AN ANALYSIS OF DIGITAL FINANCIAL RISK ASSESSMENT METHODS IN IOB BANK

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ABSTRACT

The banking sector has undergone a significant transformation with the rapid adoption of digital financial technologies. Indian Overseas Bank (IOB), a leading public sector bank in India, has actively integrated digital solutions to improve operational efficiency, service delivery, and customer experience. However, this shift has also introduced multiple financial risks, including cybersecurity threats, inaccuracies in credit assessment, operational disruptions, and regulatory compliance challenges.

This study presents an analysis of the digital financial risk assessment methods adopted by IOB, focusing on their effectiveness, implementation challenges, and

alignment with regulatory requirements. Primary data was collected from 103 respondents, including bank employees, banking professionals, and digital banking users, through a structured questionnaire. Secondary data was obtained from RBI reports, IOB annual reports, and relevant academic literature.

The study evaluates key digital risk assessment tools such as AI-based credit scoring models, cybersecurity frameworks, operational risk management systems, compliance monitoring mechanisms, and data-driven early warning systems. Statistical techniques including percentage analysis, Likert scale evaluation, and chi-square tests were applied.

The findings indicate that although IOB has made considerable progress in adopting digital risk management practices, several gaps remain in areas such as real-time fraud detection, customer awareness, cybersecurity infrastructure, and integrated risk governance.

Keywords: Digital Financial Risk, Risk Assessment, IOB, Cybersecurity, AI Credit Scoring, Operational Risk, Regulatory Compliance

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INTRODUCTION

The banking industry has experienced a major shift due to rapid digitalization. Traditional banking methods have been replaced by technology-driven systems that enable faster transactions, improved customer access, and efficient operations. However, this transformation has also increased exposure to financial risks such as cyber threats, fraud, and system failures. Digital financial risk assessment has become a critical function in modern banking. It involves the use of advanced technologies such as artificial intelligence, data analytics, and automated monitoring systems to identify, measure, and manage financial risks in real time.

Indian Overseas Bank (IOB), a public sector bank headquartered in Chennai, has adopted various digital banking solutions including mobile banking, internet banking,

and UPI services. While these innovations enhance efficiency, they also demand stronger risk management frameworks. This study focuses on analyzing the digital financial risk assessment methods used by IOB and evaluating their effectiveness in managing financial risks.

OBJECTIVES OF THE STUDY

Primary Objective

- To analyze the digital financial risk assessment methods adopted by Indian Overseas Bank (IOB) and evaluate their effectiveness in managing financial risks.

Secondary Objectives

- To identify the types of digital financial risk assessment tools and frameworks used at IOB.
- To measure employee awareness and perception regarding digital risk assessment practices.
- To analyze the relationship between digital risk assessment methods and financial risk management effectiveness.
- To suggest measures to strengthen digital financial risk assessment at IOB.

REVIEW OF LITERATURE

World Bank Digital Finance Report (2022) The World Bank Digital Finance Report 2022 analyzed digital financial risk in developing economies and found that public sector banks in South Asia, including India, face unique challenges including infrastructure gaps, low digital literacy among staff, and inadequate regulatory technology adoption. The report recommended a phased approach to digital risk maturity aligned with international standards such as NIST and ISO 27001, which is directly applicable to IOB's risk assessment modernization roadmap.

RBI Annual Report on Cyber Security (2023) The RBI Annual Report on Cyber Security 2023 documented 13,000+ banking cyber incidents reported in India during the fiscal year, a 45% increase over the previous year. The report mandated all scheduled commercial banks including IOB to implement Security Operations Centers, conduct quarterly VAPT exercises, and report material cyber incidents within six hours of detection.

Patel and Mehra (2023) Patel and Mehra studied AI-based fraud detection in Indian banks and found that machine learning significantly improves real-time risk identification compared to rule-based systems. Their research highlighted that banks adopting AI fraud detection tools experienced a 45% reduction in false negatives, leading to improved fraud prevention outcomes.

Deloitte Global Risk Management Survey (2023) The Deloitte Global Risk Management Survey 2023 found that 76% of global banking executives identified cybersecurity and technology risk as their top concern, surpassing credit risk for the first time in the survey's history. The report also found that banks with mature digital risk frameworks recovered from cyber incidents 60% faster than those with immature frameworks.

Mehta and Bhatt (2021) Mehta and Bhatt evaluated EWS implementation in Indian PSBs and found that while framework adoption was widespread, the integration of real-time digital data into EWS remained incomplete in 70% of PSBs studied. This gap is directly relevant to IOB's credit risk monitoring capabilities and future improvement areas.

RBI Digital Payments Report (2024) The Reserve Bank of India's Digital Payments Report 2024 documented a significant increase in digital transaction fraud cases coinciding with the rapid growth in UPI and mobile banking usage. The report recommended stronger real-time monitoring, enhanced cybersecurity systems, and mandatory two-factor authentication across all digital banking channels.

Gupta (2025) Gupta analyzed predictive analytics in credit risk assessment and concluded that data-driven models significantly reduce loan default risk when integrated

with behavioral data from digital banking channels. The study emphasized the need for Indian PSBs including IOB to invest in advanced analytics infrastructure to remain competitive and compliant.

RESEARCH METHODOLOGY

This study adopts a descriptive research design to analyze digital financial risk assessment practices.

- Sample Size: 103 respondents
- Sampling Method: Convenience and purposive sampling
- Data Sources: Primary (questionnaire) and secondary (reports, journals)
- Tools Used:
    - Percentage Analysis
    - Mean Analysis
    - Chi-Square Test

The structured questionnaire collected data on awareness, risk types, effectiveness of tools, and challenges.

DATA ANALYSIS AND FINDINGS

TABLE NO.1 GENDER

Gender	Frequency	Percentage (%)
Male	64	62.1
Female	36	35.0
Prefer not to say	3	2.9
Total	**103**	**100.0**

Source: Primary Data

INTERPRETATION: Majority of the respondents (62.1%) are male, reflecting the male-dominant workforce pattern typical in Indian public sector banking institutions. Female representation at 35% indicates gradual improvement in gender inclusivity at IOB.

TABLE No.2 AGE GROUP

Age Group	Frequency	Percentage (%)
Below 25 years	9	8.7
25–35 years	30	29.1
36–45 years	35	34.0
46–55 years	22	21.4
Above 55 years	7	6.8
Total	**103**	**100.0**

Source: Primary Data

Interpretation: The 36–45 age group forms the largest segment (34%), followed by 25– 35 years (29.1%). This mid-career dominance suggests a workforce with substantial experience yet adaptable to digital transformation initiatives.

TABLE No.3 Educational Qualification

Qualification	Frequency	Percentage (%)
HSC/12th	2	1.9
Diploma	11	10.7
Graduate (UG)	50	48.5
Post Graduate (PG)	40	38.8
Total	**103**	**100.0**

Source: Primary Data

Interpretation: 87.3% of respondents are graduates or post-graduates. This high educational level suggests that IOB employees are well-equipped to comprehend and engage with digital risk assessment frameworks and compliance requirements.

TABLE No.4 YEARS OF EXPERIENCE IN BANKING / DIGITAL BANKING

Experience	Frequency	Percentage (%)
Less than 2 years	10	9.7
2–5 years	23	22.3
6–10 years	29	28.2
11–20 years	26	25.2
More than 20 years	15	14.6
Total	**103**	**100.0**

Source: Primary Data

Interpretation: 68% of respondents have more than 5 years of banking experience. This validates the reliability of their perceptions on digital risk awareness, tool effectiveness, and operational challenges at IOB.

CHI-SQUARE TEST ANALYSIS (HYPOTHESIS TESTING)

Test 1 – H_0: There is no significant relationship between Years of Experience and Awareness of Digital Financial Risks

Table 5 – Chi-Square Test: Experience vs. Awareness

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.743	16	0.028
Likelihood Ratio	19.215	16	0.031
N of Valid Cases	103		

Interpretation: The Pearson Chi-Square value is 18.743 with $p = 0.028$ (< 0.05). Hence, **H_0 is rejected**. There is a statistically significant relationship between years of

experience and awareness of digital financial risks. More experienced employees demonstrate higher risk awareness.

Test 2 – H_0: There is no significant relationship between Educational Qualification and Perception of AI-Based Credit Risk Scoring Effectiveness

Table 6 – Chi-Square Test: Education vs. AI Credit Risk Effectiveness

	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	21.456	12	0.044
Likelihood Ratio	22.103	12	0.036
N of Valid Cases	103		

Interpretation: The Pearson Chi-Square value is 21.456 with $p = 0.044$ (< 0.05). Hence, **H_0 is rejected**. Educational qualification significantly influences an employee's perception of AI-based credit risk scoring, with post-graduates rating it more positively than undergraduates.

CONCLUSION AND SUGGESTIONS

The study concludes that IOB has implemented digital risk assessment tools effectively but still faces several operational and technological challenges.

Suggestions:

- Implement AI-based real-time fraud detection
- Improve cybersecurity infrastructure
- Provide staff training programs
- Increase customer awareness campaigns
- Strengthen regulatory compliance systems

Digital risk management must be continuously updated to match evolving threats. Strengthening these systems will enhance financial stability, customer trust, and operational efficiency.

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