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A STUDY OF LITERATURE ON ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN INVESTMENT DECISION MAKING FOR RETAIL INVESTORS

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ABSTRACT
Traditionally, there was not much awareness related to investments. Whatever little awareness was, there was high dependence on financial advisors, banks, manual expertise from limited sources of information, which led towards having biases in decision making related to investments. In the recent times the technological advancements in Machine Learning (ML), Natural Language Processing (NLP), robo-advisory platforms have given access to a number of investment tools. Artificial Intelligence (AI) has transformed the functioning of financial markets, the modes of accessibility, emergence of digital payment system enhancing the knowledge tools and management skills related investments.

In this study, a literature review of the published data in the last five years has been considered. The earlier studies reflect the evolution of AI and its utility to enhance the quality and experience of taking investment decisions. These studies also highlight that in the light of emergence of new technology such as AI, it is also being considered for analyzing the application-based platforms, benefits and challenges associated with it. For this paper, the study focusses on the role of AI in helping the retail investors to take quality decisions by using the application-based financial services, the benefits and challenges associated with it. This study tries to gauge the research gap related to the risk factors and also trying to understand and measure the risk elements such as lack of transparency, algorithmic bias and overdependence on automation of systems. The findings suggest that AI is providing higher accessibility, personalized interactions, efficiency and risk management, but also throws light on the ethical aspect, regulatory concerns and privacy issues embedded in this process. The study makes a conclusion that human and machine should go hand in hand i.e. be available in a hybrid mode to adapt sustainably and benefit more but by keeping safe themselves and their investment.

Keywords: *Artificial intelligence, retail investors, investment decision making, robo-advisors*

1. INTRODUCTION
Retail investors today operate in investment environments marked by heightened market volatility, overwhelming volumes of financial data, and the rapid spread of information across digital platforms. These conditions can make informed decision making challenging, particularly for individuals without advanced financial expertise. As a powerful tool, the emergence of Artificial Intelligence (AI), to address these challenges by automating data processing, detecting complex patterns, and producing predictive insights that support more informed investment choices. Technologies such as robo-advisors, algorithmic trading systems, and sentiment analysis models have lowered barriers to entry by providing retail investors with access to sophisticated analytical capabilities once reserved for institutional investors (RetailInvestor.org, 2024). As a result, AI has contributed to greater efficiency, personalization, and speed in investment decision making. Nevertheless, the growing reliance on AI also introduces significant concerns. Issues related to algorithmic transparency, data bias, accountability, and ethical governance can undermine investor trust and raise regulatory challenges (Ontario Securities Commission [OSC], 2020). This paper examines the role of AI in shaping retail investors' decision-making processes, highlighting both its transformative potential and the risks that must be carefully managed.

2. RESEARCH OBJECTIVES:
1. To review the literature on Artificial Intelligence (AI) associated with Investment Decision Making
2. To enumerate the benefits and challenges associated with AI-driven investment tools.
3. To give suggestions about use of Artificial Intelligence (AI) driven tools associated with Investment Decision Making to retail investors.

3. LITERATURE REVIEW:
1. Joshi (2025) examines the application of GPT-powered generative AI frameworks within financial institutions to enhance market intelligence and decision-making. The study highlights how GPT models enable data-driven financial analysis by improving accuracy, scalability, and cost efficiency. By leveraging large-scale datasets, these frameworks support high-domain performance and assist institutions in strategic decision-making, risk assessment, and market forecasting. The findings suggest that GPT-based systems offer significant operational advantages while facilitating scalable adoption across financial services.

2. Joshi (2025) examines the AI skills gap in the financial services workforce, highlighting the role of targeted training and digital inclusion. The study finds that generative and agentic AI improve productivity and decision-making while reducing manual tasks. However, comprehensive upskilling, especially for senior staff and older employees, is essential to ensure inclusive and sustainable AI integration.
3. Joshi (2025) reviews generative AI agent frameworks in finance, investments, and risk management, focusing on multi-agent systems and real-world applications in trading and portfolio analytics. The study finds that GenAI agents enhance productivity and decision accuracy in complex tasks. However, challenges related to workforce upskilling, explainability, regulation, standardized architectures, and hybrid human–AI workflows remain critical for responsible adoption.
4. Singh and Beri (2025) analyze AI integration in financial services, highlighting opportunities in risk management, fraud detection, investment optimization, customer service, and compliance. The study finds AI improves decision-making efficiency and customer experience. However, sustainable adoption depends on strong data security, regulatory compliance, transparency, and ethical AI governance across global financial institutions.
5. Taylor (2025) reviews AI agent frameworks and their contribution to financial stability across global financial systems. The study finds that multi-agent architectures enhance automation, decision accuracy, and operational efficiency while lowering costs. However, sustainable adoption requires standardized architectures, transparency, regulatory compliance, and hybrid human–AI governance to ensure accountability and resilience in financial services.
6. Chugh and Deshpande (2025) explore agentic artificial intelligence in financial services, emphasizing autonomous decision-making through multi-agent systems. The study highlights applications in fraud detection, portfolio management, risk assessment, and regulatory compliance. While agentic AI improves efficiency, adaptability, and automation, concerns regarding bias, explainability, data quality, regulatory uncertainty, and systemic risk underline the need for strong governance, explainable frameworks, and human-in-the-loop oversight.
7. Ahirwar and Rawat (2025) investigate the role of artificial intelligence in financial investment decision-making within the Indian context, using a mixed-methods research approach. The study examines strategic AI applications in portfolio optimization, risk management, and market forecasting. The findings demonstrate that AI-driven models significantly enhance investment efficiency and analytical accuracy. However, the authors highlight persistent challenges related to model transparency, data quality, and regulatory compliance. The study emphasizes the need for robust governance frameworks and sustained human oversight to ensure responsible AI adoption in financial investment practices.
8. Nair and Joshi (2025) examine the role of artificial intelligence in financial decision-making, with empirical evidence from India and implications for global markets. The study finds that AI enhances the speed, accuracy, and objectivity of financial analysis across risk assessment, trading, portfolio management, and fraud detection. However, challenges related to transparency, data privacy, regulatory compliance, and systemic risk underscore the need for ethical AI deployment and strong governance frameworks.
9. Jagtap (2025) analyzes the impact of AI-driven tools on investment decisions of self-directed investors in India. The study reports high awareness and usage of AI tools, leading to reduced decision errors, improved analytical efficiency, stronger risk management, and better portfolio optimization. However, awareness gaps persist among certain investor groups, highlighting the need for targeted investor education to fully realize the benefits of AI-based investment decision-making.
10. Kumar (2025) explores the role of AI agents in personal finance management, focusing on automated budgeting, expense tracking, and personalized investment advice. Using multi-agent frameworks and generative AI, the study finds improved accuracy and efficiency in financial planning through automation and tailored insights. However, ethical concerns related to data privacy and transparency highlight the need for responsible governance and explainable AI in personal finance systems.
11. Kan and Manzoor (2025) examine investor perceptions and adoption of AI-based tools in Indian equity markets using technology acceptance and behavioral finance frameworks. The study finds occupation-linked differences in AI awareness and perceived benefits such as bias reduction and real-time analysis. However, privacy and oversight concerns limit adoption, highlighting the need for transparency, investor education, and regulatory safeguards.

12. Singh, Kumar, and Kumari (2025) investigate how artificial intelligence influences investment decisions of individual investors in India using a survey-based approach. The study finds widespread use of AI tools, particularly robo-advisors, improving strategy formulation and analytical efficiency. However, mixed trust levels among investors highlight the need for human oversight, transparent systems, investor education, and user-friendly AI platforms to support responsible adoption in emerging markets.
13. Singh, Shri, Rathi, and Shah (2025) analyze the application of artificial intelligence and machine learning in Indian equity markets, focusing on the BSE and NSE. The study finds that AI-driven trading, portfolio optimization, and sentiment analysis enhance performance and efficiency. However, risks from overautomation, overfitting, volatility, and regulatory constraints highlight the need for a hybrid human–AI approach to ensure transparency, resilience, and responsible adoption.
14. Nair (2024) explores how artificial intelligence enhances investment strategies and portfolio management in global financial markets, focusing on applications in investment analysis, asset allocation, rebalancing, execution, and risk management. The study finds that machine learning improves forecasting accuracy and portfolio efficiency but faces challenges related to data quality, interpretability, and regulation, underscoring the need for explainable AI, ethical governance, human oversight, and future integration with quantum computing and blockchain.
15. Hauptman (2024) examines AI adoption in investment markets, emphasizing U.S. regulatory contexts with global relevance. While AI improves investor access, efficiency, and compliance, it also introduces risks such as bias, AI washing, data vulnerabilities, privacy concerns, and systemic threats, highlighting the need for strong regulation, transparency, and oversight.
16. Chen, Honarvar, and Lohre (2023) review AI applications in investment management, covering asset pricing, risk prediction, trading, sentiment, ESG analysis, and portfolio decisions. AI enhances productivity and pattern recognition but remains constrained by data quality, interpretability, and inability to manage extreme market events without human judgment.
17. Sifat (2023) analyzes the influence of artificial intelligence on retail investing in developed markets, focusing on market efficiency, portfolio management, governance, and ethics. The study finds that rapid AI-driven algorithms increase information asymmetry and investor risk, challenging traditional theories, and advocates regulatory sandboxes, ethical oversight, enhanced disclosures, and financial literacy to protect retail investors.
18. Ontario Securities Commission (2020) investigates AI use in retail investing through experimental analysis of robo-advice, personalization, nudging, and algorithmic tools. While AI improves investor access and decision efficiency, it also poses risks of manipulation, conflicts of interest, and opacity, underscoring the need for robust regulatory oversight globally.

4. RESEARCH GAP:

Although AI in finance has been widely studied, existing literature largely focuses on institutional investors and algorithmic trading firms. Limited research examines how institutional and retail investors are adopting and interpreting AI for investment decision making with the recommendations, managing trust in automated systems, and balancing AI insights with personal judgment, comparative studies on fully automated versus hybrid human–AI investment approaches.

5. RESEARCH METHODOLOGY:

The study adopts a descriptive research design and is based entirely on secondary data sources from last five years only. It employs a systematic literature review methodology, drawing on academic journals, books, research studies, industry reports, websites, and other relevant publications to examine the application and effects of AI-enabled investment tools.

6. FINDINGS FROM REVIEWED LITERATURE:

1. Artificial intelligence significantly enhances financial and investment decision-making accuracy.
2. AI reduces human cognitive and behavioral biases in investment decisions.
3. AI adoption leads to substantial gains in operational efficiency and productivity.
4. Personalized and automated investment advisory services are a major outcome of AI integration.
5. AI strengthens risk management and regulatory monitoring capabilities.
6. Agentic AI and multi-agent frameworks represent an emerging paradigm in financial decision-making.

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7. Human–AI collaboration is consistently favored over full automation.
8. Lack of explainability remains a critical barrier to AI adoption in finance.
9. Algorithmic bias and ethical risks are persistent challenges.
10. Regulatory and governance frameworks have not kept pace with AI innovation.
11. Over-reliance on AI poses systemic and market-level risks.
12. Data quality, privacy, and cybersecurity risks significantly influence AI effectiveness.
1. Workforce skill gaps constrain effective AI implementation.
2. AI improves financial inclusion but also creates new disparities.
3. Responsible AI governance is essential for sustainable value creation.

7. BENEFITS OF AI IN INVESTMENT DECISION MAKING:

1. AI models process vast structured and unstructured datasets to uncover complex patterns, enhancing Improved Decision-Making Accuracy portfolio allocation, credit risk, fraud detection, and market prediction.
2. Automation of repetitive financial tasks enhances Operational Efficiency and Cost Reduction
3. AI-powered robo-advisors and agents provide personalized investment strategies tailored to investor risk profiles and financial goals and Accessibility to sophisticated financial advice for retail and small investors.
4. AI improves detection of fraud, credit risk, market anomalies, and systematic risks enhancing Risk Management and Compliance through automated surveillance.
5. AI-driven insights support better Strategic and Competitive Advantage
6. Augmentation of Human Expertise in collaboration, not replacement.

8. Challenges of AI in Investment Decision Making:

1. Black-box models Lack Explainability making it difficult to understand or justify AI-driven decisions.
2. AI systems can amplify Algorithmic Bias and raise Ethical Concerns.
3. Existing struggle to keep pace with AI innovation. Regulatory and Compliances.
4. AI performance depends heavily on data accuracy, relevance, and timeliness Data Quality and Security Risks such as cybersecurity threats and data privacy breaches.
5. Over-Reliance on Automation and on AI may reduce human oversight and critical judgment.
6. Workforce and Financial professionals need upskilling and reskilling and reduce the Gap.
7. Agentic AI and high-frequency trading can amplify systemic risk and Market-Level Risks.

9. Suggestions to Aid Retail Investors in Using AI for Investment Decision-Making

1. Improve AI Literacy and Financial Education
2. Mandate Explainable AI (XAI) for Retail Tools
3. Promote Human–AI Hybrid Advisory Models
4. Standardize Disclosures for AI-Based Investment Products
5. Strengthen Regulatory Oversight and Investor Protection
6. Encourage Personalized Risk Profiling and Safeguards
7. Enhance Data Privacy and Cybersecurity Protections
8. Develop Independent AI Rating and Certification Systems
9. Introduce Investor-Friendly AI Interfaces
10. Foster Ethical AI and Responsible Innovation

10. CONCLUSION:

In conclusion, while artificial intelligence holds substantial promise for enhancing efficiency, accuracy, and inclusivity in financial decision-making, its long-term value depends on responsible implementation. Sustainable AI adoption in finance requires transparent and explainable models, strong ethical and regulatory governance, continuous human oversight, and investment in human capital. Future research is encouraged to focus on empirically evaluating hybrid decision-making frameworks, developing standardized evaluation metrics for agentic AI systems, and exploring regulatory models that balance innovation with financial stability. Importantly AI should not be viewed as a replacement for human judgment but rather as a complementary decision-support system.

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