

The Use of Artificial Intelligence in Trade Activities

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Abstract

The present work starts from the finding that Artificial Intelligence (AI) is increasingly influencing our lives. The integration of artificial intelligence (AI) in the economic field has experienced an extremely rapid transformation, in the trade activity being obviously visible from production and logistics, to financial services and customer relations.

Since predictions show that, by the beginning of the next decade, the transition to Artificial Intelligence could become a major engine of global prosperity, in this context, the paper aims to highlight the conceptual framework, the advantages, but also the risks associated with the integration. of AI technologies in trading companies, considering that many traders and investors are adopting this technology to improve their trading strategies.

Key words: artificial intelligence, trade, strategies, development

J.E.L. classification: F43, M15, O24, O33, N70

1. Introduction

The use of Artificial Intelligence (AI) has become a reality these days. And being still a new technology, new uses always appear, to which the economic and social environment must adapt. (Bolos, 2023)

Artificial intelligence has multiple applications in the economy, from the possibility of increasing efficiency or making decisions on a more solid basis of information to better experiences for end users or consumers. (<https://corpquants.ro/inteligenta-artificiala-in-economie/>)

The integration of AI in the economic field has experienced an unprecedented evolution, with an impact on economic activity, from production and logistics to financial services and customer relations; with a wide variety of applications, is considered disruptive and revolutionary.

The integration of this opportunity in the economic activities brings with it, along with numerous benefits, which we will analyze further in the paper, also a series of associated risks. That is why the creation and development of a solid ethical and legal framework, investments in cyber security and workforce adaptation strategies become of utmost importance. The existence of associated ethical and social challenges thus requires the involvement of interested parties from different sectors of activity to ensure that the transformations brought by the new technology make a real and positive contribution to economic progress. (Marcu, 2024)

Moreover, the ability of AI technology to effectively analyses the collected data and use to forecast future actions in real time with the use of sophisticated algorithms contributes in the growth of productivity. (Dhapte, 2024)

Artificial intelligence is a business imperative, but there is work that companies need to do to

capitalize on a transition to private AI. And any way, incorporating AI successfully means reimagining the organization. (https://www.techtarget.com/searchenterpriseai/PrivateAI/Private-AI-Demystified?utm_source=google&int=off&pre=off&utm_medium=cpc&utm_term=GAW&utm_content=sy_lp07022024GOOGOTHR_GsidsEAI_Equinix_Embed_IO212308_LI2785126&utm_campaign=Equinix_Embed_sEAI_US&Offer=sy_lp07022024GOOGOTHR_GsidsEAI_Equinix_Embed_IO212308_LI2785126&gad_source=1&gclid=CjwKCAjwkJm0BhBxEiwAwT1AXJ3knkuEIXonozxg7WTOk7Hxxk7hxEQvVWfLNSLoKyxPRwzglWslJhoC2gsQAvD_BwE)

The use of artificial intelligence in trading has gained ground in trading activities due to its ability to analyze large amounts of data with increased speed and accuracy, thus allowing finding solutions and making decisions much faster than using previous technical means.

AI has permitted trading companies to automate their trading strategies, allowing them to take advantage of market opportunities. (<https://www.nasdaq.com/articles/ai-trading-what-is-ai-trading-how-its-used-in-stock-trading>)

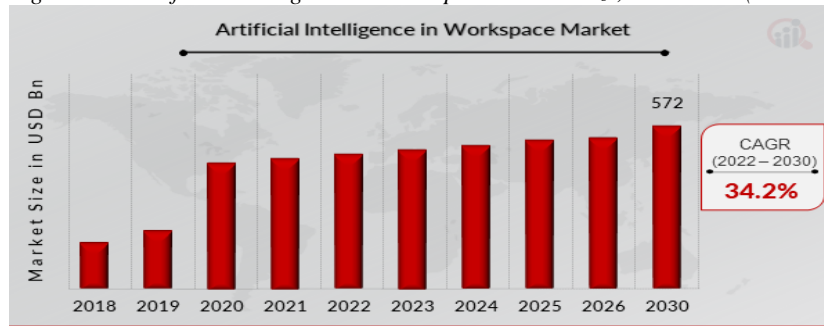
Retail trade is one of the fields in which the technology of AI technologies is constantly growing, as well as other new technologies of automation with a significant impact.

2. Theoretical background

In the last recent period of time, AI technology is rapidly expanding beyond the boundaries of the industrial field and territorial barriers. Thus, there is already a wide application in fields such as commerce or human resources management. (Dhapte, 2024)

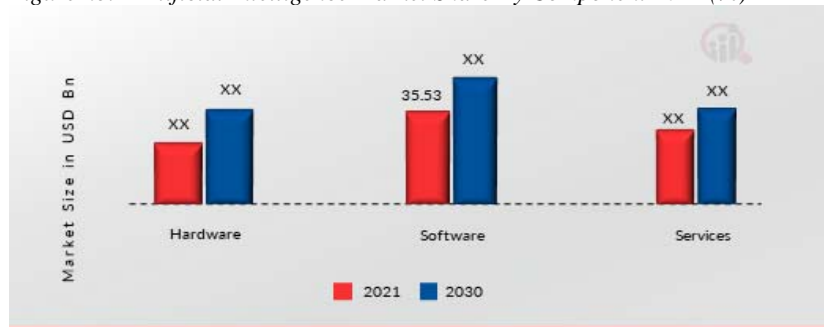
The name artificial intelligence comes from the fact that, to a large extent, its characteristics are equivalent to human behavior. AI is system software that introduces decision-making, action, and various other intelligences into a machine. which will then have to imitate human behavior and by analyzing the available data generate solutions to the problems in question. Recent studies show that artificial intelligence (AI) is on a rapid growth trend for the near future in the market share of business environments in very diverse fields, including commerce, as shown in the figures below: (Dhapte, 2024)

Figure no.1 Artificial Intelligence in Workspace Market Size, 2022-2030 (USD Billion)



Source: (Dhapte, 2024)

Figure no.2 Artificial Intelligence Market Share By Component 2024 (%)



Source: (Dhapte, 2024)

In terms of the use of AI in commercial activities, the intensification of efforts to find solutions to better understand and predict consumer behaviors and offer higher quality experiences have been driven by the development of e-commerce and the unprecedented growth of customer databases. As a result, retailers who use data effectively can secure a competitive advantage. (Anica-Popa,et al., 2021)

Incorporating AI successfully means reimagining the organization. But in order to benefit to the maximum from the potential of artificial intelligence, companies must substantially modify their own organizational structure, so that the new technology occupies a central place, in relation to all components. In recent years, this entrepreneurial attitude has gained a certain consensus among managers and especially among those who carry out their activity in the trade area. (Bala et.al, 2024)

Although AI is still a developing technology, many countries use it to develop their trade activity, both domestically and internationally. Certainly, joining the WTO can allow member countries to make better use of AI technology to support the development of international trade. Since the relationship between patent applications for different AI-related technologies and international trade is complex and constantly changing, each country should adopt and develop those types of technologies that are suitable for their income categories and at the same time beneficial to their commercial activities. (Lai, 2024)

3. Research methodology

This work aims to highlight the conceptual framework, the advantages, but also the risks associated with the integration of AI technologies in companies operating in the field of trade activity, starting from the finding that Artificial Intelligence (AI) is increasingly influencing our lives. The purpose of this study is to identify the main aspects related to the implementation of specific artificial intelligence technologies in commerce, but also the associated advantages and risks for the IT systems of companies operating in this sector. The research is of a qualitative type and was based on documentation, after which the materials were selected that, following the study, identified the mentioned elements and also those that can generate competitive advantages for the companies that carry out trade activity.

4. Findings

AI technology has gained popularity in recent years, with many traders and investors adopting it with the precise purpose to enhance their trading strategies. Success is due to benefits that could be obtained, especially to identify opportunities not possible always to be used with traditional trading methods; and it is an emerging technology that has had also an impact on traditional international trade theories.

The new technology thus became a new component of the factors of production. Countries that have research and development capabilities and means thus have a competitive advantage in high-tech industries. Through the increased data processing and forecasting capabilities of AI technology, they will be more competitive in the international trade market and the cooperation between countries become closer. (Lai, 2024)

4.1. AI trading

Speaking about the global economy, a new concept, AI trading, also known as algorithmic trading, has gained popularity in recent years, many traders and investors adopted this technology to enhance their trading strategies. AI trading is the use of artificial intelligence (AI) in the trading process in order to collect and process market information, obtain investment ideas, build portfolios, and enables traders to make informed decisions, reduce risks and make transactions more secure. (<https://www.nasdaq.com/articles/ai-trading-what-is-ai-trading-how-its-used-in-stock-trading>)

Within AI trading we can identify algorithmic trading strategies which are sets of rules and instructions that guide a computer program to execute transactions automatically. They are designed to help traders take decisions based on market data and other factors. Among these could be mentioned:

- *Quantitative Analysis*: a popular approach to algorithmic trading that involves regression analysis to identify patterns and trends. Traders can use this technique to develop strategies that identify correlations between various market factors;

- *High-Frequency Trading (HFT)*: which relies on sophisticated algorithms and high-speed data networks to take advantage of small price movements in the market and resulting in expected high transaction volumes quickly and efficiently;

- *Arbitrage Strategies*: which involve taking advantage of price differences between two or more markets. Statistical arbitrage is a popular strategy that involves identifying assets that are mispriced and trading which one could then profit by taking advantage of market inefficiencies and other opportunities;

In support of these strategies the approach known like machine learning produced a huge change in trading systems that allowed traders to analyze large amounts of data in real time. The methods of effective realization are mainly predictive models, sentiment analysis and reinforcement learning. (<https://www.nasdaq.com/articles/ai-trading-what-is-ai-trading-how-its-used-in-stock-trading>)

In the economic field, there are many frequently used means of artificial intelligence with good results in obtaining effective answers, both in terms of decision-making and for the experience offered to users. Among the most popular can be listed: chat-bots, personalized recommendations, data analysis and economic forecasts, virtual assistants for financial management, supply chain optimization, automation of repetitive processes, fraud detection and security, dynamic pricing, marketing automation or route and transport optimization. (<https://corpquants.ro/inteligena-artificiala-in-economie/>)

4.2. AI in retail

Retail trade is one of the areas where the use of AI is constantly growing. To secure a competitive advantage by adopting new technologies, retailers should consider three basic elements: consumer experience, cost reduction, increase the number of business and efficiency. (Anica-Popa, et al., 2021)

AI technologies have the ability to help retailers strengthen their sales strategy while using even existing store facilities. Thus, AI applications can detect correlations between variables such as promotional prices, display location, product range expansion, store sales and profitability, brand change, etc.

They can also be used, based on survey-based indicators, to identify purchase intentions or positive evaluations, to stimulate customer loyalty. Semantic recognition technologies or so-called "chatbots", very popular today, offer non-stop and have the advantage of reducing contacts. H&M or Lidl are examples of retail companies that use chatbots to align consumer experiences in online and offline environments. Voice recognition technologies involve the use of virtual assistants, capable of performing various tasks, or visual recognition technologies in which they are able to perform various tasks are increasingly common in retail activity.

An important aspect of the introduction of AI in retail is cost reduction. This contributes to the identification of target consumer groups with lower costs, the reduction of costs per wage because the labor force involving the human factor is reduced and the optimization of stocks. (Anica-Popa, et al., 2021)

In support of traders' decisions, along with AI, the concept of Emotional Intelligence (EI) should be mentioned. This implies the existence of a social skill, namely empathy, understanding the feelings of others. That is why EI requires the formation of cooperation, conflict resolution and negotiation skills, which thus become formidable tools for traders. (Goleman, 2006)

Like any new element, the use of artificial intelligence in retail also involves a series of challenges and risks, related to problems associated with AI technologies, the increase of total operational costs if the systems are not well managed, difficulties in communicating with customers generated by the level of understanding technical or confidentiality or ethical aspects.

4.3. Challenges of AI in commerce

By the beginning of the next decade, the shift to Artificial Intelligence could become a major driver of global prosperity. In June 2023, a study on the economic potential of generative AI, which can create new content, and its potential applications in almost all aspects of human activity and economic, estimated that this technology could add more than \$4 trillion annually to the global economy. (<https://punctuldefierbere.ro/inteligenta-artificiala-va-provoca-o-revolutie-economica-poate-ia-sa-relanseze-productivitatea/>)

The real challenge of AI seems to be related to productivity and its most recent emergence, the generative variant, has the potential to produce a decisive increase in productivity and economic development at a time when the world economy urgently needs it. Recent research shows that the reorganization of work flow in many workplaces would help support innovations that use AI to increase human productivity. (<https://punctuldefierbere.ro/inteligenta-artificiala-va-provoca-o-revolutie-economica-poate-ia-sa-relanseze-productivitatea/>)

Along with the opportunities generated by AI, such as cost reductions or new possibilities in public services, the consolidation of democracy, increased security and safety or applications in the military field, there is also a series of dangers and potential risks. In this sense, we can mention the reduced or excessive use of AI, responsibility for the damages caused, decisions influenced by socio-demographic data, the impact on jobs, distortion of competition, safety risks, imbalances regarding access to information, etc.

(<https://www.europarl.europa.eu/topics/ro/article/20200918STO87404/inteligenta-artificiala-oportunitati-si-pericole>)

It contributes also to the automation of production processes and has a significant positive impact on activities in agriculture or the service sector, especially tourism and transport. (Marcu, 2024)

Many enterprises are considering a proprietary AI solution, which becomes a more powerful and secure option as companies experiment with how AI can drive their business. Moving their data securely to the cloud and other sources, with full control and ownership, becomes a priority. (https://www.techtarget.com/searchenterpriseai/PrivateAI/Private-AI-Demystified?utm_source=google&int=off&pre=off&utm_medium=cpc&utm_term=GAW&utm_content=sy_lp07022024GOOGOTHR_GsidsEAI_Equinix_Embed_IO212308_LI2785126&utm_campaign=Equinix_Embed_sEAI_US&Offer=sy_lp07022024GOOGOTHR_GsidsEAI_Equinix_Embed_IO212308_LI2785126&gad_source=1&gclid=CjwKCAjwkJm0BhBxEiwAwT1AXJ3knkuEIXonozXg7WTOKbHxxk7hxEQvVWfLNSLoKyxPRwzglWslJhoC2gsQAvD_BwE)

There are also challenges related to legal considerations when using AI in trading. Traders must comply with regulations related to data privacy, algorithmic trading and market manipulation. Also, traders should use AI predictions as a tool to inform their trading decisions, rather than relying solely on them, which are not always very accurate, being influenced by factors such as the quality of the data used, the complexity of the algorithms and market conditions. (<https://www.nasdaq.com/articles/ai-trading-what-is-ai-trading-how-its-used-in-stock-trading>)

In this context, some specialists in the field have some recommendations to follow when implementing AI technology. Thus, first, it is important to understand the current capabilities of generative AI. These problems require correct, concise and consistent answers, something that AI is currently not fully capable of achieving. Second, in a business context, it is essential to understand an interlocutor's intent beyond current generative AI models and enriching them with experience in the form of business-relevant aspects. Third, businesses can realize the full value of AI if top managers drive AI adoption and collaboration across the organization. For the potential of AI to be used to the maximum, companies must rethink their organizational structures. (Bala et.al, 2024)

5. Conclusions

The aspects reported in this paper represent a selective presentation to highlight how artificial intelligence can be applied in the economy, in particular the field of trade activities, to improve efficiency, make more informed decisions and provide better experiences to users and customers.

The direction to be followed is obviously the promotion of knowledge and the adaptation of various AI techniques and applications in accordance with the experience gained by specialists, respecting business ethics values, in order to offer quality solutions adapted to the specific needs of each activity for which specific implementations are desired.

The results of the research consist of highlighting the practical benefits and risks identified in connection with the use of AI in companies in the field of commerce.

Therefore, in order to ensure the maximum potential of AI in the service of economies, major changes are needed in the political framework, but also to change the mentality towards Artificial Intelligence. In fact, AI technologies must be seen as tools that can support development without undermining human potential and inventiveness.

Achieving the greatest potential benefits of AI will require a two-pronged approach. On the one hand, to the extent possible, preventing the misuse or harmful effects of technology. On the other hand, promoting the uses of artificial intelligence that bring benefits and stimulate the economy, encouraging the applications that increase productivity the most.

Investments in digital infrastructure and a digitally competent workforce thus become essential for emerging markets and developing economies. We are in the era of AI, technology that we must use to our advantage.

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