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## Risk management practices in the Indian banking sector: Analysing challenges, strategies, and effectiveness

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### Abstract

Risk management is a critical function in the banking sector, ensuring stability amidst fluctuating market conditions, credit defaults, and operational failures. In India, the banking system has faced increasing pressure due to growing non-performing assets (NPAs), rapid digitalization, and heightened exposure to global financial markets. This paper explores the various risk management practices adopted by Indian banks, focusing on key risks such as credit, operational, market, and liquidity risks. Credit risk, primarily driven by rising NPAs, is one of the most significant challenges faced by Indian banks, especially public sector institutions. The study investigates how banks have responded through improved credit appraisal systems, stressed asset management, and stringent monitoring mechanisms. The paper also examines operational risks, which have grown with the expansion of digital banking, requiring banks to invest heavily in cybersecurity and internal controls. Additionally, market risk, driven by global economic fluctuations, and liquidity risk due to asset-liability mismatches are evaluated.

Regulatory frameworks, particularly those introduced by the Reserve Bank of India (RBI), play a vital role in shaping the risk management strategies of Indian banks. Key regulations like the Basel III norms, prudential NPA standards, and risk-based supervision (RBS) are analysed to understand their impact on improving the resilience of the banking sector.

Despite the advancements in risk management strategies, challenges such as high NPAs, cyber threats, regulatory compliance, and global economic volatility continue to persist. Case studies of the IL&FS and Yes Bank crises are presented to underscore the importance of robust risk management practices.

**Keywords:** Risk management, Indian banking sector, non-performing assets (NPAs)

### Introduction

Risk management in the banking sector has gained paramount importance in recent decades, as financial institutions face a rapidly evolving and increasingly complex risk landscape. For banks, effective risk management is not only crucial for safeguarding their financial health but also for maintaining the stability of the broader economy. In emerging markets like India, where the banking sector plays a pivotal role in economic development, managing risks efficiently is vital. This paper aims to explore the risk management practices in Indian banks, focusing on the key risks they encounter, strategies employed to mitigate these risks, and the regulatory frameworks that guide these efforts.

### Importance of Risk Management in Banking

The primary function of banks is to serve as intermediaries, facilitating the flow of funds between savers and borrowers. However, this role exposes banks to a variety of risks, including credit, market, operational, and liquidity risks. Inadequate risk management can lead to substantial financial losses, erode public confidence, and even result in the collapse of financial institutions, as witnessed during the global financial crisis of 2008. Effective risk management, therefore, is essential to ensure that banks can absorb shocks and continue to fulfill their role in the economy.

In India, the importance of risk management has grown significantly in the past decade due to rising non-performing assets (NPAs), the rapid adoption of digital banking technologies, and the increasing globalization of financial markets. Indian banks, particularly public sector banks, have been grappling with mounting credit risks, which have led to concerns about

their asset quality and overall financial health. This has necessitated a stronger focus on risk management practices and tighter regulatory oversight.

### Overview of Risks Faced by Indian Banks

Banks in India are exposed to a broad spectrum of risks, which can be broadly categorized as credit risk, operational risk, market risk, and liquidity risk. Each of these risks has unique characteristics and poses different challenges to banks. The effective identification, assessment, and mitigation of these risks form the foundation of sound risk management practices.

1. **Credit Risk:** Credit risk arises when borrowers fail to meet their debt obligations, resulting in loan defaults. In India, this risk is particularly pronounced due to the high levels of NPAs in the banking sector. NPAs have become a pressing issue for Indian banks, particularly in the public sector, where bad loans have eroded profitability and increased the need for capital infusion by the government. The inability to manage credit risk effectively can lead to a deterioration in asset quality, impair profitability, and hinder the bank's ability to lend, thereby affecting the broader economy.
2. **Operational Risk:** Operational risk refers to losses resulting from inadequate or failed internal processes, people, systems, or external events. With the rapid adoption of digital banking and the proliferation of FinTech solutions in India, operational risks have become more significant. Cybersecurity threats, technology failures, fraud, and compliance issues are just a few examples of the operational risks that Indian banks face. The interconnected nature of banking systems has also heightened the impact of operational failures, requiring banks to adopt more sophisticated risk management systems.
3. **Market Risk:** Market risk includes the potential for losses due to fluctuations in market variables such as interest rates, foreign exchange rates, and commodity prices. Indian banks are particularly exposed to market risk due to volatility in global markets, changes in inflation and interest rates, and fluctuations in exchange rates. The RBI's monetary policies, global economic conditions, and geopolitical factors all contribute to market risk, making it an area of concern for Indian banks.
4. **Liquidity Risk:** Liquidity risk arises when a bank is unable to meet its short-term financial obligations due to an asset-liability mismatch. Indian banks, especially those in the public sector, have faced liquidity constraints due to the significant amount of long-term loans on their books and the short-term nature of their liabilities. Effective liquidity management is essential for ensuring that banks have sufficient cash or liquid assets to meet their obligations in times of financial stress.

### Evolution of Risk Management in Indian Banks

Over the past few decades, the risk management landscape in Indian banks has undergone significant changes. Historically, risk management practices were limited to basic credit assessments and operational checks. However, with the liberalization of the Indian economy in the early 1990s and the subsequent globalization of financial markets, Indian banks were exposed to new types of risks. The

financial sector reforms initiated during this period laid the foundation for a more sophisticated risk management framework.

In response to the growing complexity of risks, Indian banks have adopted various risk management tools and techniques. Credit risk, for example, is now managed using advanced credit scoring models, stress testing, and early warning systems. Operational risk management has evolved with the introduction of stricter internal controls, enhanced audit mechanisms, and the deployment of cybersecurity solutions. Market and liquidity risks are managed through hedging strategies, the use of derivatives, and asset-liability management (ALM) frameworks.

The regulatory environment has also played a key role in shaping risk management practices in Indian banks. The implementation of Basel III norms, which set higher capital requirements and introduce measures for liquidity risk management, has significantly strengthened the resilience of Indian banks. The RBI has introduced various prudential norms for NPAs, risk-based supervision (RBS), and guidelines for corporate governance in banks, all of which aim to improve the overall risk management culture.

### Role of Regulatory Frameworks

The regulatory framework in India, particularly the role of the Reserve Bank of India (RBI), is central to the risk management practices of banks. The RBI has implemented several regulatory measures to ensure that Indian banks maintain adequate capital buffers, manage their risk exposures effectively, and adopt international best practices in risk management. Some of the key regulatory frameworks include:

1. **Basel III Norms:** The Basel III framework, introduced in the aftermath of the global financial crisis, has significantly enhanced the risk management practices of Indian banks. Basel III requires banks to maintain higher capital adequacy ratios, strengthen their liquidity coverage, and improve the quality of their capital. These measures are aimed at ensuring that banks have sufficient capital to absorb losses during periods of financial stress and continue to function without requiring external support.
2. **Prudential Norms on NPAs:** The RBI has introduced stricter guidelines for the recognition and provisioning of NPAs. Banks are now required to recognize bad loans at an earlier stage and make adequate provisions to cover potential losses. This has incentivized banks to improve their credit appraisal processes and adopt better risk management practices to minimize the occurrence of bad loans.
3. **Risk-Based Supervision (RBS):** The RBI has shifted from a compliance-based approach to a risk-based approach in its supervision of banks. RBS focuses on the areas of highest risk within a bank's operations, ensuring that banks allocate resources to manage these risks effectively. This approach has allowed the RBI to tailor its supervision based on the risk profile of individual banks, thereby improving the efficiency of the regulatory oversight process.

### Review of literature

Brown and Moles (2016) analyzed the importance of market risk management in the global banking system. Their work emphasized the growing importance of hedging and

derivative instruments in managing market risk, particularly in the wake of increasing globalization and cross-border trade. These global studies provide a backdrop for understanding how risk management has evolved worldwide, offering insights into how Indian banks could adopt international best practices.

Mohan (2006) focused on the root causes of the NPA crisis in Indian banks, identifying poor credit appraisal systems, ineffective monitoring of loans, and political interference as major contributors to the rising NPAs, particularly in public sector banks. The author suggested that improving the credit appraisal process and monitoring systems could help in reducing the levels of bad loans.

Das and Ghosh (2007) conducted a study on the determinants of credit risk in Indian banks. Their findings revealed that higher capital adequacy ratios and a better loan screening process significantly reduce credit risk exposure. They also emphasized the importance of regulatory frameworks, such as the adoption of Basel norms, in mitigating credit risk. The study underscored that public sector banks in India were more vulnerable to credit risk compared to private sector banks, largely due to weaker governance and operational inefficiencies.

Bhattacharya and Patel (2020) explored how technological advancements, such as the use of artificial intelligence (AI) in credit scoring, have improved the management of credit risk in Indian banks. Their research indicated that AI-based models provide more accurate credit risk assessments, reducing the incidence of NPAs. However, they also noted that the adoption of such technologies is still in its early stages in India, with significant potential for growth.

Operational risk, which includes the risk of loss resulting from inadequate or failed internal processes, systems, or external events, has gained increasing attention, especially with the digital transformation of banking. Basel II first formally introduced the concept of operational risk, and since then, banks worldwide, including in India, have taken steps to address this growing risk.

Peters and Fiedler (2010) discussed the growing operational risk in banks due to technological advancements. Their research suggested that with the increasing reliance on digital banking platforms, the scope for operational failures, such as system outages and cyber-attacks, has widened. They emphasized that banks must invest in robust cybersecurity frameworks and internal control systems to mitigate operational risk effectively.

Arora and Singh (2019) focused on operational risks faced by Indian banks in the digital age. They noted that the adoption of digital banking has made banks vulnerable to cyber threats, with several high-profile cybersecurity breaches reported in recent years. Their study recommended that Indian banks enhance their risk management practices by incorporating advanced cybersecurity measures and strengthening their IT infrastructure. The research also stressed the importance of employee training in managing operational risks effectively.

Kumar and Yadav (2014) provided an empirical analysis of market risk management in Indian banks, with a specific focus on foreign exchange risk. Their study highlighted that while private banks have adopted sophisticated tools for managing market risk, public sector banks often rely on more traditional methods, such as manual monitoring and basic hedging techniques. The study also emphasized the need for Indian banks to adopt more advanced derivative

instruments to manage market risks effectively.

Rao and Srivastava (2016) examined the role of asset-liability management (ALM) in managing liquidity and market risks in Indian banks. They argued that an effective ALM framework is crucial for mitigating liquidity risk, particularly in times of financial stress. Their research showed that Indian banks that adopted ALM frameworks were better able to manage the maturity mismatch between their assets and liabilities, reducing their exposure to liquidity crises.

Bhattacharya and Roy (2017) analyzed the implementation of Basel III norms in Indian banks and found that while large private sector banks had adapted well to the new capital and liquidity requirements, public sector banks faced challenges due to their lower capital adequacy ratios. The study concluded that public sector banks required significant capital infusion from the government to meet the Basel III standards.

Das (2018) provided a comprehensive analysis of the role of the RBI in enhancing risk management practices in Indian banks. The study highlighted the RBI's risk-based supervision (RBS) approach, which focuses on identifying and mitigating the areas of highest risk in banks. Das argued that while RBS has improved the overall risk management culture in Indian banks, there are still challenges in implementation, particularly in rural and cooperative banks.

### Statement of problem

Given the critical role that banks play in financial intermediation, poor risk management can lead to severe economic consequences, including bank failures, loss of public confidence, and systemic risks. The questions that are generated the current research problem as follows:

- How effective are the existing risk management frameworks in addressing credit, operational, market, and liquidity risks?
- What are the primary factors contributing to the high level of NPAs in public sector banks, and how can they be mitigated?
- How can Indian banks, especially smaller and rural banks, adopt advanced technological solutions to enhance risk management

These questions will provide valuable insights into the strengths and weaknesses of risk management in Indian banks, offering recommendations for improvement.

### Objectives

- To assess the current risk management practices in Indian banks
- To compare the risk management practices between public and private sector banks
- To explore the role of technology in improving risk management practices
- To evaluate the impact of regulatory frameworks on risk management in Indian banks

### Research methodology

Research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also

defined as the study of methods by which knowledge is gained. Its aim is to give a work plan for research.

**Research**

Research is a careful investigation or enquiry especially through search for new facts in any branch of knowledge. A researcher may be defined as a careful and critical enquiry or examination in seeking facts or principles in order to ascertain some of them.

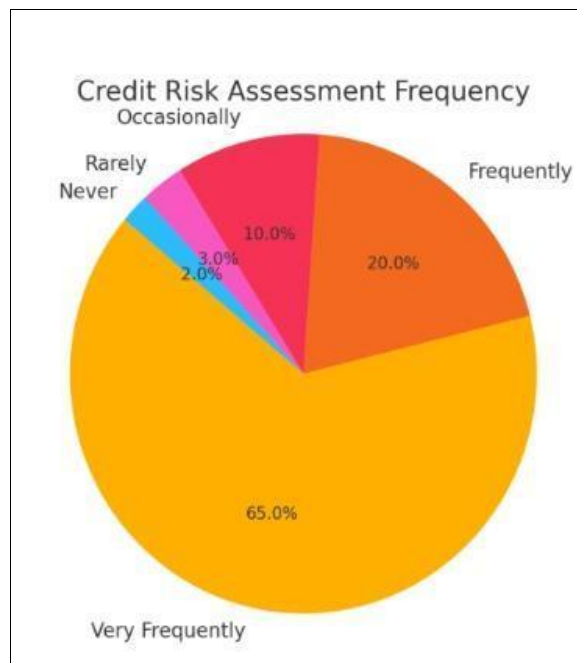
**Research Design**

The study focuses on how women business owners perceive government programs by adopting a descriptive approach that integrates both original and existing data. Original data is collected using a structured survey that includes Likert scale, multiple choice and ranking system, and a total of 100 participants are randomly selected. The existing data will be obtained from various publications, reports, scientific papers and digital repositories. The analytical process will include statistical techniques such as calculating percentages, performing chi-square test, applying Garrett ranking, one-way analysis of variance, testing for correlations, calculating weighted means and determining standard deviations. These methods are used to study and understand the perspectives of women owners in connection with state aid programs, ensuring an in -depth investigation into their opinions.

**Data analysis and interpretation**

Frequency of Credit Risk Assessment in Indian Banks

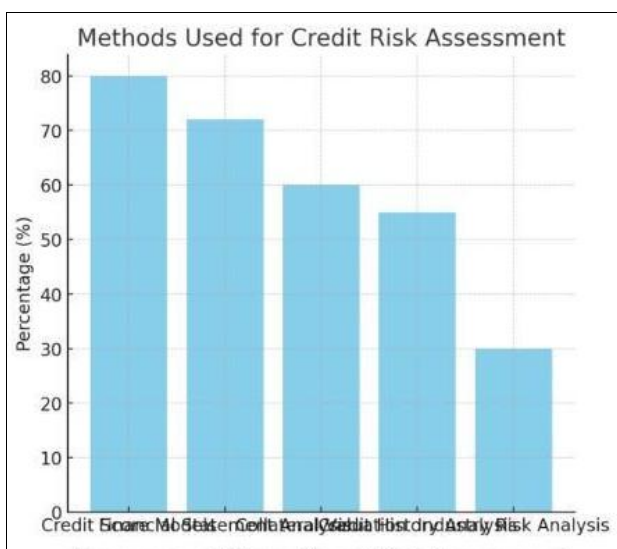
Very Frequently	Frequently	Occasionally	Rarely	Never
65%	20%	10%	3%	2%



**Inference:** The pie chart indicates that a majority of banks in India (65%) assess credit risk very frequently, reflecting the importance placed on credit risk in maintaining financial stability. However, a small percentage (5%) either rarely or never conduct these assessments, which could indicate potential gaps in risk management practices for certain institutions. This disparity suggests that while the overall industry is aware of credit risk importance, some banks might need to increase the frequency of these assessments to enhance risk mitigation.

Methods Used for Credit Risk Assessment

Credit Score Models:	Financial Statement Analysis	Collateral Valuation	Credit History Analysis	Industry Risk Analysis
80%	72%	60%	55%	30%

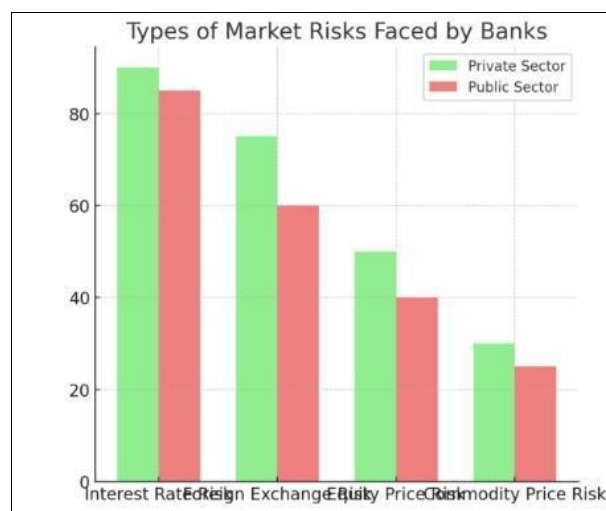


**Inference:** The bar chart shows that most banks use a combination of credit score models and financial statement analysis to assess credit risk, with a notable reliance on collateral valuation and credit history analysis as well. However, industry risk analysis is employed less frequently (30%), suggesting that banks may not be fully considering the sectoral risks that can impact creditworthiness. The

emphasis on traditional models indicates a solid foundation but also highlights an opportunity to enhance industry-specific assessment techniques.

Types of Market Risks Faced by Banks

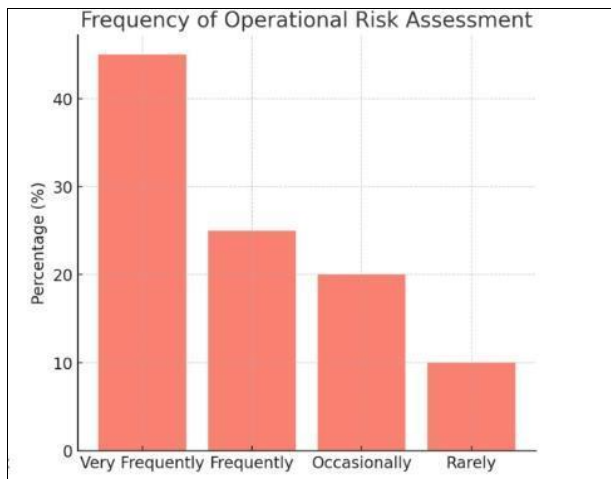
Type of risk	Interest rate	FX rate	Equity risk
Private sector banks	90%	75%	50%
Public sector banks	85%	60%	40%



**Inference:** This comparison highlights that both private and public sector banks face high exposure to interest rate risk and foreign exchange risk, reflecting the relevance of these risks in India's economic environment. However, private sector banks report slightly higher exposure to equity and commodity price risks, possibly due to more diverse investment activities. This suggests that while both sectors prioritize interest rate and currency risks, private sector banks may require additional resources to manage equity and commodity fluctuations.

Frequency of Operational Risk Assessment

Very Frequently	Frequently	Occasionally	Rarely
45%	25%	20%	10%



**Inference:** The operational risk assessment frequency bar chart reveals that most banks perform these assessments either frequently or very frequently, especially in areas related to fraud detection and system integrity. However, some banks assess operational risks only occasionally or rarely, indicating potential vulnerabilities in internal control. This variability suggests that certain banks, particularly smaller ones, may need to increase the frequency of operational risk assessments to better protect against disruptions and fraud.

Techniques for Managing Liquidity Risk

Asset-Liability Management (ALM)	Liquidity Coverage Ratio (LCR)	Diversification of Funding Sources
85%	80%	50%



**Inference:** The bar chart shows that Asset-Liability Management (ALM) and Liquidity Coverage Ratio (LCR) compliance are the primary tools used for managing liquidity risks, with 85% and 80% adoption rates, respectively. Diversification of funding sources is less commonly used (50%), especially among public sector banks, indicating that some institutions might be overly dependent on traditional funding sources. This finding suggests that public sector banks, in particular, could benefit from broadening their funding sources to enhance resilience against liquidity shocks.

**Conclusion**

The study of risk management practices within the Indian banking sector reveals both strengths and areas for improvement in managing various types of financial and operational risks. Indian banks, particularly private sector banks, have demonstrated significant advancements in implementing credit risk and market risk management practices. These banks have adopted structured models such as credit score analysis, collateral valuation, and interest rate swaps to mitigate exposure effectively. However, public sector banks face challenges in fully aligning with advanced practices, especially in areas like credit risk frequency, industry-specific risk analysis, and market risk management. In conclusion, while the Indian banking sector exhibits robust risk management practices, particularly in private sector banks, public sector banks can enhance resilience by adopting innovative practices, advanced technologies, and comprehensive frameworks. Moving forward, regulatory support, investment in technological infrastructure, and capacity-building initiatives will be essential for creating a balanced, robust, and resilient banking ecosystem capable of withstanding diverse financial and operational risks.

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