

Artificial Intelligence in Finance

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ABSTRACT

This research paper delves into the uses and Functioning of Artificial Intelligence (AI) in the Financial Sector. AI helps financial companies be smarter, faster and safer in their functioning with money and People. The paper talks about different ways AI is used in finance. For example: It helps decide if someone is likely to repay a loan (credit scoring), tries to guess how stock prices will change (stock market predictions), buys and sells stocks automatically (automated trading), and helps companies avoid losing money by spotting risks early (risk management). The goal of this research paper is to understand how AI is shaping the future of financial sector and how it can be used responsibly and effectively.

KEYWORDS: Fintech, Credit scoring, Automated trading, Risk management, Machine learning, Portfolio Management.

INTRODUCTION

The idea of using computers in finance started way back in the 1950s and 60s, when banks began using basic machines to keep records and do simple math.

In the 1980s, financial firms started using more advanced computer programs to help with stock trading and risk analysis.

By the 1990s, faster computers and more data helped AI tools become more useful.

In the 2000s and 2010s, AI really picked up speed. The rise of machine learning (where AI learns from data instead of just following rules) meant banks could now spot fraud, predict loan defaults, and automate trading better than ever.

Today, AI is basically everywhere in finance- credit scoring, real-time fraud detection, crypto trading.

IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN FINANCIAL INDUSTRY

AI (Artificial Intelligence) plays a big role in the financial industry. It is reshaping every aspect of finance providing efficiency and competitive advantage. Here are some of the aspects in which AI has impacted the Financial Sector:

- **Automated Trading:** AI helps in automated trading by making smart decisions based on data and carrying out trades without human help. It looks at huge amounts of information—like stock prices, news, and trends very quickly and spots patterns that might be hard for humans to see. Using these patterns, it creates rules for when to buy or sell, and then follows those rules to trade automatically. This allows trades to happen in seconds, which is important because markets move fast. It also learns from past trades to improve over time and doesn't get emotional like human beings, so it can stay focused on logic and data. Overall, AI makes trading faster, smarter, and more efficient.
- **Managing Risks:** AI helps in managing risks by quickly analyzing large amounts of data to find possible problems before they happen. It looks at things like market trends, customer behavior, and past events to spot warning signs, such as someone likely to miss loan payments or a business that might fail. It can also alert companies regarding frauds and unusual activities that might happen.
- **Machine Learning:** AI and machine learning work closely together. In simple words, machine learning is a part of AI. It helps it to “learn” from data and improve over time without being directly programmed for everything. It uses machine learning to make better decisions, solve problems, and do tasks like recognizing speech, understanding text, or recommending videos. So, AI becomes more useful and accurate because of machine learning.
- **Credit Scoring:** AI helps in credit scoring by looking at a person's financial data like their income, spending habits, payment history, and even online behavior, to decide how likely they are to pay back a loan. Unlike traditional methods that only use a few factors. It can study a lot more information and find patterns that humans might miss. This helps banks and lenders make fairer and faster decisions about who should get a loan or a credit card. It can also help people with little or no credit history by finding other ways to prove they're trustworthy.
- **Fintech:** AI helps in Fintech (financial technology) by making financial services faster, smarter, and easier to use. It can analyze large amounts of data quickly to help companies understand customer behavior, detect fraud, and make better financial decisions. In short, AI makes banking, investing, and managing money more efficient, secure, and personalized for both businesses and customers.
- **Portfolio Management:** AI helps in portfolio management by making smart investment decisions based on data. It looks at a person's financial goals, risk level, and market trends to create a balanced mix of investments, which is called a portfolio. It can track the performance of those investments in real time and suggest changes if needed, like selling a stock that's going down or buying a stock that's rising. It can also automatically adjust the portfolio as the market changes or as the investor changes his/her goals.

OBJECTIVES OF STUDY

- To comprehend how AI is used in automated trading.
- To explore the functions of Machine Learning in Finance.
- To assess how AI helps in managing financial risks.
- To analyze the role of AI in Fintech.

- **PROBLEM STATEMENT RELATED TO AI IN FINANCE**

AI has brought remarkable advantages to the finance industry, but it also introduces several setbacks and exposures. Here are some key problems related to AI in finance:

1. **LACK OF TRANSPARENCY:**

Many AI systems, especially those using deep learning, are like “black boxes” — we can’t see or easily understand how they make decisions. This becomes a problem when rules and regulations require clear explanations, like when approving loans or checking for fraud.

2. **DATA PRIVACY AND SECURITY:**

AI systems need a lot of data to work well, which brings up worries about how companies collect, keep, and use people’s personal information. There’s also a risk that this private data could be stolen or used in the wrong way.

3. **CYBERSECURITY THREATS:**

AI can be both something hackers try to attack and something they use to carry out attacks. Hackers might find ways to take advantage of AI systems to cause damage. They can also use it to create more advanced ways of tricking people or stealing money.

LITERATURE REVIEW

- **Ramanpreet Kaur, Dušan Gabrijelčič & Tomaž Klobučar (2023), Artificial Intelligence for Cyber Security:** The study looked at how AI is being used in cybersecurity, focusing on different tasks, types of solutions, real-life examples, and the AI techniques used. It found that while there are more articles being published on this topic, there is a need to focus more on gathering and organizing past data related to various cybersecurity tasks. This is important for creating effective AI-driven solutions in real-world cybersecurity.

- **Kelly D. Martin & Johanna Zimmermann (2024). Artificial Intelligence and its implications for Data Privacy:** This review looked at how AI impacts data privacy, focusing on both how AI works and what it does. It explored how AI influences people’s decisions about privacy, their sense of ownership over data, and social pressures.

- **Petar Radanliev (2025), AI Ethics: Integrating Transparency, Fairness and Privacy in AI Development:** This study looks at the important ethical values transparency, fairness, and privacy in how AI is used today, especially in areas like healthcare, finance, and communication. It also explains the ideas of privacy, transparency, and fairness in a simple and clear way. It shows how these values work on their own but also affect each other. By doing this, it helps build a better understanding that can be used to guide rules and decisions around the world.

METHODOLOGY

In this study, we used both qualitative and quantitative methods to learn how AI is being used in finance and what people think about it. It involved the following points:

- 1. Reading and Researching:** First, we read a lot of research papers and online articles to understand how AI is currently being used in areas like stock trading, credit scores, managing risks, and portfolio management.
- 2. Creating and Sharing a Survey:** Then, we made a questionnaire and shared it with people of different ages and jobs. We asked them questions about how they feel about AI in finance, what they think are the benefits, risks, and how it might be used in the future.
- 3. Collecting Answers:** We collected their answers using Google forms. The questions asked things like:
 - Are you familiar with AI?
 - Are you concerned about the security and privacy implications of AI in finance?
 - Have you used AI tools in finance before?
- 4. Studying the Answers:** After getting the responses, we looked at the data to see what most people thought.
- 5. Understanding the Results:** Finally, we combined what we learned from our reading and the survey to understand how people feel about AI in finance, how ready they are to use it, and what problems or concerns they might have.

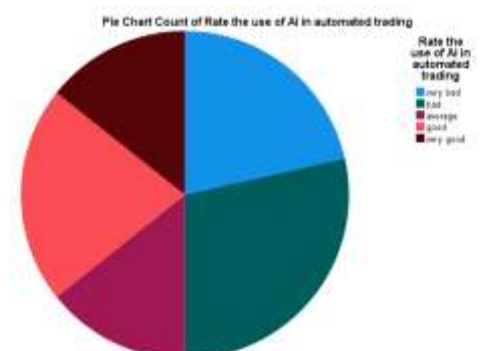
RESULTS

- 1. Automated Trading:** The result of using AI in trading is that it can help find good trading opportunities quickly, reduce human error, and work all day without getting tired.

BAR GRAPH:



PIE CHART:



Explanation:

The bar graph shows how many people gave ratings from 1 to 5, along with the percentage for each rating.

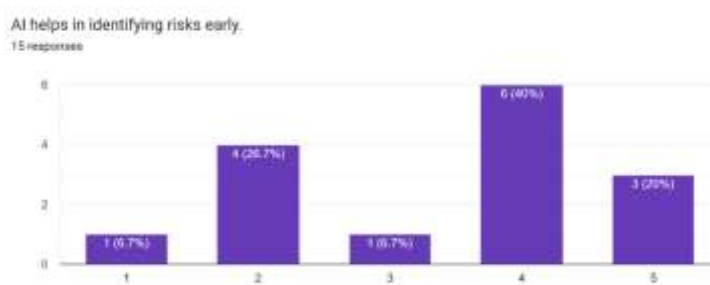
Here's an overview:

- The x-axis denotes the rating scale whereby,
 - Highly Disagree
 - Disagree
 - Neutral
 - Agree
 - Highly Agree
- The y-axis denotes the number of people who gave each rating.

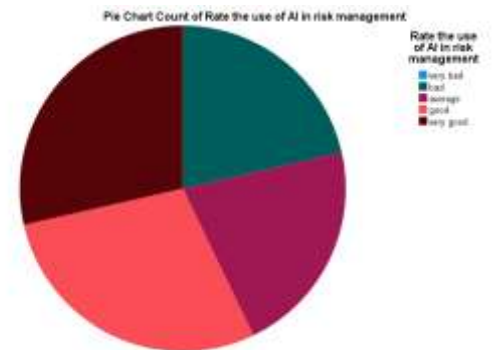
So, most people gave either a 1 or a 4, while fewer people gave a 3 or 5, but ratings 1 and 4 were the most common.

2) **Managing Risks:** It reduces human errors by using data and patterns to predict risks more accurately.

BAR GRAPH:



PIE CHART:



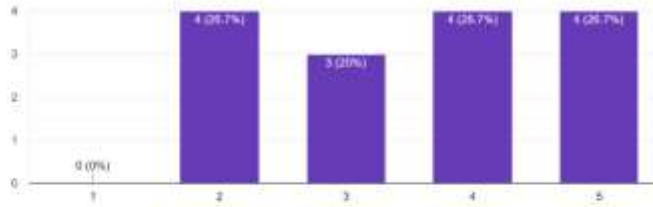
Explanation: The chart shows what people think about the idea that AI helps to find risks early. Out of 15 people:

- 6 people gave it a 4 out of 5, which means they agree.
- 3 people gave it a 5, meaning they highly agree.
- 4 people gave it a 2, so they disagree.
- 1 person gave it a 1 and 1 gave it a 3.

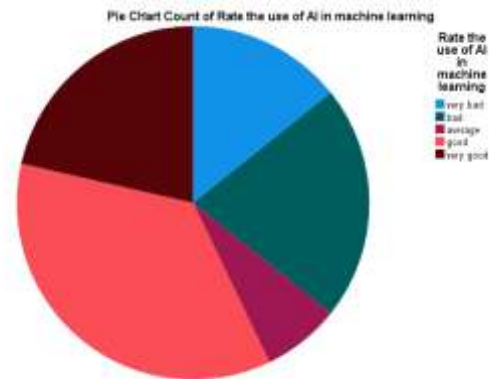
3) **Machine Learning:** Businesses use it to find unusual patterns and detect frauds more accurately than humans.

BAR GRAPH:

Machine learning can help detect unusual patterns and prevent frauds.
15 responses



PIE CHART:



Explanation: The charts show how 15 people answered the statement:

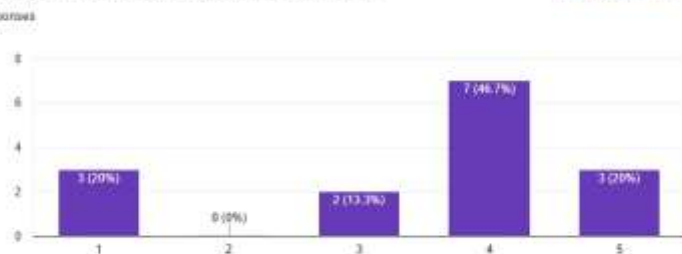
Machine learning can help detect unusual patterns and prevent frauds.

- Nobody strongly disagreed (nobody picked 1).
- 4 people chose 2, meaning they disagreed.
- 3 people chose 3, meaning they were neutral (not sure).
- 4 people chose 4, meaning they agreed.
- 4 people chose 5, meaning they strongly agreed.

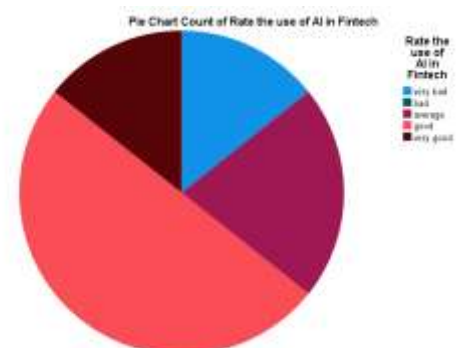
4) **AI in Fintech:** People mostly believe that AI is useful for detecting fraud in Fintech.

BAR GRAPH:

AI has made Fintech services faster and more convenient.
15 responses



PIE CHART:



Explanation: The chart shows results from a survey for a research paper on AI in Fintech.

- Most people agreed or strongly agreed.
- Some were neutral.

- A few disagreed.
- No one strongly disagreed.

CONCLUSION

The research paper shows that Artificial Intelligence (AI) is becoming very important in the finance sector. It helps companies work faster, make better decisions and detect fraud more easily. Most people agree that machine learning can find unusual patterns and prevent fraud. As technology keeps improving, AI will play an even bigger role in making financial services safer, smarter, and more efficient.

Survey results indicate that a majority of respondents recognize the value of AI in identifying unusual patterns and preventing fraudulent activities. These insights suggest that AI is not merely an emerging trend but a critical tool driving the future of finance.

LIMITATIONS

- **Changing Markets:** Financial Markets change very quickly.
- **Lack of Transparency:** Many AI models are like “black boxes”. It is hard to understand how they make decisions.
- **Cybersecurity Risks:** AI systems can be hacked or attacked, which can cause huge financial losses.
- **Ethical Concerns:** AI decisions can sometimes harm people without meaning to.
- **Regulation Issues:** Laws and rules about using AI in finance are still developing which makes it harder for companies to fully trust and use AI.

RECOMMENDATION

- **Regularly update AI models:** Since markets change fast, AI models should be updated often to stay effective and avoid outdated predictions.
- **Promote transparency with customers:** Customers should be informed when AI is being used in services like credit decisions or automated trading, building trust and understanding.
- **Strengthen Cybersecurity:** Companies must strengthen Cybersecurity measures to protect AI systems from attacks, frauds and data breaches.
- **Adopt Ethical Guidelines:** There should be strong ethical standards when developing and using AI in Finance to avoid bias, discrimination and unfair treatment.
- **Work with Regulators:** Companies should actively work with government agencies to help create smart regulations that allow innovation while protecting customers.

FUTURE SCOPE

- **More Explainable AI models:** Future research can focus on developing AI models that are easier to understand and explain, especially for important financial decisions like loans, investment and risk analysis.

- **AI for Fraud Detection:** There is a room for more advance AI models that can detect new type of financial frauds faster and more accurately.
- **AI and Global Financial Inclusion:** Research can look at how AI helps bring financial services to people in remote and underserved areas around the world.
- **Development of AI Regulations:** As AI becomes more important in finance, future research should explore how to create fair and flexible regulations that encourage innovations but also protects users.
- **AI in Risk Prediction and Management:** Future studies can improve how predicts financial risks, such as credit defaults, market crashes or fraud, making the financial system safer.

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