



## 23. AI: The Backbone of Next-Generation Commerce

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### ABSTRACT

*This paper looks at the sides of Artificial Intelligence in the finance industry. It talks about what researcher doing the new technologies being used and how they are being applied. The goal of this research is to see how Artificial Intelligence is helping the finance industry. For example it looks at how machine learning's used to predict what will happen how blockchain technology is used for smart contracts and how natural language processing is used to stop fraud. All these things help the finance industry work better manage risks and make decisions.*

*This paper is based on a lot of research and case studies from the financial institutions around the world. It wants to show the exciting things happening in the finance industry like using computers to trade giving people financial advice with robots and using Artificial Intelligence to decide who can get credit. This helps make financial services available to everyone. The paper also talks about the problems that come with using Artificial Intelligence like being fair keeping data following rules. It also gives ideas on how to use Artificial Intelligence in the finance industry.*

*The research found that using Artificial Intelligence does not just save money like the 20% less spent on following rules. It also helps everyone have access to financial services that are just right for them. This paper wants to show that Artificial Intelligence can help businesses grow and be successful. It can help students and professionals today build the businesses of tomorrow. Artificial Intelligence is like an engine that can help businesses grow and be successful. The finance industry is using Artificial Intelligence to make financial services better, for everyone. Artificial Intelligence is helping the finance industry work better and make decisions.*

- **KEYWORDS:** Artificial Intelligence (AI), Finance Industry, Machine Learning, Blockchain Technology, Smart Contracts, Natural Language Processing (NLP), Fraud Detection, Risk Management, Predictive Analytics.

- **Introduction:**

Artificial Intelligence (AI) is considered one of the most important technological developments in recent times. It is changing the face of many industries, and finance is one of the industries that is being greatly affected by it. Financial organizations deal with a lot of data on a daily basis, but it is not being utilized properly by using traditional methods. AI technologies help organizations deal with large amounts of data quickly. In the finance



industry, AI is being used in various capacities such as fraud detection, risk management, credit scoring, etc. Machine learning algorithms help in analyzing historical data to find patterns that help in predicting future financial trends. NLP is being used by financial organizations to analyze news reports, financial statements, etc. to make better investment decisions. In the finance industry, Artificial Intelligence is being used to improve customer service in the banking sector. Many banks are using chatbots and virtual assistants to respond quickly to customer queries. This is reducing costs for the banks. But at the same time, the adoption of Artificial Intelligence is also resulting in many challenges. Thus, it is important that financial organizations use AI in the right manner. In this research paper, an attempt has been made to explore the role played by Artificial Intelligence in the finance industry. It has been discussed in detail along with its advantages, challenges, and future growth opportunities.

In recent years, digital technology has started changing the way the finance industry works. Artificial Intelligence is now slowly becoming part of everyday financial activities. Banks and financial institutions are depending more on AI systems. Sometimes it is used for analyzing huge financial data. Sometimes it helps in making faster decisions. A few years ago, the same work needed many employees and a lot of time. Now machines help with it. Things move quicker than before.

Artificial Intelligence is also helping in risk management. Financial markets change very fast, and predicting risks is not always easy. AI systems study past data, market behaviour, and different financial patterns. By doing this, they can find signals that people might miss. It does not mean humans are not needed anymore, but the technology definitely makes the work easier.

Another area where AI is growing is financial technology, often called FinTech. Many companies are using AI to build digital payment platforms, automated trading tools, and even systems that give financial advice. These tools help people manage their money in a simpler way. Sometimes from just a mobile phone.

Because of this, financial services are becoming faster, smarter, and more accessible to many people. The industry is changing. And it is happening quite quickly.

- **Literature Review:**

Recently, Artificial Intelligence (AI) has emerged as an important area of research in the finance industry. This is because AI has the potential to process large amounts of data. Many researchers have conducted studies on the impact of AI technologies like machine learning, natural language processing, and blockchain on financial services.

(i) According to Russell and Norvig (2016), Artificial Intelligence is defined as “computer systems that perform tasks that normally require human intelligence, such as learning, reasoning, and problem-solving.” In the finance sector, AI has the potential to automate complex processes in finance organizations.



(ii) Machine learning is an important AI technology used in financial services. According to Jordan and Mitchell (2015), machine learning is an AI technology that enables computer systems to learn from historical data. This enables the system to improve the accuracy of the results over time.

(iii) Ngai et al. (2011) conducted research on the application of AI in fraud detection. According to their research, data mining techniques play an important role in fraud detection. AI systems can easily identify fraud by analyzing the data.

(iv) Recently, many researchers like Davenport and Ronanki (2018) have discussed the application of AI in financial services. According to their article, AI is used in financial advisory services. They mentioned that financial organizations use AI algorithms in robo-advisory services. This enables organizations to offer personalized services to customers.

(v) Another important technology in the finance sector is blockchain technology. According to Swan (2015), blockchain is an important technology used in finance organizations. This is because blockchain enables organizations to perform transparent financial transactions. Although AI has many advantages, many researchers like Binns (2018) mentioned that AI has many concerns.

Several researchers have also discussed how Artificial Intelligence is slowly changing the financial industry. Many studies explain that AI can analyze very large amounts of financial data in a short time. This makes it easier for banks and financial institutions to understand market behaviour. Some researchers say that earlier, financial analysis was mostly manual and time-consuming. Analysts had to check data carefully and sometimes it took days. Now AI tools can do similar work much faster. It is not perfect, but it helps a lot.

Other studies focus on fraud detection. Financial fraud has always been a serious issue for banks. Researchers found that machine learning systems can detect unusual patterns in transactions. If something looks suspicious, the system can alert the bank immediately. A few reports even mention that AI systems sometimes notice patterns that humans would normally overlook.

Some literature also talks about robo-advisors and automated investment systems. These platforms give financial suggestions based on market data and user behaviour. Many young investors are now using such tools. It is simple, quick, and available online. Researchers believe this trend will continue to grow in the coming years.

Overall, most of the existing studies agree on one thing. Artificial Intelligence is gradually becoming an important part of modern financial services, even if there are still challenges to solve.

- **Research Methodology:**

Research methodology is defined as a scientific method of collecting, analyzing, and interpreting data for a research study. It is a systematic process that enables a researcher to achieve the objectives of a study in an organized manner. For this research paper, a



descriptive and qualitative research methodology has been employed to understand the importance of Artificial Intelligence in the finance industry.

### **Research Design:**

The research design employed in this study is descriptive in nature. Descriptive research is conducted to understand the present scenario and trends of a specific subject. In this study, an attempt is made to understand how Artificial Intelligence is being implemented in financial institutions, how it is helping in efficiency, decision-making, and customer services.

This study is mainly focused on some of the prominent technologies of Artificial Intelligence, like machine learning, natural language processing, and blockchain technology, which are being implemented in financial services. These technologies play a significant role in financial services, like detecting fraud, managing risks, determining credit scores, and investment analysis.

### **Sources of Data:**

This research is mainly based on secondary data sources. Secondary data refers to the information that is already collected and published by researchers, organizations, and institutions. The use of secondary data helps us understand the developments that are already there in the field of Artificial Intelligence in finance.

The data for the research was collected from various academic journals, research papers, books on Artificial Intelligence and financial technology, and reports published by financial institutions and technology organizations. The sources are good platforms for getting information about the application of Artificial Intelligence in finance.

### **Data Collection and Analysis:**

The information for the research was collected using the literature review method. Various studies and reports were analyzed for getting information about the application and benefits of Artificial Intelligence in the finance industry. The collected data was analyzed using the comparative and analytical method for getting information about the trends and findings on the application of Artificial Intelligence in financial institutions.

### **Limitations of the Study:**

The research has some limitations because the study is mainly based on secondary data. The study did not include primary data collected using the survey and interview methods. Another limitation of the study is that Artificial Intelligence is an evolving field, and various technological advancements might influence the application of Artificial Intelligence in the finance industry.

The research for this paper mainly relied on secondary sources of information. Different research articles, journals, industry reports, and online publications were reviewed to understand how Artificial Intelligence is being used in the finance industry. At first, several



sources were explored. Some were very technical, others were easier to understand. Gradually, the most relevant materials were selected for the study.

Most of the information used in this research comes from academic journals, financial reports, and trusted online resources. These sources helped in understanding the practical applications of Artificial Intelligence such as fraud detection, automated trading, and credit risk assessment. The aim was not only to collect information but also to compare different viewpoints presented by researchers.

While reviewing the literature, the focus was on identifying common patterns and conclusions across different studies. Some articles emphasized the benefits of AI, while others discussed challenges like ethical concerns and data privacy. Looking at both sides was important.

Simple tables and charts were also used to present the collected information in a clear way. This helped in making the analysis easier to understand. Overall, the methodology followed in this research was descriptive and analytical, focusing on understanding the current role of Artificial Intelligence in finance.

- **Data Analysis:**

Data analysis is an essential part of any research since it assists in interpreting the data collected and determining useful patterns from it. For this study, data analysis was carried out depending on the data collected from different research papers, reports, and case studies concerning the use of Artificial Intelligence in the finance industry. The results are presented in different forms such as tables, bar charts, and pie charts to show effectively how Artificial Intelligence is applied in different financial activities.

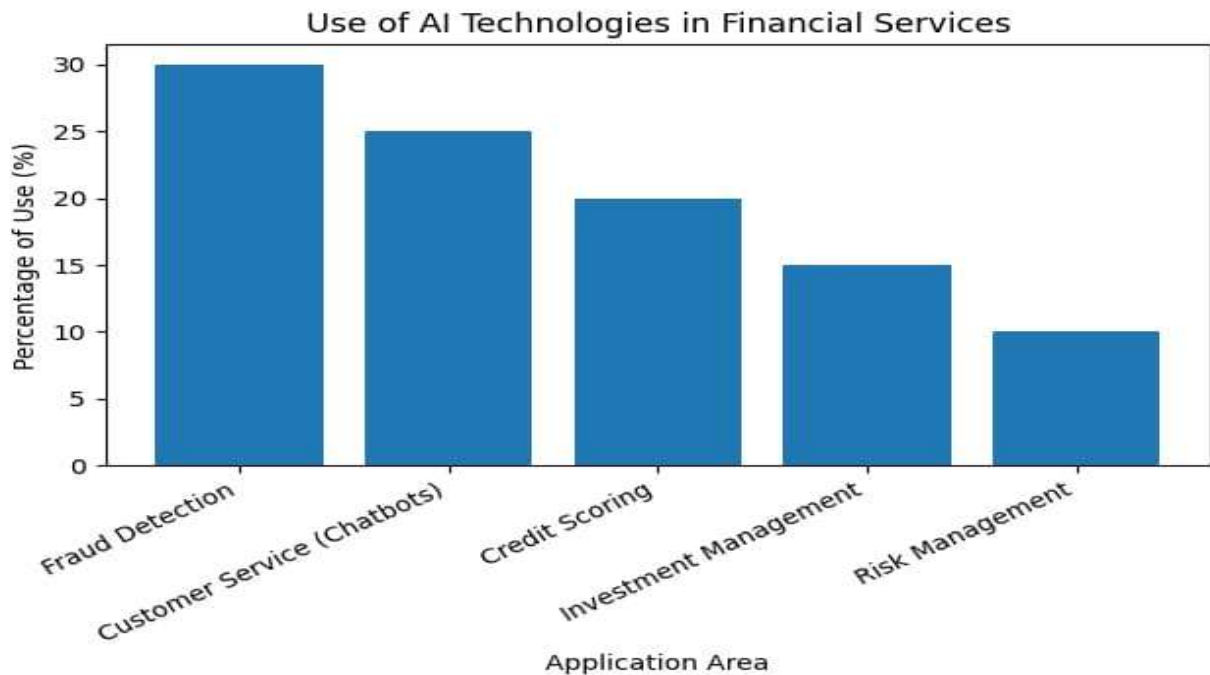
**Table 1: Major Applications of Artificial Intelligence in Finance:**

Application Area	Percentage of Use
Fraud Detection	30%
Customer Service (Chatbots)	25%
Credit Scoring	20%
Investment Management	15%
Risk Management	10%

The table illustrates the major areas in which Artificial Intelligence is applied in finance industries. Fraud detection leads in the use of Artificial Intelligence with 30%. This implies that banks and other financial institutions are highly concerned about security and fraud prevention when applying Artificial Intelligence in their respective industries.

**Bar Chart: Use of AI Technologies in Financial Services:**

The use of Artificial Intelligence in different financial services may be presented in a bar chart to show effectively the level of Artificial Intelligence applied in these institutions in different areas such as fraud detection, customer services, credit scoring, investment management, and risk management.



**Interpretation:**

The bar chart will show that fraud detection and customer services lead in the use of Artificial Intelligence in finance industries. This implies that financial institutions are highly concerned about fraud prevention when applying Artificial Intelligence in their respective industries.

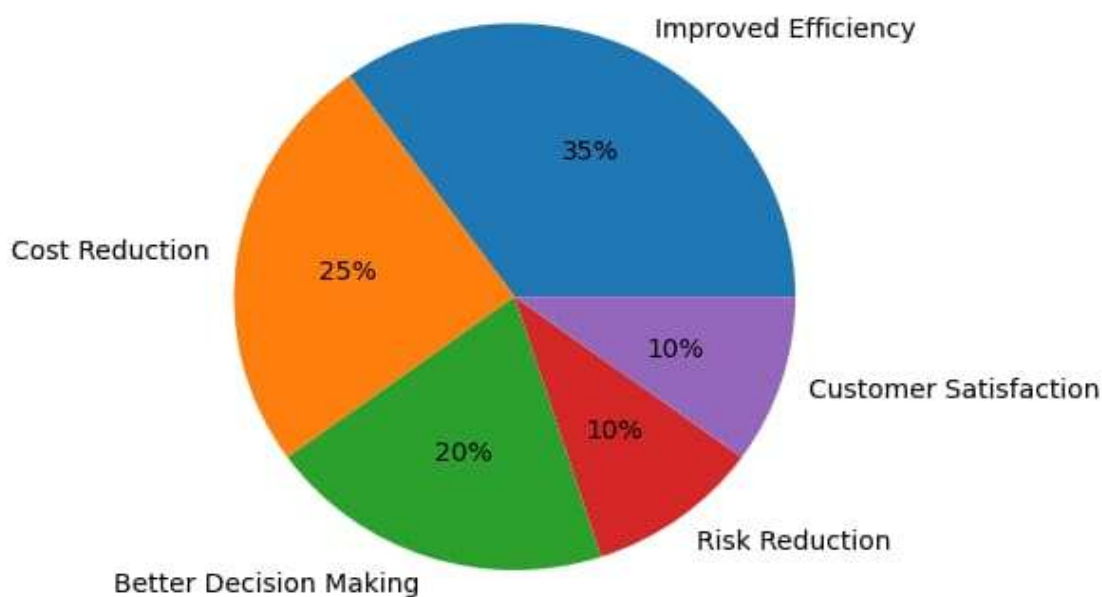
**Pie Chart: Benefits of Artificial Intelligence in Finance:**

Benefit	Percentage
Improved Efficiency	35%
Cost Reduction	25%
Better Decision Making	20%
Risk Reduction	10%

Customer Satisfaction	10%
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The pie chart may be used to show effectively the different benefits of Artificial Intelligence in finance industries.

**Benefits of Artificial Intelligence in Finance**



**Interpretation:**

The pie chart illustrates that efficiency is the leading benefit of Artificial Intelligence in finance industries. Financial institutions are applying Artificial Intelligence to improve efficiency in their respective industries since it assists in performing different tasks efficiently by processing large amounts of data quickly. Cost reduction is another leading benefit of Artificial Intelligence in finance industries since it reduces costs by performing different tasks automatically without human intervention.

The collected information was then examined carefully to understand how Artificial Intelligence is actually being used in the finance industry. Different research papers and reports were compared. Some showed strong positive results, others pointed out a few problems. Looking at both sides was important.



From the data reviewed, one clear pattern started appearing. Financial institutions that adopted AI technologies often reported better efficiency. Tasks like fraud detection, customer service, and financial forecasting were completed faster. In many cases, AI systems could analyze thousands of transactions in a short time. A human analyst would normally take much longer. This difference is quite noticeable.

Another observation from the data was the growing role of AI in automated trading and investment analysis. Several reports showed that algorithm-based trading systems are becoming more common. These systems use real-time market data to make quick decisions. Sometimes within seconds. It is impressive, but also a bit risky if not monitored properly.

The analysis also showed that AI adoption is increasing gradually across the financial sector. Large banks are leading the change, but smaller fintech companies are also experimenting with these technologies. Overall, the data suggests that Artificial Intelligence is becoming an important tool for improving financial services and decision making.

• **Findings, Suggestions, and Conclusion:**

**Findings:**

Based on the research, it is evident that Artificial Intelligence is contributing to the transformation of the finance industry. One of the key findings from the study is that AI has enabled the efficient processing of large amounts of financial data. This has been made possible through the utilization of AI technologies by financial institutions. This has ensured the efficient running of the operations of the financial industry.

Another key finding from the study is the utilization of AI in the detection of fraud. Financial institutions have been utilizing machine learning algorithms to monitor the transactions that take place in the financial industry. This has ensured the detection of fraud in the industry.

From the study, it is evident that AI is transforming the customer service offered by the banking industry. Financial institutions have been utilizing AI to offer customer service. This has ensured the provision of efficient customer service by the industry.

Another key finding from the study is the utilization of AI in the management of credit scoring and investments. AI has enabled the efficient management of credit scoring and investments by the financial industry.

Another finding from the study was that Artificial Intelligence is not only improving efficiency but also changing how financial institutions operate. Many banks are now depending on AI tools for routine analysis and customer support. This saves time and reduces manual work.

Some reports also mentioned that AI helps in making faster financial decisions. But at the same time, a few experts pointed out certain concerns. For example, issues related to data privacy and system transparency. Not every organization is fully ready for this shift yet. Even so, the general trend is quite clear. AI adoption in finance is growing steadily and will likely continue expanding in coming years.



### **Suggestions:**

Based on the findings, some suggestions that may improve the use of Artificial Intelligence in the finance industry are as follows:

First, financial institutions should invest in modern AI technologies and professionals to ensure effective implementation of Artificial Intelligence in their respective organizations.

Second, organizations should have strict data protection policies in place. Since Artificial Intelligence relies on data, it is vital for organizations to ensure data privacy to win customer trust.

Third, it is essential for governments to formulate strict rules and guidelines for the use of Artificial Intelligence in providing financial services to their respective citizens.

Lastly, financial institutions should ensure proper monitoring of their respective Artificial Intelligence systems to avoid errors in their operations.

One practical suggestion is that financial institutions should adopt Artificial Intelligence slowly, step by step. Jumping too quickly into new technology sometimes creates more confusion than benefits. It happens often. Banks could begin with small AI applications, like fraud monitoring or customer support systems. Simple tools first. Then move to more complex areas such as credit analysis or investment predictions. Training employees is also very important. Many staff members still are not fully comfortable working with AI systems. That gap needs attention. Another thing is transparency. Customers should clearly know how their data is used by AI tools. Clear policies and sensible regulations will help organisations use Artificial Intelligence in a responsible and balanced way.

### **Conclusion:**

In conclusion, Artificial Intelligence is a vital technology in the finance industry. It assists financial institutions in enhancing their respective operations, cutting down operational costs, detecting fraud, and providing quality customer services to their respective clients.

However, it is vital for financial institutions to be cautious of some of the challenges associated with Artificial Intelligence, such as data privacy, ethics, and regulation.

Therefore, it is vital for financial institutions to ensure responsible use of Artificial Intelligence in their respective organizations to ensure business success in the future.

Looking at the overall study, one thing becomes quite clear. Artificial Intelligence is slowly changing the finance industry. Not suddenly. It happened step by step. Banks first started using small tools, mostly for data analysis and fraud detection. Later the technology grew stronger. Now it helps with trading, credit decisions, even customer service sometimes. It feels almost normal now. Still, the transition is not perfect. Concerns about privacy, transparency and regulation remain. Financial institutions must be careful while adopting these systems. Technology alone cannot solve everything. Human judgement still matters.



But the direction is obvious. Artificial Intelligence will continue shaping financial services in the coming years.

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Additional information for this research paper was gathered from financial industry reports, academic journals, and articles related to Artificial Intelligence and financial technology.

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