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Emerging Technologies in Banking

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ध्येय

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

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Editorial

Mr. Deepak Kumar Lalla
Chief Executive Officer,
IIBF, Mumbai

Dear Readers,

The financial sector is undergoing a significant change driven by emerging technologies such as Artificial Intelligence (AI), Generative Artificial Intelligence (Gen AI), Machine Learning, big data and cloud computing. These technological innovations are enhancing efficiency and creating robust business models and thereby, creating new opportunities. Though the technologies are changing the way of doing work in every department, it poses some challenges as well. The challenge is how to use them with wisdom and purpose; and ensure the inclusivity, resiliency and future-readiness.

Considering the increasing use and importance of technologies in banking sector, we are publishing this issue of Bank Quest on the theme, "Emerging Technologies in Banking".

"Generative AI has the potential to change the world in ways that we can't even imagine. It has the power to create new ideas, products and services that will make our lives easier, more productive and more creative. It also has the potential to solve some of the world's biggest problems, such as climate change, poverty and disease." - Bill Gates, Co-Founder, Microsoft.

Highlighting the importance and ethical angle of Generative Artificial Intelligence in banking, the first article is on "Generative AI in Indian Banking: Applications, Ethics and Implementation Pathways" authored by Mr. Ashwin Ramachandran, Senior Manager, Artificial Intelligence/Machine Learning (AI/ML) Computational Science, Accenture. The author has highlighted that the use of artificial intelligence can improve operational efficiency, however, for its effective use, the fairness should be an integral part in the AI-driven decision-making. The author has mentioned that the efficient use of these technologies can be a strategic differentiator for banks in future.

The next article titled "मानव संसाधन विकास विभाग में कृत्रिम बुद्धिमत्ता की उपयोगिता" is written by Dr. Naipal Singh, Chief Manager (Human Resource Development), PNB Cards and Services Limited, providing insights on the use of Artificial Intelligence in Human Resource Management department. The author has mentioned that the technological interventions can provide a path towards customised training, performance appraisal and can enhance overall employee experience.

Technological interventions are increasing productivity in every aspect through customised offerings, increasing the number and reach of financial products and services to individuals, businesses especially Micro, Small and Medium Enterprises (MSMEs). Highlighting the importance of Artificial Intelligence in improving financial and credit inclusion, the next article is penned by Mr. Pramod Kumar Ojha, Special Customer Service Associate, Punjab National Bank on "Financial Inclusion 2.0: AI-Driven solutions for closing the Credit gap among MSMEs". The paper looked into the credit gap among MSMEs and how it can be reduced with the help of Artificial Intelligence.

Innovation should be responsible and strengthens the regulated financial system. The next article titled "Cryptocurrency: Global Regulations and India's stand" authored by Dr. Suja Sekhar C, Manager (Research), State Bank of India. The author has mentioned the challenges associated with the cryptocurrency and further highlighted the need of regulations to combat the use of funds for illegitimate activities, protecting consumers against frauds and ensuring the integrity of markets, financial systems and safeguarding financial stability.

This issue also features the Summary of Macro Research Project report for the year 2021-22, on the topic "Impact of EASE Reforms on Banking" by Mr. Dinesh Mishra, Chief Manager and Faculty, Union Bank of India; and Dr. Amrendra Pandey, Associate Professor, Kautilya School of Public Policy (KSPP). The author has studied the impact of the EASE reform agenda on Public Sector Banks (PSBs) performance and subsequent impact on the banking sector. The author has concluded that capital adequacy, management quality, earning ratio, liquidity and sensitivity ratio all are important in explaining efficiency of banks. All of these ratios have seen improvement in public sector banks since the implementation of EASE reforms and consequently their efficiency has also improved significantly. Additionally, Public sector banks can leverage the positive sentiments of people by concentrating on EASE related action points, particularly, customer service and product offerings by utilizing digital and analytical tools.

The Institute is inviting papers/proposals under Micro, Macro and Diamond

Jubilee CH Bhabha Banking Overseas Fellowship for the year 2025-26. We encourage the readers to participate in the Institute's research projects.

We hope that readers will appreciate its depth and comprehensive coverage.

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

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

Deepak Kumar Lalla

GENERATIVE AI IN INDIAN BANKING: APPLICATIONS, ETHICS AND IMPLEMENTATION PATHWAYS

Ashwin Ramachandran*

Introduction: The Inflection Point in Banking Technology

Indian banking stands at a technological watershed. Generative Artificial Intelligence (AI) represents not incremental automation but a capability inflection - systems that create, analyze and synthesize content at scales previously unattainable. Unlike rule-based automation or traditional machine learning models that classify and predict generative AI produces novel outputs: customer communications, analytical reports, code and insights from unstructured data. For a sector processing 131 billion Unified Payments Interface (UPI) transactions annually and serving 520 million State Bank of India (SBI) customers alone, this capability shift translates to operational transformation.

The evidence base confirms momentum. EY's 2025 survey of financial services executives reveals 74% of firms have initiated proof-of-concept projects, with 11% reaching production deployment. Investment follows intent: 42% of organizations now allocate dedicated generative AI budgets. Productivity projections are substantive - 34-38% improvement across financial services by 2030, rising to 46% specifically for banking operations. These are not aspirational targets but extrapolations from early deployment data showing cost-per-transaction reductions to one-tenth of manual processing baselines.

The Indian context introduces distinct considerations. Linguistic diversity demands multilingual capabilities across 22 scheduled languages. Infrastructure heterogeneity spans from metropolitan fiber networks to rural connectivity constraints. Regulatory architecture reflects this complexity - Reserve Bank of India guidelines on IT frameworks, outsourcing and the nascent Digital Personal Data Protection Act (DPDPA), 2023 create compliance layers limited in Western deployments.

This study examines generative AI deployment across Indian banking through dual lenses: operational applications delivering measurable value and ethical governance frameworks ensuring sustainable implementation. The treatment balances technical accessibility for non-specialist executives with practical guidance for operational deployment. It grounds discussion in documented Indian bank implementations rather than speculative capability projections, while addressing the governance imperatives that determine long-term viability.

Understanding Generative AI: Technical Foundations for Banking Professionals

Generative AI fundamentally differs from the predictive models banks have deployed for decades. Traditional credit scoring models classify applicants as approve/reject based on historical patterns. Fraud detection systems flag suspicious transactions by comparing against known fraud signatures. These are discriminative AI - they draw boundaries between categories. Generative AI creates. It drafts emails, summarizes loan applications, writes software code, synthesizes regulatory compliance reports. The distinction matters operationally because it determines use cases.

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The architectural foundation is the transformer model, introduced in 2017 and now underlying systems like ChatGPT. Think of transformers as pattern recognition engines trained on massive text corpora - billions of sentences showing how language works. During training, the model learns relationships: "credit" associates with "score," "disbursal," "underwriting", "customer" connects to "account," "query" and "satisfaction." These associations form a multidimensional map of language patterns. When generating text, the model navigates this map, selecting words based on learned probability distributions. For banking applications, this means a system trained on loan documentation can draft approval letters that read naturally, incorporating borrower details and regulatory language without explicit programming.

Scale differentiates capability. Large language models like those deployed by major Indian banks contain hundreds of billions of parameters - the numerical weights encoding learned patterns. Training requires computational infrastructure measured in thousands of specialized processors operating for weeks. The resulting systems handle tasks across domains without retraining: customer service, document analysis, code generation and risk assessment. This generality creates strategic value but also implementation complexity. A generalized model must be adapted - through fine-tuning or prompt engineering - to bank-specific terminology, regulatory requirements and internal policies.

Indian banks face deployment choices. Cloud-based models from global vendors (OpenAI, Anthropic, Google) offer immediate capability but raise data sovereignty concerns given Reserve Bank of India (RBI) localization requirements. Developing proprietary models provides control but demands rare AI talent and substantial compute investment. The emerging middle path: sector-specific models. RBI's FREE-AI Committee recommendations explicitly call for indigenous financial sector language models offered as public infrastructure. This addresses both capability and compliance - models trained on Indian banking terminology, regulatory frameworks, multilingual requirements, while avoiding customer data exposure to foreign platforms.

For banking practitioners, three technical concepts require clarity. First, hallucination - the tendency of generative models to produce plausible but factually incorrect outputs. A chatbot might cite a non-existent policy clause or misstate an interest rate. This necessitates human oversight loops for customer-facing deployments and regulatory submissions. Second, context window - the amount of text a model can process simultaneously, typically measured in tokens (roughly 75% of a word). Current models handle 100,000-200,000 tokens, equivalent to a 200-page document. This determines which banking processes can be automated end-to-end versus requiring document chunking. Third, fine-tuning versus retrieval-augmented generation. Fine-tuning retrains a model on bank-specific data, encoding institutional knowledge directly. Retrieval-Augmented Generation (RAG) connects a model to bank document databases, enabling real-time information retrieval without retraining. Most Indian implementations combine approaches - fine-tuned base models augmented with RAG for current policy documents.

The operational implication: generative AI is not a drop-in replacement for existing systems. It requires architectural integration, Application Programming Interfaces (APIs) (connecting to core banking platforms), data pipelines (feeding current information to models), governance processes (validating outputs before customer delivery) and monitoring infrastructure (tracking model performance degradation over time). Banks treating generative AI as software procurement will underperform those approaching it as capability transformation requiring organizational adaptation.

Application Domains: Measured Value Across Banking Functions

Customer-Facing Digital Channels

Conversational banking represents the most visible generative AI deployment. ICICI Bank's iPal chatbot has handled over 6 million queries since launch, achieving 90% accuracy rates while reducing call center costs by 25%.[1] The system fields account inquiries, transaction history requests, product information and complaint logging across web and mobile channels. SBI's SBI Intelligent Assistant (SIA) operates at infrastructure scale - engineered to process 10,000 queries per second, approximately 25% of Google's daily query volume[1]. These are not experimental pilots but production systems handling millions of daily interactions.

The value driver extends beyond cost displacement. Traditional Interactive Voice Response (IVR) systems route customers through menu trees; generative chatbots understand natural language intent. A customer typing "my card got declined at the grocery store" receives contextualized assistance without navigating nested menus. HDFC Bank's Electronic Virtual Assistant (EVA) processes 10 million monthly interactions, handling lost card reports, billing disputes and loan inquiries in real-time, often in regional languages. This multilingual capability addresses India's linguistic reality - banking populations speaking Hindi, Tamil, Bengali, Telugu, Marathi and 17 other scheduled languages. EVA's generative architecture enables language expansion without rebuilding rule-based decision trees for each language[2].

Personalization represents the next capability layer. Basic chatbots answer Frequently Asked Questions (FAQs); generative systems synthesize customer transaction history, product holdings and life stage indicators to provide contextual recommendations. A customer querying education loans receives responses incorporating their savings patterns, existing relationships and eligibility for linked products. SBI's YONO platform, serving 88 million registered users, employs generative AI to analyze transaction patterns and spending behavior, offering tailored financial advice[3]. The 2024 enhancements include hyper-personalized experiences driven by AI analysis of individual financial journeys.

Customer onboarding demonstrates measurable cycle time compression. Video Know Your Customer (KYC) processes previously required manual verification of PAN cards, Aadhaar documents and bank statements - a multi-day process involving document review by operations teams. Generative AI systems extract data from documents regardless of format variations, match information across sources, flag inconsistencies and generate compliance reports. Axis Bank's deployment across credit card applications reduced processing time from 15 minutes of manual data entry to 2-3 minutes for exception handling only, with bots performing extraction, matching and validation autonomously.

The constraint layer merits acknowledgment. Chatbot efficacy deteriorates for complex queries requiring judgment - restructuring loan terms, resolving disputed transactions and handling sensitive complaints. These require human escalation and poorly designed escalation paths frustrate customers. Additionally, generative chatbots occasionally produce hallucinated responses - citing non-existent policies or providing incorrect interest rates. HDFC Bank and ICICI Bank both employ multi-tiered validation: initial generative response, fact-checking against structured databases and confidence scoring determining whether autonomous response or human review is required.

Operational Efficiency and Process Automation

Document processing represents generative AI's highest-impact internal application. Banks process

[1] India AI. (n.d.). ICICI Bank leveraging AI to augment customer service and support. https://indiaai.gov.in/case-study/icici-bank-leveraging-ai-to-augment-customer-service-and-support
[2] Institute for Financial Management and Research. (n.d.). Banks riding the digital wave. https://www.ifbi.com/node/1414
[3] Klover.ai. (2025, July 30). State Bank of India's AI strategy: Analysis of dominance in banking AI. https://www.klover.ai/state-bank-of-india-ai-strategy-analysis-of-dominance-in-banking-ai/

thousands of daily loan applications, each comprising income proofs, property valuations, legal documents and bank statements. Manual processing involves reading documents, extracting key data points (income figures, employment tenure, asset values), entering information into loan origination systems and validating against policy rules. Processing times measured in days. Error rates of 5-10% from manual data entry.

ICICI Bank deployed software robotics across 200+ business processes, leveraging generative AI for document comprehension. The system reads loan applications regardless of format - Portable Document Formats (PDFs), scanned images, handwritten forms - extracts relevant fields, populates core banking systems and routes to underwriters with pre-filled assessments. Response time to customers reduced by 60%; accuracy increased to near 100%; employee time reallocated from data entry to relationship management and exception handling. The bank committed to doubling deployments, targeting 500+ robotic processes by fiscal year-end[4].

Trade finance documentation presents similar automation opportunities. Letters of credit, bills of lading, commercial invoices, inspection certificates - each containing structured and unstructured data requiring validation against contract terms and compliance requirements. Generative AI systems trained on trade finance terminology extract clause-level information, compare across documents, flag discrepancies and generate compliance reports. This reduces processing time compression from days to hours and manual review effort by 70%.

Regulatory reporting automation addresses persistent compliance cost pressures. Indian banks submit statutory returns to RBI - balance sheet data, exposure reports, liquidity ratios - formatted per eXtensible Business Reporting Language (XBRL) standards. Preparation involves extracting data from multiple internal systems, transforming to regulatory schemas, validating accuracy and documenting assumptions. Generative AI systems map internal data structures to regulatory formats, perform transformations, generate explanatory notes and flag anomalies requiring review. Banks can deploy AI to automate labour-intensive compliance tasks, bringing higher degrees of accuracy and reducing manual efforts significantly.

The strategic implications: process automation through generative AI is not displacing roles but restructuring work. Bank employees shift from repetitive data handling to higher-value activities - customer relationship development, complex exception management and process improvement. Axis Bank's experience illustrates this: automation across 125+ processes enabled redeployment of personnel to customer-facing functions, contributing to improved satisfaction scores while reducing operational costs[5].

Risk Management and Analytical Applications

Credit underwriting enhancement represents generative AI's most consequential risk application. Traditional models evaluate borrowers via structured data - credit bureau scores, income statements and asset holdings. This excludes populations lacking formal credit history and constraining financial inclusion. Generative AI systems ingest alternative data sources: UPI payment patterns, utility bill payment histories, mobile recharge regularity, digital footprints indicating stability. The models synthesize unstructured data (bank statement narratives, employer descriptions from LinkedIn) with structured inputs, generating creditworthiness assessments for previously unbankable populations.

Axis Bank piloted this approach for rural microloans in Uttar Pradesh during 2024. The AI system analyzed UPI transactions, mobile payments and utility bill histories for 50,000 applicants lacking traditional credit

[4] Institute for Financial Management and Research. (n.d.). Banks riding the digital wave. https://www.ifbi.com/node/1414
[5] Emerj Artificial Intelligence Research. (n.d.). AI applications in the top 4 Indian banks. https://emerj.com/ai-sector-overviews/ai-applications-in-the-top-4-indian-banks/

scores. Approval time compressed to 48 hours versus weeks for manual assessment. Loan disbursements increased 15%; default rates declined 20% relative to traditional methods[6]. The accuracy improvement stems from richer information - payment regularity and transaction patterns often predict repayment behavior better than point-in-time credit scores.

Fraud detection has employed machine learning for years, but generative AI adds explanatory capability. Traditional models flag suspicious transactions; generative systems explain why - synthesizing transaction context, merchant patterns, customer history into natural language narratives. This accelerates investigator review and improves false positive management. When a transaction is flagged, the investigator receives not just an alert but a generated summary: *"This ₹45,000 transaction at an electronics retailer in a different state deviates from the established pattern and occurred hours after smaller transactions in the customer's home city."* Context accelerates decisioning.

Anti-money laundering surveillance similar benefits. Banks must file Suspicious Activity Reports (SARs) when transaction patterns suggest potential money laundering. Identifying patterns requires analyzing transaction networks, entity relationships, geographic flows and behavioral anomalies across millions of daily transactions. Generative AI systems synthesize these indicators, draft preliminary Suspicious Activity Reports with supporting rationale and route to Compliance Officers. One large private bank reported 35% reduction in SAR preparation time while improving narrative quality.

Market intelligence applications are emerging. Banks monitor news flows, competitor activities, economic indicators and regulatory changes to inform credit decisions and strategic planning. Generative AI systems ingest news articles, earnings transcripts, social media sentiment and regulatory filings, synthesizing sector-specific summaries. A relationship manager assessing a corporate loan receives AI-generated briefings: recent media coverage, competitor performance, industry headwinds and regulatory developments. This democratizes research capabilities - previously requiring dedicated analyst support - across the relationship management organization.

The limitation framework requires clarity. Generative AI models exhibit bias when training data reflects historical discrimination. Credit models trained on lending patterns from decades past may encode bias against certain geographies, castes or genders. This demands rigorous bias testing, pre-deployment and ongoing monitoring. Model explainability remains challenging - regulators and customers expect clear rationale for adverse decisions, but complex generative models function as "black boxes." Banks must implement explainability frameworks: documenting which factors influenced decisions, maintaining human oversight for high-stakes determinations, establishing appeal processes for contested outcomes.

Back-Office Transformation

Human resources automation extends beyond recruitment screening. Generative AI systems analyze job descriptions and CVs at scale, but also generate customized onboarding materials, draft performance review summaries synthesizing year-round feedback and create personalized training curricula based on skill gap analysis. SBI's commitment to deploying AI across employee-facing functions reflects recognition that Human Resource (HR) efficiency directly enables customer service capacity[7].

Compliance monitoring represents high-value internal deployment. Banks must ensure employees adhere to conduct policies, trading restrictions and customer interaction standards. Generative AI systems analyze email communications, recorded

[6] State Bank of India. (2024). Annual report 2023-24 (p. 17).https://sbi.bank.in/documents/17836/39646794/Annual_Report_2024.pdf
[7] The Deep Trailblazer. (2025, March 24). Banking on intelligence: How AI agents are redefining India's financial frontier. Substack. https://thedeeptrailblazer.substack.com/p/banking-on-intelligence-how-ai-agents.

phone calls and chat transcripts, flagging potential violations - aggressive sales tactics, inappropriate customer interactions and policy breaches. One mid-sized private bank reported 60% improvement in compliance review efficiency, enabling broader monitoring coverage without proportional headcount increases.

Internal knowledge management tackles institutional memory challenges. Banks accumulate decades of policy documents, procedure manuals, regulatory interpretations and product specifications. Finding relevant information requires navigating document repositories and querying colleagues. Generative AI-powered systems function as institutional memory engines. Employees pose natural language queries - *"What is our policy on restructuring commercial real estate loans for MSME borrowers?"* - and receive synthesized answers drawn from policy documents, historical communications and regulatory guidance, with source citations enabling verification.

Code development acceleration applies particularly to banks with large internal technology teams. Generating API integration code, writing test cases, documenting systems, identifying security vulnerabilities - tasks consuming developer time. Generative AI coding assistants draft code from natural language specifications, generate unit tests, explain legacy code functionality and flag potential bugs. Banks report 20-30% developer productivity improvements, enabling faster feature delivery and technical debt reduction.

Ethical Framework: Governance Architecture for Sustainable Deployment

Regulatory Context and Emerging Guidelines

RBI's FREE-AI Committee report, released in August 2025, establishes foundational principles for responsible AI adoption in Indian financial services. The framework comprises seven "Sutras": trust as foundational, people-first orientation, innovation over restraint, fairness and equity, accountability, understandability by design and safety with resilience. These principles translate to 26 operational recommendations across six pillars - infrastructure, capability, policy, governance, protection and assurance.

The infrastructure pillar mandates establishment of AI sandboxes managed by Reserve Bank Innovation Hub, providing shared computational resources and quality datasets for experimentation. This addresses resource constraints for smaller banks and Non-Banking Financial Companies (NBFCs) lacking capital for independent AI infrastructure. The capability pillar requires training programs for board members, senior management and staff, recognizing that AI governance demands literacy across organizational levels, not just technical teams.

Policy requirements include board-approved AI strategies with defined risk appetites, regular reviews adapting to technology evolution and permanent RBI oversight mechanisms monitoring sector-wide AI developments and risks. Governance provisions integrate AI into existing risk management frameworks - credit risk committees evaluate AI lending models, operational risk teams assess automation system failures and audit functions verify AI system controls.

The Digital Personal Data Protection Act, 2023, now progressing toward full enforcement by 2027, imposes consent, purpose limitation and data minimization obligations directly relevant to AI deployments. Banks must obtain explicit customer consent before using personal data for AI model training. Purpose limitation restricts using data collected for account opening in unrelated AI applications without fresh consent. Data minimization requires collecting only necessary data for specified purposes - problematic for generative AI systems often benefiting from large and diverse datasets.

Data localization requirements persist. RBI guidelines

mandate storing payment system data and certain customer information within India. This constraints using foreign cloud-based AI services involving data transfer outside Indian borders. Banks must either develop local AI infrastructure, use India-domiciled cloud services or implement architectures where sensitive data never leaves Indian systems while non-sensitive data enables AI model interaction.

Fairness, Bias and Algorithmic Accountability

Constitutional principles underpin fairness requirements. Article 14 guarantees equality before law; banking sector mandates include priority sector lending and financial inclusion targets. AI systems making credit decisions, pricing loans or determining service levels must not systematically disadvantage protected groups - scheduled castes and tribes, religious minorities, women, rural geographies and economically disadvantaged populations.

Bias manifests through multiple pathways. Historical lending data reflects past discrimination - denied loans to certain communities or regions not because of creditworthiness but due to prejudice. Training AI models on this data encodes historical bias into automated decisions. A model learning that certain pin codes correlate with higher defaults may perpetuate geographic discrimination rather than identifying true risk factors. Feature selection introduces bias - using proxies like name, address or phone number patterns that correlate with protected characteristics.

Detection requires systematic testing pre-deployment. Banks must analyze model predictions across demographic segments, comparing approval rates, pricing and service levels. Statistical parity testing examines whether approval rates differ across groups with similar objective qualifications. Individual fairness testing verifies similar applicants receive similar decisions regardless of protected characteristics. Disparate impact analysis identifies if a facially neutral model produces discriminatory outcomes.

Indian banks must implement dedicated AI model-risk management units that conduct bias-audits before production deployment, aligning with RBI's FREE-AI framework recommendations for responsible AI governance. Testing involves comparing model decisions against protected attribute distributions in the applicant pool, examining for statistically significant disparities. When detected, models undergo retraining with bias mitigation techniques - reweighting training data to balance demographic representation, removing correlated features serving as proxies for protected attributes or imposing fairness constraints requiring similar treatment across groups.

Ongoing monitoring complements pre-deployment testing. Model performance drifts over time as input distributions shift. A credit model calibrated on pre-pandemic data may behave differently post-pandemic. Banks must monitor predictions across demographic segments continuously, investigating and remediating emerging disparities. Banks must implement quarterly model performance reviews disaggregated by customer demographics, geographic regions and product types, with remediation protocols when disparities exceed thresholds.

Transparency extends beyond technical teams to customer-facing explanations. When a loan application is declined or receives unfavorable pricing, customers deserve clear rationale. This poses challenges for complex generative AI models where decisions emerge from interactions among billions of parameters. Banks implement layered explainability: global explanations documenting generally influential factors across all decisions, cohort explanations describing drivers for customer segments and individual explanations highlighting specific factors affecting a particular decision.

Accountability structures map to existing three-lines-of-defense frameworks. Business units deploying AI own first-line risk management - validating

model appropriateness, monitoring performance and implementing controls. Independent model risk management functions provide second-line challenge - validating model development, testing robustness and verifying bias testing. Internal audit conducts third-line assurance - evaluating control effectiveness, governance adherence and regulatory compliance.

Board oversight elevates AI governance strategically. RBI guidance recommends board-level AI committees or expanded mandates for existing risk committees to approve high-risk AI deployments, review significant model failures, monitor aggregate risk exposure from AI systems and ensure organizational capability development.

Data Privacy, Security and Third-Party Risk

Customer data fuels AI model training, but DPDPA, 2023 constraints necessitate careful architecture. Purpose limitation means data collected for account opening cannot be repurposed for AI model training without explicit consent. Banks must implement consent management systems capturing customer preferences: consent for transaction processing (required for service delivery), consent for AI-driven personalization (optional enhancement), consent for model training (required if contributing data to training datasets).

Training data governance addresses Personally Identifiable Information (PII) handling. PII - names, account numbers, Aadhaar details, phone numbers - must be stripped from training datasets or anonymized to prevent memorization and potential reproduction by models. Even supposedly anonymized data carries re-identification risks when combined with external datasets. Banks implement differential privacy techniques adding statistical noise to training data, preserving utility for pattern learning while preventing individual record reconstruction.

Inference privacy protects customer queries to AI systems. When a customer asks a chatbot about loan restructuring options, that query reveals financial stress. Query logs become sensitive data requiring protection equivalent to transaction records. Banks implement encryption for in-transit queries, limit log retention to operational necessities and restrict access to authorized personnel for debugging and improvement purposes.

Third-party AI vendor management introduces additional risk layers. Many Indian banks use generative AI services from global technology companies - Microsoft, Google, Amazon Web Services (AWS) - raising data sovereignty and security concerns. RBI guidelines on IT outsourcing specify that outsourcing does not diminish regulated entity accountability. Banks remain responsible for vendor security practices, data handling, model behavior and regulatory compliance.

Contractual frameworks must address data residency (where data is stored and processed), data usage restrictions (preventing vendor use of customer data for training models serving other clients), breach notification obligations (timeline and content requirements when security incidents occur), audit rights (bank ability to verify vendor security and compliance) and exit provisions (ensuring data deletion and transitional service continuity when vendor relationships terminate).

The emerging practice involves hybrid architectures. Sensitive customer data remains within bank infrastructure; AI models operate in bank-controlled environments - private clouds or on-premise deployments. Only aggregated, anonymized insights or non-sensitive operational data transit to vendor platforms for model improvement or cloud services. This balances capability access with regulatory compliance and data sovereignty imperatives.

Cyber security considerations multiply with AI deployment. Adversarial attacks - carefully crafted

inputs designed to fool AI systems - pose fraud risks. A subtly modified document might pass generative AI validation while containing fraudulent information. Model theft attempts seek to extract proprietary models via systematic querying. Data poisoning attacks introduce corrupted data into training pipelines, degrading model performance or inserting backdoors enabling future exploitation.

Defense requires layered controls. Input validation checks submissions for manipulation indicators. Anomaly detection monitors for systematic query patterns suggesting extraction attempts. Model watermarking enables detection of unauthorized copies. Access controls limit who can query models and what data they access. Incident response plans address AI-specific scenarios - model compromise, data poisoning detection and adversarial attack identification.

Stakeholder Impact and Change Management

Customer perspective balances service enhancement against privacy and depersonalization concerns. Customers appreciate 24/7 chatbot availability and faster loan approvals, but distrust fully automated decisions affecting financial well-being. They fear algorithmic errors with no human recourse, data misuse for profiling beyond their understanding and replacement of relationship banking with transactional automation.

Banks must communicate transparently. When deploying AI-driven underwriting, customers deserve clear explanations: what data is analyzed, how decisions are made, what recourse exists for disagreement. This maintains trust while capturing efficiency benefits.

Digital literacy barriers affect adoption. Rural customers and elderly populations may struggle with AI-powered interfaces, lacking familiarity with chatbot interactions or digital document submission. Banks must maintain parallel service channels - branch access, phone support, assisted digital onboarding - ensuring AI deployment enhances rather than excluding underserved populations. SBI's multilingual chatbot development addresses linguistic barriers; branch-assisted digital onboarding addresses technology literacy gaps[8].

Employee perspective confronts automation anxiety. AI and chatbot deployment directly impacts the way operations and roles are performed, through process automation, document processing etc. Job security concerns are real and justified. Banks must proactively address workforce implications through transparent communication, reskilling programs and role transformation rather than displacement strategies.

Reskilling initiatives for employees can transits them from automated tasks to higher-value functions. Operations staff engaged in processing of loan documents retrain as handlers addressing complex cases requiring judgment. Call center employees managing routine queries can be transitioned to handling escalated issues, customer education or product sales. ICICI Bank's automation across 200+ processes included structured transition programs - identifying affected roles, mapping transferable skills, providing training for new functions and supporting internal mobility[9].

Job creation accompanies automation. AI deployment requires new roles: data scientists developing models, AI operations engineers monitoring system performance, Ethics Officers ensuring responsible deployment, trainers developing employee capability and explainability specialists interpreting model decisions. Banks building strategic AI capability invest in these new competencies, often providing growth opportunities for existing employees willing to upskill.

Shareholder perspective evaluates Return on Investment (ROI) timelines and competitive

[8] State Bank of India. (2024). Annual report 2023-24 (p. 17). https://sbi.bank.in/documents/17836/39646794/Annual_Report_2024.pdf
[9] Kumar, V., et al. (2022). Application of artificial intelligence in banking: A study based on SBI-SIA virtual assistant. ResearchGate. https://www.researchgate.net/publication/362135550_APPLICATION_OF_ARTIFICIAL_INTELLIGENCE_IN_BANKING_A_STUDY_BASED_ON_SBI-SIA_VIRTUAL_ASSISTANT

positioning. Generative AI investment is substantial - infrastructure, talent acquisition, third-party services and organizational change management. Shareholders demand clarity on value realization. Early private sector bank deployments demonstrate measurable returns: 25% call center cost reduction at ICICI Bank, 60% customer response time improvement across multiple implementations, processing time compression from days to hours for document-intensive processes [10] [11].

Competitive dynamics create investment pressure. Banks, observing peers, deploy successful AI applications. The strategic risk may emerged from inaction. Customer expectations shift - populations experiencing instant AI-driven service at one bank demand equivalent capability from their primary bankers. Technology-leading banks are establishing positions difficult for laggards to match, given first-mover advantages in data accumulation, talent acquisition and organizational learning.

Implementation Roadmap: Structured Deployment Approach

Step 1: Assessment and Prioritization

Current state evaluation establishes the deployment baseline. Banks must inventory their existing technology infrastructure (core banking platforms, data warehouses, cloud capabilities, API architectures), assess data maturity (quality, accessibility, governance) and evaluate talent inventory (data scientists, Machine Learning (ML) engineers, AI-literate business leaders, change management capability).

Infrastructure assessment determines deployment feasibility. Legacy core banking systems with limited API access constrain AI integration - model predictions require injection into operational workflows via system interfaces. Data fragmentation across siloed systems prevents holistic customer views necessary for personalized AI applications. Cloud maturity affects deployment speed - banks with established cloud platforms integrate AI services faster than those requiring infrastructure buildout.

Data maturity evaluation examines three dimensions: *Quality:* completeness, accuracy and consistency across systems.

Accessibility: can data be extracted, transformed and loaded into AI pipelines efficiently?

Governance: are data lineage, ownership, usage policies documented and enforced?

Banks with high-quality, accessible, well-governed data progress faster from pilot to production. Those with data quality issues must invest in remediation before realizing AI value.

Talent assessment identifies capability gaps. Data scientists develop and train models. ML engineers operationalize models into production systems. AI product managers translate business requirements into AI solution specifications. Domain experts (credit officers, compliance specialists and product managers) collaborate with technical teams ensuring models align with business logic and regulatory requirements. Banks lacking these capabilities must recruit from external or develop internally - both requiring time and investment.

Use case prioritization balances business value against implementation complexity. High-value and low-complexity applications deliver quick wins building organizational confidence and funding further deployment. Customer service chatbots for Frequently Asked Question (FAQ) handling represent this quadrant - measurable call center cost reduction, manageable technical complexity, limited regulatory risk. High-value and high-complex applications like AI-driven credit underwriting for alternative data warrant investment despite challenges, given strategic importance to financial inclusion and competitive positioning.

[10] Institute for Financial Management and Research. (n.d.). Banks riding the digital wave. https://www.ifbi.com/node/1414
[11] Lakshaya Patwa. (2025). Exploring the impact of AI-powered chatbots on customer experience in Indian Banking, https://ojs.svako.lt/VNTSV/article/download/376/288/1262

The prioritization matrix considers regulatory risk explicitly. Applications involving customer-facing decisions, personal data processing or regulatory reporting undergo enhanced scrutiny. Lower-risk internal applications - HR screening, code generation assistance, internal knowledge management - enable faster deployment and learning before tackling higher-stakes use cases.

Step 2: Foundation Building and Deployment Strategy

Data strategy encompasses collection, quality management and governance. Banks must identify which data supports priority use cases, implement quality improvement processes (deduplication, standardization, validation), establish governance frameworks (data ownership, access controls, usage policies) and build infrastructure enabling efficient data movement to AI systems - data lakes, feature stores and real-time streaming pipelines.

Infrastructure decisions involve cloud versus on-premise tradeoffs. Cloud platforms offer rapid deployment, scalable compute for model training and access to pre-trained models. On-premise infrastructure provides data control and regulatory compliance assurance but requires larger upfront investment and longer deployment timelines. Hybrid approaches predominate - sensitive customer data on-premise and non-sensitive applications cloud-deployed.

Talent strategy recognizes specialized skills scarcity. India has developed a strong AI talent base, but competition for experienced practitioners remains intense. Banks pursue multiple talent strategies simultaneously: hiring externally for critical roles, developing internal talent through structured training programs, partnering with academic institutions for curriculum alignment and recruitment pipelines, engaging consulting firms for specific expertise gaps.

Partnership ecosystems enable capability access without full internal development. Banks collaborate with fintech firms for specific applications, cloud providers for infrastructure and foundational models, system integrators for deployment execution and academic institutions for research partnerships. SBI's hackathon initiatives and collaboration programs illustrate ecosystem engagement - sourcing innovative solutions from startups and developers while building internal capability.

Governance structure establishment precedes scaled deployment. Banks must define AI decision-making authorities (who approves model deployments, sets risk appetite, allocates budget), establish model risk management processes (development standards, validation requirements, ongoing monitoring), create ethics review mechanisms (bias testing protocols, fairness thresholds, audit procedures) and implement incident response frameworks (model failure protocols, escalation paths, remediation processes).

Phased rollout mitigates deployment risk. Pilot implementations target limited customer segments or geographies, enabling controlled testing and learning before expansion. A chatbot pilot might serve only mobile banking customers in specific cities, allowing performance validation and issue resolution before nationwide launch. Limited production deploys to broader populations while maintaining human oversight - AI-generated loan approval recommendations reviewed by underwriters before final decisions. Full autonomy comes only after demonstrating sustained accuracy, reliability and compliance through preceding phases.

Performance monitoring frameworks track leading and lagging indicators. Leading indicators - model prediction confidence, data quality metrics, system latency - provide early warning of potential issues. Lagging indicators - customer satisfaction scores, operational cost reductions, revenue impacts, regulatory findings - measure ultimate business value and risk realization. Continuous improvement

mechanisms incorporate feedback loops: customer input drives interface refinements, model prediction errors trigger retraining, operational issues prompt process adjustments.

Step 3: Capability Maturity Evolution

Level 1 - Experimental: Banks conduct isolated pilot testing on AI feasibility for specific use cases. Projects remain disconnected from core operations, staffed by small specialist teams, with limited enterprise integration. Success metrics focus on technical feasibility rather than business impact. Most Indian banks operated at this level through 2022-2023.

Level 2 - Operational: Production deployments emerge with human oversight. AI applications integrate with core banking systems, serve real customers, deliver measurable business value. Human review remains mandatory for consequential decisions. Governance frameworks establish risk management processes. Several Indian banks transitioned to this level during 2024, evidenced by reported production chatbot deployments and process automation implementations.

Level 3 - Integrated: Enterprise-wide AI platforms enable deployment across multiple use cases. Shared infrastructure (data pipelines, model registries, monitoring systems) accelerates development. AI becomes standard consideration for process design rather than exceptional addition. Multiple business units deploy AI applications coordinated through enterprise governance. Technology-leading Indian banks are progressing toward this level.

Level 4 - Optimized: Autonomous AI systems operate with minimal human intervention, continuously improving through online learning. Dynamic model adaptation responds to shifting data distributions. AI capabilities permeate every major business process. Indian banks yet to operate at this maturity level, though global institutions like JPMorgan Chase demonstrate aspects.

Progression across maturity levels is neither linear nor uniform. Banks may achieve Level 3 capability in customer service (mature chatbot deployments) while remaining Level 1 in credit underwriting (experimental alternative data models). Deliberate maturity advancement requires investment in foundational capabilities - data infrastructure, technical talent, governance processes - alongside use case expansion.

Step 4: Success Metrics and Balanced Assessment

Business metrics quantify operational and strategic value.

Cost reduction: measured in processing cost per transaction, call center costs and operational Full-Time Equivalent (FTE) requirements.

Revenue enhancement: from improved cross-sell through AI-driven recommendations, reduced customer churn from proactive retention actions, accelerated loan origination enabling volume growth.

Customer satisfaction: net promoter scores, complaint volumes, digital channel adoption rates and customer effort scores.

Operational metrics track AI system performance.

Processing time: document review duration, query response time, application approval cycles.

Accuracy: prediction correctness rates, false positive/negative ratios in fraud detection and chatbot query resolution rates.

Throughput: transactions processed per hour, customers served per agent with AI assistance, applications evaluated per underwriter.

Risk metrics monitor AI system safety and compliance.

Model stability: prediction consistency over time, drift detection frequency, retraining requirements.

False positives: fraud alerts requiring manual review, credit denials later overturned, compliance flags determined non-issues.

Bias indicators: outcome disparities across demographic segments, approval rate differences by protected characteristics, pricing variation analysis.

Compliance metrics address regulatory expectations.

Audit findings: internal and external audit issues related to AI systems, remediation timeliness, repeat findings indicating systematic gaps.

Regulatory feedback: examination comments, informal guidance, enforcement actions related to AI deployments.

Model documentation completeness: validated development records, testing protocols, change management logs.

Employee metrics capture organizational adaptation.

Adoption rates: percentage of eligible employees using AI tools, transaction volume processed with AI assistance, self-service resolution rates.

Productivity improvement: output per employee, time allocation shifts from manual to higher-value work.

Skill development: training completion rates, internal mobility to AI-related roles, retention of AI-skilled employees.

Balanced scorecards integrate these dimensions, avoiding over-optimization on single metrics. A bank achieving cost reduction targets but experiencing rising customer complaints or employee attrition has not succeeded - short-term efficiency gains sacrificed long-term sustainability. Conversely, maintaining perfect customer satisfaction while failing to capture productivity benefits indicates insufficient ambition or poor implementation.

Conclusion: Strategic Imperatives for Indian Banking

Generative AI in Indian banking has moved beyond experimentation. Leading banks are capturing measurable value - lower costs, faster processing and better customer experience. Technology works. What matters now is execution.

Three Critical Takeaways

- **Balance speed with responsibility**. Banks winning this transition by deploying AI for business impact while building governance preventing bias and breaches. Treating AI purely as cost-cutting can invite regulatory damage. Waiting for perfect governance means competitors pull ahead.
- **Invest in foundations, not applications**. Without clean data, skilled talent and governance processes, pilots stall at production. Banks building foundational capabilities and scaling successfully; those chasing use cases keep running proof-of-concepts that never deliver enterprise value.
- **Develop talent as strategic advantage**. AI capability cannot be purchased, it must be built through organizational learning. The gap between banks developing internal expertise and those relying on vendors will widen over five years, determining who competes effectively as AI becomes table stakes.

The Path Forward: This is Indian banking's third major technology transition after core banking systems and digital channels. The next five years determine competitive positioning through 2030. Success requires deliberate execution: learn from deployments, scale what works, govern for sustainability and build capability systematically. The opportunity is real, the risks are manageable and the choice is clear.

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मानव संसाधन विकास विभाग में कृत्रिम बुद्धिमत्ता की उपयोगिता

डॉ. नैपाल सिंह*

मानव संसाधन विकास विभाग किसी भी संस्था का हृदय होता है, जो कर्मचारियों के विकास, प्रशिक्षण और प्रेरणा के माध्यम से संगठन को जीवंत बनाए रखता है। संस्थान के सभी विभाग इसके भिन्न-भिन्न अंगों की तरह कार्य करते हैं, जहां प्रत्येक का समन्वय समग्र सफलता सुनिश्चित करता है। हम किसी भी संस्थान को एक स्वतंत्र व्यक्ति की तरह मान सकते हैं। यदि व्यक्ति के शरीर के किसी भी अंग में किसी भी तरह की परेशानी आती है तो उसका प्रभाव पूरे शरीर पर पड़ता है। ऐसे ही किसी भी संस्थान का मानव संसाधन विभाग भी इसी रूप से कार्य करता है। मेरा मत है कि यदि किसी संस्थान का मानव संसाधन विभाग पूरी तरह से जागरूक और गतिमान होने के साथ-साथ संस्थान के अन्य विभागों एवं संस्थान के लक्ष्यों के साथ संरेखित है तो वह संस्थान स्वत: ही प्रगति की राह पर अग्रसर रहता है।

कृत्रिम बुद्धिमत्ता उन कम्पयूटर प्रणालियों के विकास को संदर्भित करती है जो आमतौर पर मानवीय बुद्धिमत्ता की आवश्यकता वाले कार्य कर सकती है। इसमें सीखना, तर्क करना, समस्या समाधान करना और प्राकृतिक भाषा को समझना जैसी क्षमताएं शामिल हैं। मानव संसाधन में कृत्रिम बुद्धिमत्ता के इस्तेमाल से काम करने के तरीकों में बहुत बदलाव हो सकता है जिससे कार्य में सुधार किया जा सकता है ।

मानव संसाधन एक अत्यन्त महत्वपूर्ण तत्व है जो किसी भी संस्थान की प्रगति में महत्वपूर्ण भूमिका निभाता है। विशेषत: वर्तमान तकनीकी उन्नति के चलते मानव संसाधन विकास प्रबन्धन में भी बहुत परिवर्तन हो रहे है। आज की परिस्थितियों में कृत्रिम बुद्धिमत्ता को मानव संसाधन प्रबन्धन को प्रयोग में लेकर समायोजित तरीके से इस तकनीकी का लाभ उठाना ही इसकी बहुत बड़ी उपयोगिता होगी। कृत्रिम बुद्धिमत्ता का मानव संसाधन प्रबन्धन में प्रयोग भिन्न-भिन्न तरीको से एवं भिन्न-भिन्न कार्यों के लिए किया जा सकता है, जिससे संस्था को काफी सुविधा हो सकती है। जैसे कि:

- भर्ती प्रकिया एवं चयन
- प्रशिक्षण और विकास
- कार्यनिष्पादन मूल्यांकन
- कर्मचारी कल्याण
- कर्मचारी संबंध एवं संलग्नता
- मानव संसाधन अनुपालन
- प्रशासनिक कार्य, स्थानांतरण एवं स्थापना
- प्रोन्नति, प्रशस्ति तथा रचनात्मक आलोचना (फीडबैक)
- वर्चुअल सहायता तथा चैटबॉट
- कर्मचारी ऑनबोर्डिंग/ऑफबोर्डिंग प्रक्रियाएं, आदि।

भर्ती एवं चयन प्रक्रिया में कृत्रिम बुद्धिमत्ता का प्रयोग

भर्ती एवं चयन प्रक्रिया में कृत्रिम बुद्धिमत्ता का प्रयोग कार्य विवरण (Job Description) एवं कार्य विनिर्देश (Job Specification) को तैयार करने में किया जा सकता है। साथ ही, कार्य विवरण एवं कार्य के आधार पर कृत्रिम बुद्धिमत्ता की मदद से उम्मीदवार की आवश्यक योग्यता एवं पात्रता निश्चित की जा सकती है, जिसके उपरान्त विज्ञापन देकर उम्मीद्वारों से आवेदन मंगाए जा सकते हैं और कृत्रिम बुद्धिमत्ता की सहायता से सभी दस्तावेजों की प्री-स्क्रीनिंग/स्क्रीनिंग प्रक्रिया संचालित की जा सकती है जिससे इस कार्य से जुड़े समय और लागत में उल्लेखनीय कमी लाई जा सकती है। यह बेहतर दक्षता और उत्पादकता के लिए प्रक्रियायों को सुव्यवस्थित करके ऑनबोर्डिंग को आसान बनाने में भी मदद करता है। कृत्रिम बुद्धिमत्ता किसी भी संगठन में जॉब विश्लेषण (Job Analysis) कर बेहतर तरीके से कार्य विवरण एवं कार्य विनिर्देश तैयार कर सकती है जिसके उपरान्त संगठन

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उचित माध्यम से पात्र अभ्यर्थियों से प्रविष्टि मंगा सकते हैं जिनको कृत्रिम बुद्धिमत्ता का प्रयोग करते हुए सभी अभ्यर्थियों की प्रवष्टियों का विश्लेषण कर सभी योग्य व पात्र अभ्यर्थियों की सूची तैयार कर तद्नुसार अभ्यर्थियों का साक्षात्कार किया जा सकता है। साक्षात्कार में भी कृत्रिम बुद्धिमत्ता का उपयोग किया जा सकता है जिससे सगंठन के शीर्ष अधिकारी अपने समय का उपयोग कारोबार वृद्धि में कर सकते हैं। यदि हम भर्ती एवं चयन प्रक्रिया में कृत्रिम बुद्धिमत्ता का इस्तेमाल करते हैं तो इससे समय की बचत होगी, प्रतिरूपण या छद्मरूपण के मामले भी समाप्त हो जाएंगे और इस प्रकिया में निष्पक्षता एवं पारदर्शिता को बढ़ावा मिलेगा तथा आम जनता का संस्थान पर विश्वास बढ़ेगा।

तालिका 1: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
Gusto	पेरोल, भर्ती, प्रतिभा प्रबंधन, समय-उपस्थिति ट्रैकिंग और अनुपालन	मानव संसाधन प्रबंधन
AllyO	सोर्सिंग से लेकर ऑनबोर्डिंग तक पूरी भर्ती प्रक्रिया स्वचालित, नेचुरल लैंग्वेज प्रोसेसिंग (NLP) आधारित चैटबॉट्स	भर्ती और ऑनबोर्डिंग

प्रशिक्षण एवं विकास में कृत्रिम बुद्धिमत्ता के उपयोग

कृत्रिम बुद्धिमत्ता ने कार्यस्थल पर लोगों के प्रबन्धन के तरीके में क्रांतिकारी बदलाव ला दिये हैं तथा दक्षता और प्रभावशीलता का ऐसा अद्वितीय स्तर प्रदान किया है जो पहले कभी नहीं देखा था। इक्कीसवीं सदी का कार्यस्थल तेजी से हो रहे तकनीकी विकास से बदल रहा है जिसमें कागज से लेकर कम्प्यूटर और क्लाउड तक, दूरदर्शी व्यवसाय लगातार इस बदलाव में सबसे आगे है। निरंतर आगे बने रहने के लिए, आवश्यक है कि कृत्रिम बुद्धिमत्ता तकनीकों और उनके द्वारा संभव बनाए गए नवाचारों को प्रभाव में लाया जाये।

जैसे-जैसे तकनीक तेजी से विकसित हो रही है, वैसे-वैसे कर्मचारियों की अपेक्षाएं भी बढ़ रही हैं। साथ ही, प्रबन्धन की कर्मचारियों से अपेक्षाएं भी तेजी से बढ़ रही हैं। बदलती व्यक्तिगत प्राथमिकताओं के साथ-साथ, ये बदलती अपेक्षाएँ बड़े पैमाने पर एक संतोषजनक कर्मचारी अनुभव बनाना और भी कठिन बना रही हैं। संगठन को चाहिए कि कम से कम प्रत्येक तीन वर्ष के अन्तराल पर संगठन के सभी विभागों में प्रशिक्षण की आवश्यकता का अध्ययन किया जाए जिससे विभागों की नवीन आवश्यकताओं के बारे में जानकारी प्राप्त हो और कर्मचारियों के अन्दर जानकारी के अभाव या कौशल के अन्तर का पता लगाया जा सके। इसी प्रकार, कौशल के अन्तर की जानकारी हम कर्मचारियों की निष्पादन रिपार्ट के जरिये भी प्राप्त कर सकते हैं तथा कर्मचारियों के रिपोर्टिंग अधिकारी से भी कौशल अन्तर की जानकारी ले सकते हैं। अत: इन सभी सूचनाओं/जानकारियों का हम कृत्रिम बुद्धिमत्ता के माध्यम से विश्लेषण कर सभी कर्मचारियों हेतु उचित व्यक्तिगत विकास योजना तैयार कर सकते हैं जिसके तहत प्रत्येक कर्मचारी के लिए उचित प्रशिक्षण अनुकूलित कार्यक्रम की व्यवस्था की जा सकती है। इसी तरह से संगठन अपने कर्मचारियों की भूमिकाएं परिभाषित करे और उसके साथ ही इन भूमिकाओं को निभाने के लिए आवश्यक न्यूनतम क्षमता एवं पात्रता निर्धारित करे जिससे यह सुनिश्चित हो सके कि किसी भी भूमिका/पद को प्राप्त करने या निभाने के लिए उस कर्मचारी के पास भूमिका/पद से संबंधित न्यूनतम वांछित योग्यता, क्षमता व कौशल मौजूद हों। कैरियर विकास के अलावा, कृत्रिम बुद्धिमत्ता शिक्षण को स्वचालित करने में भी मदद कर सकती है। किसी कर्मचारी की विशिष्ट शिक्षण शैली और कौशल अंतराल के आधार पर प्रशिक्षण पाठ्यक्रमों की सिफारिश करके, कृत्रिम बुद्धिमत्ता प्रत्येक कर्मचारी की जरूरतों को प्राथमिकता देती है तथा तकनीकी की मदद से कर्मचारी के प्रशिक्षण एवं उसके द्वारा कितना सीखा गया है, को भी ट्रैक किया जा सकता है। संस्थान द्वारा कर्मचारियों के प्रशिक्षण पर किया गया खर्च एक निवेश है, जो संस्थान जितना ज्यादा खर्च अपने कर्मचारियों के विकास पर करेगी, उसका भविष्य उतना ही उज्जवल होगा।

एक संवर्धित कार्यबल में, कर्मचारी अपस्किलिंग के माध्यम से नई जटिल भूमिकाओं में जा सकते हैं, जहां उनके कौशल और क्षमताओं का बेहतर उपयोग किया जा सकता है। कर्मचारी प्रदर्शन को कहां सुधार सकते हैं, यह समझने के लिए AI सहायकों का उपयोग करके रीयल-टाइम फीडबैक भी प्राप्त किया जा सकता है। कर्मचारियों द्वारा अधिक स्वायत्तता भी प्राप्त की जा सकती है, क्योंकि AI सहायक कर्मचारी के काम को अधिक स्वतंत्र रूप से करने में मदद कर सकते हैं।

कार्यनिष्पादन मूल्याकंन

प्रदर्शन/कार्यनिष्पादन मूल्यांकन किसी भी संस्था या संगठन के लिए अति आवश्यक है जिससे कर्मचारी द्वारा कार्य निष्पादन के अनुभव, कौशल का स्तर, कौशल अन्तर, फीडबैक में प्रासंगिक टिप्पणियाँ सभी को एकत्र कर कृत्रिम बुद्धिमत्ता के प्रयोग से कार्यनिष्पादन के डेटा का विश्लेषण करके कर्मचारी के बारे में एक प्रासंगिक निर्णय तक पहुंचा जा सकता है जो कर्मचारी की वेतनवृद्धि/पदोन्नति/प्रशिक्षण/पदस्थापन इत्यादि में उपयोगी सिद्ध होता है।

कार्यनिष्पादन मूल्यांकन हेतु मानव संसाधन में कृत्रिम बुद्धिमत्ता का एकीकरण महत्वपूर्ण नैतिक विचारों को प्रस्तुत करता है। कृत्रिम बुद्धिमत्ता संचालित प्रणालियां उत्पादकता मैट्रिक्स और व्यवहार पैटर्न सहित डेटा विश्लेषण के माध्यम से कर्मचारी प्रदर्शन के आकलन में दक्षता और निष्पक्षता का वादा करती है।

जब कोई कर्मचारी अपने कार्य में वास्तविक प्रभाव का अनुभव करता है, तब वह मात्र नियमों के अनुपालन से आगे बढ़कर उत्कृष्टता के लिए प्रतिबद्ध बनता है। यहाँ संगठन की भूमिका भी अत्यन्त महत्वपूर्ण होती है। केवल कार्यों को ट्रेक करने के स्थान पर, लीडर को इनके परिणामों को भी महत्व देना चाहिए। रिपोर्टों की मात्र समीक्षा करने के बजाय, अभिप्रेरक फीडबैक का ध्यान उसके कार्यों की कोशिशों पर भी होना चाहिए। मूल प्रशिक्षण के स्थान पर ऐसे शिक्षण प्रयास होने चाहिए जो कर्मचारियों को दीर्घकालीन कार्यनिष्पादन एवं सन्तुष्टि हेतु आवश्यक कौशल प्रदान करने में सहयोग करें।

कार्यनिष्पादन मूल्यांकन मात्र एक वार्षिक रिवाज नहीं है बल्कि यदि इसको उचित तरीके से लागू किया जाये तो यह एक प्रतिबद्धता एवं निष्पादक तथा गैर-निष्पादक में भिन्नता का साधन बन सकता है। फीडबैक बहुमुखी, समयबद्ध और विकासपरक होना चाहिए। कर्मचारियों को केवल यह नहीं बताया जाए कि कहां त्रुटि हुई, बल्कि यह भी दर्शाया जाए कि वे किस प्रकार उसमें सुधार कर सकते हैं। मूल्यांकन में केवल संख्यात्मक उपलब्धियों को ही नहीं, अपितु प्रतिबद्धता, नवाचार, सहयोग एवं ग्राहक केन्द्रित दृष्टिकोण को भी दर्शाया जाए।

प्रबन्धकों को यह प्रशिक्षण देना चाहिए कि वे केवल रेटिंग फॉर्म भरने तक सीमित न रहें, बल्कि कर्मचारियों के साथ फीडबैक संवाद करें, कर्मचारी को उचित सहयोग दें और अन्त में उसका कार्यनिष्पादन मूल्यांकन पूर्ण रेटिंग एवं सभी टिप्पणियों सहित कर्मचारी को लौटाएं जिससे कर्मचारी अपनी त्रुटियों में स्वयं सुधार कर सके।

मनोवैज्ञानिक सुरक्षा

उत्तरदायित्व का एक महत्वपूर्ण लेकिन प्राय: उपेक्षित पक्ष मनोवैज्ञानिक सुरक्षा है, जहाँ कृत्रिम बुद्धिमत्ता का उपयोग मानव संसाधन कर्मचारियों को अपनी बात खुलकर कहने, त्रुटियाँ स्वीकार करने और प्रश्न पूछने का आत्मविश्वास प्रदान करने में सहायक बनाती है। कार्यस्थल पर भय की संस्कृति नवाचार को दबाती है, जबकि एआई-संचालित विश्वास की संस्कृति कर्मचारियों की प्रतिबद्धता को बढ़ावा देती है। प्रबंधकों को एआई टूल्स के माध्यम से कर्मचारियों के सुझावों और विचारों को प्रोत्साहित करना चाहिए तथा उनका तत्काल धन्यवाद देकर सम्मान प्रदान करना चाहिए।

एआई गुमनाम फीडबैक सिस्टम और सेंटिमेंट एनालिसिस से कर्मचारियों को सुरक्षित वातावरण देता है, जिससे मानव संसाधन विभाग अधिक प्रभावी बनता है। इससे पूर्वाग्रह रहित मूल्यांकन होता है और रचनात्मकता बढ़ती है। प्रबंधक एआई चैटबॉट्स या सर्वे टूल्स का उपयोग कर सुझाव एकत्र करें, फीडबैक लूप बनाएँ और टीम मीटिंग्स में उन्हें शामिल करें। इससे संस्था के सभी विभागों का समन्वय मजबूत होता है। एआई पारदर्शिता लाकर सुलभता बढ़ाता है, परंतु डेटा गोपनीयता को सुनिश्चित करना आवश्यक है।

कर्मचारी संलग्नता और प्रतिधारण

संतुष्टि में सुधार के लिए कर्मचारी-केन्द्रित नीतियों का विकास करना और उन्हें लागू करना जरुरी है जिससे संस्था में प्रतिभा पलायन को कम करने के लिए विकास पथ प्रदर्शित हो और संगठन उस दिशा में कार्यरत रहे।

कर्मचारी संलग्नता और प्रतिधारण में एआई एचआर का महत्वपूर्ण योगदान है, क्योंकि कई कर्मचारी अपेक्षा से अधिक निष्ठावान भाव से कार्य करते हैं जब उन्हें संतुष्टि और विकास का मार्ग दिखाया जाता है। एआई-संचालित कर्मचारी-केंद्रित नीतियां संतुष्टि बढ़ाती हैं, प्रतिभा पलायन रोकती हैं और स्पष्ट विकास पथ प्रदान करती हैं। इससे संगठन सभी विभागों के समन्वय से मजबूत बनता है।

एआई सेंटिमेंट एनालिसिस और फीडबैक टूल्स से कर्मचारियों की भावनाओं को ट्रैक किया जा सकता है, जिससे प्रबंधक समय पर हस्तक्षेप कर मनोवैज्ञानिक सुरक्षा सुनिश्चित कर सकते हैं। इससे निष्ठा बढ़ती है और अतिरिक्त प्रयास स्वाभाविक हो जाते हैं। एआई पर्सनलाइज्ड लर्निंग पाथ और करियर प्रोग्राम्स विकसित करता है, जो कर्मचारियों को विकास के अवसर दिखाते हैं। गुमनाम सर्वे से संतुष्टि मापी जाती है, जिससे पलायन कम होता

है। प्रबंधकों को एआई डैशबोर्ड्स अपनाने चाहिए ताकि सभी विभाग सुसंगत रूप से कार्य करें।

मानव संसाधन अनुपालन

मानव संसाधन श्रम कानूनों, कर विनियमों और क्षेत्र विशिष्ट अधिदेशों का अनुपालन सुनिश्चित करता है जिससे विधिक दंड का जोखिम कम होता है और बैंक की प्रतिष्ठा बनी रहती है। बैंकिंग एक अत्यधिक नियामक और जोखिम भरा क्षेत्र है। नियमों का उल्लंघन संस्था को भारी वित्तीय और कानूनी संकट में डाल सकता है। अत: बैंक नियमित प्रशिक्षण द्वारा कर्मचारियों को नियामक आवश्यकताओं, केवाईसी, एएमएल, साइबर फ्रॉड, डेटा प्राइवेसी आदि जैसे मुद्दों की जानकारी देकर अवगत करा सकता है, जिससे सभी कर्मचारी जागरूक एवं सतर्क होकर इन जोखिमों का बेहतर तरीके से अनुपालन करते हुए अपने कार्यों का निर्वाह कर सके। इन सभी नकारात्मक विकारों के चलते ग्राहकों में विश्वास कम हो सकता है और बैंकों को भी वित्तीय एवं प्रतिष्ठात्मक हानि हो सकती है।

मानव संसाधन अनुपालन में एआई एचआर श्रम कानूनों, कर विनियमों और क्षेत्र-विशिष्ट अधिदेशों का स्वचालित अनुपालन सुनिश्चित करता है, जिससे विधिक दंड का जोखिम कम होता है और बैंक की प्रतिष्ठा सुरक्षित रहती है। बैंकिंग जैसे अत्यधिक नियामक क्षेत्र में एआई नियम उल्लंघनों को रीयल-टाइम ट्रैक कर वित्तीय-कानूनी संकटों से बचाता है। एआई नियमित प्रशिक्षण मॉड्यूल्स से कर्मचारियों को केवाईसी, एएमएल, साइबर फ्रॉड और डेटा प्राइवेसी जैसे मुद्दों पर जागरूक बनाता है, जिससे सभी जागरूक एवं सतर्क रहकर जोखिमों का बेहतर अनुपालन करते हैं। एआई कम्प्लायंस डैशबोर्ड्स और प्रेडिक्टिव एनालिटिक्स से उल्लंघनों की भविष्यवाणी करता है, जिससे एचआर विभाग संस्था के सभी भागों को संरक्षित रखता है। इससे ग्राहकों में विश्वास बढ़ता है और नकारात्मक विकारों से वित्तीय-प्रतिष्ठात्मक हानि रुकती है। एआई पर्सनलाइज्ड लर्निंग पाथ्स और सिमुलेशन ट्रेनिंग से कर्मचारियों की संलग्नता बढ़ाता है, मनोवैज्ञानिक सुरक्षा सुनिश्चित कर प्रतिधारण मजबूत करता है। प्रबंधक एआई अलर्ट्स से तत्काल कार्रवाई कर पारदर्शिता लाते हैं। एआई सुलभता बढ़ाकर एचआर को कुशल बनाता है, सभी अंगों के समन्वय से बैंक को जोखिम-मुक्त रखता है। संगठनों को एआई नीतियां अपनानी चाहिए ताकि अनुपालन निरंतर बना रहे।

तालिका 2: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
Jasper AI	प्रोफेशनल मार्केटिंग कॉपीराइटिंग, ऑटोमेटेड डॉक्यूमेंट एवं कम्युनिकेशन	मानव संसाधन डॉक्यूमेंट और कम्युनिकेशन

जब कर्मचारियों को जानकारी की आवश्यकता होती है, तो उन्हें सटीक और संगत उत्तर प्रदान किए जा सकते हैं। कृत्रिम बुद्धिमत्ता सहायकों के उपयोग से, प्रतिक्रिया समय तेज होता है और अनुपालन की निगरानी सुनिश्चित होती है।

AI टूल्स का उपयोग कंपनियों में बेहतर नौकरी संतुष्टि स्तर की ओर भी ले जा सकता है। इन प्रौद्योगिकियों को उपयोग संस्थान को एक अधिक आकर्षक और कुशल कार्य वातावरण की ओर ले जा सकता है।

उत्तराधिकार परियोजना

सीखने और विकास की प्रक्रिया कर्मचारियों को भविष्य में उच्च पदों पर संगठन का नेतृत्व करने के लिए तैयार करती है। प्रशिक्षण एवं विकास की योजनाएं उच्च पदाधिकारियों को केन्द्रित कर उनके समग्र विकास को मद्देनजर रखते हुए उन्हें प्रशिक्षण के लिए नामित किया जाता है तथा उन्हें विभिन्न पदों पर सभी उच्चाधिकारियों को भिन्न-भिन्न कार्य में दक्ष कराया जाता है जिससे उनका समग्र विकास होता है और समय रहते सक्षम कर्मचारियों को उच्च पदों पर नेतृत्व हेतु प्रशिक्षण कार्यक्रम में प्रतिनियुक्त किया जाता है। कर्मचारी विभिन्न क्षेत्रों का ज्ञान और अनुभव प्राप्त करते हैं, जिससे वे उच्च पदों की जिम्मेदारियां संभालने के लिए तैयार रहते हैं। प्रशिक्षण और भिन्न-भिन्न क्षेत्रों में कार्य करने से उनके अन्दर नेतृत्व कौशल, निर्णय लेने की क्षमता और टीम प्रबन्धन जैसे गुण विकसित हो जाते हैं जिससे संस्था में उच्च स्तर पर सक्षम उच्चाधिकारियों का अभाव नही होता है और उत्तराधिकार परियोजना सतत् प्रवाह में बनी रहती है।

AI-सहायक उपकरण कार्यस्थल में भर्ती, प्रशिक्षण और प्रदर्शन मूल्यांकन में सुधार करते हैं। एआई-संचालित उपकरणों का उपयोग करके कार्यबल योजना भी कुशलतापूर्वक की जा सकती है। यह उन कर्मचारियों की पहचान करने में मदद कर सकता है जो छोड़ने के जोखिम में हैं और संभावित उत्तराधिकारियों का निर्धारण कर सकते हैं।

उत्तराधिकार परियोजना में एआई का प्रयोग सीखने और विकास की प्रक्रिया को सशक्त बनाता है, जो कर्मचारियों को भविष्य के उच्च पदों पर नेतृत्व के लिए तैयार करता है। एआई-संचालित प्रशिक्षण योजनाएं उच्च पदाधिकारियों पर केंद्रित होकर उनका समग्र विकास सुनिश्चित करती हैं, उन्हें विभिन्न पदों पर दक्ष बनाती हैं। इससे सक्षम कर्मचारी समय रहते नेतृत्व के लिए तैयार रहते हैं और संस्था में उच्च स्तर पर नेतृत्व का अभाव नहीं होता। एआई पर्सनलाइज्ड लर्निंग पाथ्स और प्रेडिक्टिव एनालिटिक्स से कर्मचारियों की क्षमताओं का मूल्यांकन करता है, उन्हें विभिन्न क्षेत्रों में रोटेशन के लिए नामित करता है। इससे नेतृत्व कौशल, निर्णय क्षमता और टीम प्रबंधन विकसित होता है। एआई सिमुलेशन ट्रेनिंग और वर्चुअल मेंटरशिप कर्मचारियों को बहुआयामी अनुभव देता है, संलग्नता बढ़ाकर प्रतिधारण मजबूत करता है। मनोवैज्ञानिक सुरक्षा सुनिश्चित कर यह नवाचार को बढ़ावा देता है।

कर्मचारी कल्याण कार्य

मानव संसाधन विभाग कर्मचारी संलग्नता, संतुष्टि और कल्याण को बढ़ाने के लिए कार्यक्रम विकसित करता है, जो उच्च मनोबल और ग्राहक केन्द्रित सेवा के लिए महत्वपूर्ण है। ऐसी पहल में कल्याण कार्यक्रम, करियर परामर्श और पारदर्शी संवाद प्रक्रिया सम्मिलत हो सकते हैं। संस्था के अन्तर्गत महिला कार्मचारियों के लिए विभिन्न प्रकार की कल्याण योजनाएं होती हैं जिनसे महिला कर्मचारियों को अपने कार्य-जीवन में संतुलन बनाये रखने में सुविधा रहती है, जैसे छोटे बच्चों के लिए क्रैच (Crèche) सुविधा, इत्यादि।

कर्मचारी कल्याण कार्यों में एचआर विभाग एआई के उपयोग से संलग्नता, संतुष्टि और कल्याण को बढ़ाने के लिए स्मार्ट कार्यक्रम विकसित कर सकता है, जो उच्च मनोबल और ग्राहक-केंद्रित सेवा सुनिश्चित करता है। एआई-संचालित पहलें जैसे कल्याण ट्रैकर्स, करियर परामर्श चैटबॉट्स और इससे संस्था के सभी विभाग सुसंगत रूप से मजबूत बनते हैं।

कर्मचारी विकास और कल्याण के क्षेत्रों में व्यक्तिगतकरण महत्वपूर्ण है। Qualtrics अध्ययन के अनुसार, केवल 64% कर्मचारी वर्तमान संगठन में रहने की योजना बना रहे हैं, जो 2021 में 70% से कम है। AI के साथ, संगठन उच्च कर्मचारी प्रतिधारण और संतुष्टि दर प्राप्त कर सकते हैं।

एआई सेंटिमेंट एनालिसिस से कर्मचारियों की जरूरतें पहचानता है, पर्सनलाइज्ड वेलनेस प्लान बनाता है और क्रैच जैसी सुविधाओं का उपयोग ट्रैक कर संतुष्टि बढ़ाता है। इससे मनोवैज्ञानिक सुरक्षा मजबूत होती है और प्रतिधारण बढ़ता है। एआई वर्क-लाइफ बैलेंस टूल्स से क्रैच बुकिंग, लचीली शिफ्ट्स और काउंसलिंग प्रदान करता है, जिससे महिला कर्मचारी उच्च पदों के लिए उत्तराधिकार परियोजना में भाग ले सकें। इससे संलग्नता और उत्पादकता बढ़ती है।

प्रोन्नति, प्रशस्ति तथा रचनात्मक फीडबैक में कृत्रिम बुद्धिमत्ता का उपयोग

कर्मचारियों की उन्नति/प्रोन्नति, प्रशस्ति तथा रचनात्मक फीडबैक में कृत्रिम बुद्धिमत्ता (AI) का व्यापक उपयोग हो रहा है। इसके साथ ही यह तकनीक संस्थागत तथा कर्मचारियों के व्यक्तिगत स्तर पर निर्णय लेने, मूल्यांकन करने और विकास प्रक्रिया को अधिक वैज्ञानिक और निष्पक्ष बना रही है।

कृत्रिम बुद्धिमत्ता आधारित प्रणाली कर्मचारियों के प्रदर्शन मूल्यांकन डेटा, उपस्थिति, संभावित, कार्य दक्षता, व्यवहारिक एवं प्रबंधकीय गुण, साक्षात्कार, लिखित परीक्षा आदि तथ्यों का विश्लेषण कर निष्पक्ष प्रोन्नति निर्णय में सहायता करती है। यह मानवीय पक्षपात को कम करने के साथ-साथ तेजी से अनुकूल निर्णय देती है। इसमें स्वचालित रिपोर्टिंग तथा बहुस्तरीय मूल्यांकन शामिल हैं, जिससे संगठन में पारदर्शिता और कर्मचारियों तथा अन्य साझेदारों संस्था के प्रबंधन के प्रति विश्वास बढ़ता है।

प्रशस्ति हेतु कृत्रिम बुद्धिमत्ता प्रणालियों के जरिए कर्मचारियों की उपलब्धियों या उत्तम कार्य हेतु स्वचालित प्रशस्ति पत्र, प्रमाण पत्र तैयार किए जाते हैं। मेट्रिक्स आधारित मूल्यांकन में एआई उत्कृष्टता और वैज्ञानिक विश्लेषण के आधार पर उपयुक्त कर्मचारियों को पहचानकर उन्हें उचित प्लेटफार्म पर सम्मानित कराया जा सकता है। इसके साथ ही चिन्हित कर्मचारियों को विभिन्न प्रकार की योजनाओं से पुरस्कृत कर सकते है जैसे जिम मेम्बरशिप, क्लब मेम्बरशिप, एडवांस लर्निंग कोर्स सबस्क्रिप्सन इत्यादि। इससे संस्थाओं में गुणवत्ता-आधारित सम्मान प्रणाली को बढ़ावा मिलेगा और कर्मचारियों के अन्दर कुछ अच्छा करने की प्रतिस्पर्धा बढ़ेगी।

रचनात्मक फीडबैक में कृत्रिम बुद्धिमत्ता द्वारा निर्मित फीडबैक सिस्टम लगातार कार्य-प्रदर्शन, शिक्षण या सेवा गुणवत्ता पर सकारात्मक/नकारात्मक रचनात्मक सुझाव प्रस्तुत करती हैं। इंटेलीजेंट ट्यूटरिंग सिस्टम, व्यक्तिगत आवश्यकताओं के अनुरूप कर्मचारियों को फीडबैक एवं मार्गदर्शन प्रदान करते हैं। यह डेटा एनालिटिक्स के माध्यम से कौशल एवं कमियों की पहचान कर सुधार हेतु मार्गदर्शन देता है। कृत्रिम बुद्धिमत्ता के इन अनुप्रयोगों

से कार्यक्षमता, पारदर्शिता तथा रचनात्मक विकास में उल्लेखनीय सुधार संभव हुआ है, जिससे संस्थान और व्यक्तिगत दोनों स्तरों पर संतुलित, तटस्थ और परिणाममुखी निर्णय लिए जा सकते हैं।

तालिका 3: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
Rival HR	ऑनबोर्डिंग और टैलेंट लाइफसाइकल ऑटोमेशन कृत्रिम बुद्धिमत्ता के साथ	प्रतिभा प्रबंधन और ऑनबोर्डिंग

कर्मचारी डेटा का विश्लेषण करने और उनके पिछले कार्य प्रदर्शन के आधार पर कौन सा कर्मचारी किस विशेष कार्य के लिए सही होगा, यह देखने के लिए एआई का उपयोग प्रतिभा प्रबंधन में किया जाता है। कर्मचारी पहचान और पुरस्कार भी एआई का उपयोग करके किया जा सकता है जो पूर्वाग्रह को कम करता है और कर्मचारी अनुभव में सुधार करता है।

वर्चुअल सहायता तथा चैटबॉट का मानव संसाधन विकास विभाग अनुप्रयोग

वर्चुअल सहायता एवं चैटबॉट आधुनिक मानव संसाधन विकास विभाग का एक अभिन्न हिस्सा बनते जा रहे हैं। डिजिटल प्लेटफ़ॉर्म एवं तकनीकी नवाचारों के चलते ये सिस्टम मानव संसाधन विकास की पारंपरिक प्रक्रियाओं को महत्वपूर्ण गति, सटीकता और सुलभता प्रदान करते हैं।

नई भर्ती के दौरान वर्चुअल सहायक और चैटबॉट उम्मीदवारों की स्क्रीनिंग, इंटरव्यू शेड्यूलिंग और दस्तावेज़ सत्यापन की प्रक्रियाएँ स्वत: संपन्न कर सकते हैं। इससे मानव संसाधन टीम की उत्पादकता बढ़ती है और मानव त्रुटि का जोखिम कम होता है। चैटबॉट कर्मचारी संबंधित प्रश्नों का 24x7 स्वत: जवाब देते हैं, जैसे वेतन, अवकाश और नीतियों की जानकारी। ये प्लेटफ़ॉर्म कर्मचारी जुड़ाव को मजबूत बनाते हैं और फीडबैक एवं सुझाव प्राप्त करना आसान बनाते हैं।

डिजिटल असिस्टेंट नए कर्मचारियों का परिचय, ट्रेनिंग मॉड्यूल वितरण और रचनात्मक फीडबैक उपलब्ध कराते हैं। इस प्रकार कृत्रिम बुद्धिमत्ता, वर्चुअल सहायता और चैटबॉट, मानव संसाधन विकास विभाग के लिए अत्यंत उपयोगी उपकरण हैं, जो नए युग की मांगों के अनुरूप मानव संसाधन विकास को डिजिटल रूप से सक्षम बनाते हैं।

तालिका 4: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
Google Gemini	मल्टीमॉडल कृत्रिम बुद्धिमत्ता (टेक्स्ट, इमेज, कोड), तेज़ रिस्पॉन्स, गूगल इंटीग्रेशन	वर्चुअल सहायता, संवाद, कंटेंट निर्माण
AllyO	सोर्सिंग से लेकर ऑनबोर्डिंग तक पूरी भर्ती प्रक्रिया स्वचालित, नेचुरल लैंग्वेज प्रोसेसिंग (NLP) आधारित चैटबॉट्स	भर्ती और ऑनबोर्डिंग

AI-संचालित चैटबॉट्स सहायता मे कर्मचारियों की मदद कर सकते हैं। यह कुशल ग्राहक सेवा की ओर ले जाता है, विशेष रूप से संवादात्मक AI प्लेटफॉर्म, जो 24/7 सहायता प्रदान करते हैं। यदि किसी प्रश्न का उत्तर AI प्लेटफार्म पर नहीं मिलता है, उसे समाधान के लिए मानव ग्राहक सहायता कार्यकारी तक बढ़ाया जा सकता है।

कर्मचारी ऑनबोर्डिंग/ऑफबोर्डिंग प्रक्रियाओ में कृत्रिम बुद्धिमत्ता का उपयोग

कृत्रिम बुद्धिमत्ता-संचालित सहायता के साथ, जानकारी, प्रक्रियात्मक प्रवाह और यहां तक कि कर्मचारियों की भूमिका और पृष्ठभूमि के आधार पर आवश्यकता-आधारित प्रशिक्षण तक पहुंच की सुविधा के साथ ऑनबोर्डिंग प्रक्रिया सरल हो जाती है।

कार्यों को स्वचालित करके, अनुभवों को व्यक्तिगत बनाकर और डेटा का विश्लेषण करके ऑनबोर्डिंग अधिक सुव्यवस्थित हो सकती है। यह नए कर्मचारियों को जल्दी अनुकूल होने में और उन्हें सही मेंटर्स के साथ मिलाने में भी मदद करता है। संगठन में मेंटरिंग प्रक्रिया को व्यक्तिगत प्रतिक्रिया और मार्गदर्शन के प्रावधानों के साथ अधिक कुशल बनाया जा सकता है। मेंटरिंग संबंध की प्रगति और परिणामों की ट्रैकिंग भी कर्मचारी अनुभव को बेहतर बनाने के लिए की जा सकती है।

ऑनबोर्डिंग प्रक्रिया में रीयल-टाइम फीडबैक कृत्रिम बुद्धिमत्ता -संचालित टूल्स का उपयोग करने का एक और अतिरिक्त लाभ है। AI पूर्वानुमानात्मक विश्लेषण का उपयोग करके ऑनबोर्डिंग प्रक्रिया में संभावित बाधाओं की भविष्यवाणी कर सकता है और सक्रिय रूप से समस्याओं का समाधान कर सकता है।

कृत्रिम बुद्धिमत्ता टूल्स ऑनबोर्डिंग संचार को व्यक्तिगत बनाते हैं और नए कर्मचारियों को जुड़े रहने के लिए लक्षित संदेश और रिमाइंडर भेजते हैं। BambooHR, Workday और Compunnel सभी कृत्रिम बुद्धिमत्ता टूल्स हैं जो ऑनबोर्डिंग प्रक्रिया में लोकप्रिय रूप से उपयोग किए जाते हैं। इन टूल्स के साथ नियामक आवश्यकताओं और कंपनी नीतियों का पालन भी सुनिश्चित किया जा सकता है।

तालिका 5: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
AllyO	सोर्सिंग से लेकर ऑनबोर्डिंग तक पूरी भर्ती प्रक्रिया स्वचालित, नेचुरल लैंग्वेज प्रोसेसिंग (NLP) आधारित चैटबॉट्स	भर्ती और ऑनबोर्डिंग
Rival HR	ऑनबोर्डिंग और टैलेंट लाइफसाइकल ऑटोमेशन कृत्रिम बुद्धिमत्ता के साथ	प्रतिभा प्रबंधन और ऑनबोर्डिंग

कर्मचारी अनुभव एवं सम्बन्ध

कर्मचारी अनुभव के लिए कृत्रिम बुद्धिमत्ता के उदाहरणों में शामिल हो सकता है कि कैसे कृत्रिम बुद्धिमत्ता टूल्स कर्मचारी की बातचीत के स्वर और अन्य विशेषताओं से कर्मचारी की भावनाओं का पता लगा सकते हैं जो संगठन में कर्मचारी अनुभव में योगदान करते हैं। अन्य उदाहरणों में कर्मचारी व्यवहार की भविष्यवाणी करने की क्षमता शामिल है, जिसमें कर्मचारी जुड़ाव, नौकरी संतुष्टि और टर्नओवर दर जैसे कारकों पर विचार किया जाता है।

कृत्रिम बुद्धिमत्ता प्रदर्शन समीक्षाओं को संक्षेप में प्रस्तुत कर सकता है और कई स्रोतों से प्राप्त प्रतिक्रिया का विश्लेषण कर सकता है। कर्मचारियों की सीखने की प्राथमिकताओं और प्रदर्शन के आधार पर प्रशिक्षण तैयार किया जा सकता है। क्रॉस-फंक्शनल लर्निंग एक अन्य उदाहरण है, जहां कृत्रिम बुद्धिमत्ता का उपयोग विभिन्न विभागों के कर्मचारियों की भागीदारी को बढ़ा सकता है। कृत्रिम बुद्धिमत्ता -पावर्ड टूल्स संगठनों में शामिल होने वाले आवेदकों के लिए काम को बहुत आसान बना सकते हैं।

तालिका 6: कृत्रिम बुद्धिमत्ता उपकरण

टूल का नाम	प्रमुख विशेषताएं	उपयोग क्षेत्र
WalkMe and UserPilot	यूजर इंटरैक्शन का कृत्रिम बुद्धिमत्ता विश्लेषण, ऑनबोर्डिंग अनुभव का निजीकृत अनुकूलन	यूजर ऑनबोर्डिंग एवं अनुभव सुधार

कृत्रिम बुद्धिमत्ता (AI) का उपयोग करके कर्मचारी अनुभव को बेहतर बनाने में संचार, दक्षता और व्यावसायिक विकास जैसे काम के विभिन्न पहलुओं को बढ़ाने के लिए AI तकनीक का उपयोग शामिल है। AI टूल्स भर्ती, कर्मचारी ऑनबोर्डिंग और प्रशिक्षण कार्यक्रमों को सुव्यवस्थित करके किसी संगठन में कर्मचारी की यात्रा को महत्वपूर्ण रूप से बदल सकते हैं।

एआई एचआर-संबंधित प्रश्नों के उत्तर देने के लिए चैटबोट के उपयोग से बेहतर समर्थन और संचार को बढ़ावा देता है। इस प्रक्रिया को स्वचालित करने से एचआर कर्मचारी अधिक महत्वपूर्ण कार्य कर सकते है जिनमें एक-से-एक बातचीत की आवश्यकता होगी।

एचआर सपोर्ट के लिए कुछ कृत्रिम बुद्धिमत्ता टूल्स में शामिल हैं:

- IBM के एचआर चैटबॉट्स, कर्मचारियों के प्रश्नों का उत्तर देने के लिए नेचुरल लैंग्वेज प्रोसेसिंग और मशीन लर्निंग का उपयोग करते हैं।
- FirstUp, एक बुद्धिमान संचार प्लेटफॉर्म, एचआर पेशेवरों को कर्मचारी अनुभव को वैयक्तिकृत करने में मदद करता है।

कृत्रिम बुद्धिमत्ता रुझानों, समस्याओं और सुधार के क्षेत्रों की पहचान करने के लिए बड़ी मात्रा में डेटा को छांटकर प्रतिक्रिया का विश्लेषण करने में भी मदद करता है। यह प्रारंभिक कर्मचारी बर्नआउट की पहचान कर सकता है और उचित हस्तक्षेप योजनाएं तैयार कर सकता है। यह ग्राहक सहायता को और बेहतर बनाता है, जिससे कर्मचारी अनुभव में सुधार होता है।

कृत्रिम बुद्धिमत्ता टूल्स का उपयोग करके बेहतर कार्य-जीवन संतुलन भी प्राप्त किया जा सकता है। स्वचालन नियमित कार्यों को संभाल सकता है, ओवरटाइम को कम करके कर्मचारियों को कार्य-जीवन संतुलन बनाए रखने में मदद करता है।

उपसंहार

कृत्रिम बुद्धिमत्ता ने मानव संसाधन प्रबंधन में एक बड़ा परिवर्तन किया है और यह बदल रहा है कि कैसे एक कर्मचारी संगठन का अनुभव करता है। बेहतर प्रबंधक-कर्मचारी संबंध, नीरस कार्यों में कमी और व्यक्तिगत सीखने की सिफारिशें, एआई-संचालित उपकरणों का उपयोग करके कर्मचारी अनुभव को बेहतर बनाने के कुछ लाभ हैं। एआई असिस्टेंट और चैटबॉट का उपयोग कर्मचारी अनुभव को बढ़ाने में अधिक से अधिक किया जा रहा है, एचआर कर्मियों को उच्च-प्रभाव वाले काम के लिए मुक्त किया जा रहा है। इसलिए, कर्मचारी अनुभव को बेहतर बनाने के लिए एआई का उपयोग कर्मचारियों की उत्पादकता और संगठन की दक्षता को बढ़ा सकता है।

मानव संसाधन विकास विभाग और मानव संसाधन नीतियों का अंतिम उद्देश्य कर्मचारियों में जुड़ाव की भावना और संगठन के प्रति निष्ठा का निर्माण है। बीमा, स्वास्थ्य शिविर, परामर्श, महिला सशक्तिकरण, खेल एवं सांस्कृतिक गतिविधियां - यह सब कार्यस्थल को जीवंत और प्रेरणादायक बनाते हैं। साथ ही, कर्मचारियों के लिए फ्लेक्सी टाइम, मेंटरिंग, मानसिक स्वास्थ्य सहयोग, पदोन्नति पारदर्शिता, स्थानान्तरण में प्राथमिकता जैसी पहल उन्हें संस्थान से जोड़ती हैं।

आज का बैंकिग क्षेत्र अभूतपूर्व परिवर्तन के दौर से गुजर रहा है। बैंक डिजिटलीकरण, कृत्रिम बुद्धिमत्ता, बदलती ग्राहक अपेक्षाएं और वैश्विक प्रतिस्पर्धा जैसी चुनौतियों का सामना तभी कर सकते हैं जब हमारे पास एक सशक्त, प्रशिक्षित और प्रेरित कार्यबल हो। बैंक के व्यवसाय का विकास प्रत्येक कर्मचारी के विकास से जुड़ा हुआ है। बैंक के लक्ष्यों को प्राप्त करने के लिए हमें हर स्तर पर ऐसी प्रतिभाओं की आवश्यकता है जो परिवर्तनशील वातावरण में तेजी से अनुकूलन कर सकें और ग्राहक-केंद्रित दृष्टिकोण को आत्मसात कर सकें। आधुनिक बैंक मानव संसाधन प्रबन्धन प्रणाली का उपयोग मानव संसाधन प्रक्रियाओं को स्वचालित करने, संचालन को सुव्यवस्थित करने और कर्मचारियों को स्व-सेवा विकल्प प्रदान करने के लिए करते हैं।

समय एवं लागत की बचत: कृत्रिम बुद्धिमत्ता टूल्स प्रबंधकों को जॉब डिस्क्रिप्शन लिखने और नई भूमिकाएं बनाने में मदद कर समय की बचत होती हैं। यह पेड टाइम ऑफ और छुट्टियों के लिए रिक्वेस्ट मैनेजमेंट, अप्रूवल्स और ट्रैकिंग को भी स्वचालित कर सकता है। कृत्रिम बुद्धिमत्ता एचआर टीमों को कर्मचारी खर्चों की प्रतिपूर्ति, आंतरिक संचार में मदद कर समय एवं लागत की बचत की जा सकती है और भर्ती प्रक्रिया में योग्यताओं और कौशल को स्क्रीन करने में प्राथमिकता देता है।

कार्यदक्षता में वृद्धि: कृत्रिम बुद्धिमत्ता - संचालित सहायकों और स्वचालन के साथ कार्यप्रवाह में सुधार होता है जिससे कर्मचारियों को अधिक मूल्यवान कार्य करने के लिए अधिक समय मिलता है और कर्मचारियों के साथ संगठन की दक्षता भी बढ़ती है। यहां, कर्मचारियों के लिए सहायता मानव संसाधन टीम के कर्मियों पर निर्भर होने के बजाय अधिक 'सेल्फ-सर्विस' वाली हो, जो संगठन में कर्मचारी संतुष्टि स्तर को बढ़ाएगी। सेल्फ-सर्विस के जरिए कर्मचारी अपनी कर्यदक्षता के अनुसार प्रशिक्षण के लिए मनोनीत कर सकते है।

पारदर्शिता एवं सुलभता: स्वचालित एचआर सपोर्ट दक्षता और स्केलेबिलिटी को बढ़ाता है। स्वचालन दक्षता, सटीकता और स्थिरता सुनिश्चित करने में मदद करता है, जो कर्मचारी अनुभवों, संतुष्टि और प्रतिधारण दरों को बढ़ाता है। कृत्रिम बुधिमत्ता के साथ, रीयल-टाइम फीडबैक, लक्ष्य ट्रैकिंग और एजाइल प्रदर्शन वार्तालाप के साथ निरंतर प्रदर्शन प्रबंधन किया जा सकता है। इससे कार्यकुशलता, पारदर्शिता और कर्मचारी सशक्तिकरण बढ़ता है जो मानव संसाधन को रणनीतिक पहलों पर ध्यान केन्द्रित करने में सहायक होता है। आधारित सिस्टम कर्मचारियों की कौशल-विश्लेषण में भी सहायक होते हैं। वर्चुअल असिस्टेंट मानव संसाधन डेटा इकट्ठा, अपडेट और विश्लेषण कर सकते हैं। वे अनुपालन, जाँच और रिपोर्टिंग को ऑटोमेट कर सकते हैं, जिससे संगठनों में पारदर्शिता बढ़ती है।

कर्मचारी संतुष्टि और सहभागिता में सुधार: कर्मचारियों के लिए पसंदीदा कार्य मॉडल की सिफारिश करने के लिए एआई का उपयोग किया जाता है जो कार्य के प्रभावी रूप से किए जाने के साथ कर्मचारी अनुभव में सुधार करता है। यह कर्मचारियों को उनके कार्य तरीकों में बहुत अधिक लचीलापन देता है और वे जो भी उन्हें अपना काम पूरा करने और उनकी व्यक्तिगत जरूरतों को पूरा करने में मदद करे, उसे चुन सकते हैं। यह बेहतर कंपनी वफादारी, कार्यप्रवाह, उत्पादकता और परिचालन दक्षता की ओर ले जाएगा। एआई सहायक कर्मचारियों को दस्तावेज़ समीक्षा और डेटा निष्कर्षण जैसे कार्यों को तेजी से पूरा करके कहीं भी उत्पादक बने रहने में सक्षम बनाते हैं।

AI-संचालित चैटबॉट्स ग्राहक समाधान और प्रतीक्षा समय को काफी कम करते हैं। वे मल्टीलिंगुअल सपोर्ट और कॉल के बाद सारांश भी प्रदान करते हैं। Intercom का Fin AI और Zendesk एआई चैटबॉट के कुछ उदाहरण हैं। मूल रूप से, एआई चैटबॉट का उपयोग निम्नलिखित कार्यों के लिए किया जा सकता है:

- सहायता ज्ञान का उपयोग;
- सही व्यवहार और नीतियों को लागू करने के लिए;
- प्रत्येक ग्राहक अनुभव को व्यक्तिगत बनाने के लिए;
- प्रदर्शन पर अंतर्दृष्टि प्रदान करने के लिए।

उनके पास सभी उत्पादों और कंपनी प्रक्रियाओं का अद्यतित ज्ञान है, जो ग्राहकों की समस्याओं को तेजी से और अधिक कुशलता से हल करने में मदद करने के लिए विस्तृत उत्तर प्रदान करता है। यह कई ज्ञान स्रोतों से सबसे प्रासंगिक जानकारी लेता है, जिससे यह अधिक व्यापक प्रतिक्रियाएं बना सकता है और जटिल प्रश्नों को हल करने की क्षमता बढ़ा सकता है। ग्राहकों की पूछताछ के आधार पर, चैटबॉट व्यक्तिगत उत्तर देते हैं जो टिकट बंद करने में डाउनटाइम को कम करते हैं और कर्मचारियों को उच्च-मूल्य कार्यों पर ध्यान केंद्रित करने का समय देते हैं।

BANK QUEST THEMES

The themes for "Bank Quest" are identified as:

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

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

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

FINANCIAL INCLUSION 2.0: AI-DRIVEN SOLUTIONS FOR CLOSING THE CREDIT GAP AMONG MSMES

Pramod Kumar Ojha*

Abstract

Financial inclusion is the key pillar of developmental policies and India is a pioneer country in financial inclusion bringing about fifty crore individuals in the ambit of formal financial institution with the help of Pradhan Mantri Jan Dhan Yojana (PMJDY). However, credit inclusion part of financial inclusion shows a gloomy picture for individuals and specifically among Micro, Small and Medium Enterprises (MSMEs). Credit inclusion is a win-win for both individual and banking industry. There are both demand-side and supply-side challenges of credit inclusion which can overcome by use of technologies. To address this credit gap, the role of Artificial Intelligence (AI) can prove catalytic effect in initiating the part two of financial inclusion with emphasis on credit inclusion among MSMEs. It can unlock the new era of credit delivery that enhance accessibility, affordability, credit appraisal, transparency, risk management, recovery and governance. Though use of AI in banking sector is not free from risk but using it with ethics and responsibility can ensure inclusion, resilience and financial stability, positioning AI as an enabler of sustainable and inclusive credit rather than a substitute for human judgment.

Keywords: *Financial inclusion, Credit inclusion, Artificial Intelligence, Credit gap, MSME*

Introduction

Financial inclusion is the process of providing basic financial services to underserved or unserved individual or business entities at the affordable rates, on time and in transparent manner. In the last decade, India's banking system has exhibited a tremendous improvement in the area of financial inclusion. India's financial inclusion policies like providing banking services, affordable credit, digital payment, insurance and pension products and financial literacy have culminated into many initiatives like Pradhan Mantri Jan Dhan Yojana (PMJDY), Priority Sector Lending (PSL), Pradhan Mantri MUDRA Yojana, Stand up India, Unified Payments Interface (UPI), Aadhar Enabled Payment Service (AEPS), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Atal Pension Yojana (APY) and National Centre for Financial Education (NCFE). RBI's financial inclusion index also indicates a steady rise from 53.9 in 2021 to 67.0 in 2025 (RBI, 2025). Despite this progress in access to basic accounts and payments, a persistent credit gap continues to constrain the potential of individuals, small enterprises, farmers and underserved groups. Traditional credit assessment models, which rely heavily on collateral and historical data, often exclude those lacking formal financial footprints. Though we have improved a lot in many dimensions of financial inclusion, however, we need to travel a long distance in credit inclusion. MSME sector, the backbone of India's Gross Domestic Product (GDP), lack access to formal credit.

In this context, Financial Inclusion 2.0 signifies a new

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phase of inclusion driven by Artificial Intelligence (AI), alternative data systems and digital public infrastructure. This phase focuses not merely on access to bank accounts but on equitable access to meaningful credit, risk-based pricing and customer-centred financial services. AI presents a transformative opportunity to bridge India's multi-layered credit gap by enabling more precise, low-cost and scalable credit decisions. AI-based solutions are, thus, likely to emerge as game changer that have important implications for expanding credit inclusion.

Why Credit Inclusion?

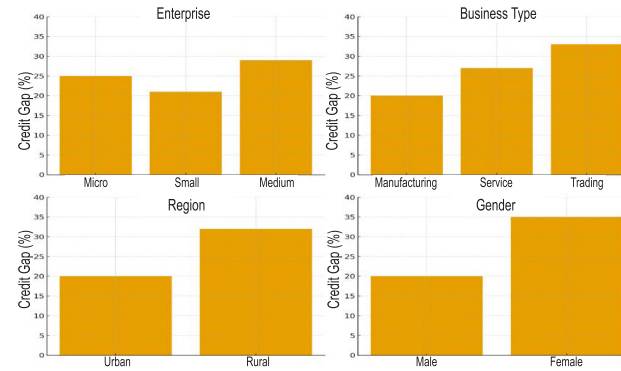
Credit inclusion is a win-win for both customer and banking industry. From the customers' point of view, credit provides income growth and act as a financial security and shock absorber. Credit from formal financial institutions protect customer from exorbitant interest rates of money lenders. It helps in asset creation and strengthen social and economic mobility, hence, improving social welfare. Small pocket credit empowers marginalised group and helps in credit footprints for future larger credit. For banks, it helps in acquiring new individual and business entities. It helps in diversification of loan portfolio to different income and geographic group reducing concentration risk. Small pocket loans improve long-term stability as it generates sustainable interest income and cross-selling opportunities. It strengthens compliance and social mandates in the form of Priority Sector Lending (PSL) and social responsibility improving banks' reputation. Credit inclusion done through digital banking and AI technologies can reduce operating cost and improve risk assessment.

Credit Gap: Causes and Challenges

Despite significant progress in financial inclusion, a sustainable credit gap continues to persist within the Indian financial system. Large chunks of individuals and business entities especially, MSME remain outside the ambit of formal credit. In a report titled "Enhancing MSME's Competitiveness in India" submitted by NITI Aayog to Government of India reveals that only 19 percent of MSME credit demand was met by formal financial institutions by year 2021 and about 80 lakh crore credit demand were unmet (PIB, 2025) and only 25 percent of Indian adult population have formal access to institutional credit (RBI, 2025). In a report on MSME submitted by Small Industries Development Bank of India (SIDBI), it was found that out of 64 lakh crore rupees of addressable debt demand, only 34 lakh crore was supplied and 30 lakh crores remained unmet (SIDBI, 2025).

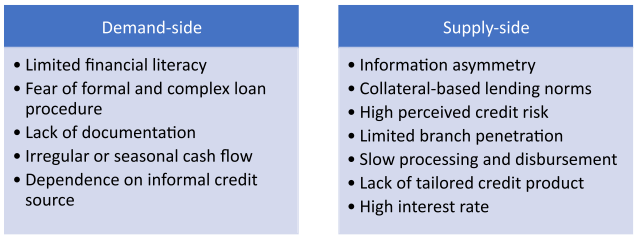
Figure 1 presents a comparative view of credit gaps across four key MSME segments - enterprise type, business activity, region and gender. The data clearly shows that medium enterprises (29%) face the highest gap within enterprise categories, while trading units (33%) experience the largest shortfall among business types. Regionally, the credit gap is more pronounced in rural areas (32%) compared to urban centres. The most significant disparity appears in gender-based access, where female-owned enterprises show a credit gap of 35%, far higher than male-owned units. Overall, it highlights persistent structural inequities that continue to restrict inclusive credit delivery.

Figure 1: Multidimensional Assessment of Credit Gaps in the MSME Sector



Source: TransUnion CIBIL and Small Industries Development Bank of India (2025)

Figure 2: Causes of Credit Gap



Source: Author's compilation

The persistence of a credit gap in the financial system arises from a combination of demand-side, barriers and supply-side constraints. On the demand-side, limited financial literacy, fear of formal and complex loan procedures, lack of proper documentation and irregular or seasonal cash flows discourage individuals and small enterprises from seeking formal credit. Many borrowers also continue to depend on informal credit sources due to ease of access, despite higher costs. On the supply-side, lenders face significant information asymmetry, which restricts their ability to accurately assess borrowers' risk. This leads to collateral-based lending norms, higher perceived credit risk and relatively high interest rates. Further, challenges include limited branch presence in remote areas, slow loan processing, delayed disbursements and the absence of tailored credit products that suit diverse borrowers' needs. Together, these factors create a structural mismatch between credit demand and supply, contributing to a persistent credit gap in the financial system.

Artificial Intelligence: Unlocking a new era of Credit Inclusion

Revolution in credit inclusion required harnessing new technology and banking sector has always embraced new technologies for its improvement. In present scenario, cutting edge technologies in this sector are not just limited to data management at backend but has entered into vanguard to shape customer experience, strengthening security and enabling faster, smarter and more inclusive financial service intelligently. Among emerging technologies, Artificial Intelligence (AI) is not just enhancing credit assessment - it is redefining who gets access to finance, how decisions are made and how underserved borrowers can finally be seen, heard and included. AI has the potential to expedite the process throughout the credit cycle from credit inclusion, credit appraisal, monitoring, customizing, document management, cyber security, grievance management and recovery.

Table 1: AI Adoption in Indian Banks

Bank Name	AI Tool/Project	Key Applications
HDFC Bank	Electronic Virtual Assistant (EVA), Predictive Analytics, AI Fraud Detection	Customer query handling, cross-selling, customer retention, real-time fraud detection
ICICI Bank	AI Software Robotics, AI Credit Scoring, Robo-Advisory	Process automation, credit approvals, personalized investment advice
Axis Bank	Aha! Chatbot, AI Fraud Monitoring, AI Document Verification	Multilingual customer service, suspicious transaction alerts, automated loan processing
Kotak Mahindra Bank	Keya Voicebot, AI KYC Verification	Natural Language Processing (NLP)-based voice banking, digital customer onboarding
IndusInd Bank	AI Video Banking, Loan Analytics	Remote transactions, repayment risk monitoring
State Bank of India	SIA, YONO App, AI Fraud Detection	Customer service chatbot, personalized banking offers, compliance monitoring
Punjab National Bank	AI Risk Assessment Tools	Loan evaluation, fraud detection

Bank of Baroda	AI Chatbots, AI Predictive Models	Customer interaction, loan recovery, customer retention
Canara Bank	AI Transaction Monitoring, AI Chatbots	Suspicious activity detection, automated query handling
Union Bank of India	AI AML Compliance, NLP-Based Systems	Anti-money laundering checks, multilingual customer support

Source: Srinivas & Katla (2025)

Figure 3: Use of AI in Credit Inclusion

Source: Author's compilation

AI-driven tools improve accessibility by allowing remote onboarding through Aadhaar-based e-Know Your Customer (KYC) and video verification, helping rural borrowers access formal credit without visiting bank branches. AI is transforming access to credit by moving beyond traditional branch-based lending and embracing new methods of customer assessment. Banks are using AI and analytic-based models to maintain or upgrade based on customer density, demographic shift, digital adoption rate, transaction pattern and operational overhead (Jain, 2025). By analysing digital footprints, utility bill payments, mobile usage patterns and real-time cash flows, AI enables banks to evaluate borrowers who were previously unserved or underserved. This approach allows even remote customers - far from brick-and-mortar branches - to be brought into the formal credit system with speed, accuracy and dignity. It enhances affordability by reducing operational costs, enabling fintechs like Paytm, BharatPe and small finance banks to offer low-ticket digital loans. In credit appraisal, AI models analyse alternative data—such as mobile usage, Goods and Services Tax (GST) filings, UPI transaction history and farm activity patterns, financial institution will access creditworthiness more accurately who lack traditional credit histories bringing millions of customers in formal credit channel. AI projected to improve efficiency by 46 percent and Indian AI finance market expect to cross 1.02 lakh crore by 2033 (ETBFSI Research, 2025). It strengthens service delivery through automated disbursement and digitally signed repayment schedules. Greater transparency is achieved by using explainable AI algorithms that show why a loan was accepted or rejected, reducing information asymmetry for customers. AI-based risk management tools detect fraud patterns, flag suspicious UPI transactions and predict repayment behaviour, enabling safer expansion of credit. In a study done by Naidu et al. (2025), accuracy of fraud detection has been enhanced by AI tool from 65 percent to 92 percent and financial losses has reduced by 28 percent. Banks and Non-Banking Financial Companies (NBFCs) also use AI for personalised customer engagement, such as reminders in regional languages or WhatsApp-based support. In loan recovery, AI bots help reschedule Equated Monthly Instalments (EMIs) or identify early signs of distress, reducing the need for coercive recovery practices. The study done by Kshetri (2021) found that in United States of America (USA), financial

institutions, actively using AI, reported to have less Non-Performing Asset (NPA) than the institution not using it. Finally, AI enhances governance by ensuring regulatory compliance, monitoring Know Your Customer (KYC) anomalies and aligning with Reserve Bank of India's (RBI's) Digital Lending Guidelines. Together, these applications demonstrate how AI can build a more inclusive, transparent and responsible credit ecosystem in India.

Not without Risks

The adoption of AI has also brought many associated risks that requires attention and must be tackled effectively.

Figure 4: Risks of Using AI in Banking Sector

Data Related Risks	• Data Quality Risks, Data Privacy Concerns, Disinformation Risk, IPR Issues
Operational and Implementation Risks	• Incorrect Integration with Legacy System, Human Skill Gaps and Change Management Issue, Concentration Risk
Regulatory and Compliance Risks	• Difficulty in Auditability and Supervision, Lack of Standadised Guideline, Regulatory Compliance Challenges
Custome Centric and Ethical Risks	• Loss of Human Touch, Fairness and Ethical Concern, Customer Acceptance and Trust Issue
Model and Algorithmic Risks	• Model Risk, Algorithmic Bias, Opaque Decision Making, Market Correlation
Cyber and Technology Risks	• Infrastructure and Technology Constraints, Cyber Security Threat, Third Party dependency

Source: Author's compilation

Data Related Risk: Data is the lifeline of AI and its efficiency depends on the quality of data on which AI is modelled. Fragmented, inaccurate, incomplete, outdated and historically skewed datasets, privacy breaches, information leak and even AI generated disinformation can lead to suboptimal and severely distorted decision-making. Issues of intellectual property rights can further complicate ownership of data and algorithm.

Operational and Implementation Risk: Reliance on third-party for providing cloud technology, infrastructure and datasets are subjected to a single point of failure. AI infrastructures are costly to implement and its operations require highly skilled staff for which banking sector require huge investment in its human resource upgradation. The adoption of AI in banking often creates a conception of trade-off between technologies and staff leading to apprehensions among employee. It is also found in the study that smaller banks have more difficulty in adopting AI due to higher fixed cost and lack of economies of scale (Stanly, 2024). This finding is also supported by the study of Goel et al. (2024) that larger and better capitalised banks are more likely to adopt AI.

Regulatory and Compliance Risk: AI in banking growing much faster than the rules and policies govern it, creating significant challenges for Regulated Entities. The lack of transparency possesses difficult for regulators, auditors and bank officials to verify its fairness, accuracy and accountabilities. It has become difficult for regulators to set a boundary line between decisions of human and human like AI.

Customer Centric and Ethical Risk: AI in banking also raises the question of ethical expectation, customer trust and comfort. It may be difficult for banks to adopt AI in decision-making on the sensitive issues like credit approval, dispute relating to finance and credit restructuring. Ethics is main concern in AI decision-making. AI system lacks human value like empathy, sympathy, integrity etc. which are essential for fair, inclusive and sensitive financial decisions. If AI model lacks these values or contains biases or make decision without proper human oversight, certain groups may feel excluded. Lack of human touch in loan recovery or complex financial needs is the important concern relating to AI.

Model and Algorithmic Risk: Unlike traditional credit models that follow fixed rules, the internal decision-making of AI models is complex and not easily visible. They learn from the data they are trained on. If this data contains bias or mistakes, the AI can also learn those biases. As a result, the model may give unfair

decisions such as rejecting a deserving borrower or approving someone whose risk is actually high (Rao, 2025). This lack of transparency can unintentionally harm certain groups and weaken trust in the lending process.

Cyber Risks: As digital and AI in banking expands, so does cyber frauds. The cases and costs of cyber threats are quadrupling year-on-year (Sharma, 2025). Use of AI in banking sector can also be mimicked by cyber attacker. It can be used for hyper realistic deepfake scams, AI social engineering (fake banking personnel), synthetic identity frauds, Data poisoning, advance phishing etc. leading to operational and reputational damage including heavy financial losses.

Future Outlook: The GAP Framework

The future of AI in banking sector is promising, the successful bridging of credit gaps in India's financial system will depend on the responsible adoption of GAP AI - Generative, Analytic and Predictive AI- within a framework anchored in trust, transparency and human oversight. While generative AI can shift the customer engagement to the next level by enabling intelligent virtual assistant, multilingual interface, automated documentation and enhancing accessibility. Analytic AI will act as backbone of operational efficiency and regulatory compliance. It will strengthen credit appraisal, risk assessment, fraud detection and portfolio monitoring deepen MSME and agriculture credit by incorporating alternative data in line with regulatory compliance. Predictive AI plays a crucial role in financial resilience and inclusion by forecasting borrowers' behaviour, stress pattern and early warning signals resulting in reducing Non-Performing Asset (NPA) and supporting responsible lending to existing individual and business entities, informal enterprises and first-time borrowers. The future effectiveness of GAP AI will rest on robust technological infrastructure, continuous training of bankers and regulators and improved AI literacy among individuals to build confidence and informed participation in AI-assisted credit processes. Equally important is togetherness, reflected in collaboration among banks, Fintech, policymakers and academia. Guided by FREE-AI principles such as Fair, Responsible, Explainable and Ethical, AI without responsibility and ethics is like technology without conscience capable of increasing lending yet exclusion and instability. AI adoption can ensure inclusion, resilience and financial stability, positioning AI as an enabler of sustainable and inclusive credit rather than a substitute for human judgment.

Conclusion

AI adoption in Indian banking is still at nascent stage, but it shows strong potential to reduce human errors, lower operational costs and improve decision-making. While challenges such as the AI talent gap and data governance remain, responsible use of AI can enhance risk management, fraud detection, customer service and regulatory compliance. If designed with transparency and respect for customer dignity and privacy, AI can boost trust and help bridge the credit gap by accounting for the emotional, social and economic realities of the financially excluded individual and business entities. Overall, AI holds a bright future in advancing financial inclusion, resilience and efficiency in the banking sector. In conclusion, the future of inclusive credit lies in a GAP-AI framework grounded in trust, transparency, training and togetherness, guided by FREE-AI principles and strengthened by widespread AI literacy, where artificial intelligence complements rather than replaces human judgment.

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CRYPTOCURRENCY: GLOBAL REGULATIONS AND INDIA'S STAND

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Abstract

This article examines the evolving landscape in the area of cryptocurrency regulation. In this study, the genesis of cryptocurrency and its evolution to the present day has been examined. The two competing perspectives pertaining to regulation of cryptocurrencies has been covered and presented the need on why these should be regulated. We look at the trajectory of regulations across the globe. We then examined the regulations in the Indian context, the issues and participants involved and attempted to explore possible solutions.

Introduction

Digital finance and cryptocurrencies are here to stay. Increased globalization and innovations in technology are reshaping the future of how financial transactions occur. Cryptocurrencies are gathering considerable public interest and demonstrating an increase in perceived value. But despite their having been in existence for many years now, there is considerable ambiguity with regard to their regulations. Here, we have examined what cryptocurrencies are and why widely divergent views exist with respect to the regulation of cryptocurrencies.

Cryptocurrencies are digital entities which are designed to work similar to currency through a computer network and are not controlled by a monitoring authority like a Central Bank. The best known cryptocurrency is called Bitcoin, but there are others that go by the names of Ethereum, Dogecoin, USDTether etc. Bitcoin has had a price increase from USD5000 in 2020 to USD 63,000 in April 2021 and to a high of USD125,000 recently[1]. Market capitalization of the crypto ecosystem was estimated to be around USD 4.17 trillion as of September 2025[2]. These serve as means of payment or exchange, provide an avenue to access goods and services and function as securities. However, the world is still divided on whether these can be treated as alternatives to fiat (paper) currency and whether these should be regulated or not.

There are primarily two schools of thought with regard to regulation of cryptocurrencies. The first group is of those who favour cryptocurrencies. They say that the transactions are cheaper, faster, offer anonymity and yield higher returns of investment. Further, record keeping of transactions is undertaken by anonymous entities through immutable digital contracts. These transactions do not require an intermediary and thus, help to contain higher transaction costs. The system allows for 24X7 operation and is always available irrespective of time-zones of operation. It is argued that therefore, cryptocurrencies can be allowed to operate as such, with little or no supervision or Government control. However, those who disfavour these currencies provide a contrary point of view. They highlighted the lack of Government control and possibility of usage to finance terrorism. These may serve as conduits for money laundering, given the anonymity involved in the transactions. When used as a payment mechanism, there is limited protection

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[1] Cryptocurrency Prices Source: TradingView. "Bitcoin.", available at https://www.tradingview.com/symbols/BTCUSD/

[2] Cryptocurrency Prices Today By Market Cap, Forbes, September 13 2025, available at https://www.forbes.com/digital-assets/crypto-prices/

to buyers and sellers if there is a breakdown in the transaction. Further, when these cryptocurrencies are treated as assets and held on as investments, their nature changes to a security. Given the volatility in its value, it becomes a prime candidate for speculation. When it comes to protection of the interests of the minority investor, the role that Governments and a strong legal framework play can not be ignored.

In this article, the two competing perspectives pertaining to regulation of cryptocurrencies have been examined. This study is in the Indian context, while being studying the regulations adopted by other countries. The development and adoption of these cryptocurrencies over the years, the issues involved have been examined and possible solutions have been explored.

Brief Background

The concept of Cryptocurrencies originated when a pseudonymous developer Satoshi Nakamoto, published a paper titled 'Bitcoin: A Peer-to-Peer Electronic Cash System' in October 2008[3]. This white paper outlined to the world how a digital currency may exist. It laid down the possibilities of how transactions can be verified and records maintained, by a decentralized technology called 'Blockchain'. By 2010, commercial transactions using Bitcoin had begun to take place.

The advantage of using blockchain technology is that every transaction is recorded on a digital ledger which is distributed across all participants. As the ledger is distributed across the system with information available to all involved, failure of a particular system presents no risk. Creation of new monetary units is controlled by an algorithm and the unit, thus, created has no physical form, existing only digitally. Its supply is not decided by a Central Bank or monetary authority, but by a digital protocol. The system is designed such that the first transaction in a block is started by the creator of the block. New elements are created in the block by 'miners' who solve complex mathematical puzzles to find a hash value that satisfies certain preset conditions.

Transfer of value takes place between peers on a decentralised distributed ledger. If X wanted to sell crypto assets to Y, Y would broadcast the details of entities involved, amount and transaction fees. Decentralised independent validators would then compete among themselves to verify the transaction. The validator selected adds the transactions to the existing blockchain and gets paid in transaction fees or sometimes with crypto assets. The changed blockchain is then circulated to all validators and users. The trail of transactions is, thus, there for everyone to see and ensures transparency while not disclosing the identities of the people behind the transactions. These transactions take up a lot of computing power and electricity; and are practically impossible to reverse.

Another feature of blockchain is the availability of smart contracts[4]. Smart contracts are self-executing computer codes that work based on specific prior criteria. These allow for programmability and composability. Programmability permits developers to top up existing blockchains with their code and composability allows performance of complex transactions on the same blockchain by blending multiple instructions within a single smart contract. They, thus, permit modifications, transcend borders and in some instances do away with intermediaries. Allowing for crypto services has augmented the field of Decentralised Finance (DeFi). DeFi protocols allow lending, trading and providing insurance in the crypto ecosystem using multiple smart contracts.

Generally, cryptocurrencies are broadly of two types - Stablecoins and unbacked crypto assets. Stablecoins are designed to maintain a stable value, by tying its value to a basket of assets including national

[3] Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system. Available at SSRN 3440802
[4] Smart Contracts, available at : https://www.ibm.com/think/topics/smart-contracts

currencies, commodities or financial instruments. As these offer reduced price swings as compared to Bitcoin, they make transactions safer for traders. The present market value of Stablecoins has crossed US$200 billion as per Global Financial Stability Report (GFSR), released by International Monetary Fund (IMF) in April 2025. The other type of cryptocurrencies are unbacked crypto assets[5]. These are the oldest form of crypto, whose value is decided by the forces of demand and supply. Their value is not pegged to any currency or asset.

On the face of it, this all looks pretty good. If a system permits one to conduct financial transactions faster and cheaper and does not need intermediaries, thus, saving on costs and time, it merits adoption. There would be no need for exchange rates or related conversion charges or transaction fees. Cross-border transactions can take place without the mediation of a trusted third-party. However, things are not as simple as that. Firstly, though cryptocurrencies were envisioned with decentralisation in mind, the reality is different. Multiple centralised intermediaries (exchanges and cryptowallets) like Mt.Gox, Binance, Coinable and FTX have played a key role in funds transfers in and out of the crypto ecosystem. Some such intermediaries have failed leading to the downfall of the entire system. When Mt.Gox failed, an estimated 8,50,000 bitcoins and about USD450 million were lost[6]. Secondly, many unbacked crypto-assets are no longer used for payments or as a means of exchange but have since become fodder for speculation. The IMF GFSR of April 2025 notes that shocks originating in the stock market tend to spillover to Bitcoin (BTC) trade. The price of BTC has been found to oscillate as much as 10% in a span of a few hours. In October 2025, subsequent to US announcing an additional 100% tariff on Chinese imports, the cryptocurrency market crashed with an estimated 1.6 million traders suffering losses exceeding USD19 billion[7]. Increasing interconnectedness between bitcoin and mainstream financial markets has made it necessary to undertake close monitoring of financial risks as they emerge. Thirdly, the anonymity offered by blockchain transactions have led to increase in money laundering and financing of terrorism[8]. An estimated USD22.2 billion is believed to have been laundered through cryptocurrencies in 2023[9]. Reports cite these numbers to be on the rise, with one report pegging it to exceed USD 40.9 billion as of 2024[10].

The Need to Regulate Cryptocurrencies

The need of regulating cryptocurrencies are: First, to combat the use of funds for illegitimate activities, money laundering or financing terrorism, second, protecting consumers against frauds and third, ensuring the integrity of markets, financial systems and safeguarding financial stability. To combat the use of crypto assets to fund illicit activities or financial terrorism, rules and regulations need to be enforced upon market intermediaries like crypto wallets. Adherence to Anti Money Laundering/Combating of Financial Terrorism (AML/CFT) guidelines, investor and consumer protection laws need to be ensured. Regulations need to target the interoperability of crypto assets where in regulated entities are involved in conversion of sovereign currency to crypto assets and vice-versa. If financial institutions undertake trade in these assets either by themselves or on behalf

[5] Financial stability risks from cryptoassets in emerging market economies, BIS Papers, No.138, August 2023, Bank of International Settlements, available at https://www.bis.org/publ/bppdf/bispap138.pdf

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[9] Money Laundering Hit $22.2 Billion in 2023, With Centralized Exchanges Still the Primary Destination, Brandy Betz, unchainedcrypto.com, February 15, 2024, available at https://unchainedcrypto.com/crypto-money-laundering-hit-22-2-billion-in-2023-with-centralized-exchanges-still-the-primary-destination/

[10] 2025 Crypto Crime Trends: Illicit Volumes Portend Record Year as On-Chain Crime Becomes Increasingly Diverse and Professionalized, Chainalysis.com, January 15 2025, available at https://www.chainalysis.com/ blog/2025-crypto-crime-report-introduction/

of customers, regulations should be developed to address how such deals should take place. The corresponding tax implications should be clearly specified. Third, depending on whether crypto assets are treated as securities with promise of future returns or as generic assets like houses, their legal status would differ. The applicable investor protection regulations and oversight would depend on whether the crypto assets are held and traded as securities or otherwise.

Further, when cryptocurrencies operate in emerging markets, issues tend to compound due to the weak legal enforcement mechanisms and inadequate protection to the minority investors[11]. The time taken to legally resolve a dispute is longer, often taking years. The interests of the small investor are perceived to be at greater risk as compared to developed economies. The possibility of investors losing their hard-earned money without recourse is real.

Regulations across the globe

When we examine how regulations on cryptocurrencies have shaped up in the past few years across the globe, we see wide variations. In the United States, cryptocurrencies are not considered as legal tender. The Internal Revenue Service (IRS) views cryptocurrencies as digital storehouses of value and has issued tax guidance on the same. The Securities and Exchange Commission (SEC) focuses on Initial Coin Offerings[12] and tokens, treating them as securities. Exchange are required to comply with SEC regulations that govern trading of securities and investors are provided some protections when trading in crypto assets. The Commodity Futures Trading Commission (CFTC) regulates crypto derivatives and futures and treats Bitcoin and Ethereum as commodities. The Financial Crimes Enforcement Network (FinCEN) requires crypto exchanges to obtain licenses. The FinCEN enforces compliance with Bank Secrecy Act and Anti-Money Laundering (AML) and Know Your Customer (KYC) requirements to prevent illicit financial activities. US has recently provided approval for stablecoins (those backed by US Dollar)[13] and the USD5.7 trillion stablecoin market is expected to show phenomenal growth as a result.

The European Union has moved ahead with the Markets in Crypto Assets (MiCA) regulation, which is a comprehensive framework for regulating crypto assets among its member states[14]. Impacting cryptocurrencies, security tokens and stablecoins, the rules were adopted in April 2023. In Canada, cryptocurrencies are not treated as legal tender[15]. The tax, security and AML authorities enforcements are applicable. Canada had implemented the Virtual Currency Travel Rule, which extended the regulatory ambit to include cross-border cryptocurrency transactions. In Japan, cryptocurrencies are treated as legal tender. Digital assets such as Bitcoin are referred to as legal property with in their Payment Services Act (PSA). Japan had taken a pro-crypto stand and had instituted a licensing system for exchanges in 2017[16]. In South Korea, these are not legal tender and in 2017, stringent action was taken prohibiting the use of anonymous accounts in cryptocurrency trading[17]. In 2018, it was mandated that traders must open accounts at the same bank as their chosen crypto exchange and use their real names for cryptocurrency trading transactions.

[11] Allen, F., Chakrabarti, R., De, S., & Qian, M. (2012). Financing firms in India. Journal of financial intermediation, 21(3), 409-445.
[12] ICO Explained: What It Is and Successful Examples, Investopedia.com, available at https://www.investopedia.com/terms/i/initial-coin-offering-ico.asp
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[15] Crypto assets, Government of Canada, available at https://www.canada.ca/en/financial-consumer-agency/services/payment/digital-currency.html
[16] As China cracks down, Japan is fast becoming the powerhouse of the Bitcoin Market, Luke Graham, cnbc.com, September 29, 2017, available at https://www.cnbc.com/2017/09/29/bitcoin-exchanges-officially-recognized-by-japan.html
[17] Is Cryptocurrency legal in South Korea, July 04, 2018, updated June 12, 2023, available at https://complyadvantage.com/insights/cryptocurrency-regulations-around-world/cryptocurrency-regulations-south-korea/

China has taken a strong stand against cryptocurrencies. Initial Coin Offerings, (where like Initial Public Offerings, a company raises funds to launch a new blockchain app or service), were outlawed in 2017[18]. Bitcoin China and several exchanges were shut down at the same time. Before this ban, the Chinese currency, Renminbi made up to 90 percent of bitcoin trades worldwide. In 2021, all cryptotrading by Chinese nationals were mandated as illegal, even the ones on foreign bourses. As of August 2025, the yuan's share as a global payments currency is less than 3%. However, the recent approval for stablecoins granted by the US is likely to prompt a different regulatory response from China. Bloomberg has reported that China is looking to join the game by issuing licences for Hong Kong Dollar Stablecoins[19]. Hong Kong is a global financial centre and the crucible for China's crypto experiments and is expected to host digital copies of the yuan or its offshore variant : the CNH.

India's stand

Cryptocurrencies caught on in India in 2012. In 2013, a Mumbai-based restaurant 'Kolonial' announced that its customers can make payments in bitcoins[20]. The Financial Stability Report released by the Reserve Bank of India in June 2013, mentioned the challenges posed by virtual currencies. Considering the growth of virtual currencies, the RBI stressed the need for a comprehensive regulation. In December 2013, RBI's press release further decried the unauthorised status of virtual currency payments[21]. At around the same time, Enforcement Directorate raided two bitcoin firms in Ahmedabad, in what became India's first legal action on a trading firm. However, between 2012-2016, cryptocurrencies gained momentum in India. Crypto exchanges such as Zebpay, Coin Secure and Uno Coin began operations here, thus, bringing in depth and volume to cryptotrading in the country.

Demonetisation in November 2016 led to surge in digital payments across the country. Cryptocurrencies also benefited from this policy initiative, with bitcoin surging in value from USD 757 to USD 1020 in India in the 18 days post demonetisation[22]. Their value in the US at that time continued to be USD770 a piece. In February 2017, RBI's press release cautioned the users of Virtual Currencies (VCs), about the exposure to potential financial, operational, legal, customer protection and security related risks[23]. It further advised that it has not given any licence or authorisation to any entity or company to deal with virtual currencies and that users doing so were doing at their own risk. In November 2017, a high level Inter-Ministerial committee (IMC) was formed under the aegis of the Ministry of Finance, Government of India, to examine the issues associated with cryptocurrencies. The committee submitted its report in 2019[24].

This report suggested that Distributed Ledger Technology (DLT) can be used by Banks and financial institutions for loan-issuance tracking, management of collateral, fraud detection, insurance claim management and reconciliation in securities market. The report documented that crypto currencies lack intrinsic value and are volatile. They operate in decentralised networks with no central authority. The transaction in cryptocurrencies are irreversible and if a wrong transaction has been made, there is no method of redress. Losing the private key (akin to

[18] Cryptocurrency Regulations around the World, China, available at https://complyadvantage.com/insights/cryptocurrency-regulations-around-world/

[19] Wait for Stablecoins to Whip up US-China Rivalry, Andy Mukherjee, Bloomberg.com, September 8, 2025, available at https://www.bloomberg.com/opinion/articles/2025-09-07/stable-coins-are-set-to-whip-up-us-china-geopolitical-rivalry

[20] From eatery to meetup, entrepreneurs increasingly accepting 'bitcoins' in India, Indu Nandakumar, ET Bureau, December 25 2013, available at https://economictimes.indiatimes.com/small-biz/startups/from-eatery-to-meetup-entrepreneurs-increasingly-accepting-bitcoins-in-india/articleshow/27871965.cms?from=mdr

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[22] India's Demonetization Is Causing Bitcoin To Surge Inside The Country, Karan Kashyap, forbes.com,December 22 2016, available at https://www.forbes.com/sites/krnkashy-ap/2016/12/22/- indias-demonetization-is-causing-bitcoin-to-surge-inside-the-country/?sh=7f985ec37dfc

[23] RBI Cautions users of virtual currencies, Press Release, February 1 2017, available at https://www.rbi.org.in/commonman/English/scripts/PressReleases.aspx?Id=2152#:~:text=The%20Reserve%20Bank%20of%20India,release%20dated%20December%2024%2C%202013.

[24] Press Release on Report and Bill of the IMC on Virtual Currencies, available at https://dea.gov.in/press-release/press-release-archive

a password) of a virtual currency wallet could mean that the money in the wallet is lost permanently. The amounts stored in wallets and raised through Initial Coin Offerings were being stolen using malware or through phishing. Consumers were, thus, subject to financial risk. The use of cryptocurrencies provided the participants with a greater degree of anonymity which, the Committee perceived may be used to financing money laundering or financing of terrorism. It was difficult for law enforcement agencies to track down people involved in these actions. While registering cases and framing charges, the ambiguous legal status of these assets were seen to create problems. To top it all, the mining of virtual currencies are resource intensive and the huge requirement of electricity is a drain on the environment. The Committee taking into account the fact that cryptocurrencies have not been recognized as legal tender in any jurisdiction at that point in time, noted that these are private enterprises and cannot replace fiat currency. Given the risks involved in cryptocurrencies, the group recommended banning of private cryptocurrencies and asked for fines and penalties for connected activities. The report, however, proposed that an official digital currency can be explored and that a Standing Committee may be established to examine the evolving cryptocurrency domain.

Meanwhile, the RBI issued a circular on April 6, 2018, which mandated that entities regulated by the RBI "shall not deal in Virtual Currencies (VCs) or provide services for facilitating any person or entity in dealing with or settling VCs. Such services include maintaining accounts, registering, trading, settling, clearing, giving loans against virtual tokens, accepting them as collateral, opening accounts of exchanges dealing with them and transfer/receipt of money in accounts relating to purchase/sale of VCs"[25]. The circular instructed that any regulated entity providing such services to Virtual Currencies should exit the relationship within three months from the date of the circular. The circular had a massive impact on the crypto ecosystem in India. Since, the cryptocurrency exchanges relied on traditional banking channels for interface between crypto currencies and fiat currencies, these activities came to a standstill. Payment of routine expenses and obligations suffered. Trading volumes declined severely and customers began to desert the exchanges to mitigate potential losses. In response to the disruption in their services, exchanges affiliated with the Internet and Mobile Association of India (IMAI) filed a writ petition with the Supreme Court challenging the constitutional validity of the RBI circular. Earlier, in 2017, two writ petitions had been lodged requesting for a ban on virtual currencies and on websites and mobile applications which dealt with crypto assets. The Supreme Court, in its judgement in March 2020, considered the writ petitions (those for and against) and overturned the ban by ruling in favour of the exchanges[26]. The Court noted the delicate balance required in allowing innovation and preventing misuse. It affirmed the role played by regulatory institutions in issuing directives to manage the risks associated with cryptocurrencies. Following this landmark judgement, several crypto exchanges and traders resumed their dealings. However, many decided to desist as there was uncertainty. In 2019, Indian residents received Income Tax notices pertaining to transactions in cryptocurrencies, asking them to submit information pertaining to income generated from cryptocurrency dealings, which had not been included in their tax returns.

While the Supreme Court was considering the case pertaining to RBI circular, the Ministry of Finance proposed a Draft Bill to create a comprehensive framework to regulate cryptocurrencies in India. The bill titled 'Banning of Cryptocurrency and Regulation of Official Digital Currency Bill, 2019' proposed the banning of use of cryptocurrency as legal tender or currency in India. The Bill prohibits mining,

[25] Prohibition on dealing in Virtual Currencies, RBI, April 6, 2018, available at https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11243&Mode=0
[26] Internet and Mobile Association of India v Reserve Bank of India, Supreme Court of India, 4 March 2020, available at:main.sci.gov.in/supremecort/2018/19230/19230_2018-_4_1501_21151_Judgement_04-Mar-2020.pdf

buying, holding, selling, dealing, issuing or using cryptocurrencies within the country. It also seeks to prohibit the use of cryptocurrencies as a medium of exchange, store of value or as a payment system. Trading with other such currencies, using them to generate credit, for raising funds or investment is sought to be banned. Penalties for offenses could result in fines upto INR 250 million or imprisonment up to 10 years or both. Any individual who directly or indirectly solicits or encourages any co-operation in any movement involving the use of cryptocurrency is likely to be punished by fines or imprisonment upto 7 years or both. Further, the bill grants the Central Government the authority, in consultation with RBI to approve a digital currency as legal tender and to allow foreign digital currencies as foreign currencies in India, subject to Foreign Exchange Management Act, 1999 (FEMA). Though this bill has not yet been passed, it has supported the creation of India's e-Rupee, the Central Bank Digital Currency (CBDC).

The Government of India has introduced a 30% tax on income generated from cryptocurrencies in 2021 and a 1% Tax Deducted at Source (TDS) on transactions above a certain threshold, vide section 115BBH inserted in the Finance Act, 2022 effective from April 1 2023[27]. The tax rules mandate that no deductions other than cost of acquisition is allowed and losses from crypto assets cannot be offset against other income. In 2023, crypto exchanges were mandated to register with Financial Intelligence Unit - India (FIU-IND), the authority overseeing enforcement of AML/KYC guidelines under the Prevention of Money Laundering Act, 2002 (PMLA)[28]. As of 2025, the CBDC, digital rupee pilot has expanded. In February 2025, Section 285BAA of India's Finance Bill has mandated that FIU-registered exchanges should maintain detailed transaction records. In May 2025, the Supreme Court urged the Government to issue clear directions to regulated digital assets, owing to the possibility of misuse, use in illegal activities and considering their destabilizing effect on Indian economy[29]. In 2023, FIU-IND had issued compliance notices to offshore crypto exchanges, following which in January 2024, Uniform Resource Locators (URLs) of these exchanges were blocked[30]. One such exchange, KuCoin paid Rs. 3.45 lakh fine and has resumed operations since March 2024. During May-June 2024, another exchange Binance paid Rs.188 crore fine and began operations. In September 2025, a third crypto exchange, the Dubai-headquartered Bybit, the world's second-largest by trading volume, has re-entered the market post compliance overhaul and payment of penalty[31].

Way Forward

The cryptocurrencies in India would require stringent regulations and supervision by various regulators and Government agencies such as the Enforcement Directorate to monitor use of cryptocurrency in economic offences, the Securities and Exchanges Board of India (SEBI) for crypto assets being treated as securities, the Department of Economic Affairs, for impact of cryptocurrencies on the policies of the State and India's Tax authorities, for jurisdiction on tax implications of trading and use of cryptocurrencies. Thus, a co-ordinated effort among various regulators and their respective departments would be needed on an ongoing basis to establish a comprehensive regulation examining different facets of the cryptocurrency. Given the inroads already

[27] Section 115BBH, available at https://incometaxindia.gov.in/pages/acts/income-tax-act.aspx
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made in using blockchain infrastructure, the same may be utilised to base the regulatory landscape of cryptocurrencies under RBI. The Centralised KYC portal may be used to ascertain the identity of individuals involved in the transactions. SEBI may step in with guidelines and institute stringent guidelines on end-use of funds and limits on retail investor participation. For trade transactions, mechanism for initiating refund has to be envisaged where in in the event of a transaction failure, funds are not lost and are returned to their rightful owners within a specified time frame. Measures may be instituted to identify and earmark cryptocurrency transactions through a central depository with information being made available to law enforcement authorities under due authorisation. Our regulations have always sought to provide the ordinary investor with the power to make decisions and be protected from mala fide intentions. Once safeguards are in place, our nation of more than 1.41 billion people would have an additional option to grow and advance!

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Summary of Macro Research Report, 2021-22 on Impact of EASE Reforms on Banking

By

Dinesh Mishra, Chief Manager and Faculty, Union Bank of India

&

Dr. Amrendra Pandey, Associate Professor, Kautilya School of Public Policy (KSPP).

In January 2018, the Government of India and Public Sector Banks (PSBs) jointly committed to and launched a common PSB Reforms Agenda for Enhanced Access & Service Excellence (EASE), comprising 30 Action Points across six reform themes. It was jointly prepared by Indian Banks' Association (IBA) and Boston Consulting Group (BCG) based on points emerging from brainstorming by the Finance Ministry, PSBs Chiefs, Executive Directors, IBA and other stakeholders. In the first round (EASE 1.0), the focus of the reforms was to ensure that PSBs set up all the internal processes and systems that would aid them in achieving higher standards in terms of CLEAN (Clean credit, Leveraging data, Ensuring accountability, Action against defaulters and Non-Performing Assets (NPAs) recovery) and SMART (Speedy, Multi-channel reach, Accessible & affordable, Responsive and Technologically enhanced) banking. The progress of the banks on each of the themes was rigorously monitored through an objective EASE Reforms Index, comprising 140 metrics. Next version was launched as EASE 2.0 which had fewer parameters (107 metrics) and mainly emphasized on business outcomes. EASE 3.0 was a continuation of earlier versions with focus on strengthening systems and processes, particularly, digital enablements.

With change in banking landscape owing to amalgamation and prevailing pandemic caused by COVID-19 during Financial Year (FY) 2020-21 and 2021-22, the reform agenda shifted gears with the launch of EASE 4.0 and 5.0. These versions of EASE focused more on digital and data driven banking to improve PSBs performance. During each version of EASE reform agenda, the quantified evaluation, benchmarking, ranking and inter-bank comparison built into the EASE Index endeavoured to create competition amongst the PSBs. During each phase of implementation, leading PSBs became the pace-setters for accelerated reforms and the best practices among PSBs were available for peer learning. The present study endeavours to understand whether the transformation of the systems and processes of PSBs under EASE reform agenda has been reflected in improved business performance and customer feedback.

The prime focus of this study is to understand the impact of the EASE reform agenda on PSBs performance and subsequent impact on the banking sector. To gauge the comparative position, their performance has been compared with those of select private banks using CAMELS ratio. We have also conducted sentiment analysis using twitter data to capture customer feedback based on 8 emotions, i.e. anger, anticipation, disgust, fear, joy, sadness, surprise and trust.

The results show that capital adequacy, management quality, earning ratio, liquidity and sensitivity ratio all are important in explaining efficiency of banks. All of these ratios have seen improvement in public sector banks since the implementation of EASE reforms and consequently, their efficiency has also improved significantly. Though private sector banks' performance on these parameters are better than PSBs, public sector banks have seen encouraging

improvements since 2018 onwards when EASE reforms were initiated.

Natural Language Processing (NLP) based sentiment analysis results showed that public sentiment is more positive towards public sector banks than their private sector peers. This despite the fact that private sector banks' services (for example, applications rating) and performance (CAMELS) are much better than public sector, shows that Government ownership of these banks play a role in giving them better public opinion. Public sector banks can leverage these positive sentiments by concentrating on EASE related action points, particularly, customer service and product offerings by utilizing digital and analytical tools.

DECLARATION FORM

The Editor,

Bank Quest,
Indian Institute of Banking & Finance, Kohinoor City, Commercial II,
Tower I, 2nd Floor, Kirol Road, Kurla (W), Mumbai - 400 070.

Dear Sir / Madam,

Re : Publication of my article

I have submitted an "_____" for publication at your quarterly journal Bank Quest.

In this connection this is to declare and undertake that the said article is my original work and that I am the author of the same. No part of the said article either infringes or violates any existing copyright or any rules there under.

Further, I hereby agree and undertake without any demur; to indemnify and keep the Institute (IIBF) indemnified against all actions, suits, proceedings, claims, demands, damages, legal fees and costs incurred by the Institute arising out of infringement of any copyright /IPR violation.

Yours faithfully,

(_____)

Author _____

Name : _____

Designation : _____

Organisation : _____

Address : _____

Tel. No. : _____

E-mail ID : _____

Signature : _____

Date : _____

IIBF INVITES PAPERS UNDER MICRO RESEARCH PAPERS: 2025-26

The Indian Institute of Banking & Finance (formerly The Indian Institute of Bankers) was established in 1928 and is working with a mission "to develop professionally qualified competent bankers and finance professionals primarily through a process of education, training, examination, consultancy/ counselling and continuing professional development programmes". One of the objectives of the Institute is to promote research relating to operations, products, instruments, processes, etc. in banking and finance and encourage innovation and creativity among banking and finance professionals. 'Micro Research' is a sort of an essay competition for members of the Institute (bankers) to present their original ideas, thoughts and best practices on areas of their interest. This initiative was started in 2004-05. Since then, the Institute invites Micro Research papers every year, on topics identified by the Research Advisory Committee of the Institute.

The competition is open to life members of IIBF, who are presently working in banks and financial institutions. In this regard, the Institute invites Micro Research papers for the year 2025-26 on the following topics. (See important clause on copyrights below[1])

1. Role of specialised banks in "Vikshit Bharat" Mission.
2. Supply chain disruptions: Challenges & Opportunities for Trade Financing
3. Role of Artificial Intelligence in credit analysis and underwriting
4. Expected Credit Loss Framework – Implications on Profitability and Viability of Indian Banks.
5. Open Banking: The Next Frontier in Financial Innovation
6. Cross-Border Payment Systems: Towards Global Financial Integration

The essays/papers will be judged on their content/ relevance and originality. The authors of the accepted papers will be rewarded with a citation and cash prize ranging from Rs. 5,000/- to Rs. 15,000/- depending on the merit of the paper. The copyrights of the selected essays/papers will lie with IIBF.

All the interested members of the Institute may submit the soft copy of the Micro Research papers in English with the word limit of 5000-6000 words or 10-12 pages (A4/Times New Roman/Font size 12) in MS Word format only through email to dd.aca3@iibf.org.in

The last date for submission of the paper is 28th February, 2026. Applicants must mention following details on the front page of their papers:

Name:	
Membership No.:	
Topic:	
Designation & Employer:	
Correspondence address:	
Mobile no. /Landline no.	
Email ID:	

Applications without membership numbers/ incomplete details will not be considered.

Phone: 022 - 68507062/68507033

[1]Candidates may please note that copying materials as it is from various sources should completely be avoided. Wherever information used in the proposal/report is taken from other sources, the author should acknowledge and provide complete reference of the source. It should be ensured that there is no violation of copyrights, if any.

IIBF INVITES PROPOSALS UNDER MACRO RESEARCH: 2025-26

The Indian Institute of Banking & Finance (Estd: 1928) is working with a mission "to develop professionally qualified competent bankers and finance professionals primarily through a process of education, training, examination, consultancy/ counselling and continuing professional development programmes. One of the objectives of the Institute is to promote research relating to Operations, Products, Instruments, Processes, etc. in Banking and Finance and to encourage innovation and creativity among banking and finance professionals. With this in view, in 2003, the Institute had started to fund research studies on selected areas in banking and finance, known as 'Macro Research', the term macro suggesting the scope of the research and to distinguish it from the other research initiative of the Institute namely the 'Micro Research'. Under the Macro Research scheme, the Institute invites proposals from research scholars from universities, colleges and banks to take up research in identified areas.

Topics for Macro Research

The Institute encourages empirical research in which, the researchers can test their hypothesis through data (primary/secondary) from which, lessons can be drawn for the industry (banking & finance) as a whole. In this regard, the Institute invites Macro Research Proposals for the year 2025-26 on the following topics. (See important clause on copyrights below[1])

1. Effectiveness of Credit Guarantee Schemes: India in a Cross-Country Setting
2. Changing Dimension and Patterns of Financial Savings in India
3. Effectiveness of Deposit Insurance Systems in Emerging Markets and developed countries with a Special Reference to India
4. Transformation in the Indian NBFC Sector: Prospects & Challenges
5. Business Correspondents Model: Gateway to Financial Inclusion and Social Outreach

Who can participate?

Teams sponsored/identified by research organizations/institutes, as well as individuals presently serving as regular employees in banks/ corporates/research organizations/institutions having a proven track record, are eligible to apply. Research proposals from bankers are specially encouraged. The individuals applying under this scheme should not be more than 58 years as on 28.02.2026.

The winners of the macro research award during the last three years (2024-25, 2023-24 and 2022-23) are not eligible to apply for the research award. Also, those winners of macro research who have been awarded twice in the past 10 years are not eligible to apply. If the research is undertaken by individuals, the proposal should be routed through their organizations after taking requisite permission, wherever applicable.

Research Proposal

The Research Proposal/s submitted should, among others, focus on the research objective/s, hypothesis, research design, methodology and execution plan of the proposed project.

[1]Candidates may please note that copying materials as it is from various sources should completely be avoided. Wherever information used in the proposal/report is taken from other sources, the author should acknowledge and provide complete reference of the source. It should be ensured that there is no violation of copyrights, if any.

Evaluation

The Research proposals will be evaluated in terms of its objective, relevance and methodology. Action points flowing from the research for policy making, should be clearly listed out in the final research report to be submitted. The track record of the research organizations/researchers submitting the proposal is also taken into account for awarding the research. All the research proposals will be prima facie considered for suitability and final selection will be made after the short listed researchers make a presentation to the members of the Research Advisory Committee (RAC) of the Institute.

Research Grant

The selected research project carries a cash award of Rs.2,50,000/- (Rupees two lakh and fifty thousand only). On commencement of the project a part (25%) of the award money will be given by way of advance as per the request of the researcher. The balance will be disbursed only on acceptance of the final report. In case a report is found unacceptable during the midterm review and final review, the research organization/researcher will not be paid the balance amount. In case a research organization/researcher abandons the project mid-way, they would be required to refund the advance availed together with interest at the prevailing MCLR of the State Bank of India (SBI).

Size of research report

Around 200-250 pages

Time frame

After completing the research work, the final research report should be submitted within a maximum period of six months from the time the project is awarded. In case of delay in submission of report, the award may be forfeited. The copyrights of the report will lie with IIBF. The report in part or full, cannot be reproduced in any form without prior approval from IIBF.

Applicant research organizations/researchers are required to submit typed proposals in English along with a brief bio-data highlighting their experience in conducting similar research through the below mentioned link:

https://iibf.esdsconnect.com/macroresearch/application

The last date for submission of the proposal is 28th February 2026.

The Director (Academics), Indian Institute of Banking & Finance,

Kohinoor City, Commercial-II, Tower-I, 2nd Floor, Behind Kohinoor Mall, Off. L.B.S. Marg, Kurla (West), Mumbai-400 070 Phone: 022-68507033

IIBF INVITES APPLICATIONS UNDER DIAMOND JUBILEE AND CH BHABHA BANKING OVERSEAS RESEARCH FELLOWSHIP (DJCHBBORF) – 2025-2026

Invites Application for Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship (DJCHB-BORF) – 2025-2026

Scheme details

The Diamond Jubilee Banking Overseas Research Fellowship was instituted by the Indian Institute of Banking & Finance in 1988 to commemorate its diamond jubilee year. The objective of the Fellowship is to provide the successful candidate an opportunity to undertake a research study on the latest developments in the field of banking and finance in India or abroad. The highlights of the scheme are as under:

1. The candidate applying for the scholarship should be a life member of the Institute and his/her application to be forwarded by the employer (HR/Personnel department), which should be an Institutional member of the Institute.
2. Age limit for the candidates is not over 50 years on **31.12.2025.**
3. **The winners of the DJCHBBORF award during the last two years are not eligible to apply for the research award.**
4. The research proposal needs to be vetted and recommended by a subject matter expert, having a Ph.D. degree attached to an institution having research credentials/operations. In this connection, candidate can approach leading B-schools located near their place of posting and IIBF on its part also will request the identified institution to guide the candidate. A scheme of compensation in place for such supporting professors, which will be conveyed to them upon selection.
5. Application (as per format enclosed), duly signed manually, to be submitted to the Institute before 28.02.2026.
6. Visit to foreign country will be considered only if there is a necessity for the same, considering the availability of the material on the internet etc. Candidates should justify the need for such visits. Such trips will have to be specially approved by the interview panel/Institute.
7. Institute reserves its right to award or withhold the fellowship based on the quality of proposals received and the Institute's decision will be final in the matter.
8. Institute would pay an honorarium of Rs.1.00 lac to the candidate on successful competition of the project.
9. For other details refer the application format enclosed.

Chief Executive Officer

Encl: Application form

INDIAN INSTITUTE OF BANKING & FINANCE

Kohinoor City, Commercial-II, Tower-I, 2nd & 3rd Floor, Kirol Road, Off. L.B.S. Marg, Kurla (West), Mumbai 400 070

(An ISO 21001:2018 Certified Organisation)

APPLICATION FOR DIAMOND JUBILEE AND CH BHABHA BANKING OVERSEAS RESEARCH FELLOWSHIP (DJCHBBORF) – 2025-2026

Note: i) Applicant's eligibility to enter for the Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship will be decided on the basis of the information he/she gives on the application form. It is, therefore, important that he/she provides full and accurate answers to all questions, otherwise the application will not be considered.

ii) This application form should be filled in carefully and in legible handwriting or typewritten.

iii) Incomplete forms will not be considered.

iv) The last date for submitting forms will be 28.02.2026. The form should be forwarded to the above address.

v) Please read the notes given at the end of this form, before filling it up.

A. PERSONAL PARTICULARS (Kindly fill in Block Letters)

1 Full Name_____

2 Date of Birth_____

3 Age (as on 31.12.2025) Years_____ Months _____

4 Gender_____

5 Marital Status_____

6 Nationality_____

7 Present Address Office_____

Photograph duly signed by the applicant to be affixed here.

_____

e-mail_____Tel. No._____

Fax no._____

Residence Address for communication:

_____

_____

_____

Tel No._____Mobile No._____

8 Address & Relationship of persons to be contacted in India in case of emergency:

e-mail_____ Tel no._____

Mobile no._____

B. PARTICULARS REGARDING ASSOCIATION WITH INDIAN INSTITUTE OF BANKING & FINANCE

1 Membership No._____

2 Whether fees for life membership have been paid _____

3 Year & Month of completion of JAIIB / Part I_____CAIIB / Part II_____

4 Whether completed Part I / JAIIB at first attempt _____

5 Whether completed Part II / CAIIB at the first attempt _____

6 Whether completed any other examinations conducted by the Institute, **if yes**

Name of the examination/s _____

Year of completion _____

7 Any award / prizes received for Institute's Examination _____

C. ACADEMIC AND PROFESSIONAL PARTICULARS (Copies of the mark list and certificates of the examinations passed should be attached along with the form)

1 Graduate and Post graduate examinations only

Degree	University	Year of Passing	Class / Grade obtained with % of marks / points secured	Whether completed in one attempt	Distinction / rank secured

2 Details of any other professional qualifications:

_____

_____

_____

_____

3 List of principal publications – books, monographs and articles with title, publisher and date. (A separate sheet may be attached as Annexure 1, if space provided here is insufficient)
(Preference will be given to candidates with publications to their credit.)

_____

_____

_____

_____

D. Employment History:

1 Date of joining the bank:_____

2 Present position _____

3 Grade / Scale _____

4 Date of promotion to the present scale / grade _____

5 Length of service as an Officer in the bank as on 31.12.2025 _____

6 Name & address of Central Office of the employer: _____

E-mail:_____ Tel No:_____

Fax No: _____

7. Earlier employment (if any) _____

8. Positions held (in chronological order starting from the present to the beginning with rank / grade and period)

Position	Institution / Dept.	Period	Nature of Duty

E. PARTICULARS OF THE PREVIOUS ENTRY / IES FOR THE FELLOWSHIP:

1 Whether entered for previous competitions: Yes / No_____

If yes, please mention the year/s: _____

2 Whether called for interview: Yes / No. If yes, please mention the year/s _____

3 Subject/s of your study under the previous entry / entries:_____

_____

F. PARTICULARS OF THE PROPOSED RESEARCH STUDY FOR THE FELLOWSHIP:

1 Title of your proposed Research Study under the Fellowship: _____

_____

2 Name of the country you would like to visit and reason thereof:_____

3 A list of the names and addresses of banks / institutions proposed to be visited for your study and the purpose of the visits. (A separate sheet to be attached as Annexure II)

3a Name of the Institute at which you would like to conduct the research work in India _____

_____

4 Foreign language other than English known (fluent / working knowledge)_

5 Outline your proposed study in not less than 1,000 words under the following headings:

a) Major objective/s & need for such a study.

b) Scope, framework & applicability of the study to our Banking Industry

c) Research methodology/ techniques to be followed

d) Select bibliography / brief review of other relevant works in this area, if any (A Separate sheet to be attached as Annexure III)

6 Please give an account of specific project/ assignment with previous or present employer which is related to the subject for which this entry is submitted.

7 Brief account of how your proposed research study will benefit Indian Banking Industry in general/ and your organization in particular.

DECLARATION BY THE CANDIDATE

I hereby certify that all the information given above is correct and I undertake to produce all documentary evidence, if called upon to do so.

I further undertake that, if selected for the award of the Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship (DJCHBBORF). I shall abide by all the rules, regulations and conditions governing the award of the Fellowship form time to time.

Place: Signature:

Date:

Certificate from the Employer

(No applications will be considered unless it is forwarded through the proper channel)

We have examined the application from. The information provided by him/her is correct to the best of our knowledge as per our records.

Place:_____ Signature:_____

Date:_____ Name:_____

Official Seal:_____ Designation_____

Undertaking by the Research Guide

I/We have gone through the research proposal and recommend the same for award of the Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship. I undertake to guide the candidate in finalizing the final project report, if the scholar is awarded to fellowship.

Place:_____ Signature:_____
(Project Guide)

Date:_____ Name:_____

Seal of the Institution:_____ Designation:_____

NOTES FOR APPLICANTS

I The Objective of the Fellowship:

The Diamond Jubilee Banking Overseas Research Fellowship was originally instituted by the Indian Institute of Banking & Finance in 1988 to commemorate its diamond jubilee year. The CH Bhabha Fellowship offered by the Indian Banks' Association was merged with the DJBORF in 2007-08 and known as the Diamond Jubilee and CH Bhabha Banking Overseas Research Fellowship (DJCHBBORF). The objective of the Fellowship is to provide the successful candidate an opportunity to undertake a research study on the latest developments in the field of banking and finance in India or abroad.

II Eligibility Criteria:

The applicants must:

1. hold a continuing membership of the Institute
2. be an officer in a bank / financial institution or any other body recognized as such by the Council of the Institute for membership purposes at least for five years at the time of application.
3. be not more than 50 years of age as on 31.12.2025
4. be at least a post graduate with an aggregate of 50% marks or equivalent grade or points form a recognized University in India or abroad.
5. be a Certificated Associate of the Institute (CAIIB)
6. Candidate must demonstrate sufficient prior interest / inclination in research.

III Application procedure:

1. Applicants should attach all copies of relevant testimonials along with the form.
2. The thesis/study proposal should also be submitted along with the form.
3. Application to be forwarded to:

   The Chief Executive Officer,
   Indian Institute of Banking & Finance, Kohinoor City, Commercial-II,
   Tower I, 2nd & 3rd Floor, Off. L.B.S. Marg, Kurla (West), Mumbai 400 070.

Mark as APPLICATION FOR "DJCHBBORF" on envelope and a soft copy of the same along with annexures should be sent at dd.aca3@iibf.org.in

IV Guidelines for the preparation of study/research proposal

The applicant must submit, along with the form, the thesis proposal on any appropriate subject of his/her choice related to the latest developments in banking and finance. The quality and standard of the thesis proposal will be considered in selecting the candidates to be called for the interview.

The thesis proposal should be not less than 1,000 words, must be typewritten on one side of the paper and each page should be numbered and the total number of words be stated on the last page. The use of headings for each section is recommended.

Thesis proposal should cover all points, as mentioned under column F (page 6), in the application form. The thesis proposal should be titled and a brief outline of the text should be written at the beginning.

V Selection Procedure:

a. The Institute will decide about the candidates to be called for interview on the basis of the quality of the thesis proposal submitted, their qualifications, experience and background. Ca didates selected for the interview will have to appear before the Committee appointed by the Institute for interview at Mumbai.

b. In choosing the awardee, the Committee will consider the personality of the candidates, bac ground, educational qualifications and professional experience, the likelihood of the cand date benefiting from the study abroad and his/her ability to make it useful to his/her Institution and /or to the Indian Banking System and also his/her capability of presenting thoughts clearly, precisely and persuasively in writing and orally to groups of senior management executive in the field of his/her study.

c. In the matter of selection of candidates for the interview and the final selection of the awardee, the decision of the Institute will be final and no correspondence questioning the decision will be entertained form any quarter.

d. It will be at the discretion of the Institute to withhold the Fellowship if the required standard is not attained.

VI Conditions for the award of the Fellowship:

The successful candidates will be offered the Fellowship subject to:

a. his/her producing a 'No Objection' certificate from the employer

b. approval of the candidate's itinerary by his/her employer and the Indian Institute of Banking & Finance

c. his/her giving an undertaking to submit two typed detailed reports on his/her findings and **publication rights/copyrights lie with** the Indian Institute of Banking and Finance, Mumbai.

VII Financial arrangements:

a. Outstation candidates coming for interview will be paid **economy class airfare** for their onward and return journeys on production of the relative bills, **provided they are not reimbursed by the respective banks/ institutions.**

b. The winner of the Fellowship will be provided with the lowest fare economy class ticket for the shortest route from place of work to the place of visit abroad, in case a foreign visit is approved by the selection panel. **Spouse / family are strictly not to accompany the scholar during this visit.**

c. Institute will pay/reimburse Foreign Exchange towards boarding, lodging and out of pocket expenses in the places of visit, for a period not exceeding **4 weeks** as decided by the Institute, which will be uniform irrespective of the cadre of the scholar.

VIII Other Conditions:

a. The candidate will have to select a guide from the research institute for the entire period of the study. The Candidate has to indicate his/her preference of the Institute and Institute will endeavour to ensure a tie up for completing the project.

b. Two copies of publishable report are to be submitted by the candidate within 6 months of completing the period of study/visit abroad, as the case may be. **In case of delay in submission of report, the fellowship may be forfeited.**

Bank Quest – Guidelines for Manuscript Submission

Contributing articles to the Bank Quest : (English/Hindi)

Original works by the author or authors should be submitted to Bank Quest. Only unpublished articles that have not been submitted for publication elsewhere will be considered for publication. Papers that are submitted to the Bank Quest for publication should not be under review at other journals.

Articles should be sent to: editor@iibf.org.in

Objectives:

The primary objective of Bank Quest is to present the theory, practice, analysis, views and research findings on issues/developments, which have relevance for current and future of banking and finance industry.

The aim is to provide a platform for Continuing Professional Development (CPD) of the members of the Institute and also to create a space for the academics in disseminating original research outcomes and innovative knowledge in the field of banking and finance.

Guidelines for manuscript submission

Each article submitted to Bank Quest is initially assessed by the Editor for general suitability. It may then be subjected to a review process by the experts in the field. On the basis of the feedback of the reviewer the article will be either accepted or rejected. If minor corrections are suggested, then the contributor will be asked to rectify the anomalies pointed by the reviewer and submit and if it's found satisfied the article will be considered for publication. The Editor has the discretion to vary this process.

The articles for Bank Quest should have a uniform template in the form of a title focussing on the core of the work done, an abstract, introduction and background, statement of the problem, review of literature, theoretical or conceptual framework, objectives, methodology, hypothesis if any, analyses and discussion, Suggestions and policy recommendations, conclusion, end notes if any and references.

Authors should carefully note the following before submitting any articles:

Format: The article, should be submitted in MS Word, Times New Roman, Font Size 12 with 1½ line spacing. The primary heading should be in capitalized form (Uppercase) and boldface. The sub-headings should be in title - case capitalization (first letter of each word in capital), in bold, and should be italicized.

Manuscripts should be prepared using APA style. For detailed information, refer to the Publication Manual of the American Psychological Association (7th ed.), http://apastyle.org

Word Length: The research articles may be in the range of 5000 to 6000 words in length. However, the contents of the article should justify the words.

The other articles may range between 2000 to 3000 words depending on the subject, coverage and quality.

Author's Profile: The cover page of the article should include full name, designation, name of organization, telephone and fax numbers, and e-mail address or last position held in case of retired persons. The author's name or affiliations should not appear anywhere else in the body of the manuscript. The actual paper should commence from the second page containing the title followed by the Abstract, Keywords, and the main paper.

Title: A title of, preferably, fifteen words or less should be provided.

Abstract: The abstract should be clear and provide an excellent summary of each article's content. It should briefly describe the objectives, explain how the study was done, and summarize the key results. The Abstract should be written in past tense and should not be more than 250 words. Avoid the use of abbreviations and references in the abstract. The Abstract should be followed by relevant keywords.

Figures, charts and diagrams: Essential figures, charts and diagrams should be referred to as 'Figures' and they should be numbered consecutively using Arabic numerals. Each figure and diagram should have brief title. Diagrams should be kept as simple as possible. Figures,

charts and diagrams should be provided in the text and should also be provided in original formats.

Tables: Use of tables, wherever essential, should be done within the article, also it should be printed or typed on a separate sheet of paper and numbered consecutively using Arabic numerals (e.g. Table-1) and contain a brief title. Tables should be numbered consecutively as Table 1, Table 2, Table 3, and so on (and not as Table 1.1, Table 1.2, Table 1.3, and so on). The title of the table should be placed above the table. The source should be indicated at the bottom.

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