

## ARTIFICIAL INTELLIGENCE AND ITS IMPACT ON FINANCIAL MARKET IN INDIA

*\* Ms. Pooja Dipak Patel*

*\* Research Scholar, Research Centre- V . K Krishna Menon college ,Bhandup - East, Mumbai-400042.*

### Abstract:

Advancements in Artificial Intelligence (AI) continue to unfold at a rapid pace. The Paper examine the impact of Artificial Intelligence (AI) in the financial market in india highlighting its various applications and associated threat. Through a detailed analysis, key technologies such as machine learning, computer vision, and natural language processing are examined, which have revolutionized critical areas such as customer service, risk management, and financial advising. Although AI has significantly improved operational efficiency and service personalization, it also presents important risks and limitations, such as data privacy, lack of model interpretability, and cyber security. Additionally the study is related with future forecasts for AI adoption in finance, suggesting that its integration will continue to expand, driven by technological advances and regulatory improvements. However, this expansion must be balanced with adequate oversight to mitigate potential risks and maximize benefits. Lastly this study offers a balanced view of the opportunities and threat of AI in Financial market .

**Keywords :** *Implications of AI in Finance, Innovation in Financial Service ,Automated Customer Support , Data Privacy in Financial Services*

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### Introduction :

Artificial intelligence in finance refers to the application of a set of technologies, particularly machine learning algorithms, in the finance industry. This fintech enables financial services organizations to improve the efficiency, accuracy and speed of such tasks as data analytics, forecasting, investment management, risk management, fraud detection, customer service and more. AI is modernizing the financial industry by automating traditionally manual banking processes, enabling a better understanding of financial markets and creating ways to engage customers that mimic human intelligence and interaction.

AI is revolutionizing how financial institutions operate and fueling startups. AI models execute trades with unprecedented speed and precision, taking advantage of real-time market data to unlock deeper insights and dictate where investments are made. By

analyzing intricate patterns in transaction data sets, AI solutions allow financial organizations to improve risk management, which includes security, fraud, anti-money laundering (AML), know your customer (KYC) and compliance initiatives. AI is also changing the way financial organizations engage with customers, predicting their behavior and understanding their purchase preferences. This enables more personalized interactions, faster and more accurate customer support, credit scoring refinements and innovative products and services.

Overall, the integration of AI in finance is creating a new era of data-driven decision-making, efficiency, security and customer experience in the financial sector.

### Review of Literature :

According to (Sezer et al., 2020), AI has transformed the financial industry by helping institutions process large data and make faster, more accurate

decisions. AI with deep graph learning allows financial institutions to analyze data in real time, reducing potential risks in financial systems (Balmaseda et al., 2023).

<https://prosiding.areai.or.id/>

Artificial Intelligence (AI) approaches have been increasingly used in financial markets as technology advances. In this research paper, we conduct a Systematic Literature Review (SLR) that studies financial trading approaches through AI techniques.

It reviews

143 research articles that implemented AI techniques in financial trading markets. Accordingly, it presents several findings and observations after reviewing the papers from the following perspectives: the financial trading market and the asset type, the trading analysis type considered along with the AI technique, and the AI techniques utilized in the trading market, the estimation and performance metrics of the proposed models. The selected research articles were published between 2015 and 2023, and this review addresses four RQs. After analyzing the selected research articles, we observed 8 financial markets used in building predictive models. Moreover, we found that technical analysis is more adopted compared to fundamental analysis. Furthermore, 16% of the selected research articles entirely automate the trading process. In addition, we identified 40 different AI techniques that are used as standalone and hybrid models. Among these techniques, deep learning techniques are the most frequently used in financial trading markets. Building prediction models for financial markets using AI is a promising field of research, and academics have already deployed several machine learning models. As a result of this evaluation, we provide recommendations and guidance to researchers. **Journal of King Saud University -**

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Today artificial intelligence (AI) has become an indispensable assistance for human traders. AI systems provide human traders with numerous advantages, such as the capability to conduct genuine high-frequency trading (HFT), which capitalizes on price discrepancies and market anomalies, and to analyze a massive data set from multiple sources in a fraction of a second. The main goal of this research is to examine the role that AI plays in the financial markets, with an emphasis on how it affects trading, portfolio management, and price prediction. In this study, quantitative research methodology was utilised. Primary and secondary sources of data were used in the investigation. An online questionnaire was used to collect the primary data, and finance databases, pertinent industry bulletins, and already published literature were used to collect the secondary data. It was found that there is an increasing incorporation of AI and machine learning technologies into financial institutions. Many of the participants revealed that these technologies are used moderately to significantly in their organizations. The most prominent AI and machine learning applications are “algorithmic trading, risk management, fraud detection, credit scoring, and customer service”

The Role of AI in Financial Markets: Impacts on Trading, Portfolio Management, and Price Prediction :Sunil Kumar Das, Shaista Anwar, Urvee Tulsyan, Yash Gupta, Rahul Vudatha, Syed Hassan Imam Gardezi

### Objective of the study :

1. To study the AI's Effect on the Financial Market .
2. To study the Influence of AI on Decision-Making Paradigms in Finance.
3. To study AI's Prospective development and its Path in the future .

**Hypothesis :**

H0 : There is no significant relationship between the level of understanding of AI technologies and the perception of AI's effect on the financial Market .

H1: There is a significant relationship between the level of understanding of AI technologies and the perception of AI's effect on the financial market .

H0: There is no significant association between the use of AI-powered tools in financial operations and the belief in AI's potential to outperform human decision-making in finance.

H1: There is a significant association between the use of AI-powered tools in financial operations and the belief in AI's potential to outperform human decision-making in finance

H0: There is no significant relationship between confidence in AI-powered tools' ability to provide accurate financial predictions and the willingness to use AI-powered tools for financial planning in the future.

H1: There is a significant relationship between confidence in AI-powered tools' ability to provide accurate financial predictions and the willingness to use AI-powered tools for financial planning in the future.

**Research Methodology :**

The study is descriptive in nature. The convenience sampling approach was utilized in the study. The questionnaire approach was used to obtain data. A total of 70 questionnaires were issued with 60 surveys receiving a response rate of 90%. Incomplete surveys were removed from the research. The questionnaire was divided into two pieces. The first segment comprises demographic questions, while the second piece covers Artificial intelligence in financial Market . C Simple percentage were used to assess the acquired data.

This studies also makes use of a systematic literature review approach to assess the Impact Of AI in

Financial Market in india .

Artificial intelligence in finance Artificial intelligence (AI) in finance can improve efficiency, reduce costs, and enhance customer experience. AI can also help financial institutions comply with regulations and meet the needs of their customers.

**Benefits Improved customer experience:**

AI can automate basic banking tasks, like payments, deposits, and transfers. It can also provide personalized banking advice and help customers check their balance.

**Better risk management:**

AI can help financial institutions identify and mitigate risk by analyzing large amounts of data to identify trends and predict future performance.

**Increased efficiency:**

AI can help financial institutions streamline operations and improve decision-making.

**Improved compliance:**

AI can help financial institutions automate data collection and reporting processes to meet regulatory requirements.

**Cost savings:**

AI can help financial institutions reduce costs by streamlining operations and improving customer satisfaction.

**Challenges:**

**Bias:** AI can be biased, which can distort financial market outcomes.

**Logistical challenges:** Deploying AI in the finance industry can be challenging due to the need to ensure data quality and security.

**Regulatory challenges:** AI may require adjustments to existing regulations.

**Inovation in financial service:**

Recent advances in AI have increased the use of AI tools in financial markets. Generative AI in particular is transforming areas like banking and insurance by generating text, images, audio, video, and code. It is

used in fraud detection, credit decisions, risk management, customer service, compliance, and portfolio management, improving accuracy and efficiency. AI is also being adopted in asset management and securities, including portfolio management, trading, and risk analysis.

The OECD promotes the importance for all actors in organisations, not just experts, to understand and manage AI, and the importance of culture, education, and AI literacy in creating effective governance frameworks for AI, including Generative AI..

### **Automated customer support in AI**

Automated customer support in AI - Automated customer service is a form of customer support enhanced by automation technology and artificial intelligence (AI). Businesses can use it to resolve customer issues—with or without agent involvement.

### **Data Privacy in Financial Services**

Data privacy in financial services is a major concern due to the increased use of Artificial Intelligence (AI), as AI systems often require access to large amounts of sensitive customer data, which raises risks of unauthorized access, breaches, and misuse, demanding robust security measures and compliance with strict regulations to protect consumer information.

Key points about data privacy in financial services with AI are mentioned below : Sensitive data collection:

AI algorithms in finance often analyze extensive personal financial data like transaction history, credit scores, and demographics, making it crucial to handle this information with extreme care.

### **Privacy concerns with data aggregation:**

AI can combine data from various sources, creating a detailed profile of a customer, which raises concerns about potential misuse of this aggregated data.

### **Algorithmic bias:**

AI models trained on biased data can perpetuate

discriminatory practices in areas like loan approvals, leading to unfair treatment of certain customer groups.

### **Transparency and explainability:**

A significant challenge with AI is the lack of transparency in how decisions are made, making it difficult to explain to customers why certain financial decisions were reached based on their data.

### **Data breaches and security risks:**

The potential for cyber attacks on AI systems storing sensitive financial data is a significant concern, requiring strong security protocols to prevent data breaches.

How financial institutions can address data privacy challenges with AI are mentioned below :

### **Strict data governance practices:**

Implementing clear policies regarding data collection, storage, access, and usage, including obtaining explicit customer consent for data processing.

### **Data anonymization and pseudonymization:**

Masking sensitive personal information where possible to protect individual identities.

### **Encryption and robust security measures:**

Employing strong encryption algorithms to safeguard data at rest and in transit.

### **Compliance with regulations:**

Adhering to data privacy laws like GDPR and local regulations to ensure responsible data handling.

### **Model development with ethical considerations:**

Carefully designing AI models to mitigate bias and ensure fairness in decision-making.

### **Transparency and customer education:**

Clearly communicating to customers how their data is being used by AI systems and providing them with options to manage their privacy settings.

As artificial intelligence (AI) continues to evolve, the financial services industry is poised to witness further advancements and innovations.

This section explores emerging technologies, potential applications, and the implications of AI for the future of work and industry dynamics within finance.

**Emerging Technologies and Innovations in AI Deep Learning:-** Deep learning, a subset of machine learning, holds promise for enhancing the capabilities of AI systems in finance. Deep neural networks can learn complex patterns and relationships from data, enabling more accurate predictions, risk assessments, and decision-making processes. Advancements in deep learning algorithms, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are expected to drive breakthroughs in areas such as image analysis, natural language processing, and time series forecasting.

#### **Explainable AI:**

Explainable AI (XAI) is gaining importance in finance as stakeholders seek to understand and trust AI-driven decisions. XAI techniques aim to make AI models more transparent and interpretable, enabling users to understand the rationale behind AI-driven recommendations and predictions. By providing explanations for AI outputs, XAI fosters trust, accountability, and regulatory compliance, facilitating broader adoption of AI in finance.

Potential Applications and Use Cases in Finance

#### **Predictive Analytics:**

AI-powered predictive analytics will continue to play a vital role in finance, enabling institutions to anticipate market trends, customer behaviour, and risk factors. Predictive models can forecast asset prices, detect market anomalies, and identify potential investment opportunities, empowering financial institutions to make informed decisions and seize strategic advantages in dynamic market environments.

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#### **Implications for the Future of Work and Industry Dynamics Augmented Intelligence:**

The future of work in finance will likely be characterized by augmented intelligence, where AI systems complement human capabilities rather than replace them. AI-powered tools and platforms will enhance productivity, creativity, and decision-making skills, enabling financial professionals to focus on high-value tasks such as strategic planning, relationship management, and innovation.

#### **Industry Dynamics:**

The widespread adoption of AI in finance is expected to reshape industry dynamics, leading to increased competition, consolidation, and collaboration among financial institutions. Fintech start-ups and technology firms will continue to disrupt traditional business models, introducing innovative products and services that cater to evolving customer needs and preferences. Collaboration between incumbents and fintech firms will drive industry-wide transformation, fostering innovation, and driving value creation for customers and stakeholders.

#### **Data Analysis And Finding :**

##### **Believe in AI's Role in Finance :**

Majority (94.74%) believe AI will play a significant role in the future of the financial market. Belief in AI's potential varies among age groups, with the



highest confidence (100%) observed in respondents aged 22-40.

### **Confidence in AI Outperforming Human Decision-Making:**

Around 63.16% of respondents are moderately confident in AI's potential to outperform human financial decision-making.

### **Current Use of AI-Powered Tools:**

Only a small extent (47.37%) of organizations currently use AI-powered tools in their financial operations.

### **Benefits of AI Implementation:**

Fraud detection (73.68%) is perceived as the financial area that would benefit most from AI implementation.

### **Confidence in AI's Predictive Abilities:**

Majority (84.21%) are very confident in AI-powered tools' ability to provide accurate financial predictions.

### **Ethical Considerations:**

Bias (36.84%) and lack of human oversight (36.84%) are the most crucial ethical considerations regarding AI's use in finance.

### **Job Displacement Concerns:**

Around 57.89% believe AI-powered tools will create more jobs than they replace in the financial sector.

### **Comfort with AI-Made Decisions:**

Overall, respondents are neutral (47.37%) about the idea of AI algorithms making critical financial decisions for them.

### **Primary Concerns with AI in Finance:**

Security breaches (47.37%) and lack of human oversight (36.84%) are the primary concerns regarding potential risks associated with AI in finance.

### **Knowledge about AI Techniques:**

Respondents generally have moderate knowledge (mean score: 5.26) about different AI techniques used in finance.

### **Skills and Knowledge for Success in AI-Powered Finance:**

Machine learning expertise (36.84%) is considered the most important skill for success in AI-powered finance.

### **Professional Training for AI-Powered Finance:**

A significant number (63.16%) believe their current professional training does not adequately prepare them for the future of AI-powered finance.

### **Use of Robo-Advisors:**

A majority (84.21%) have never used a robo-advisor for investment management.

### **Likelihood of Future AI Tool Usage:**

Around 42.11% are likely to use an AI-powered tool to help with their financial planning in the future.

### **Interest in AI Applications:**

Chatbot customer service for banking (42.11%) is the specific type of AI application in finance found most interesting or promising.

### **Conclusion :**

Lastly I conclude that findings highlight a generally positive perception of AI's role in the financial Market in India with high confidence in its predictive abilities and potential benefits such as fraud detection. However, there are limitation regarding ethical implications, job displacement, and the adequacy of professional training. To leverage the potential of AI in finance effectively, it is essential to address these concerns, invest in education and training, and foster collaboration between stakeholders to ensure responsible and beneficial integration of AI technologies in the financial sector. there is wide scope of AI in finance sector for Future Perspective.

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