THE USE AND APPLICATION OF ARTIFICIAL INTELLIGENCE (AI) IN DECISION-MAKING PROCESSES

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Purpose: The aim of the study was to analyze and characterize the available tools in decision-making processes using artificial intelligence.

Design/methodology/approach: The article uses the method of text analysis together with the technique of content analysis. It was also supported by empirical research on the use of AI tools in decision-making processes. The article focuses on the areas of application of AI in decision-making processes; AI tools used in decision-making processes and use in business are characterized. The benefits and disadvantages of these tools and the ethical implications of using AI by managers are indicated.

Findings: Although the use of AI tools cannot work on their own, initiate thought processes or define threats and benefits, trends in this field are evolving along with technological progress. AI already plays a key role in decision-making processes and its scope will increase.

Research limitations/implications: The development of AI should be constantly monitored. The identified threat is the use of NLP techniques in the tools used, which can lead to manipulation both by decision-makers and by decision-makers.

Practical implications: Growing trust in AI tools in business gives opportunities for faster decision-making without human error. It is advisable to use them in practice to reduce the time of decision-making and reduce the risk of human error in this process.

Social implications: AI is the future happening today. It is impossible to avoid the use of artificial intelligence by humans. The benefits of AI are greater than the risks at this point. As a result, many industries need to use AI tools in their practice to stay on the market, and customers and contractors put pressure on such activities by trusting these tools.

Originality/value: The article is dedicated to managers who want to use AI in their professional practice, who are not yet convinced.

Keywords: artificial intelligence, tools supporting the decision-making process, AI ethics.
Category of the paper: General review.

1. Introduction

Artificial intelligence (AI) is the result of the joint efforts of many scientists, engineers, and researchers from various fields. Its development is continued by thousands of people around the world. The term "artificial intelligence" (AI) was first used in 1956 at a conference at Dartmouth College (Pańczyszyn, 2023). The key stages in the development of AI are the years 1940-1956 when computers appeared. Then Alan Turing, a British mathematician, proposed in 1950 the concept of the "Turing test" as a criterion for machine intelligence. This was the foundation for the development of reflection on thinking machines. In 1956, a conference was held at Dartmouth College, at which research on artificial intelligence was formally initiated. At the turn of the 70s and 80s, there was a decline in interest in AI due to the reduction in research funding, which did not bring the expected progress (Tiuryn, 2024). The AI renaissance occurred in the 1990s and 2000s as AI began to develop again thanks to advances in machine learning, deep neural networks, and generally available computing power (Historia sztucznej inteligencji/Deep Technology, 2024). Currently, the era of AI is a time of dynamic development in which technologies based on this field are used in many areas of life (Wykorzystanie sztucznej inteligencji w zarządzaniu/NexTech, 2024).

Today, businesses around the world are using a variety of AI-based tools, including: ChatGPT (an all-in-one AI writing assistant that can help you create content like emails, blog posts, and marketing copy. ChatGPT analyzes your starting words and generates phrases or paragraphs based on your topic and tone of voice (McFarlanda, 2024)); Pictory (is an AI video generator that lets you create and edit high-quality videos. Pictory can turn a blog post into an engaging video for use on social media or a website (Perry, 2024)); Jasper (an AI writing assistant that can help you create compelling emails, articles, and other content. It can write a 1500-word article in less than 15 minutes (McFarlanda, 2024)); Fireflies.ai (is an AI platform for real-time meeting summarization. Fireflies.ai can help you create highlights from talks, webinars, and other events (Perry, 2024). These tools have a variety of uses and can help companies effectively manage content, communications and other aspects of their business (Dierolf, 2024; Stawicka, 2023).

2. Areas of application of AI in decision-making processes

Today, artificial intelligence (AI) is playing an increasingly important role in strategic decision-making in companies. AI can influence decision-making processes. The use of AI in strategic decision-making will be one of the key factors for future competitiveness. Human-AI interaction and the ability to choose which decisions to entrust to AI will become some of the

most important skills for decision-makers. Today, AI already plays a key role in the decision-making processes of many companies. It is increasingly used to inform public sector policies and decisions around the world, for example, supervised learning is already being used by some governments to detect potential criminals and terrorists. Despite the potential of AI, only 7% of companies use it in large strategic decisions, such as strategy development or financial planning. However, the importance of this technology for the future is enormous. As many as 75% of business leaders believe that what will set companies apart from competitors in the future will depend on who has the most advanced generative AI (Meissner, Narita, 2023). JHowever, the introduction of AI into decision-making processes can help companies increase efficiency, improve performance and make better use of resources (Atsmon, 2023; Meissner, Narita, 2023; Tewari, 2024).

The disruptive impact (AI) and benefits of its use are numerous. The areas in which artificial intelligence can support management are:

1. Data Analytics: With the ability to analyze massive data sets in a short period of time, AI enables business leaders to make more informed and precise choices (Wykorzystanie sztucznej inteligencji w zarządzaniu/NexTech, 2024). Automating the data analysis process allows you to identify patterns and tendencies that may escape the human eye. This, in turn, leads to better prediction of market performance and trends.

2. Optimize business operations: Companies use advanced AI algorithms to optimize their operational processes. Examples of applications include:
   ○ Automatic product recommendation systems that match the offer to the preferences of a specific customer.
   ○ Algorithms to optimize supply chains, minimize costs and delivery times.
   ○ Decision-making support systems in human resource management, e.g. in recruitment or employee performance evaluation.

3. Project management: AI tools enable you to achieve your project goals more efficiently and quickly. Advanced algorithms can predict potential problems and suggest the best solutions, which significantly reduces the time and costs associated with the implementation of projects.

4. Automate decision-making processes:
   ○ AI enables the automation of routine tasks and processes, which speeds up decision-making.
   ○ AI algorithms analyze data, identify patterns, and recommend actions, which is invaluable in a dynamic business environment.

5. Personalization of the offer and customer service:
   ○ AI allows you to personalize the offer and communication with customers.
   ○ Algorithms analyze data on customer behavior, which allows you to tailor the offer to individual needs.

6. Predicting trends and risks:
   ○ AI analyzes historical data and predicts the probability of certain phenomena occurring.
   ○ This helps you make better business decisions and minimize risk.

The introduction of AI into decision-making processes is inevitable and can bring many benefits if properly implemented and managed (Automatyzacja procesów decyzyjnych w zarządzaniu projektami/Mindbox, 2024; Trąd, 2022). It can become the key to success in managing a modern enterprise. Its ability to analyze data, automate, and predict outcomes can significantly improve operational efficiency and increase customer satisfaction (Wykorzystanie sztucznej inteligencji w zarządzaniu/NexTech, 2024; Dąbrowski, 2024). AI is used in project management, recruitment, financial analysis, marketing, logistics, and many other areas.

3. AI tools used in decision-making processes

The IT market already has tools that perform tasks in decision-making processes. The most commonly used are:

1. ClickUp Brain - is an all-in-one project management platform that combines the power of documents, chats, AI, and goals in a centralized digital space. ClickUp Brain, the platform's built-in AI feature, is one of the most powerful AI tools for work I've tested so far. It allows you to create custom workflows, automate repetitive tasks, and streamline processes. By setting triggers and rules, you can automate actions such as sending notifications, assigning tasks, updating statuses, and more (Parker, 2024).

2. Microsoft Power BI - is a popular data analysis tool that allows business analysts to visualize, explore, and share information. Power BI allows you to combine different data sources, create interactive reports and charts, and make decisions based on data analysis.

3. Tableau: Another data visualization tool that is often used by business analysts. Tableau allows you to create advanced visualizations, analyze trends, and uncover hidden patterns in your data.

4. ChatGPT: This is a ubiquitous large language model (LLM)-based chatbot that is trained to provide detailed answers to questions in natural, human language. The ChatGPT website saw around 1.6 billion visits in January 2024 and dominates the traffic that generates AI tools. Currently, ChatGPT has over two million developers and is used by at least 92% of Fortune 500 companies — not bad for an LLM that is less than two years old (Willing, 2024).

5. Claude AI: Claude is becoming more and more popular in 2024. It's a language model powered by Anthropic that works on both word tasks and returns fantastic results in coding, creating infographics, charts, and more. Anthropic is committed to human values and ethical considerations, with an emphasis on safety and reliability. The latest version, Claude 3.5 Sonnet, is currently delighting users on Twitter (Willing, 2024).

6. Synthesia: This is a browser-based AI software that creates engaging videos based on plain text. With over 140 AI avatars and 120 languages to choose from, it's a popular AI video tool among marketers, sales, and product teams. You can use ready-made, fully customizable templates for your AI video. Additionally, the software offers basic video editing features in its panel—you can edit colors, backgrounds, and text styles to match your brand (Singh, 2024).

The choice of tools depends on the specifics of the business and specific needs. It's worth considering what features are most important to you and what goals you would like to achieve with AI decision-making tools (Ali, 2024; Daley, 2024; Loktionova, 2024).

4. The use of AI in business

Artificial intelligence (AI) has a huge impact on various fields of business. For example, Airbnb uses AI to optimize the prices of its listings. Advanced algorithms analyze many factors, such as previous prices, bookings, seasonality, and location. Based on this, the AI system calculates the optimal price for each apartment for each night, adjusting it in real time to the current demand and supply (Mróz, 2024). Starbucks uses AI to optimize work schedules. This allows them to manage employee availability and working time more effectively (10 przykładów zastosowania AI w biznesie, 2024). ZestFinance analyzes alternative data, and Allstate uses image recognition technologies to assess repair costs and speed up the claims process (10 przykładów zastosowania AI w biznesie, 2024). Additionally, many companies are using AI to personalize marketing campaigns based on customer behavior analysis. Companies can tailor their offers to individual needs, which translates into better sales results (10 przykładów zastosowania AI w biznesie, 2024). AI also helps in credit risk assessment and fraud detection. AI automates routine tasks such as document processing, customer service, and employee schedule management (Adamska, 2023). By analyzing customer behavior data, companies can tailor their products and services to individual preferences (Adamska, 2023). AI can analyze historical data and predict the probability of certain phenomena occurring, which helps you make better business decisions (Strzałkowski, 2023). It can optimize delivery routes, manage warehouses, and speed up logistics processes (Strzałkowski, 2023). Virtual assistants, chatbots, and automatic voice recognition systems help you serve customers by answering questions and solving problems (Adamska, 2023). Thus, AI can process vast

amounts of data, identify patterns, and provide valuable insights for businesses (Adamska, 2023). Therefore, artificial intelligence has great potential in business and can contribute to increasing efficiency, improving customer service and increasing profits (Kania, 2024).

5. The popularity of AI in companies around the world and in Poland

According to the PwC Global AI Jobs Barometer 2024 report, nearly one-third of companies worldwide use artificial intelligence (AI) in their businesses (Raport Global AI Jobs Barometer/PwC, 2024). Notably, AI adoption in companies is on the rise, and the technology is impacting jobs, wages, employee skills, and productivity. Examples of the benefits of using AI include increased productivity, higher innovation, and improved quality of services (Raport Global AI Jobs Barometer/PwC, 2024). While the challenges of AI implementation are still present, more and more companies are investing in this technology to achieve full business results (Siedem na dziesięć…, 2024; Bokszczanin, 2024; Ipsos zbadał…, 2020).

According to a report prepared by the Polish Economic Institute, only a small percentage of Polish companies use artificial intelligence (AI) in their businesses. We are talking about only 6.6% of domestic companies that use solutions such as chatbots, content generators or image recognition technology (Pasławski, 2023). This result places us at the bottom of the ranking of countries in terms of AI adoption in companies. Compared to other countries, Poland is still lagging behind. For example, in China, 58% of companies have implemented artificial intelligence, and in India, 57%. In Europe, Italy (42%), Germany (34%), France (31%) and Spain (31%) have the highest levels of adaptation (Supernak, 2023; Sawicki, 2024). It is worth noting that investments in AI can contribute to increasing efficiency and improving financial results in companies, which is why education and technological support are key to increasing the percentage of companies using this technology in Poland (Sawicki, 2024; Sztuczna inteligencja w firmach w Polsce/KPMG Poland, 2023).

6. Benefits, risks and challenges of using AI in management

Artificial intelligence (AI) in decision-making processes brings both benefits and certain risks. Using AI systems requires a lot of data to be shared. There is therefore a risk of confidential information leakage or unauthorised access to data (Zagrożenia związane…, 2024). Artificial intelligence (AI) in decision-making processes brings both benefits and certain risks. Using AI systems requires a lot of data to be shared. There is therefore a risk of confidential information leakage or unauthorised access to data (Walarus, 2023). AI działa na

podstawie algorytmów, ale nie ma świadomości ani celów (Złoch, 2024). Introducing AI into decision-making processes can lead to a loss of control over the system (Wzorcowe zasady…/Portal Gov.pl, 2022). Unfortunately, more and more users share sensitive information with artificial intelligence. There is concern about the privacy and security of this data. It is worth paying attention to these risks and using appropriate safeguards to make the use of AI safe and effective (Odpowiednie wdrożenie AI minimalizuje ryzyko/KPMG Poland, 2024).

The implementation of artificial intelligence (AI) brings with it many challenges, both technical and social. Advanced AI models, such as neural networks, are often black boxes. Their decisions are difficult for people to understand. Introducing AI into decision-making processes can lead to situations where we are unable to explain why a given model made a certain decision. AI models learn from the data we provide them. If the data is biased or contains hidden bias, the models may also show the same bias. This can lead to unfair decisions, e.g. in recruitment or granting loans. Introducing AI into decision-making processes can create new attack vectors. If we poorly secure AI systems, they can become vulnerable to manipulation or hacking attacks. Decisions made by AI can have an impact on people's lives. Therefore, it is important to implement AI in an ethical manner. Questions about privacy, accountability, and fairness must be addressed. The introduction of AI may raise concerns in society. People may be afraid of losing their jobs, excessive supervision or loss of control over decision-making processes. In many countries, there are no uniform regulations on AI. Companies have to adapt to different regulations, which can be challenging. It is worth noting that despite these challenges, artificial intelligence has great potential and can bring many benefits if properly implemented and managed.

7. Ethical implications of AI use by managers

Another important issue to discuss is exploring the ethical implications and challenges of implementing AI systems is crucial. AI must be used in a way that is fair and in line with society's values (Kubera, 2024). Companies are increasingly paying attention to the ethical aspects of using AI in decision-making processes. It is important that algorithms are fair, transparent and do not lead to discrimination.

In view of the above requirements, ethical standards for the use of artificial intelligence (AI) have been created. The most important documents regulating these issues include:

1. UNESCO Recommendation on AI Ethics: UNESCO adopted a Recommendation on AI Ethics in November 2021. It is the first and so far the only legally binding instrument with a global scope dedicated to this issue. This recommendation guides the exchange of experience, cooperation and international dialogue in the context of AI (Dokumenty: Publikacje Polskiego Komitetu ds. UNESCO/Polski Komitet ds. UNESCO, 2023).

2. Standards for the ethical use of generative artificial intelligence in the Warsaw m.st Office: The project implemented by the SWPS University in cooperation with EGO and the Center for Technology Ethics of the Humanites Institute aims to develop standards for the ethical use of generative artificial intelligence in the Warsaw m.st Office. The developed standards will be regularly updated and adapted to the changing world and technological developments (Jakubik, Kuszewski, 2024).

3. European Commission's ethical framework for AI: The European Commission recommends that AI systems be developed, deployed and used in accordance with ethical principles such as respect for human autonomy, harm prevention, fairness and explainability (Skrzek, 2024).

4. Ethics in AI: The integration of ethical principles in projects, education and training, and international collaboration on standards are crucial for trust in AI. Transparency, accountability, and privacy also play an important role in AI ethics (Wytyczne w zakresie…/Publications Office of the EU, 2018).

The introduction of ethical standards is essential for artificial intelligence to serve the good of humanity and operate in accordance with social values (Łukawski, 2024).

Introducing ethical principles when creating artificial intelligence (AI) systems is crucial to ensure that AI serves the good of humanity and operates in accordance with societal values. It is therefore proposed that the following principles should be applied to companies wishing to ensure ethical actions in the process of using AI: 1) transparency: companies should strive for transparency in the operation of their AI systems. This means that users and stakeholders should have access to information about how the algorithms work, the data they collect and the decisions they make (Websensa, 2023); 2) Accountability: AI developers should be accountable for the effects of their systems. This means that they should make informed decisions, taking into account the potential consequences for people and the environment (Websensa, 2023); 3) Protect privacy: Companies should ensure user privacy and have appropriate safeguards in place to avoid privacy breaches as a result of data being used by AI systems (Websensa, 2023). 4) Security: AI systems should be secure and resilient to attacks. Companies should follow IT security best practices to minimize the risk of threats (Łukawski, 2024); 5) diversity and non-discrimination: AI developers should ensure diversity in project teams to avoid bias and discrimination in the operation of systems (Łukawski, 2024); 6) Education and awareness: Companies should educate their employees about ethics in AI and awareness of potential issues. This will help you understand what challenges may arise and how to counteract them (Łukawski, 2024).

Introducing guidelines, fairness metrics, and ensuring team diversity can help AI developers build safe and responsible AI (Florkina, 2024). The dynamic development of ethics in AI requires constant attention, innovation and cooperation (Skrzek, 2024; Etyka sztucznej…, 2024).

8. Trust in artificial intelligence (AI)

Therefore, the key is trust in artificial intelligence (AI) among managers, which affects the implementation of this technology in companies. Poland ranks one of the last in the European Union in terms of artificial intelligence adaptation. Only 3.7% of companies in Poland use AI-related technologies, mainly in large enterprises employing more than 250 people. Senior executives in companies are a major factor inhibiting the adoption of AI-based technologies. Many companies are older family businesses, where the approach to technology is conservative. However, smaller companies that want to compete with larger ones see technology as a key tool to improve efficiency and provide better services (Kasperski, 2024). The structure of companies, restrictive internal policies and high complexity of the implementation process are a challenge in the implementation of new technologies. However, it is worth noting that smaller companies that invest in AI and modern tools have a chance to succeed (Kasperski, 2024). In addition, Poland is facing a serious problem of a shortage of workers, which will affect the quality of services. With an aging population and shrinking workforce, investments in AI can help address this issue (Kasperski, 2024). Introducing AI into decision-making processes requires education, openness to new technologies and a change in organizational culture. It is crucial to understand that AI can be a tool that supports, not replaces, humans. Therefore, building trust in this technology is essential for its successful implementation (Tana, 2024; Olak, 2024; Brewer, 2023; EY Polska, 2021).

9. Conclusion

Artificial intelligence (AI) does not have human consciousness. This means that they are unable to act independently, initiate thought processes or define risks and benefits from the tasks they perform (Lewicki, 2024). Today's AI works on the basis of complex algorithms and processes that allow it to learn and adapt to new situations. Although AI systems make decisions "on their own", they have no awareness or goals (Sztuczna inteligencja (AI)…/Web Poradnik, 2024). They only execute commands according to what they are programmed to do (Sztuczna inteligencja (AI)…/Web Poradnik, 2024). In practice, this means that AI is a powerful tool that can be used for both good and bad purposes, depending on how people use it (Lewicki, 2024; Gościnny, 2024). As in any field, it is worth keeping up with trends. Trends in decision-making tools evolve with technological advancements. And as you can already see, AI already plays a key role in decision-making processes. Companies are increasingly using AI-based tools such as virtual assistants, data analytics, and generative language models. The value of AI lies in its ability to process vast amounts of data and generate insights from it (Meissner, Narita, 2023;

Purdy, Williams, 2023). Tools that enable the automation of decision-making processes are becoming more and more popular. Examples include automating data management, automating business processes, and automatically generating question responses (Purdy, Williams, 2023). Collaboration between decision-making tools and analytical tools such as Power BI or Tableau allows for better use of data and faster and faster decision-making. NLP tools allow you to analyze and understand text in natural language. This is useful in the process of gathering information and evaluating different options (Gartner Identifies the Top Trends in Data and Analytics for 2024, 2024). And virtual and augmented realities can help visualize data and scenarios, making it easier to make decisions in difficult situations (Sriram, 2024). Therefore, it is worth following new trends and adapting to changing conditions.

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