

ROLE OF ARTIFICIAL INTELLIGENCE IN FINANCE SECTOR

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Abstract:

Today's world is a world of computer technology. Most of the work is done through computers. Online shopping, online payment, online ticket booking, online electricity bill payment, online exams, e-court services, and e-banking are some examples of computer technology. It is progressing day by day. Artificial intelligence, which is developed through computer language, mathematics and physics which is a current updating in computer technology, which includes machine learning and language of algorithm. It is a manmade-computerized tool which works like a human being or more than a human being. It is nothing but a machinery-based knowledge system so known as Artificial Intelligence which is not natural but created artificially. Artificial Intelligence is being used in various fields, like Automobiles, Healthcare, Retail and Ecommerce, Finance, Transportation and logistics, Education, Manufacturing, Entertainment, and Education. Agriculture, Energy, Personnel Management and Environmental Science. Artificial Intelligence is an indivisible element of the modern world. Artificial Intelligence is playing key role in modernising finance sector. Study of concept of Artificial Intelligence, and the AI key role in the finance sector with various AI applications utilized in the finance sector. Studies will be done by means of secondary data available on the internet, various websites and research papers. The research paper concludes the role of AI in the finance sector with an explanation of the advantages and limitations of AI in the Finance Sector.

Keywords: Finance, Computer Technology, Artificial Intelligence, AI Applications

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Introduction:

The segment of the economy which focuses on investment, financial services and managing money is called the finance sector. Finance means collecting money and distributing money, i.e. circulation of money is done through the finance sector. Capital efficiency allocation, management of trade and commerce, disbursement of loans to individuals and businesses, risk management through insurance and hedging are some important angles of the contribution of the finance sector in the economic landscape. Major players in the finance sector include Banking, Insurance, Investment Service, Financial Markets, Asset Management, Wealth management, Fintech, i.e., services which are given through technology such as online lending and mobile banking.

John McCarthy (1955) defines AI as “the science and engineering of making intelligent machines.” According to the Oxford English Dictionary, AI is “the theory and development of computer systems the able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Artificial Intelligence is utilized in area of Space Exploration, E-Commerce, Gaming, Robotics, Automobile, Finance, Healthcare, Agriculture, Surveillance, Social Media, and Entertainment (Soni, 2021). In today’s world of digitalization, the finance sector is also working with technological updates. Artificial Intelligence is an indivisible element of the modern world. It is manmade machinery which is made by computer science and data science. It is nothing but a simulation of intellectual ability like human being in machines with the computer programmed to think, to find and to learn. Tasks of intellectual ability like human being such as solving problem, understanding natural language making decisions are done by this network of computers.

There the various Artificial Intelligence Tools used in finance sector. The contribution of Artificial Intelligence is notable in the finance sector. This Paper concentrates attention on role of Artificial intelligence in the finance sector, which is performed by using various Artificial Intelligence tools.

Reviews of Literature:

Kunwar M (2019) in his Ph. D study on “Artificial Intelligence in Finance” explained Artificial Intelligence concepts and various Artificial Tools in finance. Importance of Artificial Intelligence is concluded here.

Dr. Pinky Soni (2021) in his paper, “A study on artificial intelligence in finance” focused on the utilization of artificial intelligence in the field of finance sectors (banking, investment companies, insurance companies). Changes in financial industries due to Artificial Intelligence is concluded in this Paper ..

Dr. D. Divya (2024) studied" Artificial Intelligence in Finance". The paper concluded a comprehensive analysis of AI applications in finance, its effect on operational processes and decision-making.

Tobias Adrian (2024) in his paper, “Artificial Intelligence and its Impact on Financial Markets and Financial Stability” concluded about Artificial Intelligence and its Impact on Financial Markets.

Rationale of the Study:

Reviews of literature, like National Paper, International Paper and Ph. D Thesis are studied. All studies concluded that Artificial Intelligence is computer technology which is used in the industry of finance. This study is another addition to this subject of Artificial Intelligence in finance. The role of Artificial Intelligence is explained here with various Artificial Intelligence tools. Advantages and Limitations of Artificial Intelligence are studied here.

Objectives of Study:

- 1) To study the concept of Artificial Intelligence.:
- 2) To find out about applications of Artificial Intelligence in various fields.
- 3) To explain the role of Artificial Intelligence in the finance sector with Application of Artificial Intelligence tools.

Research Methodology:

This is exploratory research based on secondary sources like Journals, Articles, Ph.D. Thesis and Books Data all. Data is collected from journals, articles, Ph.D. thesis, and the Internet are studied and concluded here

Definition of Artificial intelligence:

IBM Institute (<https://www.ibm.com>)

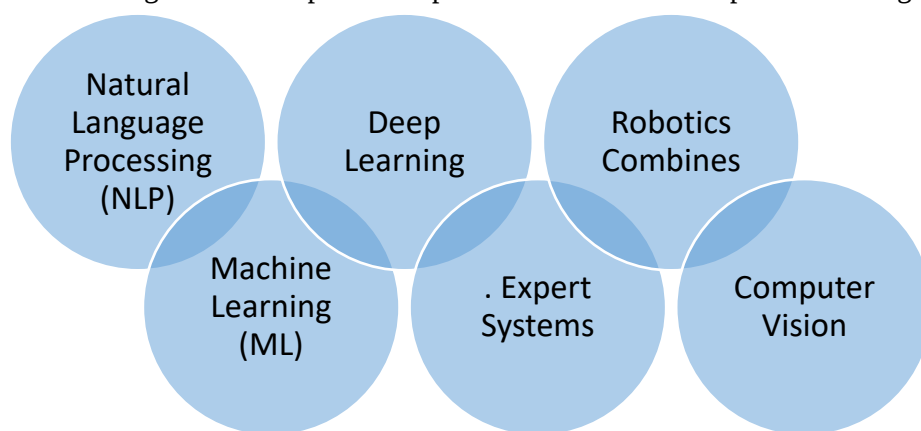
“Artificial intelligence is modern computer technology which enables computers and machines to simulate human learning, decision-making comprehension, problem-solving autonomy and creativity. It includes machine learning and deep learning.”

International organization for standardization (<https://www.iso.org/>)

“Artificial intelligence is a technical and scientific field which is devoted to the engineer's system that generates output search as content forecast decisions or recommendations for the given set of human definitions to perform objectives. It includes algorithms and machine learning.”

Key Components of AI:

Artificial Intelligence concept is explained with its components using the following diagram.



1. **Machine Learning (ML):** When data is to learn and improve without explicit programming, then this subset of AI is called Machine Learning. For example, fraud detection recommendation systems.
2. **Natural Language Processing (NLP):** This machine has an ability to understand, analysis and give response to human language. For example, virtual assistants (e.g., Siri, Alexa), translation tools.
3. **Computer Vision:** This machine has an ability to study and analyze visual data, such as images and videos. For example, medical imaging. Facial recognition.
4. **Robotics Combines:** It is a technology of mechanical engineering used to create robots having intelligence for performing tasks like human beings in the physical world. For example, autonomous vehicles manufacture robots and surgical robots.
5. **Expert Systems:** It is AI Programme using logical rules for a knowledge base to take human decision-making. For example, diagnostic systems in healthcare.

6. Deep Learning: It is a subset of machine learning which uses neural networks with multiple layers to analyze complex data to achieve advanced tasks like speech and image recognition.

As stated above, Artificial Intelligence has various parts to work in practice. It has numerous advantages across various industries and areas of life. Some of the advantages are explained here.

Advantages of Artificial Intelligence (AI):

1. Automation of Tasks: Automation of tasks is possible due to AI. It frees up human time for more creative and complex activities. For example, AI in manufacturing streamlines production processes.
2. Improved Efficiency and Productivity: AI having essential contribution in improving efficiency and productivity.
3. Enhanced Accuracy and Precision: reduce Human errors are reducing by using machine learning models and Algorithms which results in higher accuracy and precision. It is highly beneficial in healthcare.
4. 24/7 Availability: It is available for 24/7 hours. It doesn't need any rest
5. Personalization: It is useful in personalized recommendations and experiences, as in Netflix and E-commerce.
6. Better Decision-Making: Better decision-making is possible due to Artificial Intelligence.
7. Advances in Healthcare: Disease diagnosis, drug discovery, robotic surgery, and personalized medicine are various AI tools useful in healthcare.
8. Cost Savings: Even if there has a high cost of implementation, it is saving cost by reducing errors, automating the process and increasing efficiency.
9. Improved Customer Experiences: Customer experiences improved by using chatbots and recommendation systems. AI enhances customer service and interaction.
10. Support for Complex Problem-Solving: Addressing climate change challenges, predicting natural disasters Optimizing supply chains is going on because AI excellence.
11. Accessibility: Speech recognition and text-to-speech software. This AI technology is more accessible to people with disabilities.

With all the above Key Components and Advantages of AI, it is an applicable and useful key in various fields as stated below. Artificial Intelligence is transforming industries and enabling innovative problem solutions.

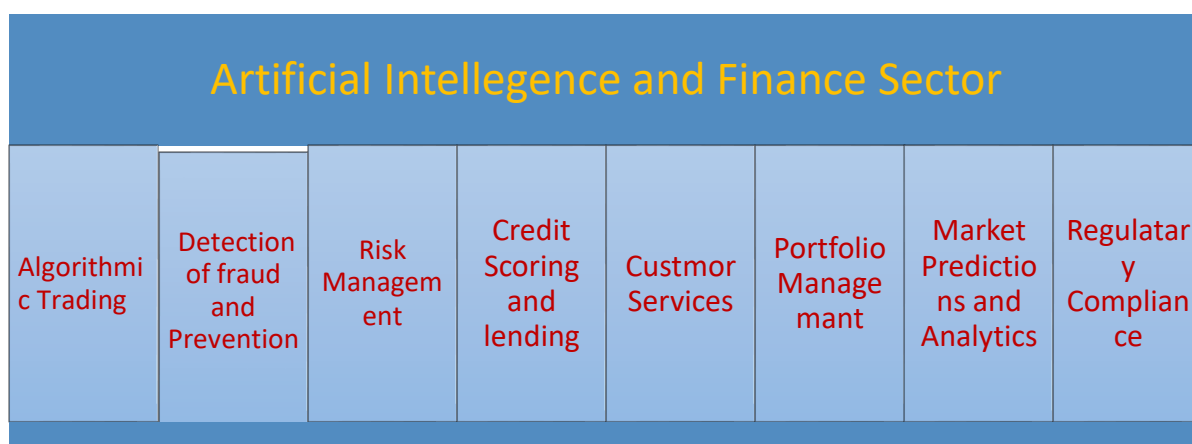
Artificial Intelligence in Various fields:

1. Healthcare: Cancer detection through imaging analysis, discovery and development of drug, treatment recommendations. Personalized medicines, virtual health assistance, chatbots and Robotic surgery are AI tools used in healthcare.
2. Transportation and Logistics: Traffic management systems, Automatic vehicles, Self-driving cars, fleet management and predictive maintenance, transportation management, delivery scheduling are AI tools used in Transportation and logistics.
3. Education: Language learning and skill enhancement tools, individualized learning approach for students, Automatic assessment and grading, Virtual tutors and learning assistants are AI tools used in Education.

4. Retail and E-Commerce: Product recommendations, Virtual shopping assistants, Chatbots for customer support. Augmented reality (AR) experiences, demand forecasting and inventory management are AI tools used in Retail and E-Commerce.
5. Manufacturing: Quality control using computer vision, supply chain optimization, automatic maintenance of equipment, automation of assembly lines with robotics are AI tools used in manufacturing.
6. Entertainment and Media: Content recommendation systems like Netflix, Spotify and Content creation. AI-generated music is an AI tool used in entertainment.
7. Finance and Banking: Fraud detection and prevention, customer service through AI chatbots, Algorithmic trading, and credit scoring and risk assessment are AI tools used in finance.

In this way, AI is now becoming part of every field. This paper concentrates attention on role of Artificial intelligence in the finance sector, which is explained as below.

Role of Artificial Intelligence in Finance Sector:



1. Algorithmic Trading:

It is technology where algorithms analyze data to determine trading opportunities. It executes traders Speedier and increased accurately than human traders. Listed below are the AI tools used in Algorithmic trading.

* Meta Trader: It executes trader.

* Quant Connect: It is a cloud -based platform used for developing, testing, and deploying AI driven-in algorithms.

2. Detection of Fraud and Prevention:

The machine learning model works for detecting fraud by observing unusual patterns in transactions. Systems are adopting new threats, improving over time. Listed below are the AI tools used in Detection of Fraud and Prevention.

* FICO Falcon Platform: To detect and prevent fraudulent financial transactions with machine learning model is Function of FICO .

* Kount: This is AI-based software used for fraud detection, used in e-commerce and payment processing.

3. Portfolio Management:

AI tools are used to create and manage investment portfolios. It is helpful in tolerance of individual risks and goals. Investment decisions for the public are easily made because of this. The following portfolio is the AI tools used in portfolio management.

* Wealth front: It is a robo-advisor which works for portfolios.

* Betterment: It is AI-driven software which is useful in portfolio management and tax optimization.

4. Regulatory Compliance:

AI gives automatic compliance checks and observed transactions to ensure adherence to regulations so that the risk of monetary penalties is reduced.

* Theta Ray : It is AI software which is designed for compliance monitoring and anti-money laundering.

* Actico Compliance Suite: It is one another AI tool used in regulatory compliance.

5. Customer Service (Chatbots and Virtual Assistants):

Chatbots and Virtual Assistants are developed in AI for better customer service. By reducing operational costs, it improves customer satisfaction.

* KAI (Kasisto) : It is an AI platform for virtual assistants enabling 24/7 customer support in financial institutions.

* IBM Watson Assistant: It is for answering customer queries and guiding financial decisions.

6. Credit Scoring and Lending:

Artificial Intelligence tools are used for credit scoring and the lending process.

This approach creates access to credit for populations who are under banked. Zest and Upstart are AI tools used in Credit Scoring and lending.

7. Risk Management:

It works to evaluate risks by studying datasets, for example, market trends and customer behavior. It helps in accurate decision-making for reducing potential losses. SAS Risk Management Leverages, AI to assess credit, market, and operational risks are AI tools used in Risk Management

8. Market Predictions and Analytics:

It is an AI tool with social media and news articles which predict market movements. It helps investors to know about market trends. Bloomberg Terminal and Integrates are available here to analyze market trends and provide insights.

As given above, there are various AI tools used in the finance sector and AI is playing an important role in the finance sector through algorithmic trading. Fraud detection and prevention, risk management, customer service, regulatory compliance, market predictions and analytics and credit scoring and lending. Even if it has an important role in finance, there are some limitations or challenges in the application of AI tools in limitations and those limitations are as follows.

Limitations of Application of AI tools in finance sector:

1. Data Challenges:

Data Privacy and Security, Quality and Availability of data. Regulatory Restrictions on Data Use, the Law of GDPR and CCPA limit how customer data can be used, and it is challenging for AI to analyze data.

2. Regulatory and Compliance Issues:

AI has to match with constantly changing rules, such as anti-money laundering (AML) and know-your-customer (KYC) regulations. Complex and Evolving Regulations and Auditability and Accountability. There are also some limitations.

3. Ethical Concern

There are ethical issues like Bias in AI Models, Lack of Human Judgement and Job Displacement in Application of AI tools in the finance sector.

4. Cyber security Risk

Cyber security risk includes Model Robustness, AI in Fraudulent Activities, and Increased Threat of Attacks.

5. Transparency and Explain ability

Stakeholders like customers, regulators require transparency to trust AI-driven financial systems. black box problems and compliance reporting are having some problems in application.

6. Cost of Implementation

AI is expensive. It has a high initial investment. Developing, deploying, and maintaining AI systems are also expensive. Advanced Hardware, software and skilled professionals create high costs.

7. Integration with Legacy System

Many financial institutions are working with legacy systems which are not so good for the application of modern technology. Application AI requires some changes in existing systems which can disrupt operations.

8. Skill Gap

For application of AI Expertise, and skilled employees are required. Much time employee resistance is in process of AI due to fears of job displacement or lack of understanding of the technology.

9. Over-reliance on AI

There is a loss of human Oversight and moral hazards, so institutions might shift responsibility for decisions to AI systems, avoiding accountability for negative outcomes.

10. Competition and Innovation Pressure

Fast-Paced Innovation and the Rise of Fintech and Big Tech are also creating difficulties in application.

Conclusion:

Artificial intelligence is computer technology which is run with the help of computer science and data science. It is applicable in various fields. Finance is a significant area where artificial intelligence is applicable. There are a lots of artificial intelligence tools applicable in the finance sector. Examples of AI tools are Algorithmic trading, detection of fraud and prevention, customer service, compliance reporting etc. which have a essential contribution in finance. Examples of AI tools are Google Translate and ChatGPT. Even if it is modern

technology and has a lots of advantages, it also has some limitations or challenges in applications. The bias model of AI will not work effectively. If the computer program given for preparing the AI model has insufficient or inaccurate information, then its result is also not accurate. That is, accurate input will result in accurate output. It is one of the limitations of artificial intelligence. Even though it has some limitations, artificial intelligence works in a very good way in the finance sector.

References:

1. Kunwar M (2019) *Artificial Intelligence in Finance* <https://ijcrt.org/papers/IJCRT>
2. Dr.Pinky Soni (2021), *A study on artificial intelligence in finance*. <https://www.theseus.fi/bitstream/handle/>
3. Dr D. Divya (2024) *Artificial Intelligence in Finance*. <https://www.researchgate.net/publication/>
4. Tobias Adrian (2024) *Artificial Intelligence and its Impact on Financial Markets and Financial Stability*” <https://www.imf.org/en/News/Articles/>
5. *International Business Machines Corporation* <https://www.ibm.com>
6. *International organization for standardization* <https://www.iso.org/>
7. *Towards data science* <https://towardsdatascience.com/>

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