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# Artificial Intelligence in Financial Decision Making

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## **Abstract-**

Artificial Intelligence (AI) has rapidly transformed the landscape of financial decision-making by introducing advanced data analytics, automation, and predictive intelligence into traditional financial systems. This study examines the role of AI in enhancing the efficiency, accuracy, and reliability of financial decisions across key domains such as investment analysis, credit risk assessment, fraud detection, and portfolio management. The research is based on secondary data collected from academic journals, industry reports, and financial databases, and adopts a descriptive and analytical methodology to evaluate the impact of AI-driven tools and techniques.

The findings reveal that AI significantly improves decision-making by processing large volumes of structured and unstructured data in real time, identifying complex patterns, and generating actionable insights that are often beyond human analytical capabilities. AI-based models, particularly machine learning algorithms, have demonstrated superior performance in forecasting market trends, optimizing investment portfolios, and minimizing financial risks. Additionally, AI contributes to cost reduction, operational efficiency, and financial inclusion by enabling faster and more accessible financial services.

However, the study also highlights several challenges associated with AI adoption, including data privacy concerns, algorithmic bias, lack of transparency in decision-making processes, and regulatory constraints. These limitations emphasize the need for ethical AI practices and robust governance frameworks. Furthermore, the research underscores the continued importance of human judgment and financial literacy in interpreting AI-generated outputs and ensuring balanced decision-making.

The study concludes that while AI serves as a powerful tool in financial decision-making, its effectiveness depends on the integration of technological capabilities with human expertise. A hybrid approach combining AI-driven insights with professional judgment is essential for achieving sustainable and reliable financial outcomes in the evolving digital economy.

**Keywords:** Artificial Intelligence, Financial Decision-Making, Machine Learning, Predictive Analytics, Risk Management, Financial Technology

## I. INTRODUCTION

The financial sector has undergone significant transformation with the integration of Artificial Intelligence (AI). Traditionally, financial decision-making relied on human judgment, historical data, and statistical tools. However, the increasing complexity of financial markets and the availability of big data have necessitated advanced analytical tools. In recent years, the financial sector has witnessed significant disruptions and rapid technological advancements, prominently driven by the integration of artificial intelligence (AI) (1). AI technologies, characterized by machine learning, deep learning, natural language processing, and cognitive computing, have fundamentally altered traditional financial decision-making paradigms.

AI enables financial institutions and individuals to make informed decisions by processing vast amounts of structured and unstructured data in real time. Technologies such as machine learning, natural language processing, and predictive analytics are now widely used in banking, investment, and financial planning.

AI not only improves efficiency but also enhances the quality of financial decisions by reducing human errors and biases.



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Studies indicate that AI-driven systems can improve credit scoring accuracy and reduce loan approval time significantly, making financial services more inclusive and efficient .

This paper aims to provide a comprehensive examination of AI's role in enhancing financial decision-making processes, analyzing current applications, evaluating benefits and challenges, and exploring future developments in this rapidly changing field.

### **II. OBJECTIVES OF THE STUDY**

To analyze the role of AI in financial decision-making

To examine the applications of AI in finance

To evaluate the benefits and challenges of AI adoption

To assess the future scope of AI in financial decisions

### **III. RESEARCH METHODOLOGY**

This study is based on secondary data, collected from:

Research journals

Published articles

Reports from financial institutions

The research adopts a descriptive and analytical approach to understand AI's role in financial decision-making.

### **IV. APPLICATIONS OF AI IN FINANCIAL DECISION MAKING**

The following given shows the various applications of Artificial Intelligence which helps in the financial decision making :

#### **Investment Decision Making**

AI helps investors analyze market trends, predict stock prices, and optimize portfolios. Machine learning models enable Algorithmic trading, Portfolio optimization and Market sentiment analysis. AI improves investment strategies by identifying hidden patterns in financial data. AI helps investor in taking decision regarding investment in a best option.

#### **Credit Risk Assessment**

AI enhances credit scoring by analyzing borrower behavior, transaction history, and alternative data sources, which helps in Faster loan approvals, Improved risk prediction and Reduced default rates.

#### **Fraud Detection**

AI helps to detects fraudulent transactions in real time by identifying anomalies in financial data, which Reduces financial losses, Enhances security, Builds customer trust.

#### **Risk Management**

AI supports real-time risk assessment by analyzing market conditions and financial indicator which helps in Predicting financial risks, Enhances decision accuracy and also Enables proactive strategies.

#### **Robo-Advisory Services**

AI-powered robo-advisors provide personalized financial advice based on ,Risk tolerance, Financial goals, Investment behavior. These systems improve accessibility and reduce advisory costs. Organisations now no longer need to hire any expert advisor fir the advisory services for finance related decisions.

### **V. BENEFITS OF AI IN FINANCIAL DECISION MAKING**

#### **Improved Accuracy**

AI reduces human errors and enhances decision precision through data-driven analysis because of which the data which AI gives are yru and accurate which reduces the chances of any errors.

#### **Speed and Efficiency**

As the work done by AI so there is no paper work or any manual work to be done by human, which reduces the delay of work .AI processes large datasets quickly, enabling real-time decision-making.

#### **Cost Reduction**

Automation reduces operational costs in financial institutions. As the work done by machine so iit become more flexible and smooth and reduces extra operational cost for the organisation.



Financial institutions traditionally incur high costs in areas such as data processing, customer service, and risk assessment. AI helps in Automating back-office operations, Reducing dependency on manual labor, Minimizing administrative expenses.

#### **Better Predictive Capabilities**

AI models outperform traditional statistical models in forecasting financial trends. These predictive capabilities allow investors and financial managers to develop effective strategies and make informed decisions. Compared to traditional statistical models, AI provides more accurate and dynamic predictions.

### **VI. CHALLENGES AND LIMITATIONS**

While Artificial Intelligence (AI) offers numerous advantages in financial decision-making, its adoption is accompanied by several critical challenges and limitations. These challenges arise from technological, ethical, regulatory, and operational dimensions, which must be carefully addressed to ensure effective and responsible use of AI in finance.

The following given below shows the different challenges faced by an organisation by using AI in financial decision making :

#### **Data Privacy Issues**

AI systems rely heavily on large volumes of sensitive financial and personal data. This raises serious concerns regarding data privacy and protection. Financial institutions collect data such as transaction history, credit information, and personal identification details, which, if mishandled, can lead to Data breaches and cyberattacks, Unauthorized access to confidential information, Misuse of personal financial data.

#### **Algorithmic Bias**

AI systems are trained on historical data, which may contain inherent biases. As a result, AI models can unintentionally perpetuate or even amplify these biases in financial decision-making.

#### **Lack of Transparency**

Many AI models, especially deep learning algorithms, operate as “black boxes,” meaning their decision-making processes are not easily understandable.

This lack of transparency creates several issues like Difficulty in explaining financial decisions to customers, Lack of accountability in case of errors, Challenges in regulatory compliance. In financial sectors where trust and accountability are critical, the inability to interpret AI decisions can limit its acceptance and adoption.

#### **Over-Reliance on Technology**

Excessive dependence on AI can lead to poor decision-making if models are flawed. Recent reports highlight that AI may sometimes provide inaccurate financial advice and lacks contextual judgment.

#### **Regulatory Challenges**

The rapid development of AI has outpaced existing regulatory frameworks. Financial institutions face uncertainty regarding Compliance with financial regulations, Legal responsibility for AI-driven decisions, Standardization of AI practices. Different countries have varying regulations, making it difficult for global financial institutions to implement uniform AI systems. The absence of clear legal guidelines can hinder innovation and adoption.

### **VII. FUTURE SCOPE OF AI IN FINANCE:**

The future of AI in financial decision-making includes:

Advanced predictive analytics

Explainable AI (XAI)

Integration with blockchain

Autonomous financial systems

Financial institutions are increasingly adopting AI as a strategic tool for innovation and competitiveness.



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### VIII. CONCLUSIONS:

The integration of Artificial Intelligence (AI) into financial decision-making represents a significant shift from traditional, judgment-based approaches to more data-driven, analytical, and automated systems. This study has comprehensively examined the role of AI across key financial domains, including investment analysis, credit risk assessment, fraud detection, and risk management. The findings clearly indicate that AI has enhanced the overall quality, speed, and reliability of financial decisions by leveraging advanced technologies such as machine learning, predictive analytics, and natural language processing.

One of the most important conclusions drawn from this study is that AI significantly improves decision accuracy by minimizing human errors and biases while efficiently processing large volumes of complex financial data. Its ability to provide real-time insights and predictive forecasts enables financial institutions and investors to respond quickly to dynamic market conditions. Additionally, AI contributes to cost reduction, operational efficiency, and broader financial inclusion by making financial services more accessible and affordable.

However, the study also reveals that the adoption of AI is not without challenges. Issues such as data privacy concerns, algorithmic bias, lack of transparency, regulatory uncertainty, and cyber security risks continue to pose significant barriers. These challenges highlight that AI, despite its advanced capabilities, cannot function as a completely autonomous decision-maker in the financial domain. Instead, it should be viewed as a supportive tool that enhances, rather than replaces, human judgment. In conclusion, Artificial Intelligence has emerged as a powerful and transformative tool in financial decision-making, offering numerous benefits in terms of accuracy, efficiency, and predictive capability. However, its long-term success depends on addressing existing challenges, ensuring ethical implementation, and maintaining an appropriate balance between

automation and human intervention. The future of financial decision-making lies in the effective collaboration between AI systems and human expertise, which will drive innovation, enhance financial stability, and promote inclusive economic growth.

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