

AI in Financial decision-makingAuthor: Maria El Hajj¹*Affiliation:*

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Abstract:

Artificial intelligence (AI) has multiple applications in the financial sector due to its capacity of processing large amounts of data, finding patterns and helping with decision making. The most common areas where AI is used include credit analysis, investment, fraud detection, financial forecasting and risk management etc. Traditionally, financial decision making processes have been mainly based on historical data and experience, as well as on traditional statistical models. The use of AI will help in analyzing large amounts of structured and unstructured data and providing predictions or recommendations very quickly. However, the use of AI faces several difficulties including those related to data quality, algorithmic biases, lack of transparency, privacy issues, cybersecurity and human liability etc. This report will discuss the use of AI in financial decision making and its pros and cons, will be based on a literature review methodology, where relevant academic literature and research about AI, fintech, risk management and decision making systems will be reviewed.

Keywords:

Artificial intelligence, financial decision-making, machine learning, credit scoring, investment analysis, risk management, fraud detection, algorithmic trading, algorithmic bias

Introduction:

Artificial Intelligence (AI) is viewed as one of the technologies that is relevant in the financial sector currently. Financial institutions (banks, investment firms, insurance companies, etc.) have widely used the technology of AI to process big amounts of data and make decisions in the area. As far as the meaning of artificial intelligence is concerned, it can be defined as computer systems able to perform actions that usually require human intelligence (for example, learning, making decisions, predicting, etc.).

Therefore, AI can significantly influence financial decision-making due to the necessity to analyze huge amounts of information by financial institutions. It is crucial to know whether particular clients will receive a loan, analyze financial markets, detect fraudulent operations, etc. Traditionally, such procedures take much time and cannot work with vast and/or complicated databases. The use of AI and machine learning technologies allows processing these databases quickly and detecting required patterns that humans cannot recognize.

AI application in finance can hardly be considered anything new. The machine learning algorithms have been used in various applications like credit scoring, fraud detection and algorithmic trading in the previous decades. The latest developments in AI, such as the rise of generative AI, made the industry interested in applying the technology in order to perform even more tasks. As stated by the IMF, the use of AI is quite popular in financial markets at this moment when performing tasks of investment research, trading and analysis while generative AI may make it even more valuable. There are several advantages of using AI in decision-making in the financial sector which deserve mentioning. They include quick analysis, predictive abilities, automation, as well as effective processing of big unstructured data sets. At the same time, there are several concerns about AI which involve bad quality of data, privacy issues, biases in the algorithms, lack of transparency, cybersecurity risks, and excessive trust to automated decision-making process in finance.

This report analyzes the utilization of AI in financial decision-making and discusses the existing literature in this field.

Literature Review:

2.1-AI and Credit decision

One more field in which the technology of AI is being used in finance is credit scoring. Financial information like income, credit history, debts, and repayment history is used by banks to assess whether a particular individual or business is capable of repaying his/her/its debts. Machine learning models can handle larger volumes of information and discover relationships among variables.

It was found in the research conducted in 2024 that machine learning is becoming increasingly important in the sphere of financial risk management and allows making predictions which are more accurate and robust compared to some conventional approaches. At the same time, it should be noted that results are highly dependent on the algorithm, information, and characteristics of the particular financial firm.

AI could also leverage non-traditional data. According to the Bank for International Settlements (BIS), AI-based credit decisions could take into account bank account transactions and payments of rents, utilities, and telecom in addition to credit data.

On the other hand, AI-based credit decisions have an important challenge: fairness and transparency. A very complicated algorithm could accurately predict something while at the same time not making it understandable for the bank worker and customer how that prediction was made. Recently, in relation to AI-based credit scoring, several challenges were identified: performance, fairness, transparency, and regulation accountability.

2.2-AI and risk management

Yet another domain where AI may assist in financial decisions is risk management. Risk management implies the identification and management of different types of risks, such as credit, market, liquidity, and operational risks.

The machine learning algorithm is capable of analyzing data and detecting correlations with the possibility of occurrence of the risk. For example, machine learning algorithms may be employed for identifying suspicious activities and probability of default.

As indicated by the BIS, AI application takes place in different areas, such as risk management, fraud detection, and liquidity management. At the same time, however, the use of AI technology is likely to amplify existing risks like model risk and data privacy risks.

In other words, AI technologies should not be seen merely as substitutes for the risk management system.

2.3-AI and investments decisions

There have been efforts to connect AI applications with investment decision making too. The algorithms can be used to evaluate financial statements, market data, news and other information sources to help investment firms make decisions.

According to the IMF, machine learning and neural networks have been implemented by investment firms and have played an important role in automated and fast trading in certain financial markets. The application of AI can help with asset allocation, security selection, trade execution and risk management.

One of the benefits that can be gained from applying AI in investment decision making is that it will be able to handle large amounts of information which would not be manageable by human analysts. The skill of a financial analyst in recognizing patterns and creating information for investment decision making can be enhanced.

However, the application of AI in investment decision making comes with certain risks. If many financial institutions apply the same model and behave in the same manner depending on market conditions, their behavior may result in increased market volatility in stressful situations. According to IMF, the application of AI in investment decision making can both increase efficiency of financial markets and lead to increased volatility.

2.4-AI and fraud detection

One more area where AI can help in making decisions in finance is fraud detection. In financial organizations, there are millions of transactions, which makes it impossible for people working at such places to analyze them on an individual basis.

AI algorithms allow detecting any irregularities in transaction patterns, which makes it possible to identify suspicious transactions.

According to recent studies, AI has revolutionized the audit industry (Sawaya et al., 2026), thus increasing the transparency of financial statements (Saber & Sassine, 2022), however according to subject expert, this is conditioned by auditor independence (Sawaya et al., 2025).

The research literature often regards fraud detection as one of the areas where machine learning algorithms are applied to finance. One study, for example, mentions fraud detection, credit evaluation, algorithmic trading, and financial forecasting as examples of such applications.

2.5-Risks and ethical issues

As there are multiple benefits of AI in finance, there are also multiple challenges as identified through the literature. One of the challenges of AI systems is algorithmic bias where the bias present in historical data may be reflected in the outputs produced by AI algorithms.

Another challenge that is identified is the explanation where some AI algorithms are difficult for humans to understand. This challenge is of utmost importance in case of finance as the consequences of AI decisions can be serious and important in cases related to loans, investments, and insurances.

Privacy is another challenge in this regard where a large amount of private as well as financial data is required to train an AI system. Another challenge is related to cybersecurity where financial institutions are open to cyber-attacks.

According to the literature, AI leads to multiple challenges related to governance, model risk management, data governance, expertise, and third-party AI vendors in the finance sector according to BIS.

2.6 AI and firm performance

AI has been found to increase firm performance, especially for Small and Medium Enterprises SMEs (Khalife et al., 2024), this is particularly the case when combined with proper governance (Athari et al., 2023) and proper human business experience (Chaanine et al., 2023). AI can also increase the performance of investing corporations, through sentiment analysis which were not available before the technological surge (Khalife et al., 2025), and even though the results on a national scale vary (Athari et al., 2026), but the results on an enterprise level have been found significant (Azoury et al., 2024). Furthermore, AI has positively attributed the non-financial performance of firms and the value of their stocks accordingly (Kaspard et al., 2025 ; Kaspard et al., 2026), technology also enabled the creation of cryptocurrency (Beainy & Kamel, 2026) and predicting financial distress (Elia et al., 2021) allowing companies to get equity financing at a lower required return due to lower risk (Rizk & Sassine, 2023).

However, the literature adds that this positive impact is dependent on technological adeptness (Bejjani et al., 2024) and proper knowledge management combined with big data analytics to have a significant effect on firm performance, (Subrahmanyam et al., 2024), finally, AI resulted in better pricing (Khalife et al., 2023) thus positively contributing to an increase in market efficiency.

To conclude, AI is useful in decision-making in finance but it depends on data, model, governance, and expertise of human beings.

Methodology:

The approach chosen for this report is a qualitative literature review. The aim of this approach is to conduct an analysis of the existing literature and institutional documentation on the use of artificial intelligence in financial decision-making.

The data was gathered from research papers and institutional documents of the major international financial institutions. The sources for this research were chosen depending on their relevance to the application of artificial intelligence in finance, which includes credit decisions, risk management, investment decisions, fraud detection and financial stability.

The research was conducted according to the following sequence of steps:

Identification of the research topic:

The research topic was identified as the applications of artificial intelligence in financial decision-making.

Literature search:

The academic and institutional literature was searched for sources that mentioned such concepts as artificial intelligence in finance, AI in financial decision-making, machine learning credit scoring, AI risk management, AI financial markets and algorithmic trading.

Selection of sources:

The sources that included IMF and BIS, as well as the peer-reviewed academic literature were chosen as the sources of the research-based information on applications and risks of AI in finance.

Literature review:

The selected sources have been analyzed in order to find out any recurring themes. The following themes have been revealed: efficiency, forecasting, credit scoring, risk management, fraud detection, investments, transparency, fairness and financial stability.

Synthesis of findings:

The information provided by the sources listed above has been synthesized in order to determine the influence of AI on financial decision-making in general.

Therefore, it should be noted that the selected research is the secondary one. This kind of research does not include any data collection process from banks, investors or any financial institutions. Instead, it analyzes the information provided by other authors and financial institutions.

One of the disadvantages of the selected approach is that performance of AI depends on the specific dataset, financial market, institution and algorithm employed. Therefore, the results of one study cannot be easily applied to any other financial institutions or countries.

In scientific papers analyzed within the framework of this report, it was stated that the use of artificial intelligence in the decision-making process in finance becomes increasingly popular.

Results:

4.1 The Increased Speed of Financial Data Analysis With the Help of AI

In the first place, it was concluded that the speed of processing of large amounts of financial data with the help of AI is higher than in the conventional way. It can be useful for the banks and investment companies that require working with huge datasets.

As it was found by the International Monetary Fund, increased efficiency and productivity can become one of the most significant advantages of using AI in finance. In this case, AI can be implemented from back-office processes to financial analysis and modeling.

4.2 Predictive and Risk Management Functions of AI

In the second place, the implementation of machine learning can be helpful in prediction and risk assessment in such areas as credit scoring, fraud detection, and financial risk management.

According to research conducted on the financial risks associated with the use of the internet, it was discovered that certain machine learning techniques can surpass traditional credit scoring models in efficiency and prediction.

This implies that AI can indeed be a very helpful financial tool if developed in the right way.

4.3 AI Helps with Making Investment Decisions

It also appears from the literature review that AI is more often applied in investment related processes. This includes securities analysis, asset allocation, trade execution, and risk monitoring. AI is able to work with structured and unstructured data and detect patterns that could be hard to detect manually. Thus, the areas mentioned above as important for AI application according to IMF research on capital markets are investment decisions, trade execution, and monitoring.

However, it does not mean that AI helps in making the investment risk-free. Financial markets are affected by various unexpected elements, and the AI model that shows good results based on historical data will not show equal performance in future market conditions.

4.4 Human Control is Necessary

Another finding to mention is that, generally, AI should be supplemented by human control, especially when decisions carry financial responsibility.

Thus, the IMF states that market participants are still careful about the idea of totally autonomous AI strategy, and it is considered that human control is important for regulatory, risk management, liability, and ethical reasons.

Therefore, AI could be treated as a tool for making decisions.

Discussion and Conclusion:

In general, the application of Artificial Intelligence impacts the decision-making process in finance. As seen from the literature considered in the current paper, the technology is applied in different spheres including credit scoring, fraud detection, risk management, investment analysis, algorithmic trading, and financial forecasting.

The main advantage of AI is connected with the possibility of fast analysis of a large amount of data. Thus, through the usage of the technology, one may increase the efficiency of the process and discover some patterns that cannot be found by other means. Furthermore, machine learning may provide the opportunity for prediction in different financial applications if there is enough accurate data.

However, the use of AI has its drawbacks. Financial decisions may have drastic outcomes. Hence, the use of complex algorithms involves some problems related to bias, privacy, explainability, cybersecurity, and modeling risks. Besides, one should notice that the market environment changes, and therefore the adequacy of the model created based on historical data does not guarantee successful results in the future.

According to the conclusions made as a result of the analysis of the literature on the issue, it can be stated that AI should be regarded as a vital technology facilitating the process of making decisions rather than being a replacement for people's intellectual capacities.

The future use of AI in financial decision-making is likely to be connected with the cooperation between the technologies and the people experienced in finance. The advancement of the technologies will make it necessary to consider not only the development of sophisticated models but also their correct application.

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