assets:** Income Recognition and Assets Classification, Guidelines, Provisioning Norms for NPA, Wilful Defaulters, Compromise, Legal Action, Lok Adalat, Debt Recovery Tribunal, SARFAESI Act, 2002, IBC-2016, Loans Write-Off.

Contact for further queries

CMA Dibbendu Roy, Additional Director & HoD at bfsi.hod@icmai.in, bfsi@icmai.in



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Banking, Financial Services & Insurance Board

CERTIFICATE COURSE ON CONCURRENT AUDIT OF BANKS

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Certificate Course on Concurrent Audit of Banks



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Course Objective

The Banking, Financial Services and Insurance Board is pleased to offer **Certificate Course** on **"Concurrent Audit of Banks"** to enable participants to understand the intricacies of Concurrent Audit of Banks.

This course aims to impart in-depth knowledge on concurrent audit of banks and to help the participants to acquire with the knowledge/skills to undertake related assignments/Special Audits of the Banks like:

- Income Leakage Audit
- KYC/AML Audit
- Treasury Department Audit
- Staff Accountability Exercise in respect of Failed/NPA Advances at incipient Stage
- To supplement the effort of the Banks in carrying out Internal Audit of the Transactions and other Verifications and Compliance with the Systems and Procedures laid down by the Banks and RBI

Online Admission Link:

<https://eicmai.in/advsc/DelegatesApplicationForm.aspx>

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for members of The Institute of Cost Accountants of India

Course Eligibility

FCMA/ACMA/those who have qualified Final CMA examination, Bank Officer or Ex-Bank Officer.

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Course Fees (including learning kit) of Rs. 5,000/- plus GST of 18 %.

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Examination

Rs. 750 plus GST per attempt.

Detailed Course Content (Syllabus-2024)

- 1. Types of Audits in Banks Sector.**
 - 1.1 Risk Focused Internal Audit (RFIA).
 - 1.2 Credit Audit / Stock & Book Debts Audit / Statutory Audit.
 - 1.3 Concurrent Audit / e-Concurrent Audit etc.
- 2. Role of Concurrent Auditor.**
 - 2.1 Verification of Deposit, Advance Accounts.
 - 2.2 Verification of Locker System, Cash Department Procedures, Alternative Delivery Channels etc.
 - 2.3 Unit Inspection, End-use of Funds, Staff Accounts etc.
- 3. Credit, Market and Operational Risks.**
 - 3.1 Credit Risk Areas.
 - 3.2 Market Risk Areas.
 - 3.3 Operational Risk Areas.
- 4. Loans and Advances.**
 - 4.1 Demand Loans.
 - 4.2 Term Loans.
 - 4.3 Overdrafts, Working Capital Loans and Working Capital Term Loans.
 - 4.4 Home Loans, Car Loans, Personal Loans, Mortgage Loans, Education Loans etc.
- 5. Credit Process: Pre-sanction, Sanction & Post-sanction.**
 - 5.1 KYC, Verification of Application / Project Report, CIBIL, CIC Reports.
 - 5.2 Appraisal, Projections etc.
 - 5.3 Verification of Proposal, Sanction and Submission of Control Forms.
 - 5.4 Documentation, Types of Charges, Equitable Mortgage, Disbursement, etc.
- 6. Pre-shipment and Post-shipment Finance.**
 - 6.1 UCPDC Guidelines – FEDAI Guidelines – FEMA Guidelines.
 - 6.2 Pre-shipment packing credit Advance.
 - 6.3 Discounting of Export Bills / Import Bills payment etc.
- 7. Common Serious Lapses in Sanction, Follow-up & Documentation.**
 - 7.1 Delegation of Powers.
 - 7.2 Take-over Norms.
 - 7.3 Wrong Documentation.
 - 7.4 Stock Statements, Insurance for both Primary and Collateral Security, Monitoring of SMA-0 to SMA-2 Accounts.
- 8. Legal and Regulatory Frame.**
 - 8.1 RBI Act and Banking Regulation Act.
 - 8.2 Limitation Act.
 - 8.3 Registration Act.
 - 8.4 Indian Stamp Act.
 - 8.5 Limitation Act.
 - 8.6 SARFEASI Act and CERSAI etc.
 - 8.7 KYC/AML Guidelines.
- 9. IRAC Provisioning Norms.**
 - 9.1 Classification of Advances.
 - 9.2 Provision requirements.
- 10. Non-fund-based Business**
 - 10.1 Types of Bank Guarantees.
 - 10.2 Types of Letters of Credits.
 - 10.3 Margins, Collateral Security, Standard formats of BGs / LCs, Commission on BGs / LCs.
- 11. Operational Risk Management – ORM-I**
 - 11.1 Job Rotation–Staff Attendance–Branch Documents–Security Forms.
 - 11.2 Security Systems (Fir-Extinguisher, Smoke Detectors, Gun Licences etc.), Currency Chest Fitness Certificate–Disaster Recovery Management– Business Continuity Plan etc.
 - 11.3 Safe Deposit Lockers, Safe Deposit Articles, Deceased Claims Settlement etc.
- 12. Operational Risk Management – ORM-II**
 - 12.1 Complaints–Banking Ombudsman–Customer Forums.
 - 12.2 Branch Duplicate Keys–Reconciliation of Office Accounts–Parking Accounts–Recovery of Service Charges–Income Leakages etc.
 - 12.3 Display of Import Notice Boards–Cheque Truncation System–Complaints and Suggestion Box–Police Beat–ATM Cash Replenishment Outsourcing Agencies (Service Level Agreements).
- 13. Forex Transactions.**
 - 13.1 Opening of NRE / NRO / FCNR / RFC accounts.
 - 13.2 Purchase & Sale of Foreign Currency Cheques / Currency / Export & Import Bills–Forex Rates.
 - 13.3 Submission of R>Returns to RBI.
 - 13.4 Verification of SWIFT Message Inward / Outward Remittances.
 - 13.5 Nostro, Vostro and Loro Accounts etc.
- 14. Detection, Classification & Reporting of Frauds**
 - 14.1 Classification of Frauds–Internal & External Frauds.
 - 14.2 Provisions / Recovery Efforts of Frauds.
 - 14.3 Disciplinary action initiation / Reporting of Frauds to RBI through On-line.
- 15. Tools for Concurrent Audit of Banks**
 - 15.1 Bank Systems and Procedures / Standard Operating Procedures.
 - 15.2 Current Chest Guidelines of RBI.
 - 15.3 Delegation of Financial Powers.
 - 15.4 Service Charges etc.
- 16. Audit in CBS Environment.**
 - 16.1 Core Banking System–Major functionalities.
 - 16.2 Reports Generated by CBS like Exceptional Reports, Suspicious Transactions Reports etc.
 - 16.3 Treasury Management Solutions–Front, Mid and Back-office Reports etc.
- 17. ESG Lending Audit.**
 - 17.1 Overview of Sustainability-linked Loans.
 - 17.2 Principles of Sustainability-linked Loans.
 - 17.3 Value Statements of Social and Environment Audit.
- 18. Expected Credit Loss Provisions.**
 - 18.1 Expected Credit Loss (ECL) Framework.
 - 18.2 Verification of Stage-1, Stage-2 and Stage-3 Loan Portfolio by Auditors.
 - 18.3 Implementation of Regulatory Guidelines on ECL.



Certificate Course on Concurrent Audit of Banks



Contact for further queries

CMA Dibbendu Roy, Additional Director & HoD at bfsi.hod@icmai.in, bfsi@icmai.in



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Behind Every Successful Business Decision, there is always a CMA

Banking, Financial Services & Insurance Board

CERTIFICATE COURSE ON TREASURY, FOREIGN EXCHANGE AND INTERNATIONAL BANKING



BROCHURE



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Certificate Course on Treasury, Foreign Exchange and International Banking

About The Institute

The Institute of Cost Accountants of India was first established in **1944** as a registered company under the Companies Act with the objects of promoting, regulating and developing the profession of Cost Accountancy. On **28th May, 1959**, the Institute was established by a special **Act of Parliament**, namely, the **Cost and Works Accountants Act, 1959** as a statutory professional body for the regulation of the profession of Cost and Management accountancy. The Institute is under the administrative control of **Ministry of Corporate Affairs, Government of India**.

The Institute has since been continuously contributing to the growth of the industrial and economic climate of the country. The Institute is the only recognised statutory professional organisation and licensing body in India specialising exclusively in Cost and Management Accountancy.

International Affiliation

The Institute of Cost Accountants of India is Founder member of International Federation of Accountants (IFAC), Confederation of Asian & Pacific Accountants (CAPA) & South Asian Federation of Accountants (SAFA). The Institute, being the only institution from India, is a member of the Accounting Bodies Network (ABN) of The Prince's Accounting for Sustainability (A4S) Project, UK and International Valuation Standards Council (IVSC), UK.

Institute's Strength

The Institute is the largest Cost & Management Accounting body in the World, having a large base of about 1,00,000 CMAs either in practice or in employment and around 5,00,000 students pursuing the CMA Course.

Institute's Network

Institute's headquarters is situated at New Delhi with another office at Kolkata. The Institute operates through four Regional Councils at Kolkata, Chennai, Delhi and Mumbai as well as through 112 Chapters situated in India, 11 Overseas Centres abroad, 2 Centres of Excellence, 61 CMA Support Centres and 401 Recognized Oral Coaching Centres.

Vision Statement

"The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally."

Mission Statement

"The Cost and Management Accountant professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting."

Course Objectives

Treasury Management is an essential function of a Bank or any Entity dealing with Large volume of funds. With the increased Globalization of Markets, it has become essential to have an in-depth knowledge of the functioning of the Domestic Money and Debt Markets as also the Foreign Exchange Markets for effective management of funds. On account of several Policy measures undertaken by Reserve Bank of India (RBI) and other Regulatory Authorities, different segment of financial markets (Money, Securities, Foreign Exchange and Derivatives Markets) have witnessed significant growth and development in terms of new financial instruments, number of players, volume of business, etc.

In the light of such developments, treasury functions in Banks, FIs and Corporates have grown manifold and therefore have become challenging to manage. Therefore, it has become indispensable for Banks, Financial Institutions and Corporates to make their newly inducted treasury officers well versed with various segment of the financial market, different products and operations, so that they not only serve their clients better, but also manage the risks inherent in Treasury.

Practicing CMAs who dealing with their Clients are in one way or other linked to Finance and Financial related Issues. Hence, they should possess Good knowledge of 'Treasury Operations', so that they can provide Value Addition Services to their Clients. Treasury Operations of Banks and Commercial Organizations are more or less with difference of Regulatory Compliance. Even in small business entities, Treasury Operations helps a lot to minimize the Cost of Borrowings and Maximize the Yield on Investments etc.

In addition to the above, this course is also useful to CMAs who are:-

- Empanelled with Banks for Treasury Audit and Forex Audit.
- For Forensic Audit of Treasury Operations / Forex Operations in Banking Industry
- In Credit Audit, if the Bank Sanctions Loans to Clients like Pre-shipment and Post Shipment Packing Credit Advance, this course is also useful.
- And also, useful to take up the Assignments like 'Concurrent Audit in Treasury Department' of Banks, Commercial entities etc.

The Course provides a holistic insight into the various dimensions in Bank Treasury and Forex Operations.

Online Admission Link:
<https://eicmai.in/advsc/DelegatesApplicationForm.aspx>

CPE Credit: 10 hours
 for members of The Institute of Cost Accountants of India

Course Eligibility

FCMA/ACMA/those who have qualified Final CMA examination, Final year Students of the CMA Course/Any Graduate.

Course Duration

- Classroom Learning of 3 hours per day in the Weekend through online mode
- 50 Hours on-line Coaching.
- 2 months course
- Online Examination for 100 marks

Course Fees

Course Fees (including learning kit) of Rs. 6,000/- plus GST of 18%. Final year Students of the CMA course for an amount of Rs. 4,500 plus GST of 18%.

Special Discount for Corporates

For number of employees 5-10, discount is 15%. For number of employees more than 10, discount is 20%

Examination

Rs. 750 plus GST per attempt.

Syllabus

SECTION - 1

a. Introduction to the Money Market:

- ✓ Economic Function-Definition-Classification of Intermediaries
- ✓ Types of Markets-Participants-Nature of Domestic Market
- ✓ Repurchase Agreements

b. Capital Markets:

- ✓ Economic Function
- ✓ Classification of Instruments-by Issuer and Types
- ✓ Principles of Valuation

c. Foreign Exchange Markets:

- ✓ Introduction-Definitions-Direct and Indirect Quotations: Cross Rates, Factors affecting Exchange Rates
- ✓ Relationship with Market Operations-Financing Spot Operations Interest Arbitrage-Forward-Forward Business
- ✓ Forward Transactions-Factors affecting / influencing forward rates
- ✓ Premiums: Discounts, Forward Cross Rates
- ✓ Swap Transactions
- ✓ Outright Deals

d. External Markets:

- ✓ External Commercial Borrowings
- ✓ GDRs / ADRs

e. Derivatives Markets:

- ✓ Introduction – Definition and Characteristics of FUTURES, SWAPS and OPTIONS
- ✓ Elementary Hedge Applications

SECTION - 2

a. Scope and Function of Treasury Management:

- ✓ Objectives of Treasury
- ✓ Structure and Organisation
- ✓ Responsibilities of Treasury Manager

b. Cost Centre / Profit Centre:

- ✓ Financial Planning and Control
- ✓ Capital Budgeting
- ✓ Risk Analysis

c. Liquidity Management:

- ✓ Objectives
- ✓ Sources of Liquidity
- ✓ Maturity Concerns: Projected Cash Flow and Core Sources Contingency Plans
- ✓ Short term and Long-term Liquidity
- ✓ Maturity Ladder Limits
- ✓ Internal Control – The Need and Importance – Financial and Operational risks – Internal vs External Control Segregation of Duties among Front and Back Offices – Management Information – Netting

d. Treasury's Role in International Banking:

- ✓ Changing Global Scenario and Treasury Functions
- ✓ Treasury Structure- Front and Back Office
- ✓ Control of Dealing Operations – Trading Limits – Trading and Operational Policy – Moral and Ethical aspects
- ✓ Confirmations

e. Revaluation Mark to Market and Profit Calculations:

- ✓ Supervision and Exchange Control Departments
- ✓ RBI requirements
- ✓ Recent Developments in the Central Bank's Policy Framework

f. ESG Investments Trading:

- ✓ What is ESG Investing?
- ✓ How does ESG investing work?
- ✓ Why it is important to consider the environment while investing?
- ✓ How important it is to consider socially aware companies while investing?
- ✓ How important role does a company's corporate governance place for investors?
- ✓ Issuance requirements of Green Bonds.

SECTION - 3

a. Introduction:

- ✓ Meaning of Risk in Banking Operations- Financial and Non-Financial Risks
- ✓ Risk Process
- ✓ Key Risks in Relation to Treasury Management – Interest Rate Risk, Currency Risk, Liquidity Risk, Credit Risk and Operational Risk



Certificate Course on Treasury, Foreign Exchange and International Banking

Syllabus

b. Measurement and Control of Risk:

- ✓ Identifying Measures and Controlling Risk – Statistical Methods
- ✓ Risk Exposure Analysis
- ✓ Risk Management Policies
- ✓ Fixation and Delegation of Limits
- ✓ Different Limits- Open Position / Asset Position Limits/ Deal Size/Individual Dealers/Stop Loss Limits

c. Assets Liability Management:

- ✓ Components of Assets and Liabilities –

- History of AL Management
- ✓ Organisational and Functions of ALCO
- ✓ Management and Interest rate Exposure / Liquidity
- ✓ Risk Adjusted Return on Capital
- ✓ Capital Adequacy Concerns

d. Hedging the Risk:

- ✓ Forward, Futures and Options Market
- ✓ Mechanics of Futures
- ✓ Foreign Currency Futures Market
- ✓ Options Market- Options Strategies
- ✓ Hedging Strategies and Arbitrage
- ✓ Call Options and Put Options

Contact for further queries



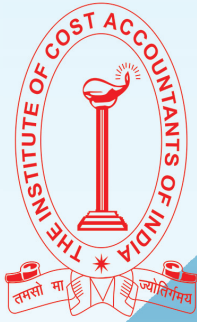
CMA Dibbendu Roy, Additional Director & HoD at bfsi.hod@icmai.in, bfsi@icmai.in



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Brochure

Certificate Course on Project Financing

Banking, Financial Services and Insurance Board

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About The Institute

The Institute of Cost Accountants of India is a statutory body set up under an Act of Parliament in the year 1959. The Institute as a part of its obligation, regulates the profession of Cost and Management Accountancy, enrolls students for its courses, provides coaching facilities to the students, organises professional development programmes for the members and undertakes research programmes in the field of Cost and Management Accountancy. The Institute pursues the vision of cost competitiveness, cost management, efficient use of resources and structured approach to cost accounting as the key drivers of the profession. In today's world, the profession of conventional accounting and auditing has taken a back seat and cost and management accountants are increasingly contributing toward the management of scarce resources and apply strategic decisions. This has opened up further scope and tremendous opportunities for cost accountants in India and abroad.

After an amendment passed by Parliament of India, the Institute is now renamed as "**The Institute of Cost Accountants of India**" from "**The Institute of Cost and Works Accountants of India**". This step is aimed towards synergising with the global management accounting bodies, sharing the best practices which will be useful to large number of transnational Indian companies operating from India and abroad to remain competitive. With the current emphasis on management of resources, the specialized knowledge of evaluating operating efficiency and strategic management the professionals are known as "**Cost and Management Accountants (CMAs)**". The Institute is the largest Cost & Management Accounting body in the world, having approximately 5,00,000 students and 1,00,000 members all over the globe. The Institution headquartered at New Delhi operates through four regional councils at Kolkata, Delhi, Mumbai and Chennai and 112 Chapters situated at important cities in the country as well as 11 Overseas Centres. It is under the administrative control of Ministry of Corporate Affairs, Government of India.

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CPE Credit: 10 hours

for members of The Institute of Cost Accountants of India

2

Certificate Course on Project Financing | The Institute of Cost Accountants of India

Course Objective:

The Banking, Financial Services and Insurance Board of ICAI offers the **Certificate Course on Project Financing** in recognition of the increasing scale, complexity and strategic importance of infrastructure and project-led development in India. Project financing today extends well beyond conventional lending, encompassing specialised appraisal techniques, risk allocation structures, legal and regulatory frameworks, and long-gestation funding models unique to infrastructure sectors.

This course provides a focused and practical understanding of project finance, with emphasis on

- infrastructure projects,
- covering credit appraisal,
- risk assessment,
- funding mechanisms,
- contractual structures and project management principles.

Designed by experienced practitioners, it integrates conceptual foundations with real-life case studies and interactive learning to ensure strong application orientation.

With infrastructure development central to national priorities, the programme equips professionals with the skills required to evaluate, structure and manage large-scale projects effectively. Through this initiative, ICAI continues its commitment to strengthening sector-specific capabilities and enabling professionals to contribute meaningfully to sustainable economic growth.

Course Eligibility:

CMAs, Bankers (all categories), NBFCs, AIFs, CMA Final Students, Graduates, Infrastructure professionals, Developers and all other stakeholders.

Course Duration:

- a. Classroom Learning of 2 hours per day in the Weekend through online mode
- b. 30 hours online Coaching
- c. 2 months course
- d. Online Examination for 100 marks

Course Fees:

Course Fees (including learning kit) of Rs. 5,000/- plus GST of 18%

Examination Fees:

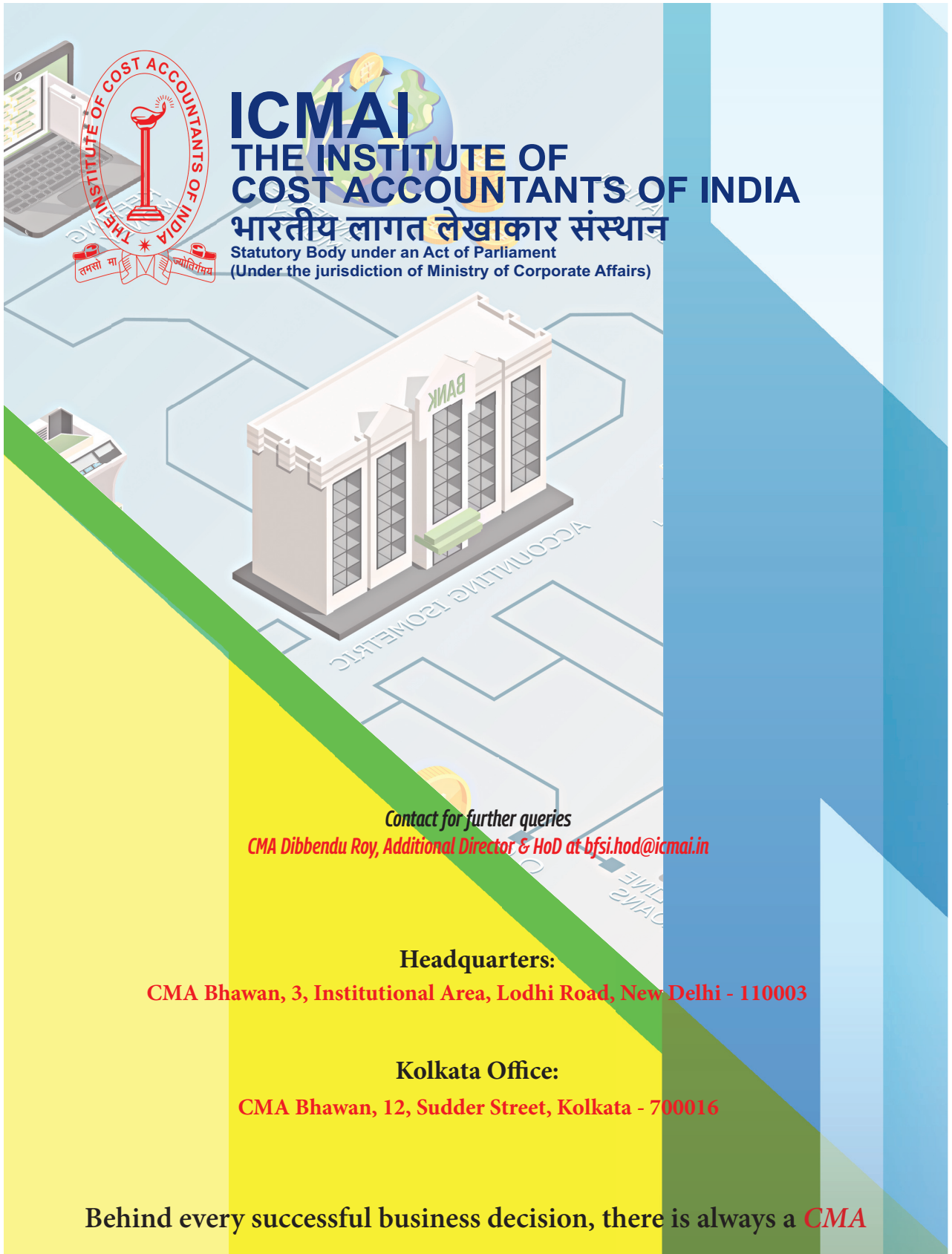
Rs. 750/- plus GST per attempt

Online Admission Link:

<https://icmai.in/advsc/DelegatesApplicationForm.aspx>

Detailed Course Content:

- * Fundamentals of Infrastructure Financing
- * Infrastructure Project Models
- * Credit Appraisal Process and Feasibility Studies
- * Financial Appraisal
- * Key Performance Indicators
- * Risk Management Framework in Infrastructure Financing
- * Regulatory norms and various regulations that govern Infrastructure Financing
- * Documentation, Monitoring and Performance audit of infra projects
- * Case Studies on various sub-Sectors
- * Alternate sources of Finance
- * ESG and Sustainable Finance
- * Professional opportunities and interlinkages with other areas viability, project planning and implementation
- * Financial Closure, Preventive Vigilance and Documentation



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Brochure

Certificate Course on Cost Control Strategies in the Banking Sector

Banking, Financial Services and Insurance Board

Behind every successful business decision, there is always a **CMA**



Certificate Course on Cost Control Strategies in the Banking Sector | The Institute of Cost Accountants of India

About The Institute

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After an amendment passed by Parliament of India, the Institute is now renamed as **"The Institute of Cost Accountants of India"** from **"The Institute of Cost and Works Accountants of India"**. This step is aimed towards synergising with the global management accounting bodies, sharing the best practices which will be useful to large number of transnational Indian companies operating from India and abroad to remain competitive. With the current emphasis on management of resources, the specialized knowledge of evaluating operating efficiency and strategic management the professionals are known as **"Cost and Management Accountants (CMAs)"**. The Institute is the largest Cost & Management Accounting body in the world, having approximately 5,00,000 students and 1,00,000 members all over the globe. The Institution headquartered at New Delhi operates through four regional councils at Kolkata, Delhi, Mumbai and Chennai and 112 Chapters situated at important cities in the country as well as 11 Overseas Centres. It is under the administrative control of Ministry of Corporate Affairs, Government of India.

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Vision Statement



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Course Objective:

The Banking, Financial Services and Insurance Board is pleased to offer **"Certificate Course on Cost Control Strategies in the Banking Sector"**. The BFSI Board has developed a structured 30 hours Certificate Course covering major cost drivers, cost allocation, activity-based costing, transfer pricing, digital vs. branch cost comparison, regulatory cost (CRR/SLR/PSL/ECL), branch profitability, workforce optimisation, and RBI-aligned cost transformation strategies. The Course is designed for CMAs with the objective of strengthening analytical capability, cost diagnostics, and profitability enhancement across the banking sector.

This Certificate Course on Cost Control Strategies in the Banking Sector covers the following Learning Objectives:

- ✦ Understand major Cost Drivers in Commercial Banks.
- ✦ Develop Analytical Tools for measuring and Controlling Costs.
- ✦ Implement Cost Allocation, ABC, Marginal Costing, Transfer Pricing.
- ✦ RBI-Aligned Cost Analysis for Banking Operations.
- ✦ Build Strategies to Improve Profitability, Reduce Inefficiencies, and Optimise Resources / Productivity.

Course Eligibility:

CMAs

Course Duration:

Classroom Learning of 2 hours per day in the Weekend through online mode

30 hours online Coaching

2 months course

Online Examination for 100 marks

Course Fees:

Course Fees (including learning kit) of Rs. 3,000/- plus GST of 18%

Examination Fees:

Rs. 750/- plus GST per attempt

CPE Credit: 10 hours
for members of The Institute of Cost Accountants of India

Online Admission Link:
<https://eicmai.in/advsc/DelegatesApplicationForm.aspx>

**Detailed Course Content:****Day-1 :**

- Overview of Indian Commercial Banking System (PSBs, Private Banks, SFBs).
- Introduction & Cost Structure of Indian Banks.
- Major Cost Heads: Interest Cost, Personnel, Operating Expenses, Credit Cost.
- Distinction: Controllable vs Non-controllable Costs.

Day-2 :

- Understanding Bank Financial Statements from a Cost Lens.
- Cost Elements in P&L, Balance Sheet Analytics.
- Cost of Funds, Operating Cost, Credit Provisioning
- Understanding CIR (Cost-to-Income Ratio), NIM, ROA, ROE

Day-3 :

- RBI Compliance Cost: CRR, SLR, Priority Sector Lending, Regulatory Reporting.
- Cost of NPA/ Stressed Asset Management.
- Impact of Compliance with ECL, IRACP Norms.
- Competitive Cost Challenges for PSBs vs Private Banks

Day-4 :

- Direct / Indirect Costs in Banks.
- Fixed vs Variable Costs.
- Treasury-related Costs, Branch Operation Costs, Technology Cost (Including Alternate Delivery Channels Cost).
- Overhead Absorption in Banking Context.

Day-5 :

- Activity Based Costing (ABC) Principles Applied to Banking Operations.
- Identifying Activities: Cash, ATM, NEFT/RTGS/IMPS, Loan Processing, CASA, Digital channels.
- Cost Drivers & Cost Pools.
- Case Study: ABC Model for Loan Processing

Day-6 :

- Multilevel Cost Allocation.
- Branch-level Profitability.
- Transfer Pricing (FTP) Basics.
- Shared Service Centre Costing.
- Allocate Overhead to Branches using Templates.

Day-7 :

- Costing of Products: Term Loans, Working Capital, CASA, Debit / Credit Cards, Digital Products.
- Return on Risk-Adjusted Capital (RAROC) vs Traditional Profitability
- Customer Lifetime Value (CLV)
- Case Study: Profitability Analysis of a Hypothetical Branch.

Day-8 :

- Digital Transactions vs Branch Transactions: Comparative Cost.
- ATM vs Branch vs Digital Delivery Cost.
- FinTech Partnerships.
- Enterprise IT Cost Control Strategies.
- Practical: Compute Cost Savings through Migration to Digital Channels.

Day-9 :

- Staff Cost Optimization.
- Productivity Metrics: Business Per Employee, Profit Per Employee / Branch.
- Workforce Planning & Automation.
- Performance-Linked Cost Management.

Day-10 :

- Marginal Costing in Credit Pricing.
- Break-even Analysis for Branches / Products.
- Pricing of Loans / Retail Products on Marginal Cost Basis.
- Exercise: Compute Break-Even for a Small Branch.

Day-11 :

- Internal Pricing of Funds; Liquidity Premium.
- FTP impact on NIM, Profitability of Branches.
- FTP in PSBs vs Private Banks.
- Practice: FTP-Based Profitability Computation.

Day-12 :

- ECL vs Incurred Loss: Cost Impact.
- Credit Risk Cost Modelling.
- Pricing Loans Considering PD/LGD/EAD.
- Case study: Credit Risk Cost on SME Lending.

Day-13 :

- ALM Implications for Cost Control.
- Fraud-related Cost Exposures.
- Audit Findings impacting Cost Efficiency.
- Cost Leakages in Procurement, Outsourcing, Branch Ops.

Day-14 :

- Vendor Evaluation.
- Outsourcing: Cost Analysis, Risk, RBI Outsourcing Guidelines.
- Technology Procurement Lifecycle
- Branch Rationalisation.
- CASA Enhancement for Cost Reduction.

Day-15 :

- Capital Productivity & ROA Improvement.
- Digital-First Cost Transformation Strategy
- Branch Budgeting.
- Efficiency Metrics: Cost Per Account, Cost Per Transaction.
- Cost Control SOPs.
- Energy & Resource Cost Management
- Predictive Analytics for Cost Forecasting.
- KPI Design.



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Snapshots





Release of Special Issue on ECL for the BFSI Chronicle (23rd edition) on 30th January, 2026 at Pune.



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI presented a copy of Aide Memoire on Infrastructure Financing Book (3rd enlarged revised edition) to CMA Pawan Kumar, Former Chief Adviser (Cost), Ministry of Finance on 12th February, 2026. (R to L)



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI presented a copy of BFSI Chronicle and Study Material for Advance Certificate Course on Fintech to Shri Abhijit Mazumdar, Regional Director, RBI Arunachal Pradesh on 14th February, 2026. (R to L)



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI (extreme right) presented a copy of Aide Memoire on Infrastructure Financing Book (3rd enlarged revised edition) to Shri Pradeep Ramakrishnan, Executive Director, Department of Capital Markets, IFSCA (2nd from right) along with CMA (Dr.) Ashish P. Thatte, Central Council Member, ICAI (3rd from right) and other Members, ICAI on 6th April, 2026.



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI felicitating Shri Jeevan Sonparote, Executive Director, Securities and Exchange Board of India on 8th April, 2026. (R to L)



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI felicitating Shri Sunil Kadam, Executive Director, Securities and Exchange Board of India on 8th April, 2026. (R to L)



Dr. Saurabh Maheshwari, Consultant (centre) felicitating CMA P Vasudevan, Executive Director, Reserve Bank of India (extreme right) along with CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI (extreme left) on 8th April, 2026.



Certificate Course on Concurrent Audit of Banks (13th Batch) Inauguration with CMA Reeny Ajith, Regional Director, Chhattisgarh, Reserve Bank of India on 18th April, 2026.



CMA Chittaranjan Chattopadhyay, Chairman, BFSIB and ACMB of ICAI felicitating Shri Niraj Kumar Panda, CGM, SBI Kolkata Circle on 21st April, 2026. (R to L)

ACTIVITIES OF THE BFSI BOARD



1. Webinars

i. Electric Vehicles - Emerging Business and Financing Model

The Board organized a Webinar on 18th March 2026. Shri Arun Krishnan, Program Director-Climate Finance, WRI India and Ms. Sharvari Patki, Program Head - Electric Mobility, WRI India along with experts from CoEZET (IIT Madras) were the speakers.

ii. Credit Worthiness Check - the Conceptual Framework

The Board organized the webinar on 20th March 2026.

CMA Sabyasachi Sengupta, Professor, XLRI - Xavier School of Management was the Speaker.

iii. Impact of Global Uncertainty in International Trade

The Board organized a Webinar on 27th March 2026 from 5 to 7 p.m. CMA Mrityunjay Acharjee, General Manager (Finance), Numaligarh Refinery Limited was the speaker on the topic of Impact on Insurance and Reinsurance in the Present Global Uncertainty. CMA (Dr.) P Siva Rama Prasad, Former Assistant General Manager, State Bank of India and CMA Nijay Gupta, Forex Expert were the other speakers who spoke on the theme from the regulator perspective and treasury aspect respectively.

iv. Impact of Budget 2026-27 on BFSI Sector

The Board organized a webinar on Impact of Budget 2026-27 on the BFSI Sector on 10th February 2026. The distinguished speakers included Ms. Kanika Pasricha, Chief Economist, Union Bank of

India, CMA (Dr.) Balu Kenchappa, Former CGM, Reserve Bank of India and Member, BFSIB, ICAI, Shri C. M. Khurana, Former CGM-CFO, Oriental Bank of Commerce and Former CGM (Credit), India Infrastructure Finance Company Limited and Ms. Ritwika Roy, Founder's Office, Finlabs. The webinar presented diverse perspectives on the Finance Bill covering economic outlook, regulatory views, infrastructure financing, and fintech implications of the Union Budget. The session was very well received, and the Board looks forward to conducting more such knowledge initiatives.

v. Certificate Course on Project Financing- A broad Overview

The Board organized the webinar on Certificate Course on Project Financing- A broad Overview on 28th February, 2026. Shri C. M. Khurana, Former CGM-CFO, Oriental Bank of Commerce, Former CGM (Credit) IIFCL was the speaker.

2. Opportunities for CMAs

- i. CMAs are eligible to apply for the recruitment of Associate Manager – Finance & Accounting in Small Industries Development Bank of India (SIDBI).***
- ii. CMAs are eligible to apply for the recruitment of Senior Manager Financial Analyst & Manager Financial Analyst in Indian Bank.***
- iii. CMAs are eligible to apply for the recruitment of Vice President in the National Bank for Financing Infrastructure and Development (NaBFID).***
- iv. CMAs are eligible to apply for the recruitment of Senior Analyst positions on a Fixed Term Basis (On Contract) & Senior Analyst positions on a Full Term (Regular Basis) in the National Bank for Financing Infrastructure and Development (NaBFID).***
- v. CMAs were eligible for empanelment as Stock and Receivables Auditors at State Bank of India.***
- vi. CMAs are eligible to apply for various vacancies in India Infrastructure Finance Company Limited. The last date for applications is 10th April, 2026.***
- vii. CMAs are eligible to apply for various vacancies in the National Bank for Financing Infrastructure and Development. The last date for applications is 8th April, 2026.***
- viii. SBI has released an advertisement for recruitment of Circle Based Officers and CMAs are eligible to apply for the post having 303 vacancies.***
- ix. CMAs are eligible to apply for the posts of Senior Manager – Credit Analyst and Manager – Credit Analyst in Bank of Baroda***

3. Release of Special Issue on ECL – 23rd Issue of BFSI Chronicle

The BFSI Board of Institute of Cost Accountants of India (ICMAI) released the Special Issue on Expected Credit Loss (ECL), the 23rd edition of the BFSI Chronicle for the January–March 2026 quarter, on 30th January 2026 from the hands of CMA Neeraj D. Joshi. The publication comprises 20 insightful articles on ECL and may be accessed at the following link: https://icmai.in/upload/BI/BFSI_CHRONICLE_23rd_EDITION_3001_2026.pdf

4. Certificate Courses

- i. Advanced Certificate Course on Fintech***

The 3rd batch, with 119 participants, commenced on 1st February 2026. We hope the learners leverage this opportunity to deep dive into the vast ocean of Fintech through guidance from erudite faculty and gain strong practical insights from the course.

ii. Project Financing and Cost Control Techniques in the Banking Sector

Admissions for the 1st batch of the above two courses commenced from 18th February 2026.

The link for the admission for the courses is as follows-

<https://eicmai.in/OCMAC/BFSI/BFSI.aspx/>

iii. Other Certificate Courses

The admission for the Certificate Course on Concurrent Audit of Banks (13th Batch), Credit Management in Banks (13th Batch) and Treasury and International Banking (11th Batch) have started. The admission window for the all courses is stated as follows:

<https://eicmai.in/OCMAC/BFSI/DelegatesApplicationForm-BFSI.aspx>

5. Launch of the MoU with Siva Sivani Institute of Management, Hyderabad

A MoU exchange ceremony was conducted by the Siva Sivani Institute of Management, Hyderabad on 21st January, 2026. The occasion was graced by CMA Chittaranjan Chattopadhyay, Chairman, BFSI Board, ICAI along with CMA (Dr.) Kh AVSN Murthy, Council Member, ICAI along with CMA Khaja Jalal Uddin, Chairman, Hyderabad Chapter, ICAI and CMA (Dr.) P. Siva Rama Prasad, Former AGM, State Bank of India and Faculty of the BFSI courses. At the event Dr. NRKS Chakravarthi, Director I/C, Director, SSIM and Dr. V. Jayalakshmi, Professor, Area Chair - Finance, Program Chair - PGDM-BIFS were also present. There were enrolments of 107 students and 3 faculties for the Advance Certificate Course on Fintech and the course will be starting from February, 2026.

Financial Snippets

• Banking

- **Bank of Baroda Reinstatement:** The Madhya Pradesh government withdrew a five-year ban on Bank of Baroda for government business within 24 hours of its issuance.
- **ATM Business Acquisition:** CMS Info Systems acquired the ATM managed services business of Financial Software and Systems (FSS) for ₹ 115 crore.
- **Leadership at JP Morgan:** JP Morgan appointed HSBC veteran Rahul Badhwar as the new Senior Country Officer for its India operations.
- **Unclaimed Deposits:** Public sector banks reported ₹ 60,518 crore in unclaimed deposits, which were subsequently transferred to the RBI's DEA Fund.
- **Technical Error Impact:** A system error at Bank of Baroda mistakenly inflated borrower EMIs, leading to a temporary decline in customer credit scores.
- **Union Demands:** The United Forum of Bank Unions (UFBU) demanded an immediate resolution to the impasse regarding revised Performance-Linked Incentives (PLI).
- **Doha Bank Exit:** Qatar's Doha Bank announced plans to exit its branch operations in India, shifting to a representative office model.
- **IndusInd Bank Chair:** Former SBI MD Arijit Basu was appointed as the part-time chairman of IndusInd Bank following shareholder approval.
- **Cost Control Guidance:** ICAI released a new Guidance Note on Cost Control Strategies specifically for the Banking Sector to improve operational efficiency.
- **Major Cross-Border Acquisition:** The Reserve Bank of India (RBI) approved Emirates NBD Bank's proposal to acquire a 60% majority stake in RBL Bank for approximately \$3 billion.
- **Significant Asset Quality Improvement:** The RBI reported that Indian banks' bad loan (NPA) ratio dropped to a multi-year low of 2% by December 2025, with no immediate systemic hit seen from the West Asia conflict.
- **Liquidity Management Interventions:** To manage tightening liquidity, the RBI injected ₹ 25,101 crore into the banking system via a three-day Variable Rate Repo (VRR) auction in late March.
- **State-Run Banks Outpace Deposits:** Major public sector lenders, including PNB and Bank of India, recorded double-digit loan growth (12-15%) in FY26, significantly outpacing their deposit growth.

2. Financial Services Sector

- **Digital Loan Growth:** The digital personal loan book in India reached ₹ 1.39 lakh crore, with sanctions jumping 53% in Q3 FY26.
- **Green Bond Demand:** Sovereign Green Bonds saw strong investor interest with high bid-cover ratios, indicating robust support for sustainable finance.
- **Highway Funding:** Union Minister Nitin Gadkari launched the NHAI-backed Raajmarg Infra Investment Trust (RIIT) on the BSE.
- **Startup Ecosystem Support:** DPIIT signed an MoU with a digital entertainment firm to foster growth for product-based tech startups.
- **Buyback Surcharge:** Finance Bill amendments proposed a flat 12% surcharge on capital gains derived from share buybacks by companies.
- **Healthcare IT Expansion:** Infosys entered a definitive agreement to acquire Optimum Healthcare IT for \$465 million to boost digital transformation services.
- **Unincorporated Sector Growth:** Ministry data revealed that unincorporated sector units in India grew by 8% during the 2025 calendar year.
- **Fintech Penalty:** RBI imposed a penalty on Pine Labs for failing to comply with regulatory norms regarding payment systems.
- **MSME Lending Guide:** ICAI published a revised Aide Memoire on lending to the MSME sector, including guidelines on debt restructuring.

3. Insurance

- **Jio Financial Entry:** Jio Financial Services announced plans to commence its life and general insurance business operations by 2026.
- **Cashless Claim Timelines:** New regulations set a 1-hour target for pre-authorization and a 3-hour limit for final cashless claim approvals.
- **Risk Mitigation Tools:** Credit Default Swaps (CDS) are being promoted as vital insurance mechanisms against corporate default risks.
- **Audit Standards:** ICMAI issued a Guidance Note on the Internal Audit of General Insurance Companies to strengthen governance.
- **Premium Stability:** Industry reports indicate that life insurance term plan premiums are stabilizing after significant post-pandemic fluctuations.

4. Economy

FPI Outflows: The West Asia conflict triggered record FPI outflows of ₹ 14,403 crore from Indian government securities in March.

WTO Stance: India formally opposed the inclusion of the China-led investment pact (IFD) into the WTO framework.

Growth Forecast Cut: Goldman Sachs slashed India's growth forecast for calendar year 2026 by 60 basis points to 5.9%.

Inflation Target: The Centre retained the retail inflation target at 4% (with a 2-6% band) for the period 2026-2031.

Record Rupee Low: The Rupee hit a record closing low of 94.05 against the US Dollar due to geopolitical tensions.

Climate Commitments: India updated its NDC, targeting a 47% emissions intensity cut and 60% clean power capacity by 2035.

CPI Projections: ICICI Bank projected India's retail inflation to rise to 4.5% in FY27 due to persistent energy price pressures.

OECD Projections: The OECD projected India's GDP growth at 7.6% for FY26, moderating to 6.1% in FY27.

Unemployment Trends: The unemployment rate fell to 3.1% in 2025 under the "usual status" approach of the Periodic Labour Force Survey.

Market Borrowing: The government announced plans to raise ₹ 8.20 trillion via bonds in the first half of FY27.

Japanese Assistance: Japan committed \$1.73 billion in loans for four major infrastructure projects in India.

WMA Limits: The RBI set the Ways and Means Advances (WMA) limit for the central government at ₹ 2,50,000 crore for H1 FY27.

UDAN Scheme: The regional connectivity UDAN scheme was extended for 10 years with an allocated budget of ₹ 12,159 crore.

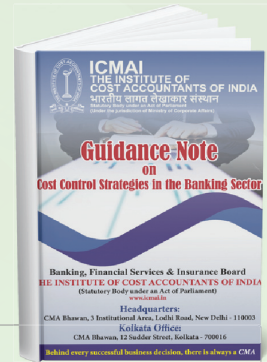


New Arrivals



GUIDANCE NOTE ON COST CONTROL STRATEGIES IN THE BANKING SECTOR

This handbook offers a focused, practitioner-ready exposition on cost control and efficiency enhancement in the Indian banking sector. Drawing on authoritative datasets from the Indian Banks' Association (IBA), bank annual reports and expert consultations, it distils core cost structures, prevailing inefficiencies and contemporary cost-management approaches. The volume combines analytical clarity with actionable guidance to help banks, NBFCs and financial institutions strengthen profitability, optimise resource deployment and align operations with emerging regulatory expectations. It concisely maps controllable and non-controllable cost drivers, benchmarks trends across public and private banks, and underscores the need for dedicated costing functions. With targeted emphasis on digital enablement, automation, energy efficiency, branch-rationalisation strategies and advanced costing tools, the handbook provides a coherent blueprint for improving cost competitiveness and informed strategic decision-making across the banking ecosystem.



Salient Features

- ◆ **Authoritative synthesis** of Indian and international practices in bank cost management.
- ◆ **Practical tools and analytical models**, including CBA frameworks, EOQ for cash, CIR improvement strategies, ALM-based cost optimisation and treasury efficiency levers.
- ◆ **Case-based insights** drawn from field visits, interactions with bank officials and real-world examples from PSBs, private banks and global institutions.
- ◆ **Comprehensive sector-wide analysis** of cost structures across branches, ATMs, lockers, call centres, training units, and outsourcing channels.
- ◆ **Forward-looking guidance** on digital transformation, energy optimisation and emerging models like centralised lockers, digital branches and automated audit systems.

Scope & Coverage (Selected Themes)

The book's comprehensive structure spans 28 chapters, covering—among others—the following core themes:

- ◆ **Role of Banks and Sector-wide Performance Trends:** Contribution of banks to India's economic architecture; comparative performance of public and private sector banks across FY 2021–2025.
- ◆ **Costing Frameworks and Policies:** Need for a formal costing policy; importance of cost-to-income ratio (CIR); budgeting discipline; role of CMAs in institutionalising cost culture.
- ◆ **Cost Audit & Transparency:** Rationale for cost audit, departmental costing structures, and frameworks for strengthening pricing transparency.
- ◆ **Operational Cost Drivers:**
 - Rent, taxes, lighting ("third cost").
 - Cash handling costs at branches and ATMs, EOQ models and logistics optimisation.
 - Electricity, branch infrastructure and digital branch models.
 - Safe-deposit locker operations and technology-driven optimisation.
 - ATM cost effectiveness, rural deployment strategies, and emerging "robo-advisory" concepts.
- ◆ **Income & Audit-Related Controls:** Audit cost rationalisation, automation of income-leakage controls, CBS-driven daily exception reporting.
- ◆ **Cost of Third-Party Product Sales:** Commission analysis, cost-benefit evaluation, and strategic focus on core banking services.
- ◆ **Outsourcing & Training Costs:** Governance of outsourced functions, creation of specialised subsidiaries, TNA-based training strategies.
- ◆ **Productivity Enhancement:** Use of RPA, BREs, job family structuring, inter/intra-firm productivity comparisons, and gold-loan processing efficiency.
- ◆ **NPA Resolution & Recovery Costs:** Cost-benefit comparison of SARFAESI, DRT, IBC, use of BCs and DRAs, and optimised recovery-unit functioning.
- ◆ **ALM & Treasury Cost Control:** FTP models, derivative tools, refinance options (NABARD, SIDBI, NHB), and reducing cost of capital in line with Basel III norms.
- ◆ **Mergers & Structural Efficiency:** Synergies from branch consolidation, IT integration, and economies of scale.
- ◆ **Role of Cost Accountants:** Activity-based costing (ABC), cost-control departments, and the growing need for Chief Cost Controllers in banks.

Why This Handbook is Essential

- ◆ Addresses the sector's urgent need to contain controllable costs amid rising compliance expenditure, digital infrastructure costs and heightened competition.
- ◆ Provides bank-ready frameworks to strengthen CIR performance, conduct cost-benefit analysis, optimise cash, branch, ATM and energy usage, and streamline audit processes.
- ◆ Equips banks to make data-driven decisions on rental, outsourcing, locker operations, training expenditure and NPA recovery models.
- ◆ Offers empirical insights using verified banking data (FY 2023–2025) to benchmark efficiency and guide strategic cost restructuring.
- ◆ Supports capacity-building for banking professionals—particularly CMAs—in integrating costing methodologies with risk management and profitability improvement.

Target Readers / Beneficiaries

- ◆ Senior bankers, cost controllers, treasury and ALM professionals, operational heads, auditors, risk managers, CMAs, consultants, NBFC/SFB executives, academic institutions and students of banking, finance and costing.
- ◆ This handbook serves as a strategic reference for integrating cost management with operational efficiency, profitability enhancement and long-term competitiveness across India's banking ecosystem.

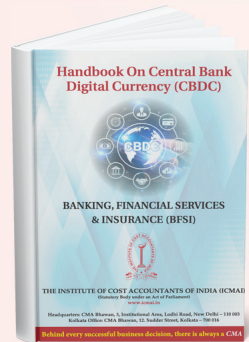
Book purchase link

https://icmai.in/booksale_bfsi/Home.aspx

Warm Regards,
CMA Chittaranjan Chattopadhyay
Chairman
Banking, Financial Services and Insurance Board

HANDBOOK ON CENTRAL BANK DIGITAL CURRENCY (CBDC)

This authoritative handbook presents a concise, practice-oriented exposition of Central Bank Digital Currency (CBDC), addressing its design, technology, policy and operational implications with particular reference to banking systems and financial reporting. Bridging international precedents and India-specific regulatory considerations, the volume equips practitioners, regulators and policy-makers with actionable guidance for CBDC design choices, implementation architectures, risk management, legal and accounting treatment, and the broader macro-financial impacts.



Salient Features

- ▶ Comparative analyses of global CBDC models and country case studies.
- ▶ Technology decision framework (scalability, security, interoperability).
- ▶ Practical policy notes on liquidity, balance-sheet and governance implications.
- ▶ Accounting treatment, tax considerations and illustrative ledger approaches.
- ▶ Role-specific guidance for central banks, commercial banks, custodians and cost accountants.
- ▶ Annotated bibliography and statutory annexures for reference.

Scope & Coverage

- ▶ Principles of public trust and currency integrity amid digital-asset proliferation.
- ▶ CBDC design considerations: types (retail/wholesale), direct/indirect/hybrid models, interest-bearing options and international design features (Bahamas, Sweden, Canada, ECCU, Uruguay).
- ▶ Technology architecture: platform selection, DLT vs non-DLT trade-offs, scalability, security, interoperability (domestic and cross-border) and analytics.
- ▶ Operational resilience: continuity planning, resource usage, consumer protection and grievance redressal.
- ▶ Policy implications: effects on monetary policy, liquidity management, financial stability, legal and balance-sheet ramifications.
- ▶ AML/CFT, privacy and data-protection.
- ▶ Institutional roles and liabilities: distribution models, custodial arrangements, and accountability of central banks, intermediaries and commercial banks.
- ▶ Accounting and reporting: classification under IFRS, triple-entry accounting, taxation, and practical guidance for financial records.
- ▶ Sectoral perspectives: cost-of-credit implications and the role of Cost Accountants in managing CBDC-related financial stability concerns.
- ▶ Annexures: relevant statutes (e.g., Digital Personal Data Protection Act, 2023) and comprehensive references.

Target Readers

Central bankers, senior bankers, treasury & payments heads, risk and compliance officers, policy makers, auditors, CMAs, financial accountants, fintech architects, legal counsel, regulators, academic researchers and postgraduate students in finance and financial technology.

To serve as a succinct, operational compendium that enables informed decision-making, rigorous risk management and compliant implementation of CBDC initiatives, thereby preserving monetary integrity while fostering innovation in the payments ecosystem.

Book purchase link

https://eicmai.in/booksale_bfsi/Home.aspx

Warm Regards,

CMA Chittaranjan Chattopadhyay

Chairman

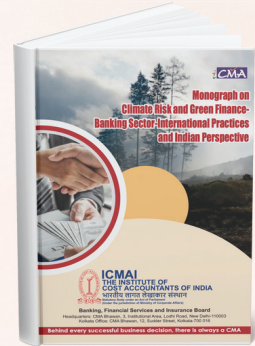
Banking, Financial Services and Insurance Board

MONOGRAPH ON CLIMATE RISK & GREEN FINANCE

This authoritative monograph presents a comprehensive, practice-oriented treatment of climate risk and green finance with special reference to the banking sector. Drawing together international best practices, global taxonomies and India-specific regulatory developments, the volume examines physical and transition risks, net-zero strategies, financing instruments, disclosure frameworks and practical implementation pathways for banks, NBFCs and financial intermediaries.

Salient Features

- ◆ Authoritative synthesis of international best practices and Indian regulatory updates.
- ◆ Practical chapters on financing instruments, transition pathways, and business-impact analysis.
- ◆ Templates for ESG disclosures, green deposit verification and sustainability reporting.
- ◆ Illustrative case studies and sectoral exposure snapshots.
- ◆ Bibliography and references for further research.



Scope & Coverage

The book comprises a substantive Table of Contents of 54 chapters, covering — inter alia — the following themes:

- ◆ Sustainability & UN SDG linkages; Five Pillars of Sustainability.
- ◆ Global environmental risk scenarios and climate-risk fundamentals.
- ◆ Climate change as a physical risk for the BFSI sector and practical climate-risk assessment frameworks.
- ◆ Net-Zero strategy: identification of risks & opportunities; pathway development; current landscape and leading transition examples.
- ◆ Net-zero financing & investment — international best practices, EBA guidelines and principles.
- ◆ Mitigation and adaptation areas; blended finance and transition financing models for India.
- ◆ RBI, SEBI and other Indian regulatory interventions — disclosure frameworks, taxonomy, green deposit verification and third-party certification requirements.
- ◆ Role of Banks, NBFCs and Small Finance Banks; green deposit policies; green bonds, carbon markets and biodiversity credits.
- ◆ Practical templates for qualitative disclosures on E, S and G; sustainability KRIs and ESG reporting pack for banks.
- ◆ Case studies: sustainability reports and ESG highlights of leading Indian banks (FY 2023–24) and exposure snapshots.

Why this Monograph is Essential

- ◆ Integrates international frameworks with RBI's evolving regulatory architecture, including the Disclosure Framework on Climate-related Financial Risks and Green Deposit Verification norms.
- ◆ Enables CMAs to lead climate-project appraisal, transition-finance structuring, cost-impact analysis and taxonomy-aligned reporting across the BFSI sector.
- ◆ Equips banks and financial institutions to design bankable climate projects, stress testing and credible ESG disclosures demanded by regulators and investors.
- ◆ Offers practical templates, checklists and KRI frameworks to accelerate operationalisation of green finance practices.

Target Readers

Senior bankers, risk and treasury officers, sustainability & compliance heads, regulators, policy-makers, credit analysts, NBFC/SFB executives, CMAs, Research analysts, consultants, and academic/post-graduate students of finance and sustainability.

This monograph is intended as a practical reference to assist the Indian banking and financial community in aligning risk management, financing strategies and disclosures with global climate objectives and national policy imperatives.

Book purchase link

https://icmai.in/booksale_bfsi/Home.aspx

Warm Regards,
CMA Chittaranjan Chattopadhyay
Chairman
Banking, Financial Services and Insurance Board

Aide Memoire On INFRASTRUCTURE FINANCING (3rd Enlarged Revised Edition)

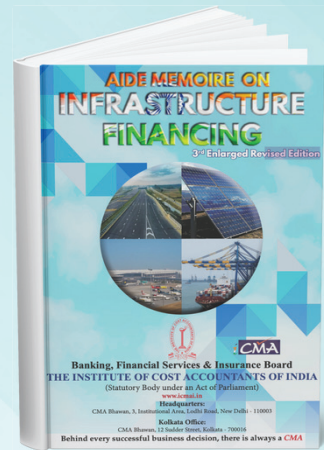
Infrastucture sector continues to play its significant role in the long term sustainable development of the country. Its contributions with multiplier effect for the entire economy are well recognised. A properly structured robust 'Infrastructure Financing' mechanism is critical for the holistic development.

Enthused by the overwhelming response and positive feedback about our previous two editions of the book, we have now launched the third Enlarged and Revised edition for the benefit of all members and students of the Institute, bankers and other professionals & stakeholders in the infrastructure domain.

This edition contains additional chapters on the government perspective, new illustrative project case studies with added coverage on ESG and sustainable finance, besides updation of material on alternate sources of finance along with the need for further reforms and the way forward.

Synopsis - Salient Features of the Book

- ✓ A single reference point and guide for the niche area of Infrastructure Financing.
- ✓ The book covers basic theoretical concepts as also the real nitty-gritty and finer nuances involved in Infrastructure Financing, with all the relevant and contemporary topics which include the following :-
 - ▶ Definition of Infrastructure sector - updated Harmonized List of Infrastructure sub-sectors.
 - ▶ RBI Guidelines on Infrastructure Financing - Project Finance Directions (2025)
 - ▶ Various models of Public Private Partnership for undertaking an infrastructure project.
 - ▶ Project structure for financing - formation of Special purpose Vehicle - key project documents.
 - ▶ Financing mechanism - consortium/ syndication
 - ▶ Credit Appraisal Process covering management, technical, economic, marketing and financial appraisal.
 - ▶ In-depth analysis of cost of project and means of finance, cost over-run, time over- run and mitigation.
 - ▶ Key Performance Indicators like DSCR ,IRR ,BEP
 - ▶ Assessment of various risks involved in Infrastructure Financing like construction risk, market risk, financial risk etc.
 - ▶ Detailed case studies on appraisal of the following projects..
 - ✦ Road sector - Hybrid Annuity Model (HAM)
 - ✦ Road Sector - Toll Operate Transfer (TOT) model
 - ✦ Solar Energy Project
 - ✦ Airport Project
 - ✦ Port Project
 - ▶ Case studies on credit risk mitigation..
 - ✦ Waste to energy project
 - ✦ Water supply management project
 - ✦ Railway station redevelopment project.
 - ▶ Project monitoring ,supervision and follow-up and Performance Audit of Infrastructure projects.
 - ▶ Management of weak accounts and restructuring along with a case study of an infrastructure project restructuring.
 - ▶ Alternate sources of funding including InvITs, IDFs, securitisation and Credit Enhancement etc.
 - ▶ Infrastructure Thrust by Government of India with updated details of National Infrastructure Pipeline, National Monetization Pipeline, Gati Shakti, budgetary allocations and role of IIFCL NaBFID ,IREDA.
 - ▶ ESG and Sustainable Finance..
 - ▶ Atmanirbhar Bharat and Urban Infrastructure
 - ▶ Preventive Vigilance
 - ▶ Infrastructure Reforms -Need for a forward looking approach.



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Warm Regards,
CMA Chittaranjan Chattopadhyay
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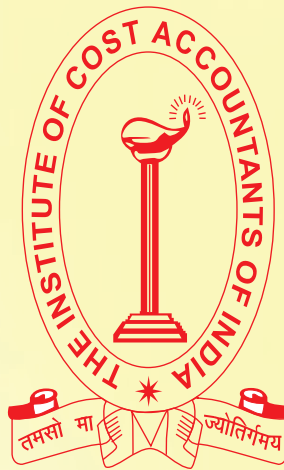
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Behind every successful business decision, there is always a CMA