International Journal of Advanced Technology & Engineering Research (IJATER)
www.ijater.com

A STUDY ON IMPACT OF ARTIFICIAL INTELLIGENCE ON FINANCIAL DECISION MAKING IN INDIA

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Abstract:

Artificial Intelligence (AI) has transformed financial decision-making worldwide, including in India. The adoption of AI-based technologies like machine learning, predictive analytics, and big data has massively improved the speed, accuracy, and efficiency of financial processes. AI applications are now deeply embedded in banking, investment, risk assessment, fraud detection, and financial planning, providing data-informed insights and automation that were not possible before.

In the Indian financial sector, AI implementation has been increasing because of rising digitization, government initiatives, and development in financial technology (FinTech). In a report by NITI Aayog, financial solutions powered by AI have the potential to add a projected $1 trillion to India's economy by 2035. Also, as per a survey by the Reserve Bank of India (RBI), more than 75% of Indian banks have already implemented AI-powered risk assessment tools to support decision-making and regulatory compliance.

This research paper discusses the revolutionary impact of AI on financial decision-making in India. It discusses how AI-based financial solutions enhance decision-making effectiveness, risk evaluation accuracy, and customer satisfaction while also considering issues like ethical issues, data security threats, and regulatory challenges. Based on secondary data sources, the study presents an analysis of the present and future impacts of AI in India's financial sector.

Key Words: Artificial Intelligence, Financial Decision, Machine Learning, Risk Management, Fraud Detection.

Introduction:

Decision-making in the financial domain is a part that is mostly involved in the growth of an economy, affecting individuals, companies, and government policies. In the past, decisions on finance were made by people through their expertise, past experiences, and classical statistical models, however, the methods that were used were good but there were challenges in the processing of a huge amount of data immediately and steadily. Nevertheless, due to the drastic improvements in the field of Artificial Intelligence (AI), the financial sector has been changed significantly, aiming in the direction of data-driven, automated, and predictive decision-making processes.

The power of AI algorithms has empowered financial institutions to conduct live analysis of big datasets, find regularities in them, and make resolute decisions with very little human interference. Consequently, this shift of the responsibilities has boosted the risk management process and has been effective in reducing the number of frauds, designing investments and customer service automation. In India, the AI acceptance of financial technologies has been stepped up by the development of electronics, the growth of fintech startups, and the encouragement the authorities give to technology-driven financial inclusion.[6] AI-based solutions in the form of machine-learning models, predictive analytics, and natural language processing have become common in decision-making that aims at improving efficiency, stipulating resources, and financial accessibility for both sectors: business and people. As AI continues to develop, its role in financial decision-making is anticipated to be more prominent over time such that it will actually dictate the future landscape of India's economy.

India is one of the fastest growing intermediate economies and has rapidly stepped into the domain of finance with the help of AI. The use of AI-powered algorithms is increasing in the areas of banking, investment management, credit risk assessment, fraud detection, and financial forecasting. The use of AI-driven technologies and their integration into the financial industry have really helped improve the accuracy and effectiveness of financial decision-making, thus enabling real-time analysis of complex data and making predictive modeling more manageable for the risk management of the best quality.

According to a report by NASSCOM, the Indian AI market is estimated to grow to $7.8 billion by 2025, which will be mainly driven by financial services. Apart from that, AI-driven automation in the banking and investment industry is the cause for the 20-30% cut in operational costs for leading lenders in India. A PwC study estimates that AI in India can make a contribution of up to $957 billion towards the economy by 2035, financial sector being the largest driving force for this economic transformation.[5] The wide acceptance of AI is being accelerated by the Indian fintech ecosystem's growth, regulatory initiatives that promote digital banking, and the growing consumer demand for personalized financial products.

This paper seeks to look at the revolutionary potential of AI in financial decision-making in India. This study considers the ways in which AI-enabled financial services facilitate the functioning of the financial sector through the fast

performance, correctness, and appoints were mentioned as potential challenges: among them are ethical issues, data security threats, and regulatory compliance processes. Through the analysis of auxiliary data sources, this study would give a perspective on the introduction of AI in the financial landscape of India and its consequent envisions. Conversely, this work focuses only on secondary data.

Literature Review:

Khandelwal, Parth and Suryawanshi, Vikas Kumar (2022) in their research work they identified accuracy, innovation & enhanced efficiency as major opportunities of AI in financial decision making. On the other hand, ethical dilemmas, algorithmic biases and regulatory complexities as major challenges. They suggested training of financial professionals & involvement of industry participant to enhance the role of AI in financial decision making.[11]

Gupta, Shipra (2021) she reviewed various research works published and conclude that post integration of Artificial Intelligence in financial sector accounting & financial decision making has completely transformed. AI has empowered financial professional to make a well-informed decision by optimizing outcomes & utilizing the availability of data to its fullest.[12]

Patel, S. and Desai, R. (2020) delve into the role of artificial intelligence (AI) as a part of algorithmic trading, dissecting its progress and significance in the financial markets. The research work points out the influence of AI-driven trading on the financial markets such as mean-reversion, trend-following, and machine learning-based methods in the search for good prices, helping the trading of inventory and ordering all over the market.[7]

Smith, A. and Jones, B. (2018), They concentrate on the examination of advanced AI technologies with respect to market liquidity and automation of trading. They track the development of cleverly programmed algorithms such as the example of high-frequency trading and AI-powered trading techniques and their consequences for the state of the art in financial trading, price discovery, market efficiency, and liquidity provision.[10]

Sharma, S, and Gupta, A, (2018), on the other hand they, looked at AI generated algorithmic pricing strategies in financial markets and e-commerce. Their investigation mainly focuses on the techniques of revenue optimization, which includes effective pricing strategies through competition and dynamic models of pricing based on AI which really are the disruptive, potential good and bad of these technologies. They assert that AI technologies are capable of causing significant changes in consumer welfare and market competition. Moreover, the research covers AI's involvement in credit risk assessment by examining the efficacy of machine learning algorithms in credit scoring models and the increased accuracy in the prediction of default risks.[9]

Jones, C. et al (2019) Jones audits AI application in risk management and regulatory compliance. Their study spotlights on what AI-driven technologies do to financial crime detection, automate compliance processes, and enhance regulatory transparency and accountability within the financial sphere.[8].

Research Objective:

- To examine how AI might improve India's financial decision-making procedures.
- To investigate how AI is affecting financial planning, risk management, banking, and investments.
- To determine the main obstacles preventing the use of AI in financial decision-making.
- To examine the advantages and prospects of financial solutions powered by AI.

Research Methodology:

The research was carried out by systematically studying literature that includes academic journals, industry reports, and government publications in order to examine the influence of AI on financial decision-making in India. The research holds a qualitative research approach using the data from the given sources to draw the key results. This study is based exclusively on secondary data. A systematic review of literature, including academic journals, industry reports, and government publications, was conducted to assess AI's impact on financial decision-making in India. The study follows a qualitative research approach to synthesize insights from existing sources.

The study relies on published research papers, reports from financial institutions, RBI guidelines, and AI implementation case studies in India. Data sources include peer-reviewed journals, reports from consulting firms (such as PwC and McKinsey), and publications from financial regulatory bodies.

Impact of AI in Financial Decision Making in India:

- **AI in Banking and Credit Assessment:** The introduction of AI in small and large banks in India has greatly influenced the credit risk function leading to the reduction of fraud, automated customer service, sales and the creation of space for new and innovative products. The process has evolved over many years and has resulted in human-like mimicking technologies such as machine learning and robotics that are now being used by financial institutions in: real-time transaction decisions, automating back-office, and improved compliance. Machine Learning Techniques like; the use of customer financial transaction types and other unstructured or raw data can be employed for the success of this move. It is important to mention the success in automating and consumer-facing tasks such as contract and invoice verifications and evaluations. Moreover,

customer service should be on another level, delivering personalized banking services, while keeping employees motivated, engaged, smart, and efficient in their work.

A report by the Reserve Bank of India (RBI) finds that AI-driven fraud detection systems have contributed to a 30% decrease in banking fraud since the last 5 years. Plus, automated credit scoring has helped the small business loan market to grow by 25% and to maintain the lower default rates.[3]

- **AI in Investment and Wealth Management:** One of the ways that Robo-advisers develop and give personal investment ideas is through the analysis of the trends of the market and the risk profile of each individual. The use of goal-based wealth advisory processes done through robo-advisors has been proven as efficient and valid.[2] The results of an experiment carried out by Hanson and Kikuchi in the University of New South Wales on Facebook advertising of weather forecasts indicate that material with humor is more likely to sell. In the field of financial market data processing, AI technology is of great importance and can be materialized in various disruptive applications as forecasting market prices, transaction data analytics, personal finance management, trade processing etc. At present, the two major practical applications of AI in finance are chatbots and data-driven advice and both have a massive impact on operations, people, and products.

- **AI in Risk Management:** The next-level technology like AI/ML is permitting the financial sector to get systemic and comprehensive insights into risk in various areas such as stress testing, fraud detection, and credit card default prediction.[3] In response, banks have embraced fintech's as partners in respective technological revolutions, granted them access to customer data, and entered into other strategic joint deals. The AI models alongside the use of other technologies like Blockchain cryptography, encryption, and post-quantum cryptography would enable the prevention of cyber threats that correspond to a threat category such as Ransomware. The internet has made life more convenient and facilitated more access to digital or online platforms for the purchase of products and services as well as money transfers.

- **AI in Financial Planning and Forecasting:** AI is the technology we apply in the business of financial forecasting by evaluating factors such as economic indicators, market conditions, and consumer behavior. Some businesses are equipped with artificial intelligence for the purpose of analyzing and managing the budget, cash flow, and capital allocation in an optimal way.

Predictive analytics from AI is what financial institutions get their power to predict the upcoming market conditions and being able to change their strategies. Within personal finance, AI-based apps for budgeting services in real-time are those that offer the feature of tracking actual expenses and goal-specific saving plans for the individuals.[1]

Opportunities of AI in Financial Decision Making:

- **Enhanced Efficiency and Accuracy:** AI reduces the human errors, financial operations are streamlined, and decision-making is made faster. Automated workflows and AI-driven data analysis boost operational efficiency in banking, investing, and financial advisory.
- **Increased Financial Inclusion:** AI tools help financial institutions to approve loans for people who have been turned down based on credit scores, but have shown they are responsible borrowers in the past using alternative data sources. To achieve inclusion in the unbanked and underbanked sectors, AI technology takes advantage of the other ways of getting money to capital such as mobile phones and utility bill payments.[4]
- **Cost Reduction:** The operation of automation is the process that impacts how much money banks and investment firms save and allows them to offer more affordable financing instruments. The use of AI-supported digital chatbots and virtual assistants greatly involves humans in customer service matters which later leads to lower costs.
- **Real-Time Decision Making:** AI does the instant analysis of financial data, the result of which is better decision-making for traders, investors, and financial planners. The usage of AI-based algorithmic trading enables faster trade execution based on real-time market conditions, which thus, raises the investment returns.

Challenges of AI in Financial Decision Making:

- **Data Privacy and Security Concerns:** The AI in finance field uses large amounts of financial data that are private and require special protection. Cybersecurity threats, situations in which data is breached and regulatory compliance are the biggest difficulties. Financial institutions must use unshakable encryption protocols, secure data sharing practices and AI governance frameworks to make sure that their client data remains inviolable.
- **Lack of AI Expertise:** The adoption of AI in India's financial sector is quite slow because the country does not have enough skilled AI professionals to help in the development and running of AI-based financial solutions. The way out is to conduct upskilling initiatives and to form partnerships between the academy and the financial sector for the purpose of filling the gap.

- **Ethical and Bias Issues:** Even AI systems can learn and they might obtain a biased view of the world, which will consequently lead to financial racism, the unfair allocation of loans, or investment recommendations. Additionally, non-uniform and biased data can lead to credit rating models that are unfair and therefore build inequality financial inclusion. Transparency in AI algorithms and bias mitigation techniques are crucial to address these ethical concerns.
- **Regulatory and Compliance Challenges:** The regulatory framework of India's financial services is still a work in progress, and AI-driven financial services are about to be included in it. It is very important that there are clear AI governance policies, ethical AI usage guidelines and AI audit methods to ensure that the directive norms are complied with. The Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI) must take the initiative to write AI-specific financial regulations.

Conclusions:

AI is reinventing financial decision-making through efficiency, accuracy, and the provision of financial services to everyone in India. This increase in AI usage in the financial sectors of the banks, investments, and risk management of India also promises a related bright future. Besides the risks associated with data privacy breaches and regulatory loopholes, AI's potential advantages are substantial. As a major contributor to the Indian economy, it is expected that AI will lead to the collaboration of players in the financial sector, policymakers, and AI developers towards the development of adequately ethical AI food. Very soon, financial decision-making will turn into an AI-driven process which will actually define the financial system of the future for India.

Acknowledgement

Ms. Isha Verma and Dr. Jyotika James are thankful to IJATER Journal for the support to develop this document.

References:

[1]. Brynjolfsson, E., & McAfee, A. (2017). Machine, Platform, Crowd: Harnessing Our Digital Future. W.W. Norton & Company.
[2]. Dhar, V. (2016). "When to trust robots with decisions, and when not to." Harvard Business Review.
[3]. RBI (2023). AI and Machine Learning in Indian Banking Sector: Impact and Challenges. Reserve Bank of India.
[4]. Kapoor, A., & Aggarwal, N. (2021). "Artificial Intelligence in Indian Financial Markets: Opportunities and Risks." Journal of Financial Innovation, 9(2), 45-67.
[5]. PwC India (2022). The Future of AI in Indian Financial Services: Trends and Insights.
[6]. World Economic Forum (2020). The Impact of AI on the Financial Services Industry.
[7]. Patel, S., & Desai, R. (2020). AI in algorithmic trading strategies: A review of literature. Journal of Financial Technology, 7(2), 201-215.
[8]. Jones, C., et al. (2019). AI in regulatory compliance and risk management: A review of literature. Journal of Financial Regulation, 6(3), 267-281.
[9]. Sharma, S., & Gupta, A. (2018). AI-driven algorithmic pricing strategies: A review of literature. Journal of Pricing Strategy, 12(3), 129-144.
[10]. Smith, A., & Jones, B. (2018). AI-driven trading algorithms and market liquidity: A theoretical perspective. Journal of Financial Technology, 7(2), 89-104.
[11]. Khandelwal, Parth and Suryawanshi, Vikas Kumar (2022), Impact of Artificial Intelligence on Financial Decision-Making: A Conceptual Research Paper E-ISBN: 978-93-5747-332-3
[12]. Gupta, Shipra (2021), Journal of Cardiovascular Disease Research, ISSN: 0975-3583, 0976 -2833, Vol 12, Issue No. 06a

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