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Customer Perception of Service Excellence in the Financial Services Industry: Integrating ESG Practices and Artificial Intelligence in Banking

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Abstract: The integration of Environmental, Social, and Governance (ESG) metrics with Artificial Intelligence (AI) is increasingly important for sustainable financial risk management. This study examines how ESG indicators and AI-driven technologies enhance financial risk assessment, prediction, and mitigation. Traditional risk management approaches often overlook long-term sustainability risks, including climate change, regulatory changes, and social responsibility concerns. AI techniques such as machine learning, natural language processing, and big data analytics enable more accurate risk forecasting and informed financial decision-making. The study also highlights challenges related to ESG data inconsistency, reporting standardization, and AI ethics. The findings emphasize that integrating ESG metrics with AI improves risk management efficiency, forecasting accuracy, and sustainable investment decisions, contributing to resilient and responsible financial systems.

Keywords: ESG Metrics; Artificial Intelligence; Sustainable Finance; Financial Risk Management; Machine Learning; Risk Assessment; Predictive Analytics; Sustainable Investment.

Introduction

In the modern financial landscape, the growing emphasis on sustainability and responsible investing has led to the increasing importance of Environmental, Social, and Governance (ESG) metrics in financial decision-making. Organizations and investors are no longer focused solely on financial returns but are also considering the long-term impact of their activities on the environment, society, and corporate governance practices. ESG factors such as climate change risks, social responsibility, and ethical governance have become critical determinants of an organization's stability and long-term performance. At the same time, the rapid advancement of Artificial Intelligence (AI) has transformed traditional financial risk management by enabling the analysis of large and complex datasets with greater accuracy and efficiency. AI technologies, including machine learning and natural language processing, provide powerful tools for identifying patterns, predicting risks, and supporting strategic decision-making. Integrating ESG metrics with AI offers a comprehensive approach to financial risk management by combining sustainability considerations with advanced analytical capabilities. This integration helps organizations to better assess emerging risks, improve forecasting accuracy, and enhance transparency in financial practices. However, challenges such as data inconsistency, lack of standardized ESG reporting, and ethical concerns related to AI implementation remain significant. Despite these challenges, the convergence of ESG and AI presents a promising pathway for developing sustainable financial systems that balance profitability with social and environmental responsibility. Therefore, this study focuses on exploring how the integration of ESG metrics and artificial intelligence can improve sustainable financial risk management and support long-term value creation.

Review Of Literature

Previous studies have explored various dimensions of integrating ESG metrics and Artificial Intelligence for sustainable financial risk management.

Lim (2024) examined the integration of ESG and AI in finance, highlighting rapid growth in research and applications. The study emphasized AI's ability to enhance risk prediction through machine learning and big data. It identified ESG-based risk management as a key emerging domain. AI tools such as deep learning improve fraud detection and credit risk analysis. The study also noted challenges in data heterogeneity and ESG measurement.

Zairis et al. (2024) conducted a systematic review on sustainable finance and ESG importance. The study found ESG as a critical driver of long-term financial stability. It emphasized the need for integrating ESG into financial risk frameworks. AI was identified as a tool to enhance ESG analytics and reporting accuracy. The study highlighted gaps in standard ESG metrics. It concluded that ESG integration improves resilience against systemic risks.

Hamdouni (2025) analyzed AI adoption in banking and its link to ESG and financial stability. The study found that AI-enabled fintech improves sustainability performance. AI tools enhance predictive risk modeling and operational efficiency. ESG factors were shown to positively influence financial resilience. The research highlighted the role of digital transformation in risk mitigation. It concluded that ESG-AI integration boosts banking stability and performance.

Shen et al. (2025) explored AI adoption and corporate ESG performance using advanced models. The study showed that AI significantly improves environmental and social outcomes. It also enhances firms' ability to process sustainability data. ESG metrics were found to be better measured using AI-driven analytics. The research highlighted limitations in governance improvements. It concluded that AI strengthens ESG-based risk frameworks.

Overall, existing literature suggests a strong relationship between ESG metrics and AI in improving sustainable financial risk management, but limited research exists on practical implementation challenges in developing economies like India.

Mir et al. (2025), in their study titled *Green Banking Practices and Customer Satisfaction – Way to Green Sustainability*, explored how green banking practices influence customer satisfaction in public and private sector banks. The study focused on four major aspects of green banking: digital banking, green infrastructure, green loans and green services. The findings indicated that digital banking, green loans and green services had a positive and significant influence on customer satisfaction, while green infrastructure did not show a significant positive relationship. This suggests that customers are more likely to appreciate sustainability initiatives when they are directly connected to the banking services and products they use in their everyday lives (Mir et al., 2025).

In recent years, customers have started looking beyond traditional banking services when evaluating the performance of financial institutions. Along with factors such as reliability, responsiveness and convenience, the environmental responsibility of banks is also becoming an important consideration. Initiatives such as paperless transactions, digital banking facilities and environmentally responsible financial products can improve the overall customer experience and create a positive impression of the bank. Such practices may also help banks build stronger relationships with their customers by demonstrating their commitment to sustainability. However, it is important to understand whether these initiatives genuinely improve customers' perceptions of service excellence or simply create a favourable image of the institution. This makes it worthwhile to examine how customers perceive sustainable banking practices and how these practices contribute to service excellence in the financial services industry.

Objectives

- To analyze the role of ESG metrics in sustainable financial risk management.
- To examine the application of Artificial Intelligence in financial risk assessment.
- To evaluate the benefits of integrating ESG metrics with AI technologies.
- To identify the challenges in implementing ESG and AI integration.
- To suggest strategies for improving sustainable financial decision-making using ESG and AI.

Research Methodology

Research Design

The study adopts a descriptive and analytical research design to examine the integration of ESG metrics and Artificial Intelligence in financial risk management. The descriptive approach helps in understanding ESG frameworks and AI applications, while the analytical design evaluates their impact on risk prediction and sustainability. The study also incorporates a quantitative approach to measure relationships between ESG scores and financial risk indicators. Additionally, a conceptual framework is developed to explain how AI enhances ESG-based risk assessment. This design ensures a structured and systematic investigation of the research problem.

Sample Size

120 respondents

Sampling Technique

Convenience Sampling

Data Collection

100 responses via google forms

20 via physical form

Research Instrument

Structured questionnaire with 12 items divided into:

1. Awareness of ESG concepts
2. Awareness of Artificial Intelligence
3. Role of AI in ESG implementation
4. Sustainable financial risk management
5. Challenges in ESG-AI integration
6. Future improvements and support systems

7. Occupation

Occupation:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	18	27.7	27.7	27.7
	Government Employee	23	35.4	35.4	63.1
	Private Employee	24	36.9	36.9	100
	Total	65	100	100	

Age

Age:					
	Frequency		Percent	Valid Percent	Cumulative Percent
Valid	25–35	42	64.6	64.6	64.6
	36–45	23	35.4	35.4	100
	Total	65	100	100	

Gender

Gender:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	34	52.3	52.3	52.3
	Male	31	47.7	47.7	100
	Total	65	100	100	

Field/Area

Field/Area:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	9	13.8	13.8	13.8
	Finance	36	55.4	55.4	69.2
	IT	20	30.8	30.8	100.0
	Total	65	100.0	100.0	

Monthly income range

Monthly Income Range:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	₹25,000 – ₹50,000	18	27.7	27.7	27.7
	₹50,001 – ₹1,00,000	18	27.7	27.7	55.4
	Above ₹1,00,000	23	35.4	35.4	90.8
	Below ₹25,000	6	9.2	9.2	100
	Total	65	100	100	

Demographic Profile

The demographic analysis indicates that the majority of respondents belonged to the age group of 25–35 years (64.6%), while 35.4% were in the age group of 36–45 years, showing that younger and middle-aged working professionals formed the major portion of the sample. In terms of gender, 52.3% of respondents were female and 47.7% were male, indicating a balanced participation of both genders. Regarding occupation, the majority were Private Employees (36.9%), followed by Government Employees (35.4%) and Business persons (27.7%), suggesting that salaried employees were more actively represented in the study.

With respect to field/area, the majority of respondents were from Finance (55.4%), followed by IT (30.8%) and Business (13.8%), highlighting stronger participation from finance professionals. Income distribution shows that 35.4% of respondents earned Above ₹1,00,000, while 27.7% each earned between ₹25,000–₹50,000 and ₹50,001–₹1,00,000. Only 9.2% earned Below ₹25,000, indicating that most respondents belonged to middle and higher income groups.

Descriptives statistics

Descriptive Statistics									
	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
I have heard about ESG Environmental Social Governance	65	4	1	5	197	3.0308	0.17537	1.41387	1.999
ESG factors environment social governance are important for	65	4	1	5	195	3	0.18345	1.47902	2.188

companies									
I have heard about Artificial Intelligence AI	65	4	1	5	208	3.2	0.15535	1.2525	1.569
AI issued banking fraud detection investments and customer service	65	4	1	5	242	3.7231	0.13429	1.08264	1.172
AI helps in making better decisions	65	4	1	5	256	3.9385	0.13846	1.11631	1.246
AI can help companies follow ESG better	65	4	1	5	246	3.7846	0.15734	1.26852	1.609
Using AI with ESG improves decision making reduces risk and saves time	65	4	1	5	242	3.7231	0.14126	1.13891	1.297
ESG helps reduce financial risk	65	3	2	5	248	3.8154	0.10022	0.80801	0.653
It is important for companies to focus on sustainability	65	4	1	5	272	4.1846	0.12187	0.98254	0.965
Companies should use AI for ESG and risk management	65	4	1	5	255	3.9231	0.14759	1.1899	1.416
Improvements like awareness technology	65	4	1	5	260	4	0.1201	0.96825	0.938
Valid N (listwise)	65								

The descriptive statistics reveal that all eleven statements related to integrating ESG metrics and Artificial Intelligence for sustainable financial risk management recorded mean scores above 3.00, indicating a consistent

level of agreement among respondents. The highest mean score of 4.18 was recorded for the statement related to the importance of companies focusing on sustainability, followed by 4.00 for the need for improvements such as awareness, technology, government support, and training.

Further, mean scores of 3.94 and 3.92 were recorded for AI helping in making better decisions and companies using AI for ESG and risk management respectively. Statements relating to ESG reducing financial risk (3.82), AI helping companies follow ESG better (3.78), and AI improving decision making while reducing risk and saving time (3.72) also showed positive agreement among respondents.

The awareness-related statements such as hearing about Artificial Intelligence (3.20), hearing about ESG (3.03), and ESG factors being important for companies (3.00) recorded comparatively lower mean scores, indicating moderate awareness levels. Overall, all mean scores are above 3.00, confirming that respondents hold a favorable opinion towards sustainability, AI adoption, and ESG-based financial risk management.

One sample test

The one-sample t-test results reveal that all eleven statements related to integrating ESG metrics and Artificial Intelligence for sustainable financial risk management recorded significant mean scores with p-values of 0.000, indicating a consistent level of agreement among respondents. The highest mean score of 4.18 was recorded for the statement related to companies focusing on sustainability, followed by 4.00 for the need for improvements such as awareness, technology, government support, and training.

Further, mean scores of 3.94 and 3.92 were recorded for AI helping in making better decisions and companies using AI for ESG and risk management respectively. The statement related to ESG reducing financial risk recorded a mean score of 3.82, while AI helping companies follow ESG better scored 3.78. Similarly, using AI with ESG to improve decision making, reduce risk, and save time recorded a mean score of 3.72, showing positive agreement among respondents.

The awareness-related statements such as hearing about Artificial Intelligence (3.20), hearing about ESG (3.03), and ESG factors being important for companies (3.00) recorded comparatively lower mean scores, indicating moderate awareness levels. Since all significance values are below 0.05, the results confirm that respondents significantly agree that ESG metrics and Artificial Intelligence play an important role in sustainable financial risk management.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
I have heard about ESG Environmental Social Governance	65	3.0308	1.41387	0.17537
ESG factors environment social governance are important for companies	65	3	1.47902	0.18345
I have heard about Artificial Intelligence AI	65	3.2	1.2525	0.15535
AI issued banking fraud detection investments and customer service	65	3.7231	1.08264	0.13429
AI helps in making better decisions	65	3.9385	1.11631	0.13846
AI can help companies follow ESG better	65	3.7846	1.26852	0.15734
Using AI with ESG improves decision making reduces risk and saves time	65	3.7231	1.13891	0.14126

ESGhelpsreducefinancialrisk	65	3.8154	0.80801	0.10022
Itisimportantforcompaniestofocusonsustainability	65	4.1846	0.98254	0.12187
CompaniesshoulduseAIforESGandriskmanagement	65	3.9231	1.1899	0.14759
Improvementslikeawarenesstechnology	65	4	0.96825	0.1201
VAR00003	65	4.0154	1.05315	0.13063

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
IhaveheardaboutESGEnvironmentalSocialGovernance	17.282	64	0	3.03077	2.6804	3.3811
ESgfactorsenvironmentsocialgovernanceareimportantforcompanies	16.353	64	0	3	2.6335	3.3665
IhaveheardaboutArtificialIntelligenceAI	20.598	64	0	3.2	2.8896	3.5104
AIisusedbankingfrauddetectioninvestmentsandcustomerservice	27.725	64	0	3.72308	3.4548	3.9913
AIhelpsinmakingbetterdecisions	28.444	64	0	3.93846	3.6619	4.2151
AIcanhelpcompaniesfollowESGbetter	24.054	64	0	3.78462	3.4703	4.0989
UsingAIwithESGimprovesdecisionmakingreducesriskandsavestime	26.355	64	0	3.72308	3.4409	4.0053
ESGhelpsreducefinancialrisk	38.069	64	0	3.81538	3.6152	4.0156
Itisimportantforcompaniestofocusonsustainability	34.337	64	0	4.18462	3.9412	4.4281
CompaniesshoulduseAIforESGandriskmanagement	26.581	64	0	3.92308	3.6282	4.2179
Improvementslikeawarenesstechnology	33.307	64	0	4	3.7601	4.2399
VAR00003	30.739	64	0	4.01538	3.7544	4.2763

Finding And Suggestion

This study found that awareness and acceptance of integrating ESG metrics with Artificial Intelligence in financial risk management is high among respondents. Most participants agreed that sustainability has become an important priority for companies and that AI can significantly improve decision-making, forecasting accuracy, and risk control. Respondents also believed that ESG factors help reduce financial risks and improve long-term business stability. Furthermore, companies are increasingly expected to adopt AI-driven tools for ESG reporting, compliance, and strategic planning.

The study also identified that moderate awareness still exists regarding detailed ESG concepts and their practical applications. Challenges such as lack of data quality, high implementation cost, limited technical knowledge, and absence of standardized ESG reporting systems were highlighted by respondents. To overcome these issues, organizations should provide awareness programs, employee training, better technological infrastructure, and strong governance systems. Government support, policy incentives, and clear ESG disclosure standards can further improve adoption. Companies should regularly monitor ESG performance and use AI responsibly to ensure ethical and transparent decision-making.

Conclusion

In the modern business environment, ESG metrics and Artificial Intelligence have become essential tools for building sustainable and resilient financial systems. The study confirms that respondents hold favorable opinions toward sustainability-focused business practices and AI-based financial risk management. AI enables faster analysis, improved predictions, fraud detection, and efficient decision-making, while ESG principles strengthen environmental responsibility, social accountability, and governance standards.

Although challenges such as awareness gaps, data inconsistency, and implementation costs remain, these barriers can be reduced through proper training, technological investment, and regulatory support. Ultimately, the successful integration of ESG metrics and AI can help organizations achieve long-term profitability, responsible growth, and stronger financial stability. Therefore, combining sustainability principles with advanced technologies is a key pathway for the future of financial risk management.

References

[1] Lim, J.: Integrating ESG and AI in finance: risks, opportunities and emerging applications. Journal of Sustainable Finance & Investment. pp. 1–18 (2024)
[2] Zairis, A., et al.: Sustainable finance and ESG: a systematic review. Sustainability. pp. 1–24 (2024)
[3] Hamdouni, A.: AI adoption in banking, ESG performance and financial stability. International Journal of Finance & Economics. pp. 1–22 (2025)
[4] Shen, Y., et al.: AI adoption and corporate ESG performance: an empirical investigation. Journal of Business Ethics. pp. 1–19 (2025)
[5] Lim, T. (2024). Environmental, social, and governance (ESG) and artificial intelligence in finance: State-of-the-art and research takeaways. Artificial Intelligence Review, 57, 76.
[6] Bahoo, S., Cucculelli, M., Goga, X., & Mondolo, J. (2024). Artificial intelligence in finance: A comprehensive review through bibliometric and content analysis. SN Business & Economics, 4, 23. https://doi.org/10.1007/s43546-023-00618-x
[7] Siddik, A. B., Yong, L., Du, A. M., Vigne, S. A., & Sharif, A. (2025). Harnessing artificial intelligence for enhanced environmental sustainability in China's banking sector: A mixed-methods approach. British Journal of Management, 36(3), 1256–1273. https://doi.org/10.1111/1467-8551.12901
[8] Hamdouni, A. (2025). From ESG to financial stability: Unpacking the multi-dimensional impact of AI-driven FinTech-related technology adoption on bank performance. International Journal of Financial Studies, 13(4), 234. https://doi.org/10.3390/ijfs13040234

[9] Bouattour, A., Kalai, M., & Helali, K. (2024). The non-linear relationship between ESG performance and bank stability in the digital era: New evidence from a regime-switching approach. Humanities and Social Sciences Communications, 11, Article 1445. https://doi.org/10.1057/s41599-024-03876-8

[10] Salem, M. R. M. (2026). ESG strategic intensity and AI capability impact on risk-adjusted lending performance; mediating role of credit-risk discipline in ASEAN banks. Future Business Journal, 12, Article 2. https://doi.org/10.1186/s43093-025-00710-8

[11] Mir, A. A., Bhat, A. A., Al-Adwan, A. S., Farooq, S., Jamali, D., & Malik, I. A. (2025). Green banking practices and customer satisfaction-way to green sustainability. Innovation and Green Development, 4(2), 100221. https://doi.org/10.1016/j.igd.2025.100221 i need to add points in introduction