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AI USAGE OPPORTUNITIES IN BUSINESS MODEL DEVELOPMENT AND IMPLEMENTATION – A THEORETICAL APPROACH

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The aim of the article is to show theoretically those areas within the elements constituting the business model in which AI can be used to improve the processes of creating value for customers and for the companies themselves. The article indicates the possibilities of using AI both in creating a business model and in improving. The article includes proposed answers to the following questions: How can AI help identify factors influencing the level of revenue achieved by an organization? How can AI help identify factors that create customer value? To what extent can AI help control the factors affecting the value chain? How can AI help identify which resources/competencies of an organization constitute the source of competitive advantage? How can AI help shape the relationship between the organization and the groups of owners that determine the basic strategic goals of the organization? The considerations indicate that artificial intelligence can be utilized in all areas that constitute a business model. Thanks to the capabilities provided by artificial intelligence, the decision-making process has acquired a tool that facilitates a significant reduction in the time required to make decisions through the rapid generation of analyses and reports, as well as the forecasting of trends. By automating time-consuming and repetitive tasks, the skills and competencies of employees can be directed towards strategic initiatives.

Keywords: value creation, business model, AI

1. INTRODUCTION

Artificial intelligence (AI) refers to a computer's capability to perform functions usually associated with human intellect (Chiu et al., 2024, p. 1). Recent

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times have seen a noticeable increase in the implementation of business models powered by artificial intelligence across various sectors, which are a key tool for capturing value from a challenging and economically constrained market. This is achieved through the value proposition offered and delivered to customers using analogue and digital solutions (Jabłoński, Jabłoński, 2023, p. 201). The reason is that AI technology can be used by a business model to generate, deliver and capture value in novel ways. Creating value is a condition for achieving competitive advantage and developing an enterprise, and the ability to create it is related to the business model used by the enterprise (Brzóska, 2016, p. 1). AI-driven business models combine automation, data analytics and machine learning to increase operational effectiveness and enhance long-term scalability, in contrast to traditional business models that depend on manual operations (Gibson, 2024). AI-driven business models can innovate more effectively and dynamically with digital cores and connected data platforms than traditional models, which rely on manual processes. Thanks to AI, businesses can better shape their services and understand affinities across their target demographics by employing data mining techniques to gather statistics about habits, shopping preferences, buying behaviours, price tagging preferences, colour choices, style preferences, online trends, and other individual information (Mishra, Tripathi, 2021, pp. 3-4). The aim of the article is to show theoretically the areas within the elements constituting the business model, and especially in case of trade and service enterprises, where AI can be used to improve the processes of creating value for customers and for enterprises themselves. AI can be used to improve the processes of creating value for customers and for enterprises themselves. A systematic literature review was conducted. The considerations in the article are based on a definition of the business model proposed by Konieczna (2015, p. 31) according to which “a business model is a description of the elements that create value, both from the perspective of the organization itself and its customers. It includes the identification, based on the value chain, of the sources of revenue and defines the way of creating value based on the unique combination of resources/competencies that a given organization has and the purpose of the business model is to obtain such conditions for conducting business that will be able to meet the needs of owners and act in their interest”.

2. BUSINESS MODEL DEVELOPMENT

An effectively structured business model harmonizes the value delivered to clients with the value acquired by the provider of the value (Teese, Linden, 2017, p. 1). To do these, parts of the business model should be analysed in greater detail to improve the business model based on the insights gained. This can be done in various areas, including (Doll, Eisert, 2014, pp. 10-11):



- 1) Analysing what customers want closely and enhancing the value offered to meet those needs more effectively. A want becomes a need when it is shaped by culture, social factors, and a person's character. There are two types of wants: a 'physical' desire and a 'mental' desire (Camilleri, 2018, p. 32). Consumers aim to fulfil different kinds of needs, which include basic survival, feeling secure, having connections with others, achieving recognition, and realizing their full potential. A customer need is a problem that a person is trying to solve, which motivates them to seek a product or service to do so (Miller, 2020). The procedure for identifying customers, allowing for orienting the way of thinking about the customer towards comprehensively delivered value, is divided into four basic elements: requirements – knowing, understanding, tracking changes and their dynamics; possibilities – the competence of the organization to meet requirements; capabilities – the actual fulfilment of customer requirements by the organization; continuity – the organization's adaptation to the dynamics of changes in requirements in individual customer segments in the long term (Szczepańska, 2010, p. 46). To realize this, the 4C concept can be used while improving a business model. In this model, four elements can be distinguished: Customer Value – the company focuses on the customer's values and needs, not the product; Cost to the Customer – the seller takes into account the burden on the customer's budget, not just the price (e.g. in relation to the competition or production costs); Convenience – the company focuses on new and convenient ways of reaching the customer, not existing distribution channels; Communication – planned promotion is replaced by continuous dialogue with customers (Žak, 2015, p. 222). The 4C marketing mix focuses on the purchaser, in accordance with the market dynamics, positioning customer requirements at its core. It aims to create comprehensive interactions with consumers also with the use of AI to gain complete insights into their needs and provide appropriate products and accessible services (Ali Jarad, 2020, p. 2115).
- 2) Analysing competitors and enhancing the value offer in order to boost distinctive features. A key goal in recognizing competitors is to enhance management's understanding of potential threats and opportunities in the competition. For heightened awareness, it is crucial to comprehensively explore the competitive environment early in the analytical process. This approach assists managers in steering clear of the risks associated with a narrow focus on competitive strategies and reduces the likelihood of being caught off guard (Bergen, Peteraf, 2002, p. 158). Competitor analysis helps gain insights into rivals within the sector, highlighting their strengths and weaknesses. Such analysis opens up more avenues for surpassing competitors in the marketplace, particularly regarding creating value for the customer. Benchmarking facilitates the assurance that the quality of products and services aligns with or exceeds market expectations (Abba, 2021, p. 31). An operational manager must possess a clear understanding of the level of competition in their field and assess various categories

of competitors, including direct competitors, indirect competitors who address similar customer needs with different means, and potential competitors who may not target the same customer demographic but utilize comparable resources or possess similar capabilities (Guo et al., 2017, pp. 735-736). Professionally conducted competitor analysis, which might also use AI, competitors' next moves to be anticipated and enables a company to differentiate itself from its competitors (Mononen, 2021, p. 17).

- 3) Analysing partnering options and improving key activities and resources accordingly. A partnership is a specific business connection involving two or more companies, founded on trust, honesty, shared risks, and shared rewards (Dubrovsky, 2020, p. 85) that involve such factors of a successful business partnership as collaboration, goals, ideas, plan, participate, teamwork, support, help, trust, performance, growth, share, synergy success, win-win (Kiss, 2020, p. 72). Partnering refers to a variety of managerial practices and organizational designs that enhance and maintain collaboration (Barlow, Jashapara, Cohen, 1998, p. 4). This type of relationship boosts the joint competitive strength and business success more than what the individual groups could manage alone. The forms of partnerships can be diverse, but all must encompass substantive characteristics of a strategic partnership, namely reciprocal adjustment of participants' resources and behaviour, inclusion of the development component, long-term cooperation, and risk and outcome sharing (Dubrovsky, 2020, pp. 85-86). Therefore, before joining such an arrangement, a company should analyse its partnering options. For such a partnership to be successful companies need key resources and processes that describe how value will be delivered to customers and the enterprise 'itself' (Johnson, Christensen, Kagermann, 2009, p. 156) and that should be improved constantly. The requirements for improvements also should focus on enhancing the workforce's abilities in fields like work organization, designing – scaling – measuring – overseeing – enhancing – managing the company, managing quality, handling changes, managing risks, and managing projects, which can directly impact work efficiency and competitive performance (Blaga, 2020, p. 288).
- 4) Analysing customer experience and improving customer relations accordingly. Customer experience encompasses the interactions between clients and businesses that cater to customers' tangible and emotional sensations when engaging with the company's products and services (Suharto, Yuliansyah, 2023, p. 404). The result of experience is customer satisfaction, which can be described as the impression formed from experiencing a particular product or service interaction. This satisfaction leads to increased customer loyalty, subsequent purchases, positive referrals, and ultimately greater profits (Ban, Kim, 2019, p. 2). To achieve it, the 4E model was established, which can be used for improving a business model. This model changed the emphasis from deals to experiences, thereby stressing how vital emotional bonds and lasting relationships are.

In this model, we can distinguish four elements: Experience – products serve as means to provide unforgettable experiences. Companies aim to build emotional ties, realizing that a good experience can result in customers sticking around and supporting the brand; Exchange – this not only includes selling for money but also involves the worth a customer gains, not only from the product but from the whole experience; Evangelism – satisfied customers are promoters for the brand, telling others about their good experiences, which in turn helps the brand become more recognisable and grow; Everyplace – companies need to be active and involved in different platforms, providing a smooth and coherent experience for their customers (Mada, 2024, p. 42). For this reason, it is extremely important to maintain good relationships with customers and to improve them. AI can serve this purpose, as it allows businesses to forecast consumer actions, streamline customer support functions, and offer suitable product suggestions. It helps organizations in handling customer interactions more efficiently, while also enhancing the complete customer experience (Naim, Rajuddin, Ansyori, 2024, pp. 77-78).

- 5) Analysing key activities to reduce related costs. Organizations today constantly strive to keep their costs low, reduce waste, streamline production processes, and accelerate manufacturing to remain competitive (Singh, Singh, 2015, p. 76). A change aimed at reducing costs can target functions, the organization of production, administration structure, technology, the assignment of responsibilities, and delegation of authority. It also addresses the attitude, motivation, behaviour, knowledge, and performance of staff (Blaga, 2020, p. 288). Moreover, key resources specific to a given company that are difficult or impossible to counterfeit (Tece, Pisano, Shuen, 1997, p. 516) bring competitive advantage by delivering benefits to customers from products or delivering benefits to the organization in the form of lower unit costs (Bowman, Ambrosini, 2003, p. 292). A reduction in incurred costs can be achieved through adopting continuous improvements, which can be interpreted as a culture of ongoing enhancement focused on eradicating waste across all systems and processes within the organization, and engaging all members (Singh, Singh, 2015, p. 76). AI can be used in this area to improve operational efficiency by automating routine tasks, through which companies can save both time and resources (Naim, Rajuddin, Ansyori, 2024, p. 78).

3. A PROPOSAL FOR USING AI IN THE DECISION-MAKING PROCESS WHEN DEVELOPING AND MODIFYING A BUSINESS MODEL

In accordance with the adopted definition indicating five areas that constitute a business model (Konieczna, 2017, p. 14), it is possible to state how

artificial intelligence can help the management in decision-making processes in order to achieve the organization's strategic goals by answering the following questions:

- 1) The area of factors influencing an organization's sales revenues – How can AI help identify factors that influence the level of revenue achieved by an organization?
- 2) Customer value area – How can AI help identify factors that create customer value?
- 3) Value chain area – To what extent can AI help control the factors affecting the value chain?
- 4) Area of resources/competencies – How can AI help identify which resources/competencies of an organization constitute the source of competitive advantage?
- 5) Area of action for owners – How can AI help shape the relationship between the organization and the ownership groups that determine the basic strategic goals of the organization? (fig. 1)

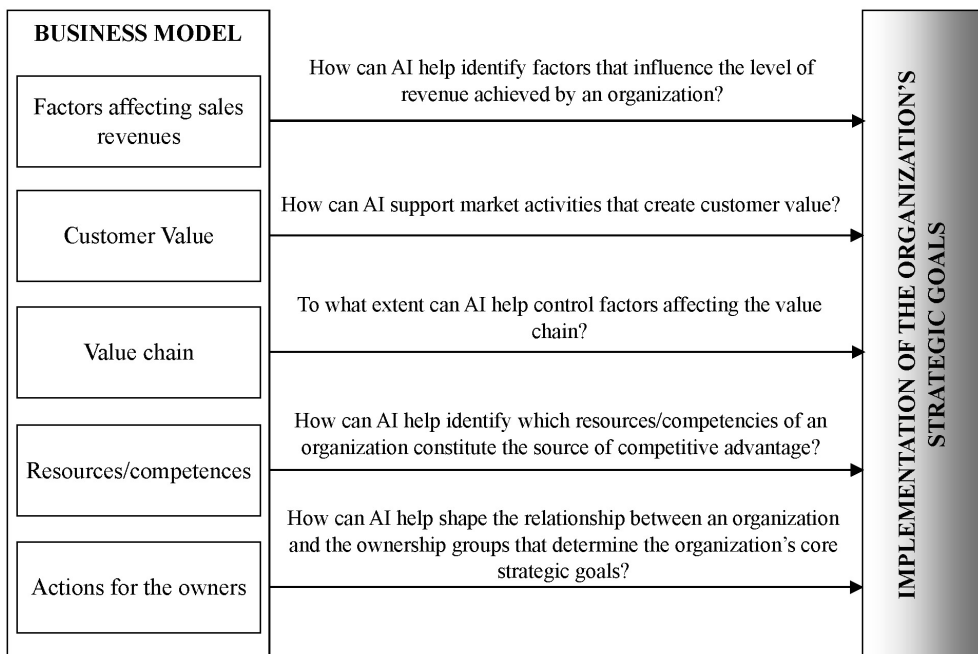


Fig. 1. Elements of a business model in which artificial intelligence can be used (own work based on Konieczna, 2017, p. 14)

Three types of AI (traditional ML, generative AI, agentic AI) should be used when making decisions, as they can be combined in one system; in practice they increasingly cooperate with each other rather than operate in isolation (fig. 2).

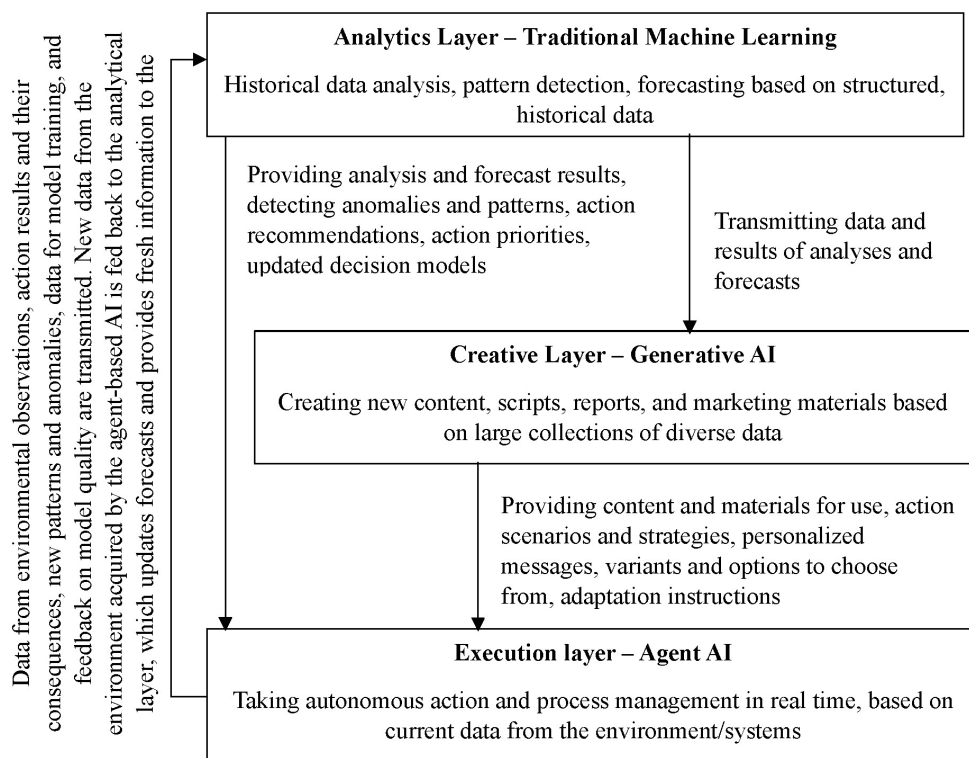


Fig. 2. Usage of different types of AI in decision-making (own work)

The list below shows aspects of a business model in which AI can be used.

1) Area of factors influencing the sales revenues of the organization.

Within this area, it is possible to determine how AI can help identify factors affecting the level of revenues achieved by the organization, in order that the company would be able to shape its strategy to maximize sales revenues. Depending on what factors determine sales revenues (Konieczna, 2015, p. 98), AI can be used in different ways (fig. 3).

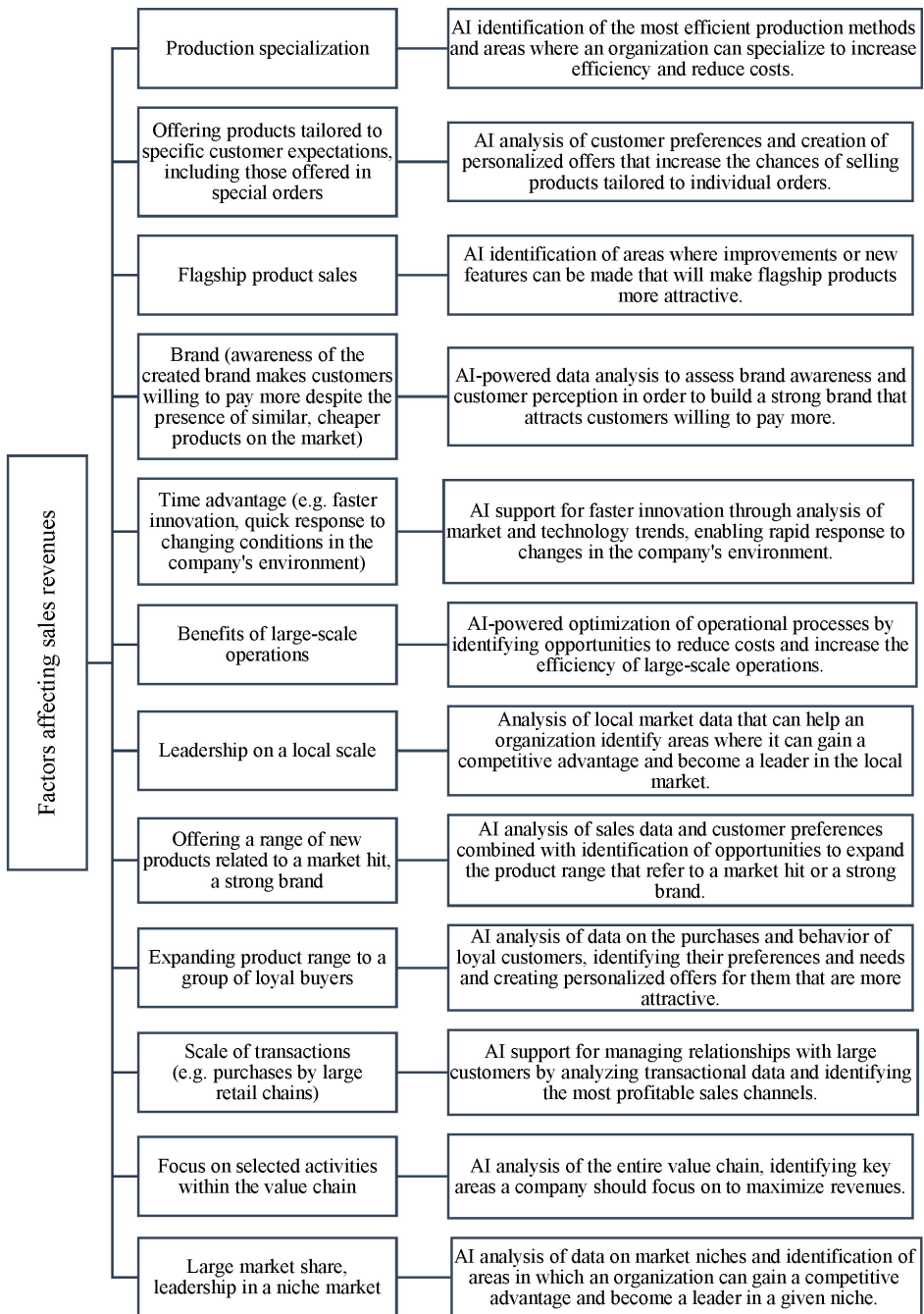


Fig. 3. Areas of using artificial intelligence to increase sales revenues within the individual factors that influence them (own work)

2) Customer Value Area

AI can be used to support market activities that create value for the customer, which can in turn be classified into the following areas: product, innovation, quality, packaging, sales marketing and distribution (Konieczna, 2015, pp. 98-99). Artificial intelligence can significantly support the identification of factors that create value for the customer by processing data on customers' behaviour, their preferences and purchase history, which will facilitate finding out what aspects of products or services are most valued by customers. In this way, it will be possible to adapt the offer to customer needs. Additionally, personalization can increase customer satisfaction and loyalty. In addition, AI can extend the identification of value-creating factors to the analysis of market and competitive data to help determine optimal product prices, thanks to which it will be possible to maximize customer value while maintaining competitiveness (tab. 1).

Table 1. The use of AI to support market activities that create value for the customer in particular areas

Area	The use of AI
Product	<ul style="list-style-type: none"> - collecting and analysing customer feedback - identifying key areas requiring improvement - predicting future customer needs based on analysis of their previous behaviour and market trends - proposing product personalization options based on analysis of customer behaviour - adjusting prices on an ongoing basis based on analysis of market data - answering customer questions, solving their problems and providing information
Innovations	<ul style="list-style-type: none"> - automating and optimizing R&D processes - creating product prototypes - supporting R&D teams through fast data processing
Quality	<ul style="list-style-type: none"> - automating quality control processes - predicting potential failures and quality problems of products based on analysis of historical production data - collecting and analysing customer opinions on the quality aspects that are most important to customers - optimizing production processes by identifying the most effective production methods and minimizing the risk of errors

Area	The use of AI
Sales marketing	<ul style="list-style-type: none"> - analysing data on customer preferences and behaviours, allowing for the creation of personalized offers and marketing campaigns - automating aspects of marketing campaigns such as planning, implementation and analysis of results - collecting and analysing customer opinions on their moods and preferences - continuously adjusting advertising campaigns to changing market conditions and customer preferences - sending marketing emails, managing advertising campaigns, customer service using chatbots
Packaging	<ul style="list-style-type: none"> - generating packaging designs that are optimal in terms of cost, functionality, environmental friendliness and aesthetics - generating different versions of the packaging design in a short time taking into account the product dimensions, production cost and material - collecting and analysing customer opinions on the most attractive types of packaging for consumers, in line with the latest trends
Research and development	<ul style="list-style-type: none"> - by analysing data on market trends, consumer behaviour, pointing out market niches and suggesting new product ideas - by being able to combine existing concepts in a new way, proposing improvements to current products - supporting innovations that could not be created with the participation of human teams alone - creating multiple design options based on parameters such as material constraints, manufacturing processes or performance requirements, which makes designing faster and products more optimal and innovative - virtual testing of prototypes in various scenarios, which shortens time and reduces costs - detecting problems in the testing phase, allowing for shortening the overall product development cycle

Source: own work.

3) The area of implementation and control of market activities that create the value chain

AI can be used in the implementation and control of market activities that create a value chain in areas such as supply logistics, production and distribution, and marketing (Konieczna, 2015, p. 100). In particular, its use concerns optimizing operational parameters and improving efficiency due to forecasting accuracy (tab. 2).

Table 2. The use of AI in the implementation and control of market activities that create the value chain

Area	The use of AI
Procurement logistics	<ul style="list-style-type: none"> - analysing historical sales data, seasonal changes in demand, and other factors that influence product demand to minimize excess inventory, prevent stockouts, and maximize delivery efficiency
Production logistics	<ul style="list-style-type: none"> - real-time monitoring of energy consumption and optimization of its use, which leads to cost savings and reduced CO2 emissions - AI analysis of sales data, current market trends and various external factors, allowing for optimization of inventory and production management, which allows for better adjustment of production to actual demand - identifying opportunities to improve the production-related process and elimination of unnecessary stages - AI prediction and prevention of future failures based on analysis of historical data, thus eliminating costly downtime and resulting losses
Distribution logistics	<ul style="list-style-type: none"> - automatic inventory management, inventory tracking and storage space optimization - performing by AI-controlled warehouse robots a variety of tasks, such as sorting, packing, order picking, labelling and moving goods, which saves time and resources - AI analysis of historical data and current conditions on transport routes to precisely determine the most optimal routes for vehicles and predict and avoid potential delays and reduce fuel consumption - AI tracking of vehicle movement and inventory levels enabling route optimization and better loading planning - constant monitoring of the technical condition of vehicles using AI allows detecting the need for repairs before a failure occurs
Marketing	<ul style="list-style-type: none"> - AI analysis of the impact of promotions and marketing activities on the demand for a given product, allowing for better planning of marketing strategies, adapting the offer to changing customer needs and optimizing the costs associated with the production and distribution of goods - AI analysis of which elements of the campaign bring the best results, which allows for real-time optimization of content and strategies - using analyses conducted by AI to personalize content on websites - using AI to target advertisements on social media platforms based on demographic data, interests and behaviour of users - generating advertising texts, product descriptions and blog articles by AI as part of content marketing based on specified parameters - using chatbots to make it easier for customers to interact with the brand by answering frequently asked questions, booking services and making transactions

Source: own work.

4) The area of proper use of the organization's resources/competences

AI can help in the proper use of the resources/competencies of the organization in such areas as research and development, production, quality, supply logistics, marketing, finance, employment, organization and management (Konieczna, 2015, p. 101) in achieving a competitive advantage by analysing the current situation in the enterprise and on the markets served, thus providing data that will allow for an appropriate response from the management, thanks to which processes can be innovated more dynamically and efficiently, which will allow for a more effective use of resources and competences (tab. 3).

Table 3. Use of AI in the proper use of existing resources/competencies of the organisation

Sphere	The use of AI
Research and development	Automatic tracking and analysis of competitor activities and buyer behaviour in real time using AI can enable companies to leverage their ability to predict changes in technology and techniques, and thus respond more quickly to market changes by leveraging their ability to create new technologies and products.
Production	The use of AI in new technologies can accelerate innovation and drive the development of new hardware and software solutions by increasing the level of automation and robotization of production processes and developing production capacities, which helps to achieve a competitive advantage.
Quality	Using AI, companies can create innovative offers using systems to improve the quality of processes and products, adapting them to customer needs and gain a competitive advantage by delivering the highest quality products.
Procurement logistics	The use of AI can help understand the current situation, predict changes in supply markets and optimize the scale of supplies.
Marketing	Using AI, companies can learn about the current situation in the markets they serve, based on which they can predict changes in them. AI also allows for better understanding of competitors and the instruments they use to compete, as well as predicting their behaviour. AI enables companies to learn about the needs, preferences and behaviours of customers, and to predict their future needs, preferences and behaviours.
Finance	By analysing historical data, market trends, and economic indicators, AI can be used to help plan revenues, costs, and expenses, enabling the creation of more accurate budgets, identifying areas for cost optimization, and making better financial decisions. By identifying key areas for improvement, companies can optimize their total, fixed, and labour costs.

Sphere	The use of AI
Employment	AI analysis of job candidates' CVs can allow the best-matching profiles to be selected, as well as to improve the recruitment and selection systems. By identifying training needs based on employee performance data, the company can improve the applied training systems. AI can also stimulate motivation by engaging employees in gamification. Moreover, companies can use chatbots to support learning. Additionally, the analysis of behavioural data by AI allows for the creation of rewards tailored to individual preferences and the improvement of the applied motivation systems.
Organization and management	Thanks to its ability to analyse huge data sets, AI enables optimization of operational processes and personalization of the offer for customers. It also allows companies to streamline the supply chain, refine resource management through forecasting and planning, and make decisions in human resource management. Business decisions can be made based on solid data, which significantly affects the efficiency and effectiveness of the business strategy, thus gaining a competitive advantage.

Source: own work.

5) Area of activities for the owners of the organization

AI can also be used in shaping the relationship between the organization and the groups of owners that determine the basic strategic goals of the organization. Based on an analysis of market data conducted by AI, the company can shape the appropriate offer for customers, thus maximizing profit and the possibility of a wider satisfaction of the economic needs of owners. On this basis, it can also offer higher sales prices for owner-producers and lower supply prices for them. AI can further help improve social, social, cultural and educational activities carried out by the company for owners, making them more effective and accessible to them.

4. CONCLUSION

Compared to traditional management tools, current research and business practice suggests that artificial intelligence (AI) brings the following benefits:

- faster and more accurate decisions thanks to real-time analysis and trend predictions,
- cost optimization thanks to process automation and more efficient resource management,
- flexibility and scalability enabling dynamic strategy adjustments and enabling the management of a growing number of processes and clients without increasing costs,

- a new level of data analysis by integrating data from various systems into a single picture of the situation, thus enabling more accurate decision-making,
- support in shaping customer offerings through comprehensive analysis of customer needs,
- a shift in the management paradigm, redefining the current way of thinking about strategy and operations, thanks to the ability to continuously make adaptive decisions based on real-time data rather than static data.

Artificial intelligence is used in various areas of management, ranging from strategic decisions to daily operations, such as in data analysis and decision-making, optimization of operational processes, human resources management, marketing and customer service, project management, etc.

The article proposes specific business model areas where AI can be used to improve the processes of creating value for customers and for enterprises themselves. The considerations here reveal how artificial intelligence can be used in all areas that are elements of the business model, such as both in creating a business model and improving it. Areas where AI could be applied include the following: identifying factors affecting the level of revenue achieved by the organization; supporting market activities that create value for the customer in individual areas of activity; implementing and controlling market activities that create a value chain; the proper use of the resources/competences of the organization; in shaping the relations between the organization and groups of owners determining the basic strategic goals of the organization. AI's possibilities can provide companies with a tool that allows them to significantly shorten the decision-making process by quickly generating analyses and reports, as well as giving the capability to forecast trends. Thanks to the automation of time-consuming, repetitive tasks, human skills and competences can be used on more strategic initiatives. AI is a tool that can support the work of various departments of the company and the flow of information between them, and thus increase the effectiveness of decisions and actions by achieving greater efficiency, reducing costs and accelerating research and development activities. In addition to the benefits associated with artificial intelligence, it is also necessary to remember the challenges connected with its implementation, such as the high cost, the danger of intellectual property theft, and the ethical consequences resulting from social values. However, by relying on decision-making using data generated by AI, companies can gain a competitive advantage by being agile, proactive and flexible, adapting their business model to the constantly changing market, which will also allow them to be more resistant to crises.

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MOŻLIWOŚCI WYKORZYSTANIA AI W OPRACOWANIU I REALIZACJI MODELU BIZNESOWEGO – PODEJŚCIE TEORETYCZNE

Streszczenie

Celem artykułu jest teoretyczne pokazanie, w jakich obszarach w ramach elementów konstytuujących model biznesu może być wykorzystana AI w celu ulepszenia procesów tworzenia wartości dla klientów i dla samych przedsiębiorstw. W pracy wskazano możliwości zastosowania AI zarówno przy tworzeniu modelu biznesu, jak również jego udoskonalaniu. Zawarto propozycję odpowiedzi na następujące pytania: W jaki sposób AI może pomóc w identyfikacji czynników wpływających na poziom przychodów osiągniętych przez organizację? W jaki sposób AI może pomóc w identyfikacji czynników kreujących wartość dla klienta? W jakim stopniu AI może pomóc w kontroli czynników wpływających na łańcuch wartości? W jaki sposób AI może pomóc w identyfikacji, które zasoby/kompetencje organizacji stanowią źródło przewagi konkurencyjnej? W jaki sposób AI może pomóc

w kształtowaniu relacji między organizacją a grupami właścicieli, które określają podstawowe cele strategiczne organizacji? Z rozważań wynika, że sztuczna inteligencja może być zastosowana we wszystkich obszarach, które konstytuują model biznesowy. Dzięki możliwościom, jakie oferuje, proces podejmowania decyzji zyskał narzędzie, które umożliwia znaczne skrócenie czasu potrzebnego na podejmowanie decyzji poprzez szybkie tworzenie analiz i raportów, a także prognozowanie trendów. Dzięki automatyzacji czasochłonnych, powtarzalnych zadań umiejętności i kompetencje ludzi mogą być wykorzystywane w strategicznych działaniach.

Słowa kluczowe: tworzenie wartości, model biznesu, AI

