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ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING APPLICATIONS IN FINANCIAL RISK ASSESSMENT AND INVESTMENT DECISION-MAKING

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ABSTRACT

In recent years, Artificial Intelligence (AI) and Machine Learning (ML) have significantly transformed the financial sector. These technologies enable organizations to analyse large volumes of data, predict risks, and support effective investment decisions. This research paper examines the applications of AI and ML in financial risk assessment and investment decision-making. The study is based on secondary data collected from journals, books, and online academic sources. The findings indicate that AI and ML improve prediction accuracy, reduce human errors, and enhance financial performance. However, challenges such as ethical issues, data security, and lack of transparency continue to hinder their full adoption. The study concludes that AI and ML will play a critical role in the future of financial management and investment strategies.

KEYWORDS: Artificial Intelligence, Machine Learning, Financial Risk, Investment Decision, Predictive Models

INTRODUCTION

The finance industry has experienced rapid technological growth due to digitalization and automation. Artificial Intelligence and Machine Learning have emerged as powerful tools for financial institutions to manage risks and improve investment decisions. Traditional financial models rely on historical data and manual analysis, whereas AI-driven models process real-time data and provide accurate predictions. AI technologies are widely used in banking, stock markets, insurance, and corporate finance for forecasting, fraud detection, and portfolio management. The increasing availability of big data has further enhanced the effectiveness of AI-based financial models. Therefore, understanding the role of AI and ML in financial decision-making is essential for modern financial management.

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REVIEW OF LITERATURE

Previous research highlights the growing importance of AI and ML in finance. Several studies have reported that AI-based financial models outperform traditional statistical models in predicting risks and investment outcomes. Researchers have found that machine learning algorithms improve credit scoring, detect fraudulent transactions, and enhance portfolio optimization. Some studies also emphasize the role of AI in reducing emotional biases in investment decisions. However, scholars have raised concerns regarding ethical issues, data privacy, and regulatory challenges associated with AI adoption in finance. Overall, existing literature indicates that AI and ML significantly contribute to financial innovation and performance improvement.

STATEMENT OF THE PROBLEM

The financial sector is becoming increasingly complex due to globalization, technological advancements, and rapid changes in financial markets. Traditional financial risk assessment and investment decision-making methods rely heavily on historical data and human judgment, which may lead to inaccurate predictions, biased decisions, and increased financial risks. In recent years, Artificial Intelligence (AI) and Machine Learning (ML) technologies have been introduced to improve forecasting accuracy, automate decision-making processes, and enhance risk management.

However, the adoption of AI and ML in finance also raises several challenges, such as data security concerns, ethical issues, lack of transparency in algorithmic models, and high implementation costs. Many financial institutions are still uncertain about the effectiveness and reliability of AI-based systems in real-world financial decision-making. Therefore, there is a need to examine the applications of Artificial Intelligence and Machine Learning in financial risk assessment and investment decision-making and to analyse their benefits and challenges in the financial industry.

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OBJECTIVES OF THE STUDY

1. To analyse the role of AI and ML in financial risk assessment.
2. To examine the application of AI and ML in investment decision-making.
3. To identify the advantages of AI-based financial models.
4. To study the challenges associated with AI adoption in finance.

Research Methodology

Research Design

The study adopts a descriptive research design using secondary data.

Data Collection

Data were collected from academic journals, research papers, financial reports, and online databases.

Data Analysis

The collected data were analysed using qualitative content analysis and comparative analysis methods.

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TABLE 4.1
Opinion on AI and ML in Financial Decision-Making (100 Respondents)

Factor	Agree (%)	Neutral (%)	Disagree (%)
Accuracy Improvement	85	10	5
Risk Reduction	78	15	7
Speed of Decision	82	12	6
Cost Efficiency	70	20	10
Security Concerns	65	25	10

TABLE 4.2
Benefits of AI and ML in Finance

Benefits	Number of Respondents	Percentage (%)
Better Risk Prediction	40	40%
Faster Decision Making	30	30%
Reduced Human Error	20	20%
Cost Reduction	10	10%
Total	**100**	**100%**

TABLE 4.3
Challenges in Using AI and ML in Finance

Challenges	Respondents	Percentage (%)
Data Security Issues	35	35%
High Implementation Cost	25	25%
Lack of Skilled Staff	20	20%
Ethical Issues	10	10%
Model Transparency Issues	10	10%
Total	**100**	**100%**

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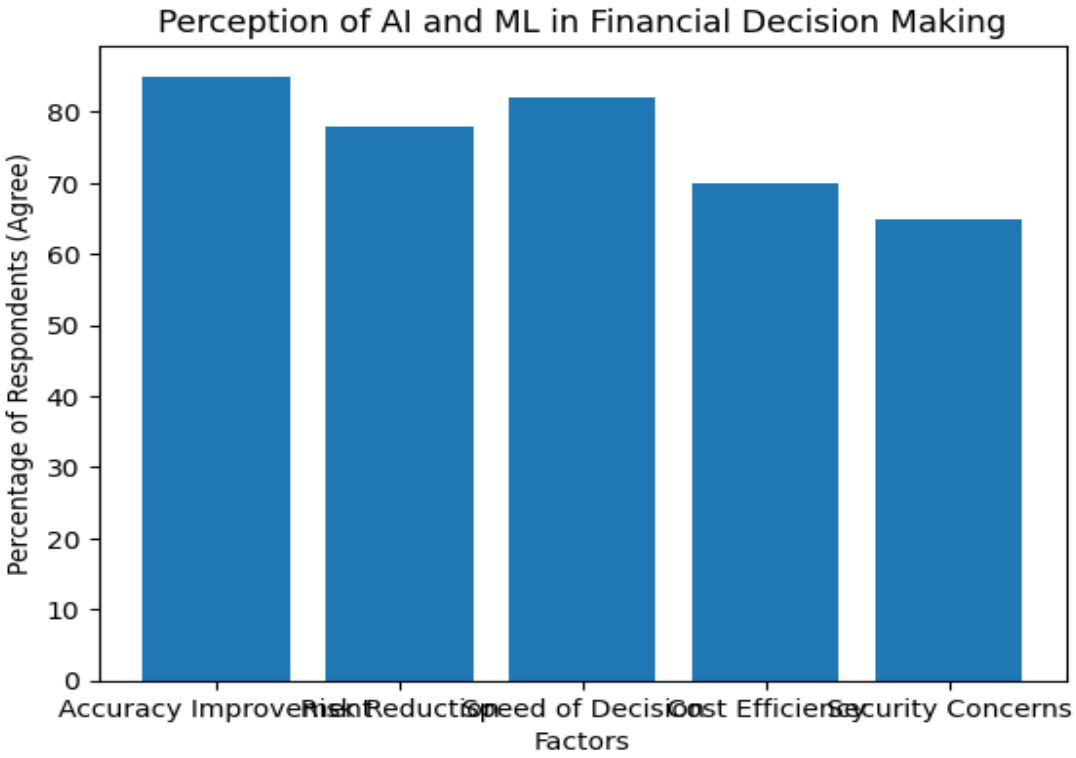

Advantages of AI and ML in Finance

- High accuracy in financial forecasting
- Faster and automated decision-making
- Reduction in human bias and errors
- Improved risk management
- Cost reduction and operational efficiency
- Enhanced profitability and competitiveness

Challenges and Limitations

Despite its benefits, AI adoption in finance faces several challenges:

- Data privacy and security risks
- Ethical issues and algorithmic bias
- Lack of transparency in AI models
- High implementation and maintenance costs
- Requirement for skilled professionals and infrastructure

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Findings of the Study

- AI and ML significantly enhance financial risk prediction accuracy.
- AI-driven investment models provide better performance compared to traditional methods.
- Automation reduces human emotional influence in investment decisions.
- Regulatory and ethical concerns remain major barriers.
- Financial institutions are increasingly investing in AI technologies.

Suggestions of the study

- **Financial institutions should invest in AI infrastructure and training** to effectively implement AI and ML models in risk management and investment processes.
- **Regulatory authorities should establish clear guidelines and policies** to ensure ethical and responsible use of AI in financial decision-making.
- **Organizations should adopt explainable AI models** to improve transparency and build trust among stakeholders, investors, and regulators.
- **Data security and privacy measures must be strengthened** to protect sensitive financial and customer information from cyber threats.
- **Financial professionals should be trained in AI and data analytics** to improve their understanding and effective use of advanced technologies.
- **Companies should integrate AI with traditional financial models** to enhance accuracy and reduce dependency on a single system.
- **Continuous monitoring and evaluation of AI systems** should be conducted to ensure reliability, accuracy, and fairness in decision-making.
- **Collaboration between technology experts and financial managers** should be encouraged to improve AI-driven financial strategies and risk management practices.

CONCLUSION

The present study examined the role of Artificial Intelligence and Machine Learning in financial risk assessment and investment decision-making. The findings indicate that AI and ML technologies have significantly improved the accuracy, speed, and efficiency of financial analysis compared to traditional methods. These technologies help financial institutions predict risks, detect fraud, optimize portfolios, and support strategic investment decisions. The study also revealed that AI-driven models reduce human bias and errors, leading to better financial performance and more reliable decision-making processes. However, the research identified several challenges such as data privacy concerns, ethical issues, lack of transparency in AI algorithms, and high implementation costs. These challenges may hinder the widespread adoption of AI in the financial sector if not properly addressed.

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Overall, the study concludes that Artificial Intelligence and Machine Learning have a transformative impact on the financial industry and will play a crucial role in future financial management practices. With proper regulatory frameworks, skilled professionals, and secure data systems, AI and ML can enhance financial risk management and investment decision-making, contributing to sustainable growth and competitiveness in the financial sector.

REFERENCES

- Kotler, P., & Keller, K. L. (2021). *Marketing Management* (16th ed.). Pearson Education.
- Schiffman, L. G., & Kanuk, L. L. (2020). *Consumer Behaviour* (12th ed.). Pearson.
- Armstrong, G., Kotler, P., Harker, M., & Brennan, R. (2020). *Marketing: An Introduction* (14th ed.). Pearson.
- Kumar, V., & Reinartz, W. (2021). *Customer Relationship Management: Concept, Strategy, and Tools* (3rd ed.). Springer.
- Homburg, C., Jozić, D., & Kuehnl, C. (2020). Customer experience management: Toward implementing an evolving marketing concept. *Journal of the Academy of Marketing Science*, 48(1), 135–160.
- Dwivedi, Y. K., et al. (2021). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges and opportunities. *International Journal of Information Management*, 57, 102263.
- Solomon, M. R. (2020). *Consumer Behaviour: Buying, Having, and Being* (13th ed.). Pearson.
- Chaffey, D., & Ellis-Chadwick, F. (2020). *Digital Marketing: Strategy, Implementation and Practice* (7th ed.). Pearson.
- Ladhari, R., & Tchetgna, N. M. (2021). The influence of personal values on customer satisfaction and loyalty. *Journal of Retailing and Consumer Services*, 59, 102430.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2020). *Multivariate Data Analysis* (8th ed.). Cengage Learning.