AN ANALYSIS ON TRANSFORMATION IN BANKING SECTOR: INTEGRATING GENERATIVE AI INTO ACCOUNTING AND HR IN FUTURE

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Abstract

*The rapid evolution of **Generative Artificial Intelligence** (AI) is transforming the banking sector by enabling more personalized customer interactions, automating complex processes, and enhancing decision-making across financial services. This chapter explores the integration of generative AI models – such as large language models (LLMs), generative adversarial networks (GANs), and diffusion models – into banking operations. Key applications include AI-driven customer support, fraud detection, risk assessment, credit scoring, synthetic data generation for model training, and compliance reporting. Through case studies and real-world implementations, the chapter outlines how generative AI improves operational efficiency, customer satisfaction, and product innovation. It also addresses the associated challenges, such as data privacy, model interpretability, and regulatory compliance, providing a balanced view of the opportunities and risks. The chapter concludes with a strategic framework for banks seeking to implement generative AI responsibly and effectively.*

Keywords: *Generative AI, Banking, Financial Services, Large Language Models, Customer Experience, Automation.*

Introduction

Generative AI is emerging as a transformative force in the banking sector, reshaping the financial institutions operate, engage with customers, and manage risk. Unlike traditional AI models that primarily focus on prediction or classification, generative AI can create new content—such as text, synthetic data, financial reports, or customer communications—based on learned patterns. Technologies like large language models (LLMs) and generative adversarial networks (GANs) are enabling banks to automate complex processes, enhance fraud detection, personalize customer service through conversational agents, and generate synthetic datasets to train other AI models while preserving data privacy.

As the demand for more intelligent, responsive, and secure financial services grows, generative AI offers a strategic advantage by driving efficiency, innovation, and customer satisfaction. However, its adoption also presents challenges, including regulatory compliance, ethical concerns, data governance, and the risk of model-generated inaccuracies or bias. Financial institutions must therefore develop robust AI governance frameworks to ensure transparency, fairness, and accountability. With thoughtful integration, generative

AI has the potential to become a foundational technology in the ongoing digital transformation of the banking industry.

Review of Literature

1. **Saha, B., Rani, N., & Shukla, S. K. (2025):** In their comprehensive survey, the authors explore the global adoption of Generative AI across financial institutions, emphasizing its role in enhancing customer engagement, automating workflows, and extracting insights from vast financial data. They also address emerging cybersecurity threats and ethical concerns, proposing best practices for secure and responsible adoption.
2. **Desai, A. P., Mallya, G. S., et al. (2024)**: This study provides an in-depth overview of Gen-AI applications in finance, discussing opportunities and challenges. The authors highlight the ability of Gen-AI to handle large data volumes, provide fast responses, and fine-tune for various tasks, while also addressing challenges such as data privacy and model transparency.
3. **Fares, O. H., Butt, I., & Lee, S. H. M. (2022)**: Through a systematic literature review, the authors examine 44 articles on AI utilization in banking, identifying key research themes such as Strategy, Process, and Customer. They propose an AI banking service framework that bridges the gap between academic research and industry knowledge.
4. **Glover, J., Rao, R., et al. (2024)**: The authors discuss the integration of Generative AI into finance workflows, noting that 42% of companies are experimenting with Generative AI, and 15% are embedding it into their business strategies. They highlight the potential of Generative AI to enhance value through automation and real-time predictive models.
5. **Bhattacharyya, A., Yu, Y., et al. (2025)**: This paper focuses on model risk management for Generative AI in financial institutions, emphasizing the need for enhanced testing and controls to ensure safe deployment. The authors discuss the introduction of new model risks, such as hallucinations and toxicity, and propose additional practices required in model validation.

Objectives of the Study

1. To explore the applications of generative AI in enhancing customer experience.
2. To assess the impact of generative AI on operational efficiency and cost reduction.
3. To examine the challenges and risks associated with implementing generative AI in banking.

Method of Study:

This study adopts a explore the role, applications, and implications of **Generative Artificial Intelligence (AI)** in the banking sector. The combination of qualitative and quantitative research methods ensures a comprehensive understanding of both the technical and human aspects of generative AI adoption in financial institutions.

1. Research Design

The study is designed as a **simple random method** It seeks to describe existing applications of generative AI in banking while exploring future possibilities, challenges, and ethical implications.

2. Data Collection Methods

a. **Primary Data Collection:** Surveys & Interview method.
b. **Secondary Data Collection:"** Literature Review & Case Studies.

Data Analytics:

1. Age Group

Table 1: Age Group

Age Group	Number of Respondents	Percentage (%)
Under 25	5	10%
25–34	15	30%
35–44	12	24%
45–54	10	20%
55 and above	8	16%
Total	**50**	**100%**

Interpretation:

The majority of respondents are in the **25–34 age group (**30%), followed by the **35–44** group (24%), indicating a strong engagement with generative AI tools among the working-age, tech-savvy population. The **Under 25** and **55 and above** groups represent smaller portions, suggesting lower AI adoption or familiarity among younger and older demographics.

2. Type of Bank

Table 2: Type of Bank

Type of Bank	Number of Respondents	Percentage (%)
Public Sector	15	30%
Private Sector	20	40%
Digital-Only Bank	10	20%
Cooperative Bank	5	10%
Total	**50**	**100%**

Interpretation:

The majority of respondents come from Private Sector Banks (40%), followed by Public Sector Banks (30%), indicating that private banks are leading in the adoption of generative AI, while Digital-Only and Cooperative Banks represent smaller segments of the market.

3. Generative AI Improved our Experience

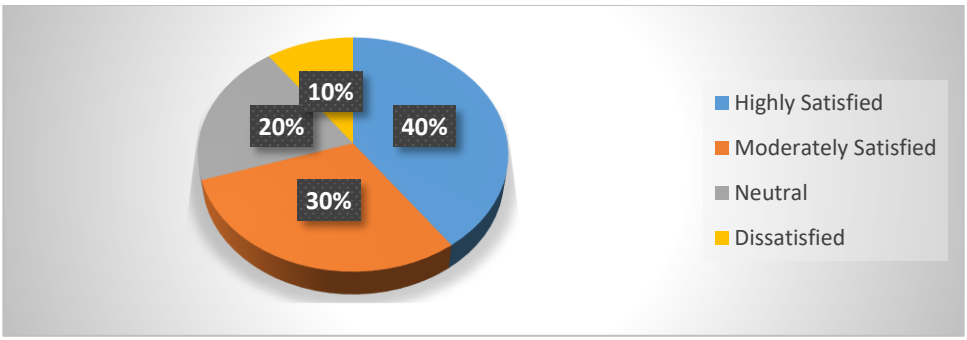
Table 3: Generative AI Improved our Experience

Particulars	Number of Respondents	Percentage (%)
Highly Satisfied	20	40%
Moderately Satisfied	15	30%
Neutral	10	20%
Dissatisfied	5	10%
Total	**50**	**100%**

Interpretation:

The majority of respondents (70%) reported being either highly or moderately satisfied, indicating a generally positive perception. A smaller portion (10%) expressed dissatisfaction, while 20% remained neutral. Overall, the feedback suggests a favourable level of satisfaction among participants.

Chart -3



4. Operational Tasks

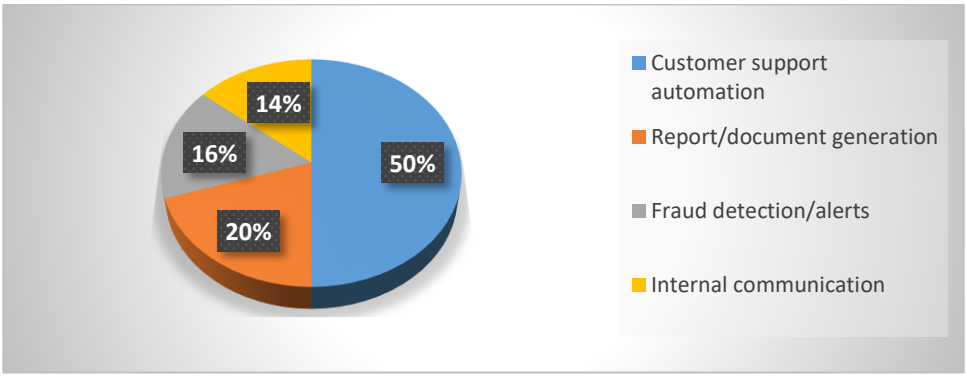
Table 4: Operational Tasks

Operational Task	Number of Respondents	Percentage (%)
Customer support automation	25	50%
Report/document generation	10	20%
Fraud detection/alerts	8	16%
Internal communication	7	14%
Total	**50**	**100%**

Interpretation:

The data shows that customer support automation (50%) is the most improved operational task through generative AI, indicating strong adoption in customer service areas. Other functions like report generation (20%), fraud detection (16%), and internal communication (14%) show moderate improvement, suggesting room for broader AI integration across banking operations.

Chart -4



5. Challenges or Risks to Associate

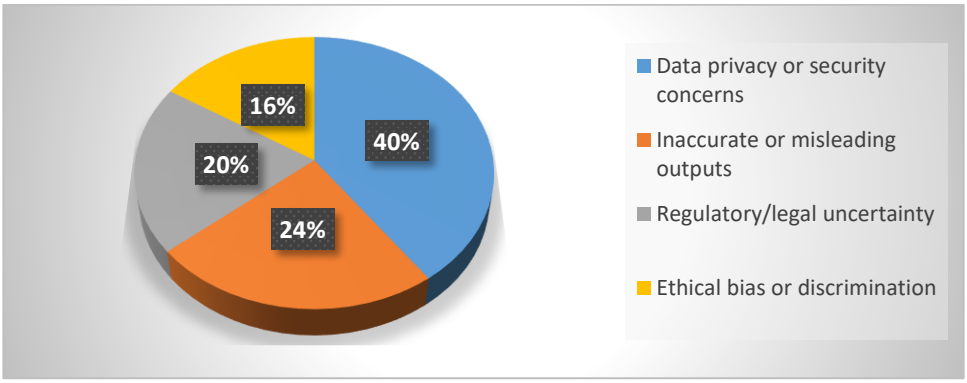
Table 4: Operational Tasks

Challenge/Risk	Number of Respondents	Percentage (%)
Data privacy or security concerns	20	40%
Inaccurate or misleading outputs	12	24%
Regulatory/legal uncertainty	10	20%
Ethical bias or discrimination	8	16%
Total	**50**	**100%**

Interpretation:

The most reported challenge is data privacy or security concerns (40%), indicating that safeguarding customer information is the top priority in adopting generative AI. Other concerns like inaccurate outputs (24%) and regulatory uncertainty (20%) highlight the need for reliable systems and clearer legal frameworks.

Chart -5



Findings

1. The 25–44 age group shows the highest engagement with generative AI in banking, reflecting strong adoption among tech-savvy, working-age individuals, while younger and older groups show lower involvement.

2. Private Sector Banks (40%) lead in generative AI adoption, suggesting higher investment in innovation, while Public Sector, Digital-Only, and Cooperative Banks show relatively lower participation.
3. Seventy percent of respondents are highly or moderately satisfied, showing a generally positive perception. Only 10% are dissatisfied, while 20% remain neutral, indicating overall contentment with some mixed feelings.
4. Customer support automation (50%) is the most improved area, highlighting strong AI adoption in customer service, while other functions like report generation, fraud detection, and internal communication show moderate improvement, indicating potential for further AI integration.
5. Data privacy and security concerns (40%) are the top challenge, emphasizing the importance of protecting customer information, while issues like inaccurate outputs (24%) and regulatory uncertainty (20%) underscore the need for more reliable systems and clearer legal guidelines.

Suggestion

1. Banks should focus on tailored AI training and outreach to engage younger and older demographics, making AI more accessible and appealing to all age groups.
2. Public sector, digital-only, and cooperative banks should increase investments in AI technology and collaborate with fintech partners to enhance AI adoption and innovation.
3. Focus on addressing the concerns of dissatisfied and neutral respondents to further improve overall satisfaction.
4. Banks should expand AI automation to other functions like fraud detection, report generation, and internal communication to further streamline operations and improve efficiency.
5. Banks should strengthen data security measures, ensure AI system reliability, and collaborate with regulators to establish clear legal frameworks for AI usage in banking.

Conclusion

In conclusion, the adoption of generative AI in banking holds significant potential for improving customer experience, operational efficiency, and innovation. By focusing on tailored AI training for diverse age groups, banks can ensure broader engagement and accessibility. Public sector, digital-only, and cooperative banks must prioritize investments in AI and collaborate with fin techs to remain competitive. Expanding AI's successful applications and addressing areas with room for improvement will drive better outcomes, particularly in customer support and service areas. Additionally, the integration of AI in critical functions like fraud detection and report generation will further enhance operational efficiency. Above all, strengthening data security and ensuring AI system reliability will address the main challenges, while collaboration with regulators will help create a robust legal framework to guide ethical AI usage. By implementing these strategies, banks can successfully navigate the evolving AI landscape while maximizing benefits and minimizing risks.

Reference

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