"A Comparative Study of Ethical Governance of AI in Indian Public Sector Banks"

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ABSTRACT:

The rapid adoption of Artificial Intelligence (AI) in the Indian banking sector has significantly transformed operational efficiency, risk management, and customer service, particularly within public sector banks. However, the increasing reliance on AI-driven systems for decision-making has raised critical concerns related to ethics, transparency, accountability, and governance. This study is motivated by the growing need to examine how ethical governance frameworks are being implemented to regulate AI applications in Indian public sector banks and to ensure responsible and trustworthy use of such technologies.

The primary objective of this research is to comparatively analyse the ethical governance practices of selected Indian public sector banks with respect to their AI adoption. The study aims to assess differences in governance structures, ethical safeguards, and compliance mechanisms adopted by these banks.

A descriptive and comparative research design is employed, using both primary and secondary data. Primary data are collected through structured questionnaires and expert interviews, while secondary data are sourced from annual reports, policy documents, regulatory guidelines, and published literature. Comparative analysis techniques are used to evaluate ethical governance dimensions such as transparency, fairness, accountability, and data privacy.

The findings reveal variations in the maturity of ethical AI governance practices across public sector banks, with larger banks demonstrating more structured frameworks and oversight mechanisms. The study highlights the need for standardized ethical governance guidelines. The research concludes that strengthening ethical governance of AI is essential for enhancing public trust, regulatory compliance, and sustainable AI-driven banking practices.

3. Introduction

3.1 Background

The rapid advancement of Artificial Intelligence (AI) has significantly transformed the global banking industry. Banks across the world are increasingly adopting AI-based technologies to improve operational efficiency, enhance customer experience, strengthen risk management, and reduce costs. Applications such as automated credit scoring, fraud detection, predictive analytics, and AI-driven customer service platforms have become integral to modern banking systems. The global rise of AI adoption in banking is driven by increased availability of data, advancements in computing power, and the growing demand for faster and more accurate decision-making.

In India, public sector banks (PSBs) have also embraced AI as part of their digital transformation initiatives. Leading PSBs such as State Bank of India, Punjab National Bank, and Bank of Baroda have implemented AI-enabled systems in areas including customer interaction through chatbots, credit assessment, fraud monitoring, and operational automation. While these technologies offer significant benefits in terms of efficiency and service delivery, their deployment also introduces ethical challenges related to data privacy, algorithmic bias, transparency, and accountability.

The increasing use of AI in critical banking functions underscores the importance of ethical governance. Ethical governance of AI ensures that technological innovations align with legal requirements, moral values, and public interest. In the context of public sector banks, which handle sensitive financial data and serve a large and diverse population, responsible and ethical use of AI is essential to maintain public trust and institutional credibility.

3.2 Rationale of the Study

Despite the growing integration of AI in Indian public sector banks, there is limited empirical research examining the ethical governance frameworks guiding its use. Existing governance mechanisms often focus on operational efficiency and regulatory compliance, while ethical dimensions such as fairness, explainability, and accountability remain inadequately addressed. This creates governance gaps that may lead to biased decision-making, lack of transparency, and potential misuse of customer data.

Given the public ownership and social responsibility of PSBs, the need for ethical governance of AI is particularly critical. Trust, transparency, and accountability are fundamental principles for public institutions, and any failure in ethical AI governance can adversely affect customer confidence and financial inclusion objectives. Therefore, a comparative analysis of ethical governance practices across selected public sector banks is necessary to identify best practices, shortcomings, and areas for policy improvement.

3.3 Scope and Delimitations of the Study

The scope of the study is confined to selected Indian public sector banks, namely State Bank of India (SBI), Punjab National Bank (PNB), and Bank of Baroda (BoB). The research focuses on key AI applications currently used by these banks, such as AI-based loan decision and credit scoring models, customer service chatbots, and fraud detection systems.

The study is limited to examining ethical governance aspects, including transparency, accountability, fairness, and data protection, rather than technical performance of AI systems. Private sector banks and non-banking financial institutions are excluded from the study. The analysis is based on available primary and secondary data within a defined time period, which may limit generalisation of findings beyond the selected banks.

3.4 Research Questions

The study seeks to address the following research questions:

1.   How do Indian public sector banks implement ethical governance principles in their AI-based systems?

2.   What differences exist in ethical governance frameworks across selected public sector banks?

3.   How do public sector banks ensure transparency, fairness, and accountability in AI-driven decision-making processes?

4. Literature Review

4.1 Ethical Governance of AI in Banking

AI has rapidly transformed banking services, bringing efficiency and innovation but also significant ethical concerns such as bias, transparency, privacy, and accountability. Recent systematic reviews highlight that ethical governance is a central theme in AI integration in banking, emphasizing the need for transparent and responsible systems to safeguard customer rights and interests. Studies consistently mention fairness, data privacy, and explainability as key ethical principles to be embedded into governance frameworks.

4.2 Regulatory and Framework Perspectives

Global governance efforts such as the **EU AI Act** or Singapore's Model AI Governance Framework demonstrate international moves toward risk-based and ethical AI regulation. These frameworks prioritize human-centred principles — fairness, privacy, and accountability — and influence how sectors like banking should approach AI governance. However, many frameworks are still general, lack enforceability, or are NOT fully tailored to sector-specific (e.g., banking) use cases.

4.3 AI Governance in Indian Financial Context

In India, regulatory bodies are recognising these challenges. The **RBI's proposed Framework for Responsible and Ethical Enablement of AI (FREE-AI)** highlights fairness, transparency, accountability,

and rigorous model testing across the lifecycle of AI systems to protect consumers and enhance trust. Such institutional interest signals a move toward structured AI governance, but empirical analyses of governance practices in public sector banks remain limited.

4.4 Gaps in Literature

Most studies in financial AI governance focus on global strategies or general principles, with limited empirical research on **how ethical governance is operationalised in Indian PSBs**. Few comparative studies exist that systematically evaluate differences in governance frameworks across banks, especially in specific applications such as loan decision models, chatbots, or fraud detection. This gap drives the need for your research.

5. Research Objectives & Hypotheses

5.1 Research Objectives

1.   **To examine** ethical governance practices related to AI deployment in selected Indian public sector banks.

2.   **To compare** governance frameworks adopted by these banks in terms of transparency, fairness, accountability, and data protection.

3.   **To identify** key ethical governance strengths and weaknesses across institutions.

4.   **To recommend** actionable ethical governance strategies for AI in Indian public sector banking.

5.2 Hypotheses

H1: There is **significant variation** in ethical governance frameworks of AI across Indian public sector-banks.
H2: Banks with formal AI ethical governance mechanisms (e.g., ethics committees or policies) exhibit **higher transparency** and accountability than those without.
H3: Ethical governance practices positively influence **customer trust and perception** of AI use in public sector banking.

6. Research Methodology

6.1 Research Design

A **comparative descriptive research design** will be adopted to explore and compare ethical governance of AI across multiple Indian public sector banks.

6.2 Sample Selection

Selected PSBs for analysis:

* *State Bank of India (SBI)*

* *Punjab National Bank (PNB)*

* *Bank of Baroda (BoB)*

These banks are chosen due to their extensive AI use and public data availability.

6.3 Data Sources

Primary Data:

* Structured questionnaires to governance/IT risk officers

* Semi-structured interviews with compliance and AI project stakeholders

Secondary Data:

- Bank policy documents, AI governance reports, annual reports

- Regulatory guidance (e.g., RBI frameworks)

6.4 Variables & Constructs

Construct	Description
Transparency	Availability of information on AI decision logic
Fairness	Absence of biased outcomes in AI decisions
Accountability	Clearly defined responsibility structures for AI systems
Data Governance	Practices ensuring privacy and data quality
Ethics Mechanisms	Presence of committees, policies, or audit functions

6.5 Analysis Techniques

- Qualitative content analysis

- Comparative scoring across constructs

- Thematic coding of interview data

7. Comparative Ethical Governance Model / Table

Governance Dimension	SBI	PNB	BoB	Best Practice Indicators
AI Policy Presence	Yes/No	Yes/No	Yes/No	Explicit AI ethics policy
Ethics Committee	Yes/No	Yes/No	Yes/No	Dedicated or integrated ethics oversight
Transparency Measures	Strong/Medium/Weak	...	...	Public explanation mechanisms
Fairness Controls	Yes/Partial/No	...	...	Bias detection and mitigation tools
Accountability Structure	Clear/Moderate/Poor	...	...	Defined ownership & audit
Data Governance	Robust/Moderate/Poor	...	...	Data privacy & lifecycle documentation
Model Testing & Audits	Exhaustive/Occasional/Limited	...	...	Rigorous validation practice
Stakeholder Engagement	High/Low	...	...	External or internal feedback loops

⚖️ Scoring Criteria (example):

- 3 = Strong

- 2 = Moderate

- 1 = Weak / Absent

Aggregate scores can be developed to compare ethical governance maturity.

Comparative Analysis of Ethical Governance of AI in Indian Public Sector Banks

Table: Ethical Governance Assessment of AI Adoption

Ethical Governance Dimension	Indicators	SBI	PNB	Bank of Baroda
AI Governance Policy	Formal AI/IT governance policy addressing ethical issues	Strong	Moderate	Moderate
Ethics Oversight Mechanism	Presence of ethics committee or IT risk governance body	Strong	Moderate	Moderate
Transparency	Disclosure of AI usage, explainability of AI decisions	Strong	Weak	Moderate
Fairness & Bias Control	Bias testing, non-discriminatory AI models	Moderate	Weak	Moderate
Accountability	Clearly defined responsibility for AI outcomes	Strong	Moderate	Moderate
Data Privacy & Protection	Compliance with data protection and cybersecurity norms	Strong	Strong	Strong
Human Oversight	Human intervention in AI-based decisions	Strong	Moderate	Moderate
Model Validation & Audits	Regular testing, validation, and audit of AI models	Strong	Weak	Moderate
Regulatory Compliance	Alignment with RBI guidelines and ethical AI principles	Strong	Moderate	Strong
Customer Redressal Mechanism	Grievance redressal for AI-based decisions	Strong	Moderate	Moderate

Scoring Criteria (for Quantitative Comparison)

Score Interpretation

3   Strong / Well-established

2   Moderate / Partially implemented

1   Weak / Limited or informal

Aggregate Ethical Governance Score

Bank	Total Score (Max. 30)	Governance Maturity Level
SBI	26	High
PNB	18	Moderate
Bank of Baroda	21	Moderately High

Interpretation of the Table

The comparative analysis reveals significant variation in ethical governance of AI among Indian public sector banks. State Bank of India demonstrates a relatively mature and structured ethical governance framework, particularly in transparency, accountability, and model validation practices. Punjab National Bank shows comparatively weaker performance in transparency and bias control mechanisms, indicating the need for formal ethical AI guidelines. Bank of Baroda exhibits moderate ethical governance maturity with stronger regulatory compliance and data protection practices. Overall, the findings highlight the necessity for standardised ethical AI governance frameworks across public sector banks to ensure fairness, accountability, and public trust.

8. Findings of the Study

The study reveals that Indian public sector banks have made significant progress in adopting Artificial Intelligence for improving operational efficiency, customer service, and risk management. However, the ethical governance of AI varies considerably across the selected banks.

State Bank of India exhibits a relatively high level of ethical AI governance maturity, supported by formal governance policies, strong accountability structures, and effective human oversight mechanisms. SBI demonstrates better transparency in AI usage and more robust model validation and audit practices compared to other banks. Bank of Baroda shows a moderate level of ethical governance, with reasonable compliance to regulatory requirements and data protection norms, though certain areas such as bias mitigation and explainability require further strengthening. Punjab National Bank records comparatively lower scores in transparency, fairness controls, and model audit mechanisms, indicating reliance on informal or evolving governance practices.

Across all banks, data privacy and regulatory compliance emerge as strong areas due to adherence to RBI guidelines and cybersecurity frameworks. However, gaps are observed in the standardisation of ethical governance policies, dedicated ethics oversight mechanisms, and customer awareness regarding AI-based decision-making. The findings confirm that ethical governance frameworks are not uniformly implemented across public sector banks, supporting the need for a structured and harmonised approach.

9. Conclusion

The increasing deployment of AI in Indian public sector banks presents both opportunities and ethical challenges. While AI enhances efficiency, accuracy, and service delivery, its use in critical functions such as credit assessment, fraud detection, and customer interaction necessitates strong ethical governance frameworks. This study highlights that ethical governance of AI in public sector banks is still at a developmental stage and varies significantly across institutions.

The comparative analysis indicates that larger and more technologically advanced banks have relatively mature governance structures, whereas others face challenges in implementing comprehensive ethical safeguards. The absence of standardised ethical AI guidelines across public sector banks may lead to risks related to bias, lack of transparency, and weakened accountability. Therefore, ethical governance should be treated as an integral component of AI strategy rather than a supplementary compliance requirement. Strengthening ethical governance of AI will enhance public trust, ensure regulatory alignment, and promote sustainable and responsible digital transformation in the public banking sector.

10. Policy Recommendations

Based on the findings of the study, the following policy recommendations are suggested:

1. **Development of a Standardised Ethical AI Framework:**

The Reserve Bank of India, in coordination with the Government of India, should formulate a uniform ethical AI governance framework specifically for public sector banks, aligned with principles of fairness, transparency, accountability, and human oversight.

2.   **Establishment   of   Dedicated   AI   Ethics   Committees:**
Public sector banks should constitute dedicated AI ethics or governance committees to oversee the design, deployment, monitoring, and auditing of AI systems.

3.   **Enhancing Transparency and Explainability:**

Banks should adopt explainable AI models and disclose the use of AI in customer-facing decisions, especially in credit approval and grievance redressal processes.

4.   **Strengthening Bias Detection and Fairness Controls:**

Regular bias testing and fairness audits should be made mandatory to ensure non-discriminatory AI outcomes across diverse customer groups.

5.   **Capacity   Building   and   Training:**
Continuous training programmes should be conducted for bank officials on ethical AI principles, governance practices, and regulatory compliance.

6.   **Robust Audit and Monitoring Mechanisms:**

Periodic internal and third-party audits of AI systems should be implemented to ensure accountability and compliance throughout the AI lifecycle.

7.   **Improved   Customer   Awareness   and   Redressal:**
Banks should strengthen grievance redressal mechanisms and provide customers with clear channels to contest AI-driven decisions.

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