International Journal of Advance and Innovative Research
Volume 13, Issue 1 (II): January - March 2026
ISSN 2394 - 7780

ARTIFICIAL INTELLIGENCE IN MUTUAL FUNDS: ENHANCING RISK MANAGEMENT, FRAUD DETECTION, AND PERSONALIZED INVESTMENT STRATEGIES

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ABSTRACT
Artificial Intelligence (AI) has emerged as a transformation force in the financial services industry, particularly within the mutual fund sector. The increasing complexity of financial markets, growing regulatory requirements, and rising investor expectations have encouraged mutual fund companies to adopt AI-driven solutions. This research paper aims to examine the role of Artificial Intelligence in enhancing risk management, improving fraud detection mechanisms, and enabling personalized investment strategies in the mutual fund industry with special reference to India.

The study adopts a descriptive and analytical research design using both primary and secondary data. Primary data is collected through a structured questionnaire administered to retail mutual fund investors, while secondary data is sourced from SEBI reports, RBI publications, academic journals, and industry reports. The research highlights how machine learning algorithms and predictive analytics help fund managers assess portfolio risks, detect abnormal transaction patterns, and optimize asset allocation. AI-powered robo-advisory platforms also play a significant role in delivering customized investment recommendations based on investor risk profiles and financial goals.

The findings indicate that AI significantly improves operational efficiency, enhances transparency, and strengthens investor confidence in mutual fund operations. However, challenges such as data privacy concerns, high implementation costs, lack of skilled professionals, and regulatory constraints remain key barriers to widespread adoption. The paper concludes that despite these challenges, AI holds immense potential to reshape the mutual fund industry in India

***Keywords**: Artificial Intelligence, Mutual Funds, Risk Management, Fraud Detection*

1. INTRODUCTION
The finance sector has witnessed rapid technological advancements over the past decade, with Artificial Intelligence (AI) playing a crucial role in reshaping financial services. AI refers to the simulation of human intelligence in machines that are capable of learning, reasoning, and decision-making. In the mutual fund industry, fund houses and Asset Management Companies (AMCs) are increasingly adopting AI to manage large volumes of data, assess market risks, prevent fraud, and offer customized investment solutions to investors.

Mutual funds involve pooling money from investors and investing it in diversified portfolios of securities. Due to market volatility, regulatory requirements, and increasing competition, mutual fund companies face challenges related to risk management, fraud control, and meeting diverse investor expectations. AI-based systems help overcome these challenges b**y** providing data-driven insights and automated decision-making**.**

2. REVIEW OF LITERATURE
1.Securities and Exchange Board of India (SEBI). (2022). Artificial Intelligence (AI) has emerged as an important technological advancement in the financial services sector, improving efficiency, transparency, and decision-making. The SEBI Annual Report (2022) highlights the growing adoption of AI and data analytics in Indian capital and mutual fund markets to enhance market surveillance, risk management, and investor protection (SEBI, 2022).

2.Securities and Exchange Board of India (SEBI) .(2023). Mutual Fund Regulations and Guidelines. Mumbai: SEBI.emphasize the role of technology-driven governance in mutual fund operations. According to SEBI (2023), AI applications in portfolio management, compliance reporting, and investor servicing improve operational efficiency and reduce manual errors while ensuring investor protection through ethical and secure use of technology.

3. Reserve Bank of India (RBI). (2022). Report on Trends and Progress of Banking in India. Mumbai: RBI. notes that AI-based analytical tools play a significant role in strengthening financial stability by improving risk assessment and early fraud detection mechanisms (RBI, 2022). The report also stresses the need for regulatory oversight to address challenges related to data privacy and operational risks.

4. PwC. (2021). Artificial Intelligence in Asset and Wealth Management. PwC Research Report. explains that AI technologies are transforming asset and wealth management by enabling portfolio optimization, investor

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behavior analysis, and predictive risk management. AI-driven insights support personalized investment solutions and enhance investor satisfaction in mutual fund services

5.Accenture. (2021). AI-Powered Transformation in Financial Services. Accenture Insights. highlights that AI-powered transformation in financial services enables automation of complex processes, improves fraud detection, and enhances customer experience. However, the report emphasizes the need for robust governance frameworks and skilled human resources to ensure responsible AI adoption

SEBI (2022) emphasized the importance of technological adoption in mutual funds. PwC (2021) observed that AI-based analytics improve asset allocation and risk forecasting. However, limited empirical studies focus specifically on AI adoption in Indian mutual fund.

**AI Helps in Detecting Fraudulent Transactions	Respondents	Percentage
Strongly Agree	31	31%
Agree	42	42%
Neutral	17	17%
Disagree	7	7%
Strong Disagree	3	3%

3. RESEARCH GAP

Existing studies on Artificial Intelligence in finance mainly focus on banking, stock markets, and insurance sectors. Limited empirical research is available on the application of AI specifically in the mutual fund industry, especially in the Indian context. There is a lack of comprehensive studies analyzing AI's role in risk management, fraud detection, and personalized investing simultaneously. Additionally, investor perception and regulatory challenges related to AI adoption in mutual funds remain underexplored. This study aims to bridge these gaps by providing an integrated analysis of AI applications in Indian mutual funds.

4. RESEARCH METHODOLOGY

The study adopts a descriptive research design. Primary data was collected through a questionnaire from 100 retail investors using convenience sampling. Percentage analysis and graphical methods were used for interpretation.

Research Design: Descriptive.

Sample Size: 100 investors.

Sampling Method: Convenience sampling.

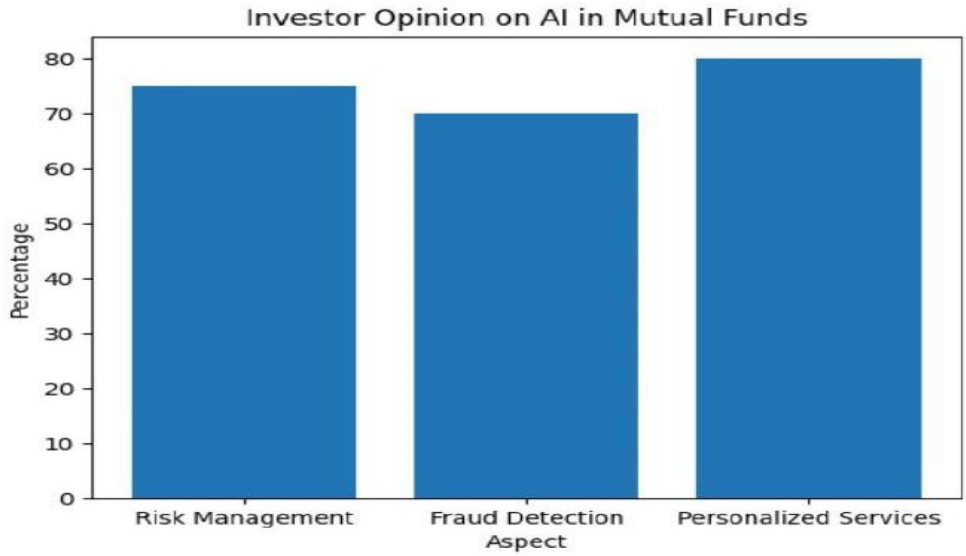
Tool: Questionnaire and percentage analysis.

5. DATA ANALYSIS AND INTERPRETATION

ASPECT	AGREE(%)
Risk Management	75%
Fraud Detection	70%
Personalized Services	80%

*AI Reduces operational and financial fraud risks.	Respondents	Percentage
Strongly Agree	29	29%
Agree	40	40%
Neutral	20	20%
Disagree	8	8%
Strong Disagree	3	3%

ISSN 2394 - 7780



Interpretation
The data presented shows generally high levels of positive investor opinion (above 70% in all categories) regarding the use of AI in mutual funds: Personalized Services receives the highest level of agreement, with approximately 80% of investors having a positive opinion.

Risk Management is the second most highly regarded application, with about 75% of investors sharing a positive opinion. Fraud Detection Aspect garners positive opinion from about 70% of investors, making it the least favored, but still strongly supported, application among the three.

Overall, investors appear to be optimistic and supportive of incorporating AI into mutual fund operations, particularly for services that offer a personalized experience.

****Indian Mutual Fund Case Studies**
Case Study 1: ICICI Prudential Mutual Fund has adopted AI and advanced analytics to enhance portfolio risk assessment and asset allocation. The fund house uses machine learning models to analyze market volatility and investor behaviour helping fund managers optimize investment strategies and improve returns while minimizing risks.

Case Study 2: HDFC Mutual Fund utilizes AI-powered tools for fraud detection and compliance monitoring. Automated systems track transaction patterns to identify suspicious activities and ensure adherence to SEBI regulations. AI has also helped the fund house improve operational efficiency and reduce manual intervention.

Case Study 3: Axis Mutual Fund – Robo Advisory Axis Mutual Fund has implemented AI-driven robo-advisory platforms to offer personalized investment recommendations. These platforms assess investors' risk profiles, financial goals, and investment horizons to suggest suitable mutual fund schemes, making professional advisory services accessible to retail investors.

6. FINDINGS & SUGGESTIONS

Findings

1. Majority investors support AI adoption.
2. Highest acceptance for personalized services.
3. Strong trust in AI-based risk assessment

Suggestions

1. Increase investor awareness
2. Strengthen data security
3. Regulatory guidance for ethical AI

The study finds strong investor acceptance of AI in mutual fund operations. Mutual fund companies should focus on enhancing data security, investor awareness, and ethical AI adoption.

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CONCLUSION

The study concludes that AI adoption positively impacts mutual fund efficiency and investor satisfaction. Artificial Intelligence plays a transformative role in mutual fund management. The findings confirm that AI adoption enhances efficiency and investors confidence , contributing to sustainable growth .

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