

---

***Data Analysis Using Artificial Intelligence and Its Impact on the Trading Process in  
Financial Markets***

***Berarma Rima***

Algerian capital markets assessment laboratory and prospects for their development in light of  
globalization, university of setif 1, (Algeria)

[rima.berarma@univ-setif.dz](mailto:rima.berarma@univ-setif.dz)

Received: 23.10.2024

Accepted: 28.11.2024

Published: 01.01.2025

**Abstract :** The analysis of data using artificial intelligence (AI) is considered one of the pivotal factors reshaping trading practices in financial markets. AI provides the capability to process vast amounts of data quickly and accurately, assisting traders in uncovering hidden patterns and trends, thereby enhancing the accuracy of predictions regarding price movements. It also contributes to risk management by providing precise analyses that support well-informed Investment decisions. However, this field faces certain challenges, such as a lack of transparency and risks associated with erroneous analyses, necessitating a careful balance between reliance on AI and the utilization of human expertise. Overall, AI represents a significant opportunity to improve trading effectiveness, provided that the associated risks are managed prudently.

**Keywords :** Data Analysis, Artificial Intelligence, Trading, Financial Markets

**JEL Classification Codes :** C80,O33, G10, G15

---

**Corresponding author :** rima berarma, e-mail: [rima.berarma@univ-setif.dz](mailto:rima.berarma@univ-setif.dz)

## **1. Introduction**

In the past decade, financial markets have undergone a significant transformation driven by rapid technological advancements, particularly in the realm of data analysis employing artificial intelligence (AI). AI has emerged as an indispensable tool for comprehending and scrutinizing intricate patterns within financial data, thereby empowering traders to make more informed and effective decisions.

The importance of AI in data analysis is accentuated by its ability to process vast volumes of information with remarkable speed and precision, facilitating conclusions that are anchored in empirical evidence rather than intuition or emotional impulses. Through sophisticated machine learning algorithms, AI systems can extract insights from historical data, which aids in forecasting market movements and identifying lucrative investment opportunities.

The integration of these technologies has profoundly influenced financial markets, with the advent of algorithmic trading systems fundamentally reshaping trade execution and risk management practices. While the benefits of AI in trading are considerable, accurately predicting price movements necessitates substantial expertise and rigorous analysis. Consequently, traders and investors face challenges in making sound decisions that yield profitable investment returns. In this context, AI assumes a pivotal role in analyzing financial market data by discerning potential risks and projecting future price trajectories. This capability enhances risk management strategies and contributes to the mitigation of financial losses, underscoring the transformative impact of AI on contemporary trading methodologies.

Based on the preceding discourse, the following problem statement can be articulated:

**How is data analyzed through the lens of artificial intelligence (AI), and what impact does this analysis exert on trading operations within financial markets ?**

From this central problem statement, several pertinent sub-questions can be formulated:

- What are the prerequisites for effectively entering financial markets through the deployment of artificial intelligence ?
- What essential data must be gathered to facilitate the analysis of financial markets utilizing AI ?
- How can machine learning methodologies be leveraged to forecast price movements in these markets?
- What are the primary challenges that may arise when integrating artificial intelligence into financial market practices?
- In what ways can artificial intelligence be employed to enhance automated trading strategies?

This study is of considerable significance as it highlights the application of artificial intelligence (AI) across various sectors, particularly within financial markets, which have become progressively reliant on AI technologies for their regulation and governance. However, this heightened dependence introduces potential risks that may give rise to illicit activities, necessitating legal accountability. Therefore, an examination of the methodologies by which financial markets are managed through AI is crucial for a thorough understanding of these dynamics and their broader implications.

## **2. Prerequisites for Entering Financial Markets with Artificial Intelligence**

The process of listing on the stock exchange necessitates adherence to a set of legal requirements that can be classified into two distinct categories. The first category comprises

general conditions that must be fulfilled for market entry, which may differ from one jurisdiction to another. The second category encompasses specific criteria that must be satisfied when seeking to list on the stock exchange using artificial intelligence technology. A comprehensive understanding of these prerequisites is essential for entities aiming to navigate the complexities of market entry and ensure compliance with regulatory standards (Zhou, 2018, p. 10).

**2.1. General Conditions for Entering Financial Markets with Artificial Intelligence :** The process by which companies and economic institutions endeavor to enter the securities market necessitates the fulfillment of a comprehensive array of conditions, encompassing both financial and legal dimensions. It is important to highlight that the entry requirements for the stock exchange vary significantly between countries and across different exchanges. These conditions can be succinctly articulated as follows:

- The company or institution seeking to enter the stock exchange must be classified as a capital company, characterized by its reliance on the capital contributions of its partners, irrespective of the independent status of each shareholder. Such companies are distinguished by the tradability of their shares and include forms such as joint-stock companies, limited partnerships with shares, and limited liability companies.
- It is essential that the capital be made accessible to prospective shareholders at a rate ranging from 20% to 25%. This proportion must be offered on the securities market through the issuance of corresponding shares no later than the date of listing.
- Companies or economic institutions aspiring to enter the stock exchange must have been established or operational for a minimum duration of three years.
- The publication of annual financial statements for the two preceding fiscal years is mandatory, and the company must have demonstrated profit ability during the two years leading up to the date of application submission.
- The presence of an internal control body must be substantiated, with an evaluation conducted by an auditor in their report regarding the company's internal control systems. In the absence of such a body, the company is required to commit to its establishment within the fiscal year following the acceptance of its securities for trading.
- A comprehensive entry dossier must be meticulously prepared and submitted to the relevant authorities. This dossier should include the company's articles of incorporation, a detailed overview of its operations, and its future prospects, along with a strategic plan for entering the securities market.
- The final financial statements must be submitted, encompassing the income statement and the audited closing balance sheet, duly certified by the auditor.
- The company is obligated to notify the stock exchange management of any transfers or disposals of specific assets prior to its entry into the stock market.

**2.2. Specific Conditions for Entering Financial Markets with Artificial Intelligence :** To gain access to any stock exchange, there exists a comprehensive set of standard conditions that investors must comply with prior to listing. However, when contemplating entry into financial markets utilizing artificial intelligence (AI), several specific conditions must be satisfied, as delineated below:

- **Obtaining Licenses :** The requirement for securing licenses signifies that companies interested in entering financial markets through the application of artificial intelligence must

obtain the necessary official approvals and licenses from pertinent authorities before initiating operations. These licenses function as regulatory instruments designed to oversee and regulate the deployment of modern technology and AI within financial markets, ensuring the lawful and appropriate provision of financial services. Typically, the authorities responsible for issuing licenses for the use of AI in financial markets include governmental agencies tasked with oversight and regulation, such as central banks and financial regulatory bodies. Specific prerequisites may be established for license acquisition, including the submission of comprehensive reports on the technologies employed, the provision of Security and protection plans, and compliance with evaluations conducted by relevant authorities prior to the implementation of AI (الرسمية، 1997).

- **Compliance with Financial Laws and Regulations:** The integration of artificial intelligence into financial markets necessitates stringent adherence to the financial laws and regulations applicable within the jurisdiction of implementation. This encompasses compliance with all legal frameworks governing financial markets, including regulations pertinent to corporations, financial funds, and other financial institutions operating within these environments. Furthermore, adherence to financial laws includes compliance with regulations governing the secure and ethical utilization of financial and personal data related to investors. This includes obligations related to data encryption and safeguarding against unauthorized access and misuse, thereby protecting investors and preserving the integrity of financial markets from potential violations or fraudulent activities.
- **Investment in Modern Technology:** This condition stipulates that companies aspiring to enter financial markets with artificial intelligence must invest in the development of innovative technologies and solutions within the AI domain that can enhance the financial landscape. Such investments are intended to encourage firms to cultivate innovations that yield valuable solutions for investors and the broader financial ecosystem.
- **Adherence to Security Standards:** The incorporation of artificial intelligence into financial markets mandates compliance with established security and protection standards. Financial organizations engaged in AI-driven trading and investment must implement rigorous standards and procedures to ensure the safe utilization of AI technologies, thereby mitigating any adverse impacts on trading systems and overall market stability. Upholding these security standards is crucial for the successful integration of AI within financial markets, optimizing the benefits of AI technologies, and enhancing financial performance.
- **Provision of a Qualified Workforce:** This condition underscores the necessity of assembling a team with the requisite expertise in modern technologies and artificial intelligence. Such a workforce should possess the skills to analyze and interpret financial data effectively and provide accurate recommendations to investors. Typically, these teams comprise specialists in AI, financial analysis, and data analytics, alongside proficient programmers and developers. Companies aiming to enter financial markets with artificial intelligence must ensure the availability of a sufficiently qualified workforce capable of transforming financial data into actionable insights for investors, in collaboration with domain experts and specialists.

**2.3. Applications of Artificial Intelligence in Financial Markets :** The applications of artificial intelligence within financial markets encompass a diverse array of domains, significantly

contributing to the field of financial brokerage. Additionally, AI enhances the operational efficiency of central clearinghouses and regulatory authorities.

### 3. Data Analysis Utilizing Artificial Intelligence

The incorporation of artificial intelligence (AI) within financial markets is witnessing unprecedented growth, capturing the interest of organizations, regulators, and investors alike. AI is extensively deployed for data analysis, encompassing a diverse array of applications pertinent to this domain.

**3.1. Technical Data Analysis :** Technical analysis is a discipline centered on the examination of price patterns and recurring technical indicators in the dynamics of stock, currency, and commodity prices. The primary objective of this field is to elucidate future price trajectories. In the realm of financial markets, artificial intelligence is frequently leveraged to perform technical analysis by scrutinizing historical price data to formulate predictive models that assist in forecasting prospective price movements. Prominent examples of price patterns include trends, channels, and exploration patterns (P, 2018, p. 23).

The foundational hypothesis of technical analysis posits that the recurrence of price patterns and technical indicators signifies a heightened probability of trend repetition in the future. Through the application of AI, analysts can process these patterns with augmented speed and precision, thereby empowering traders to make more informed investment decisions and enhancing the potential for superior profits (Kumar & Rajiv, 2018, p. 16).

**3.2. Customer Interaction :** AI-driven chatbots are increasingly employed in customer service to furnish personalized financial advice and deliver prompt responses to client inquiries, thereby mitigating the necessity for human interaction. These chatbots further analyze customer interactions and sentiments to enhance the overall user experience while automating routine tasks and updating customer information efficiently (الشعراني, 2023).

**3.3. Market Trend Evaluation m** Artificial intelligence possesses the capacity to accurately assess both historical and current market trends, identify salient patterns, and predict future price movements. Moreover, AI algorithms can execute transactions in a timely manner based on pre-defined rules and conditions. Financial institutions and investors derive substantial advantages from this advanced technology, as it facilitates the formulation of precise, informed decisions predicated on the analysis of extensive datasets (2023, الباحث, p. 15).

**3.4. Robo-Advisors :** The concept underlying robo-advisors involves AI functioning as a digital investment consultant that delivers its services by analyzing historical price patterns, discerning trends and future indicators, and generating optimal financial recommendations for investors. This system enables users to create and manage their investment portfolios through a web platform or mobile application, often with minimal or no interaction with human advisors. Investors provide relevant information, and the robo-advisor formulates recommendations based on that input. This AI-driven investment advisory model contributes to enhanced investment performance while mitigating associated risks.

### 4. The Utilization of Artificial Intelligence in Market Direction Determination and Forecasting within Financial Markets

The implementation of artificial intelligence (AI) in discerning market direction and forecasting within financial markets represents a highly effective mechanism that facilitates informed decision-making. Intelligent systems possess the capacity to analyze vast quantities of historical and real-time data, extracting nuanced patterns and trends that may not be readily apparent to traders. Techniques such as machine learning and neural networks are employed to scrutinize economic data, market information, and even news and social trends. These analytical

processes are instrumental in predicting price movements and future market trajectories, thereby empowering investors to make strategic decisions that enhance profit opportunities while mitigating risks. This is accomplished through the following methodologies:

**4.1. Price Forecasting :** Price forecasting technologies provide invaluable investment opportunities, enabling investors to leverage precise predictions to make judicious investment decisions and augment their potential for profit. This approach can be applied to a diverse range of financial assets, including cryptocurrencies, equities, and commodities.

**4.2. Automated Trading :** The scope of AI systems extends beyond mere analysis; they can also supplant human traders by executing transactions based on programmed directives derived from historical data. Automated trading is characterized by its speed, accuracy, and immediate responsiveness to fluctuations in financial markets, thereby optimizing profitability and enhancing overall operational efficiency.

## **5. The Role of Artificial Intelligence in Monitoring Market Deviations**

Artificial intelligence plays a pivotal role in the surveillance of market deviations by delivering precise and rapid analyses founded on extensive datasets. The following aspects delineate its key contributions:

**5.1. Big Data Analysis:** AI utilizes advanced analytical techniques to scrutinize financial data, encompassing price dynamics, trading volumes, and economic trends. Such analyses are essential for identifying normative patterns within the market.

**5.2. Deviation Detection:** Through machine learning, sophisticated models can discern anomalous changes in prices or market behaviors, such as sudden surges or abrupt declines, which may indicate potential deviations.

**5.3. Future Movement Forecasting:** AI is adept at generating predictions regarding the potential ramifications of economic or political events on market dynamics, thereby facilitating data-informed investment decisions for investors.

**5.4. Real-Time Analysis :** AI provides the capability for instantaneous market monitoring, enabling immediate responses to sudden or unforeseen changes.

**5.5. Risk Mitigation:** By issuing notifications and alerts concerning deviations, AI assists investors in enhancing their risk management strategies, thereby improving the likelihood of success in volatile market environments.

**5.6. Portfolio Management:** Effective management of investors' financial asset portfolios entails the judicious selection of investment assets and the allocation of capital among them to achieve defined investment objectives while considering and controlling acceptable risk levels. AI techniques can be deployed in portfolio diversification and in the management of investment risks, contributing to the minimization of potential losses. Additionally, AI enhances decision-making processes and portfolio performance management through continuous market monitoring and comprehensive analysis of Financial and economic data related to publicly traded companies, exchange-traded funds, and other assets (Jia & Mariya, 2018, p. 167).

**5.7. Risk Management:** Financial markets are increasingly embracing AI to develop more accurate and sophisticated predictive models. These capabilities enable financial experts to harness contemporary data to identify risks and trends, ensuring currency stability and providing superior information for future strategic planning. AI can elucidate potential risks and forecast

future scenarios, offering valuable insights that assist financial institutions in making informed decisions based on complex financial data. An illustrative example is the "Aladdin" platform developed by BlackRock, which integrates algorithms and machine learning to analyze vast amounts of financial data, thereby facilitating the identification of risks and opportunities while delivering timely insights to investment managers(9 صفحة، 2019، ستين) .

**5.7. Fraud Detection:** This application is critical for identifying various forms of fraud or manipulation within financial data and business operations. It relies on sophisticated data analysis techniques, machine learning, neural networks, and both general and specialized algorithms to detect patterns and signals indicative of fraudulent activity. This process involves monitoring financial data patterns to identify unusual discrepancies, outliers, or implausible correlations among data points. In instances of suspicion, alerts are triggered for traders, supervisors, or regulatory authorities, necessitating appropriate measures to investigate and verify the issue. Consequently, fraud detection emerges as an essential tool for maintaining integrity and transparency within financial markets, thereby safeguarding investors from unjustified losses (Bhatia & Mandeep, 2019).

## 6. Potential Risks of Artificial Intelligence in Financial Markets

In recent years, advancements in artificial intelligence (AI) technologies have significantly augmented their capacity to analyze data and deliver precise predictions regarding financial markets. Nevertheless, despite the potential advantages associated with these technologies, there are inherent risks tied to their application within this domain. The following risks merit particular scrutiny(2023، عباس) :

- **Informed Decisions:** AI algorithms primarily rely on historical data, consequently, any anomalies or inaccuracies within this data can precipitate misguided investment decisions.
- **Data Bias:** The effectiveness of investment strategies may be adversely influenced if the data employed is unrepresentative or imbued with biases, which can distort outcomes.
- **Loss of Transparency:** The intricate nature of certain AI systems may render them opaque, complicating users' ability to comprehend the underlying decision-making processes. This lack of transparency can erode trust in the efficacy and reliability of these systems.
- **Sudden Market Changes:** AI systems may lack the requisite adaptability to respond to unforeseen events or market disruptions, thereby amplifying risk exposure.
- **Security Vulnerabilities:** Digital systems are susceptible to cybersecurity breaches, which can compromise financial integrity and lead to substantial financial losses.
- **Instability Due to Over-Reliance:** An excessive dependence on similar AI systems may precipitate heightened market volatility, as widespread behavioral patterns could exacerbate fluctuations in asset prices.
- **Regulator Compliance Challenges:** Organizations may encounter significant obstacles in ensuring that their AI systems conform to pertinent financial regulations and legal standards, potentially exposing them to legal liabilities and compliance issues.

## 7. Methods of Protecting Traders Using Artificial Intelligence in Financial Markets

The methods employed to protect traders using artificial intelligence in financial markets encompass a range of strategies and techniques. These methods rely on advanced data analysis to detect negative patterns and predict potential risks. Additionally, mechanisms are implemented

for instant alerts when any unusual behavior in the market is observed. Furthermore, data security is enhanced through encryption techniques and cybersecurity measures to ensure the safety of sensitive information. Advanced models are also developed for risk assessment and effective diversification strategies to maintain the stability of investment portfolios. These efforts contribute to providing a safer and more reliable trading environment for traders. Below are some of the methods used to protect traders using artificial intelligence in financial markets:

- **Advanced Data Analysis:** AI relies on analyzing large amounts of data to identify unusual patterns and behaviors, helping to uncover potential risks.
- **Instant Alerts:** AI technologies are used to send instant alerts to traders when abnormal changes occur in the market, enabling them to make quick decisions.
- **Risk Assessment:** Advanced models are utilized to assess the risks associated with investments, assisting traders in making informed decisions based on acceptable risk levels.
- **Enhancing Cybersecurity:** Data security is strengthened through encryption techniques and breach prevention measures, protecting traders' sensitive information.
- **Investment Diversification Strategies:** AI can aid in developing effective diversification strategies, reducing the risks associated with investing in specific assets.
- **Performance Evaluation:** AI tools help monitor and analyze the performance of investment portfolios, allowing traders to continuously adjust their strategies.

## **8. Legal Liability for Artificial Intelligence Errors in Financial Markets**

Legal responsibilities associated with programming errors in artificial intelligence (AI) within financial markets in the United States vary depending on the nature of the error and its impact on traders and stakeholders. It is important to acknowledge that legislation and regulatory frameworks differ among states and are subject to ongoing evolution. Nevertheless, several common legal liabilities can be delineated when programming errors in AI occur in financial markets :

- **Developer Liability:** Under U.S. law, companies that develop AI technologies are required to compensate users for financial damages incurred due to errors. Affected parties have the right to initiate lawsuits against these companies to seek appropriate reparations, as financial software typically bears primary responsibility for programming errors that lead to losses. Additionally, developers are obligated to provide comprehensive training to users on the safe and effective utilization of AI technologies, including raising awareness about potential risks and strategies for mitigation. Moreover, developers must supply necessary software updates to enhance performance and reduce the likelihood of future errors) U.S(2022 ‘.
- **Broker Liability:** Financial brokers are mandated by U.S. regulations to maintain a fair and equitable trading environment for their clients. When employing intelligent technologies in trading operations, brokers must ensure that these technologies function correctly to avoid programming errors or market manipulation. If a broker utilizes malfunctioning AI technologies that result in financial losses for users, they may be held liable for those losses. Furthermore, brokers may face liability if these technologies are associated with any form of fraud or market manipulation, potentially leading to legal repercussions. It is essential to recognize that liability is contingent upon the specific circumstances of each case and the extent of the broker's involvement in the programming error or financial misconduct (Hendershott, Ryan, & Brian, 2023).

- **Regulatory Agency Liability:** Regulatory bodies bear the responsibility of ensuring compliance with laws and regulations governing AI in financial markets, protecting investor rights, and preventing violations or market manipulation. For example, the U.S. Securities and Exchange Commission (SEC) enforces a suite of regulations that govern financial and investment activities, establishing specific rules for the use of technology in these markets. These regulations encompass validating traded information, preventing price manipulation, and ensuring the provision of transparent and accurate information to investors. Consequently, regulatory agencies hold substantial responsibility for ensuring the effective and accurate implementation of these rules and regulations.
- **Trader Liability:** Traders who employ AI technologies in their trading activities assume responsibility for the decisions made based on these technologies. In cases where programming errors or inaccurate data used in trading lead to financial losses, traders are liable for those losses. Additionally, traders engaging in any form of fraud or market manipulation utilizing AI technologies will face legal accountability for any resultant financial losses. To mitigate these risks, traders are encouraged to enhance their understanding of the technologies utilized and verify the accuracy of the data and information upon which they rely. They must also adhere to all relevant laws and regulations governing trading in financial markets and conduct their activities with integrity and high ethical standards (Jr & David, 9).

Financial and investment management firms are advised to maintain detailed and regularly updated records to assess whether automated systems, are functioning correctly and aligning with the specified investment strategy objectives. Furthermore, these firms must promptly report any malfunctions or errors in automated systems, including changes in the technologies, software, or data utilized.

As of now, no comprehensive laws have been enacted in the European Union addressing legal liability for programming errors in AI within financial markets. However, several general guidelines and legislative frameworks may be referenced. For instance, a set of guidelines pertaining to AI was issued by the European Union in April 2019, emphasizing the necessity for transparency, accountability, legal rights protection, security, safety, and ethical considerations. Additionally, existing EU legislation, such as laws related to personal data protection and consumer rights, includes provisions that can be invoked to establish liability in cases involving AI-related errors in financial markets.

In April 2021, the European Union introduced new legislation that establishes a framework for the ethical use and accountability associated with AI. This legislation delineates specific requirements for liability concerning parties employing AI in financial markets, stipulating that users of AI are responsible for decisions made based on its analyses and results. Users are also required to clarify the operational mechanisms of these systems and ensure compliance with applicable laws and regulations. The legislation includes protections for consumer and investor rights, underscoring the importance of handling data in a manner consistent with personal data protection and privacy standards.

The preceding information can be summarized based on the following key principles:

- **European Ethical AI Guidelines** issued in 2019, which emphasize the necessity for transparency, accountability, protection, security, and safety in the utilization of intelligent technologies such as AI.

- **General Data Protection Regulation (GDPR)**, which governs personal data protection and emphasizes the importance of maintaining the privacy of customers' financial data.
- **Anti-Money Laundering and Counter-Terrorism Financing Laws**, which obligate financial firms to implement measures to prevent money laundering and terrorism financing, while stressing the use of intelligent technologies for data analysis to identify illicit financial activities.
- **New European Financial Discipline Rules**, which aim to enhance existing regulations to mitigate financial risks and improve transparency and customer protection.

Additionally, it is noteworthy that the European Union is actively pursuing the establishment of specific legislation concerning artificial intelligence.

## 9. Conclusion

The integration of artificial intelligence (AI) in the analysis of data within financial markets signifies a transformative shift in the methodologies employed for information analysis and investment decision-making. AI possesses the capability to process vast quantities of data in a significantly reduced timeframe, thereby assisting investors in identifying patterns and trends that may remain obscured through traditional analytical techniques.

Furthermore, AI provides sophisticated tools for risk assessment, enhancing the ability of investors to make informed decisions. However, an over-reliance on such technologies may introduce novel challenges, including issues related to transparency and the potential risks associated with erroneous analyses. Consequently, it is imperative to establish a balance between leveraging AI technologies and utilizing human expertise to ensure the formulation of successful and sustainable investment strategies. In this context, AI not only opens new avenues in the realm of financial markets but also necessitates ongoing adaptation and learning in response to rapid advancements.

**Key Findings:** The study yielded several critical findings, including:

- **Entry Conditions:** Engaging in financial markets through AI requires specific conditions beyond conventional entry criteria.
- **Accuracy and Precision:** AI plays a vital role in enhancing the precision of financial market operations, thereby reducing Human error.
- **Regulatory Oversight:** The absence of a dedicated regulatory body to oversee the operation of AI in financial markets presents a significant gap.
- **Predictive Accuracy:** AI techniques have demonstrated an ability to improve the accuracy of predictions related to price movements and market trends, thus aiding investors in making more informed decisions.
- **Efficiency in Data Processing:** The capacity of AI to handle extensive data sets in a brief period markedly diminishes the time required for analysis compared to traditional methodologies.
- **Pattern Recognition:** AI has proven effective in identifying complex data patterns that may not be readily apparent through manual analysis.

- **Risk Mitigation:** AI techniques contribute to reducing trading-related risks by providing precise analyses of market data.
- **Tailored Investment Strategies:** AI models can customize investment strategies to align with dynamic market patterns and individual investor requirements.
- **Market Sentiment Analysis:** AI's ability to analyze market sentiment through the monitoring of news and social trends introduces a novel dimension to financial data analysis.
- **Complementary Role:** Despite the advancements in AI applications within financial markets, they are still regarded as supportive tools, and traditional market mechanisms remain essential.

**Recommendations:** Based on the findings, the following recommendations are proposed:

- **Skill Development:** It is crucial to enhance training programs for investors and traders to deepen their understanding of AI techniques and their effective application in investment decision-making.
- **Data Quality Improvement:** Financial institutions should prioritize the enhancement of data quality utilized in AI models, as the accuracy of outcomes is heavily contingent upon the quality of input data.
- **Transparency Enhancement:** Developing mechanisms to ensure transparency in AI algorithms is vital, as it aids investors in comprehending the associated risks of utilizing these technologies.
- **Legal Framework Development:** Establishing a clear legal framework to govern the use of AI in financial markets is essential to protect investors' rights and mitigate potential risks.
- **Continuous Research:** Ongoing research into AI and its applications in financial markets should be promoted to facilitate the development of innovative and effective models that bolster predictive capabilities.
- **Inter-entity Collaboration:** Strengthening collaboration among financial firms, academia, and software developers is essential for the exchange of knowledge and experiences, thus enhancing AI applications in the financial sector.
- **Risk Assessment Protocols:** Financial institutions should conduct regular assessments of the risks associated with AI technologies and formulate strategies to mitigate these risks.
- **Exploration of New Applications:** Investigating novel applications of AI, such as big data analysis and future trend predictions in financial markets, is necessary for identifying new investment opportunities.

## 10. Bibliography List:

- Bhatia, S., & Mandeep, K. (2019). „Predicting Stock Prices with Deep Learning Models . Consulté le september 3, 2024, sur <https://ieeexplore.ieee.org/document/8370641>
- Hendershott, T., Ryan, R., & Brian, R. (2023, JUL 26). Algorithmic Trading and the Market for Liquidity. Consulté le 2024, sur <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1540-6261.2011.01662.x>
- Jia, M., & Mariya, Y. (2018). Applied Artificial Intelligence: A Handbook for

- Business Leaders . O'Reilly Media , USA : 3 Second Edition .Jr, J. C., & David, Y. (9, 5 2023). Artificial Intelligence, Algorithmic Trading, and Market Manipulation. Consulté le 2024, sur <https://www.jstor.org/stable/24862935>
- Kumar, A., & Rajiv, B. (2018). Consulté le 2023, sur Using Machine Learning to Predict Stock Prices: <https://www.ijcsme.com/docs/papers/August2017/V6I8201783.pdf>
- P, E. (2018). ChanAI-driven financial markets: the future is now.U.S., b. t. (2022). Securities and Exchange Commission,Artificial Intelligence and Securities Markets: Initial Reflections and Considerations . Récupéré sur <https://www.sec.gov/spotlight/artificial-intelligence>
- Zhou, A. (2018). Artificial Intelligence in the Financial Markets: A Blueprint for Success . magazine 1 Harvard Business Review , Harvard Business Publishing , vol N 96.
- . Récupéré sur [www.maaal.com](http://www.maaal.com)الباحوث، ل.(2023).الجانب القانوني لتقنية الذكاء الاصطناعي في الأسواق المالية العالمية
- الرسمية، ا. (1997). المادة 30 من النظام 97/03 رقم المؤرخ في 18 نوفمبر 1997 يتعلق بالنظام العام بالبورصة بقم المنقولة، الجريدة الرسمية .
- . Récupéré sur <https://fifreedomtoday.com>الشعراني، ه. (2023). استخدامات للذكاء الاصطناعي في الأسواق المالية
- ستين، د. ع. (2019). تطورات الإستخدام الإقتصادي للذكاء الاصطناعي . مجلة البحوث القانونية والإقتصادية.
- عباس، ح. (2023). المخاطر الناشئة عن تقنيات الذكاء الاصطناعي في الأسواق المالية . Consulté le 2024, sur <https://www.cses.org.sa/Article/330/%D8%A7%D9%84%D9%85%D8%AE%D8%A7%D8%B7%D8%B1->

**To cite this article according to (APA):**

Berarma Rima. (2025). Data Analysis Using Artificial Intelligence and Its Impact on the Trading Process in Financial Markets. *Journal of New Economy*, Vol16 / (Issue 01-2025).