



## Implications of the application of artificial intelligence and Industry 4.0 on society

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**Abstract:** In this research paper, based on a systematic research of recent relevant literature, the possibilities of developing artificial intelligence and industry 4.0 will be presented with the aim of improving business processes and life and love in the continent. Companies and business systems are increasingly using advanced technological solutions to improve their operations. In the paper, the evolved problems accompanying the development of the artificial intelligence implementation process will be identified and the key success factors of the implementation process will be identified. The paper will examine in detail the possibility and feasibility of integrating artificial intelligence within the framework of Industry 4.0. Artificial intelligence undoubtedly brings numerous advantages and simplification of the operations of companies and organizations. The technological revolution, digital transformation and innovations have led to significant changes in all spheres of human activity, in this sense, the definition and determination of artificial intelligence plays a key role in achieving a balance between technological innovations and the protection of social norms and standards. The work will define the nature of cooperation and engagement of experts from different authorities for the optimal implementation of the integration of artificial intelligence within the framework of Industry 4.0. However, researches in practice indicate numerous problems and prejudices and the necessity of defining the security and risks involved in the implementation projects of artificial intelligence and Industry 4.0, to which experts dealing with the management of implementation and implementation projects must pay particular attention to the use of a reliable and responsible artificial intelligence system.

**Keywords:** Digitization, Digital transformation, Artificial intelligence.

### 1 INTRODUCTION

Artificial intelligence technologies are an integral part of Industry 4.0, and it is logical that they are the main subject of research. Research on the impact of the Industry 4.0 concept on society with a special emphasis on the use of modern technologies such as artificial intelligence, blockchain, big data and cloud computing is becoming more and more relevant every day. Artificial intelligence research in the era of Industry 4.0. indicate that small and medium-sized enterprises use cloud computing and IoT technologies to monitor industrial processes, but there is little real use in business. Artificial intelligence is a concept that was initially popularized, especially in movies, which suggested that intelligent robots and machines would take over the world. Artificial intelligence refers to any computer system that imitates natural intelligence in order to perform a specific task. In the literature, it is stated that artificial intelligence is the ability of a machine to perform functions that are related to people's minds (Staff, 2023). Research on the application of artificial intelligence technology in Industry 4.0 shows that a very small percentage of companies use artificial intelligence technologies, as well as that intelligent production is the key to Industry 4.0. In this context, the development of artificial intelligence significantly contributes to the advancement of technology that enables devices to better simulate human behavior. Due to the steady progress, the limits of artificial intelligence are being tested, and its definition is also being adapted accordingly (Pettersson, 2021). Some authors state that in some cases, the process of artificial intelligence is supervised by humans, reinforcing good decisions and discouraging bad ones, or there are artificial intelligence systems that are designed to learn without human supervision (Glover, 2024). Today, artificial intelligence is increasingly present in the real world. Artificial intelligence is used in all industries and serves as the basis of machine learning. In this context, machine learning is important for, for example, smart production, which also represents the link between artificial intelligence and Industry 4.0, which will additionally strengthen the concept of

smart production with its algorithms. Artificial intelligence can be useful in making decisions based on data and performing repetitive or computer-driven tasks (Glover, 2024). One of the key things is how artificial intelligence and Industry 4.0 will affect work processes, services, security, as well as regulation. legislative aspect. Many companies and organizations are transforming their business models by integrating artificial intelligence into the business model, in addition to the digitization and computerization of operations. In addition to the above applications, artificial intelligence helps protect people by piloting online fraud detection systems and robots for dangerous jobs (Glover, 2024). Looking at the history of development, machine learning technology as the "engine" of artificial intelligence was not initially recognized as very widely applicable. It is known that Industry 4.0 is not based on a single technology, but on a combination of different technologies, such as communication networks, data analysis and other technologies that make up the entire technological ecosystem (Mourtzis et al. ., 2022, p. 292-293) . There is a small number of scientific papers in the literature that touched on all the ways in which the use of Industry 4.0 technology affects the development of the company. The research results indicate that the implementation of Industry 4.0 is necessary for companies and business systems to competitively survive the new technological revolution by achieving maximum production capacity with maximum material consumption, minimum production costs, minimum losses and greater customer satisfaction. In this sense, it can be said that, among other things, new sophisticated technologies are becoming drivers of change in higher authorities and in the marketing environment, whereby the next era of customer interaction is expected to be based on digitalization and the use of communication platforms (Crittenden, 2019).

### 3 DEVELOPMENT OF ARTIFICIAL INTELLIGENCE AND INDUSTRY 4.0

Artificial intelligence is increasingly becoming a part of our everyday life and is present in many areas of life and love. In the literature, it is stated that artificial intelligence is a method that enables a computer, computer-controlled robot or software to think intelligently like humans. It is achieved by studying the patterns of the human brain and analyzing the cognitive process (Duggal, 2024). The facts mentioned above indicate the topicality of research and the need for systemic research of the challenge and power that artificial intelligence brings to society, in the context of the introduction of Industry 4.0 technology. With recent technical advances in the power of artificial intelligence, supplemented by hardware and so on. and with deep learning, it is possible to establish the most intelligent systems in companies that are able to predict and consequently prevent unwanted events based on shared historical data within the framework of the deep learning artificial intelligence system. Some authors emphasize that by applying new technologies and digital tools, companies can improve their business processes, reduce costs and increase efficiency (Berman & Najt, 2024, p. 23). Well-known researchers describe the fourth industrial revolution as a transition from traditional production to a new era in which physical and digital processes are intertwined (Hofmann & Rusch, 2017, p. 23). model and the increase of intersectoral relations, which in turn can lead to significant effects on the economy (Denić 2024). In the literature, it is stated that, in general, artificial intelligence focuses on three main cognitive abilities: learning, reasoning and self-correction. (Burns, Laskowski, & Tucci, 2022). Given that artificial intelligence is developing day by day and that it is divided into different types that can tell us how far artificial intelligence has come, where it is going and what the future holds (Betz, 2024). Viewed chronologically, the term Industry 4.0 was mentioned for the first time in 2011 at the Hannover fair by the German government, universities and private companies. In the literature, the definition of Industry 4.0 is often used as a strategic program for the development of advanced production systems with the aim of increasing the productivity and efficiency of the national industry (Xu et al., 2021, p. 530).

#### 4 TYPES OF ARTIFICIAL INTELLIGENCE

In the relevant literature, artificial intelligence is mainly divided into narrow or weak and broad or strong. Examples of narrow artificial intelligence (Labbe & Wigmore, 2021): Image and face recognition systems; Chatbots and virtual assistants; Self-driving vehicles; i Models for maintenance planning.

Well-known authors emphasize that broad or strong artificial intelligence or systems are not intended to completely simulate artificial intelligence, but are designed to automate certain human tasks using machine learning, deep learning and natural language recognition (Labbe & Wigmore, 2021). This is followed by opinions that broad artificial intelligence should therefore have cognitive abilities that can completely imitate humans. When a new task is presented to her, she can solve it independently using logic and knowledge from other domains. Broad artificial intelligence can also successfully pass Turing's test (Burns, Laskowski, & Tucci, 2022). Many advantages of applying artificial intelligence are cited in the literature. In this sense, Haleem (2022) as an advantage of using artificial intelligence, for example in marketing, states that neural networks develop dynamic tools for service providers that enable the processing of large volumes of data and provide more meaningful insights for better creation and understanding of perfect customer segments, marketing automation, content

creation and предвиђаје продаје. Some authors highlight Industry 4.0 as a framework, that is, Industry 4.0, which is characterized by the integration of the physical and digital worlds, represents a new model of production that uses advanced technologies such as the Internet of Things (IoT), artificial intelligence (AI), robotics and large quantities Big Data. In the review of the literature on industry 4.0, some digital technologies are common: cloud computing, IoT, industrial IoT, big data processing, blockchain technology, cyber-physical systems, digital twin, artificial intelligence. New sophisticated technologies enable the creation of "smart" factories and business systems that are capable of independently optimizing their processes and adapting to changes in the environment (Schwab, 2016, p. 67). One of the characteristic definitions of Industry 4.0 was given by Carvalho & Cazarini (2020, p. 6), who define Industry 4.0 as an advanced production model that includes a set of technologies that are not necessarily new or are complexly integrated with each other. The most important thing is that Industry 4.0 combines the use of intelligent sensors, artificial intelligence and data analysis to optimize business and production processes in real time. Some authors dealt with the application of Industry 4.0, stressing that in the context of banking, Industry 4.0 enables the rapid adoption of new technologies that improve the user experience, increase the security and efficiency of financial transactions, and at the same time create new challenges, such as the need for greater data protection and adaptation to new regulatory requirements (Berman & Najt, 2024, p. 92). Experiences from practice indicate that the introduction of artificial intelligence, similar to the digitization and automation of business, brings with it the need to reorganize workplaces. Artificial intelligence can be used in the areas of cost reduction, product quality improvement, production process planning and many other areas. In the literature, it is stated that the digitalization process also creates new challenges, such as the security of cyber attacks and the regulation of new technologies within the framework of existing legislative and ethical frameworks (Brown & Jones, 2020, p. 56; Lee & Kim, 2020, p. 77). The application of artificial intelligence not only enabled the continuity of the message, but also created new message capabilities in the field of financial services, such as digital currencies and cryptocurrency (Gupta & Patel, 2020, p. 14). Digitization and Industry 4.0 represent transformative processes that shape the modern world. Industry 4.0 includes fundamental changes in the technological infrastructure that we already use today (Mubarak & Petraite, 2020, p. 1). In the literature, it is stated that the theoretical background covers different aspects, including information technology, internet creation, artificial intelligence, data processing and machine learning (Atwell, et al., 2022, p. 112). Research results in practice indicate that IoT can be well connected with other elements of Industry 4.0, such as Cloud production, cyber-physical systems, use of big data and artificial intelligence (Stojanović K 2024). Artificial intelligence can be divided into four different groups: - interactive artificial intelligence, - systems with limited memory, - theory of mind, - self-awareness. The following figure 1 shows 4 types of artificial intelligence.

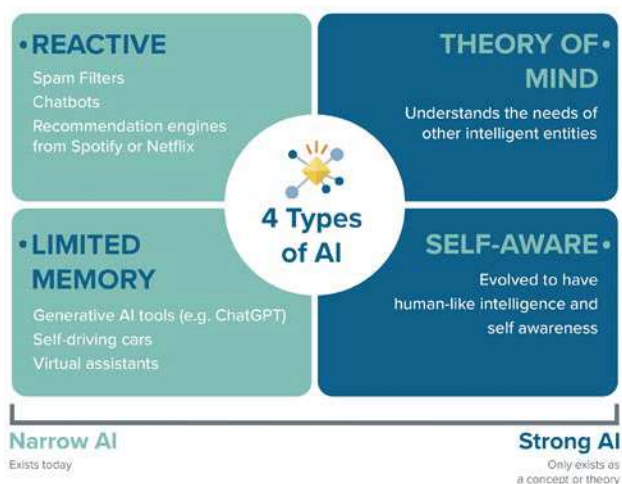


Figure 1 4 Type Artificial intelligences  
Source Petersson 2021

The first two categories belong to narrow artificial intelligence, while the last two belong to powerful artificial intelligence, which has not yet been developed (Petersson, 2021). A device based on interactive artificial intelligence is not capable of storing data or relying on its previous experiences to make a decision in real time (Buitin, 2022). Reactive AI cannot build on prior knowledge or perform more complex tasks. Examples of this reactive machine artificial intelligence are IBM Deep BLUE, Netflix Recommendation Engine (Betz, 2024). Systems with limited memory due to their abilities represent more complex forms of artificial intelligence than interactive intelligence (Buitin, 2022). Examples of this artificial intelligence are chatbots and virtual assistants, as well as self-driving cars (Betz, 2024). In these systems, the basis for artificial intelligence is preserved data collected in the past (Petersson, 2021). Artificial intelligence certainly represents a new era in the development of information and communication technologies, as it brings numerous innovations and opens up possibilities for the realization of previously unfeasible ideas. Since 2017, more and more studies have focused on artificial intelligence.

If the theory of mind were applied to artificial intelligence, it would mean that the system has social intelligence and can understand people's emotions. Emotional signs are so nuanced that machines with artificial intelligence would need a lot of time to fully read the emotions of others, which would lead to errors in the learning phase (Betz, 2024). Such artificial intelligence would have the ability to understand people's intentions and predict people's behavior, which is a key ability for AI systems to become integral members of people's teams (Burns, Laskowski, & Tucci, 2022). Примена теорије ума у образовању mentors use artificial intelligence with theory of mind to adapt to the individual needs of students, thus providing personalized learning experiences and emotional support (John, 2023). Artificial intelligence reaching the level of theory of mind would overcome current limitations (Petersson, 2021). Artificial intelligence theory of mind can improve the patient-physician interaction by understanding and responding to the patient's emotional states and needs. It can also support mental health monitoring and therapy (John, 2023). In fact, systems should be able to understand and process the concept of mind, changes in emotion during decision-making and other psychological concepts in real time, which could enable a two-way relationship between humans and artificial intelligence (Buitin, 2022). Chatbots and virtual assistants using AI theory of mind can better understand and respond to customer problems, leading to

greater customer satisfaction (John, 2023). There is no doubt that artificial intelligence is one of the powers that has been intensively developing in recent years for the needs of both individuals and organizations. Drones and self-driving cars that have built-in theory of mind artificial intelligence can navigate complex traffic routes more safely and predict the intentions of other vehicles and pedestrians in traffic (John, 2023). Robots that have built-in theory of mind and artificial intelligence can help care for the elderly, people with special needs or children by understanding their emotions and providing appropriate assistance (John, 2023). Self-awareness - Such devices are at the level of popular intelligence, which they can even surpass (Burns, Laskowski, & Tucci, 2022). This type is one of the ultimate goals of artificial intelligence, because they believe that when artificial intelligence with self-awareness is achieved, AI machines will be out of control because they will have a sense of self (Betz, 2024). Self-aware artificial intelligence relies on how researchers understand consciousness and how to imitate and implement it in machines (Buitin, 2022). The closest progress that exists involves artificial intelligence that is able to learn from interactions and improve over time, or true self-awareness is the goal to be achieved (senek, 2024). We currently know too little about the functioning of the human brain to be able to create a system that would be so intelligent (Petersson, 2021). In the future, self-aware artificial intelligence will transform industries such as health care, environmental management, and personal assistance through innovation: medical diagnostic systems, environmental bots, and personalized learning assistants. On the other hand, we must be aware that the development of artificial intelligence, similar to the development of ICT technology, opens up many new professions and jobs that did not exist in the past. The literature mentions machine learning, natural language processing and deep learning for artificial intelligence automation as key techniques that transform business. In this context, each technique plays a key role in improving decision-making, optimizing performance and driving innovation (Franklin, 2024). Machine learning has been identified as one of the main factors of the transition from traditional industry to Industry 4.0. The research results indicate that the integration of AI into business systems and companies can be studied at the level of the entire organization, it can also be studied at the level of individual functions or departments present in organizations. Industry 4.0 refers to the integration of information and communication technologies in the production process, which enables the creation of memory factories and systems (Thaduri, Aljumaili & Kour, 2019, p. 86). Artificial intelligence with technologies such as industrial IoT, big data analysis, cloud computing and cyber-physical systems help businesses by making business operations more efficient in terms of using business resources, faster and in a more efficient manner. This is followed by the views of the author who emphasize that Industry 4.0, marked by revolutionary technologies such as the Internet of Things, artificial intelligence, blockchain technology and big data, brings significant changes to all sectors, especially the financial sector (Schwab, 2016, p. 32). Essentially, the idea of cyber-physical systems, where virtual and physical worlds intertwine and create, is the basis of these concepts. AI develops and learns through experiences that are stored and based on experiences from which a spontaneous reaction is later established in the same situations. When it comes to fixed or repetitive processes and tasks, artificial intelligence can be very efficient and can replace humans. In this respect, it can be said that the key

elements of these processes include artificial intelligence that enables machines to learn and adapt, internet devices that connect devices and systems, and cloud technologies that enable access to data from anywhere in the world (Atwell, et al., 2022, p. 134). Research results indicate that artificial intelligence systems can drive several types of business automation, such as enterprise automation and process automation, which help reduce human error and release human labor at a higher level (Goodvin & Quiroz Vazquez, 2024). The consequences of the integration of artificial intelligence in companies and business systems can already be seen, but it will be even more visible in the future, when many organizations will integrate artificial intelligence into their workplaces, which will replace many employees and robots with integrated artificial intelligence, which will be increasingly present. However, practice shows that with advanced technology comes challenges such as data privacy, information security and ethical issues related to the application of artificial intelligence. For this reason, some authors state that it is important to follow the latest trends in this field and to develop an appropriate strategy for managing the process (Taalbi, 2019, p. 47). Artificial intelligence has various advantages that require the integration of technology and human labor, thereby improving operational efficiency and driving business value (Goodvin & Quiroz Vazquez, 2024). All in all, the theoretical background of artificial intelligence, digitalization and Industry 4.0 covers a wide range of concepts and technologies that have the potential to change the way different industries and business companies function. What is the character of these technologies and the ICT sector in society is best expressed by the estimate that today in Serbia more than 115,000 people with an average income of more than 2,000 euros work in the ICT sector. Research in practice shows that the processes of processing increasingly large amounts of business data and the application of information technology have gradually spread through almost all sectors and all aspects of business are aimed at automation and greater efficiency. The results show that Serbia's current export of the ICT sector is close to 4 billion euros. The most important thing for this progressive evolution of business is continuous technological development. Some authors state that artificial intelligence tools also enable marketing segmentation and strategies for adapting marketing campaigns to customers based on their interests (Goodvin & Quiroz Vazquez, 2024). While others emphasize that Industry 4.0 will especially affect production because a large number of new technological innovations can be applied to production, storage, operations, manipulation, etc. (Vendrell – Herrero, et al., 2024, p. 88). In this sense, this revolution also improved the functioning of financial markets, accelerated the development of media and transport, and facilitated global integration through globalization (Carvalho & Cazarini, 2020, pp. 6-7). Interview tools such as IBM Watson Assistant help chatbots to overcome some of the problems of the previous problems that could not answer many questions of customers (Goodvin & Quiroz Vazquez, 2024). Based on the review of the literature and research in practice, it is noticeable that artificial intelligence, Industry 4.0 have been hot topics in recent years, but they certainly do not represent a new concept. Some authors state that the process of creating content using artificial intelligence is still largely unregulated, so employees must monitor the use of artificial intelligence in content creation in order to prevent copyright infringement, publication of false information and other unethical business practices (Goodvin & Quiroz Vazquez, 2024). Viewed chronologically, the process of

technological transformation can be traced differently through the history of mankind. For example, 40 hours ago, the Internet was invented or 570 hours ago, Johannes Gutenberg invented the stamp. Although this invention was invented in China long ago, Gutenberg's invention is still more acceptable to the western world (Atwell, et al., 2022, p. 123). Regarding the use of the position, the authors emphasize that the increased use of technology in the workplace represents a greater potential for security solutions. Organizations must be proactive in detecting irregularities in order to prevent threats and protect organizational and user data (Goodvin & Quiroz Vazquez, 2024). In this sense, Industry 4.0 represents a new, disruptive model, as it affects changes in the competitive environment, business models and existing processes. Forecasts are that the development of artificial intelligence in Serbia by 2030 will have an impact of more than 15 percent on the global growth of the gross domestic product. In the literature, it is stated that industry 4.0 logically follows the previous three industrial revolutions and means a rapid digital transformation of the process in the frame of processing and manufacturing industries (Atwell, et al., 2022, p. 130). When talking about the future of artificial intelligence, it is obvious that it will dictate new technologies and innovations. In this context, companies must understand the adaptation of artificial intelligence, as this is the key to maintaining a competitive advantage (Goodvin & Quiroz Vazquez, 2024). It is known that the transformation of business is based on the intelligent networking of machines using advanced information and communication technologies, with the aim of enabling autonomous communication between devices, analysis and purchase of large amounts of data, autonomous delivery of decisions, requests for status in real time, as well as the creation of additional risks (Gartner, 2021, p. 85). Companies today are faced with huge amounts of business data, however, companies cannot take advantage of this huge amount of stored data without the help of artificial intelligence. For example, large data sets are processed by deep learning to identify subtle patterns and correlations that can provide companies with a competitive advantage (Tucci, 2024). The director of the organization Data Science Conference, Aleksandar Linc Đorđević, states that Belgrade ranks third in Europe in the development of artificial intelligence, just behind London and Vienna. As noted by Ghosh et al (2019), the use of AI in larger organizations has increased by more than 70% in recent years, but according to research, as many as 80% of large organizations are already actively incorporating the use of AI. their operations (Ghosh et al., 2019) The current projection that the value of the artificial intelligence market is almost 500 billion dollars and the use of this technology in the next few years could increase the world GDP up to 4,400 billion dollars of new value speaks volumes for the importance of this authority. , of which 1,000 billion can be created only in banking. In this context, according to the report of the European Commission: artificial intelligence will significantly contribute to the automation of 14% of jobs, while another 32% of interest will experience major transformations. Projects and procedures for the introduction and implementation of artificial intelligence in business have their own specificities and key success factors. When introducing artificial intelligence in the company, it is very important to adhere to appropriate implementation methodologies, choose the right tool, prepare your team for the efficient use of artificial intelligence and plan the implementation strategy. It is also necessary to ensure that the integration of artificial intelligence corresponds to the specific company or

organization. Here are some steps for implementing artificial intelligence (Demkovič, 2024)

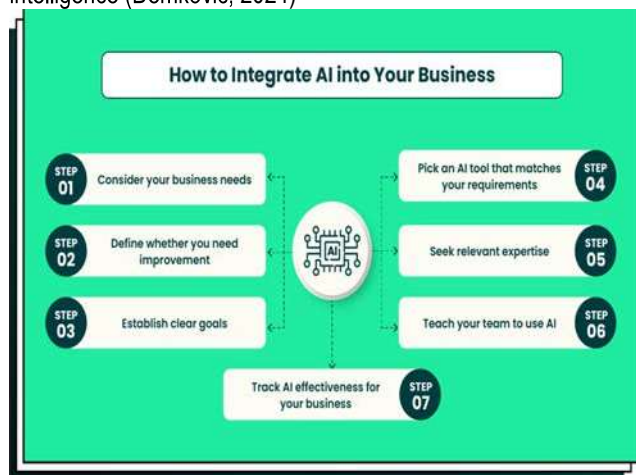


Figure 1 4 Type Artificial intelligences (Demkovych,2024)

### 3 RESEARCH METHODOLOGY

For the purposes of research, the relevant literature, published scientific articles, conducted studies and other sources relevant to artificial intelligence and Industry 4.0, or the research problem of our work, will first be reviewed. This information was then analyzed, using a descriptive method with the aim of summarizing the key results that were reached by reviewing the literature. In this sense, with the intention of summarizing the views of the author, the method of compilation was used, which means that different opinions and views of the author are combined and summarized. In addition, a comparison of relevant research studies of artificial intelligence and Industry 4.0 was made, which enables the application of the comparison method in this work. This made it possible to identify potential similarities, differences, and trends between different studies, thus providing a more comprehensive picture of the research problem. In the empirical work, the methods of surveying and summarizing data using statistical methods are used, with the result being explained in a meaningful way and connected with each other.

### 5 NEW TRENDS IN ARTIFICIAL INTELLIGENCE AND INDUSTRY 4.0

Research results in practice indicate that as companies and organizations began to accept Industry 4.0, the fifth industrial revolution also appeared (Xu, et al., 2021, p. 530). In the context of Industry 4.0, the goal is the transition to intelligent or smart production. The very term Industry 5.0 was introduced by the research authorities that are considered the next industrial revolution. The integration of artificial intelligence in the organization is most often achieved through the use of various tools, applications and intelligence systems that have integrated artificial intelligence, which ensures the optimal functioning of such tools, systems and applications, which ensure the improvement of the entire company. According to some authors, this is a systemic transformation that includes an impact on civil society, management and structures, and popular identities, in addition to purely economic and production consequences (Vaidia et al., 2018, p. 238). In addition to the above with artificial intelligence, machines will be able to learn, think and act in the same way as humans, which will contribute to greater

automation and problem-solving abilities (Glover, 2024). One of the basics of business improvement is the integration of new technologies with operational activities, which leads to increased effectiveness and efficiency of business and stronger organization of production. In this respect, modern society is largely looking to federal and business regulations on artificial intelligence to help guide the future of technology (Glover, 2024). Many internal and external factors, such as legal regulations, financial pressures, changes in consumer habits, social and cultural aspects, etc., exert direct pressure on business operations and business decision-making processes. In this respect, the application of artificial intelligence is very useful. In this context, the well-known author Greval (2021) states that the main positive aspect of the use of artificial intelligence in marketing is the adaptation of offers for buyers, which increases the value for sellers and reduces search costs, facilitating the creation of customized offers at the right moment and at the right stage of the purchase process in the B2C environment. where there is a large number of buyers, that ensures the extraction of consumer surplus and reduced search costs for customers. However, despite the fact that AI is becoming more and more powerful and is now able to perform many tasks that only humans could do in the past, especially due to the advanced learning and programming capabilities of AI, the fact is that the "real" human contact will continue to be which will be needed in many places and will continue to be the key to success. The transformation of business models as part of Industry 4.0 results in improvements that lead to increased profits, reduced costs, improved user experience, innovation, etc. (Gartner, 2021, p. 90). In today's era, it is almost impossible to find an organization that does not use information and communication technology in its operations. Many organizations have digitized their operations and fully supported them using ICT technology. According to some authors, the difference compared to the previous industrial revolution was not found in the invention of a new technological product that changed the world, but rather in the upgrading of existing systems that fundamentally changed the functioning systems of primary production, but also other related businesses (Taalbi, 2019, p. 45). The results in practice indicate that the use of artificial intelligence for the enterprise also brings large amounts of revenue, and it is also important to note that the demand for skills such as data science, natural language processing, computer science and deep learning techniques is extremely high, while the supply of talented печеньяка у тим областима контакти. It is interesting to note that Serbia is the world leader in the number of women involved in artificial intelligence and computer science, with a figure of around 40%, while the next country in the world is Finland with only 24%. In our environment, in professional circles, there is a prevailing opinion that in the fourth industrial, that is, digital revolution, we have a chance to catch up and catch up with the developed world. In this direction, Serbia will invest 100 million euros in the development of artificial intelligence in the two years ending in 2026. In view of the extremely dynamic development of information technologies, companies and organizations are forced to focus their business processes on the integration of digital tools that enable better efficiency, faster and cheaper performance of everyday activities, as well as personalized services (Berman & Najt, 2024, p. 82). For the successful and efficient integration of artificial intelligence as well as technology in general, as well as for the successful digital transformation of organizations, it is naturally necessary that technology be

presented to employees as a tool for easier and more successful work, but not as a substitute for it. As for investing in new technologies in our environment by 2026, Serbia is planning to invest 30 million euros in another supercomputer, which will be free for researchers and startups, 20 million euros in software for the public sector, primarily in healthcare, energy and transport, as well as 30 million euros for incentives for the development of artificial intelligence. AI is already very powerful today and can perform individual tasks that would otherwise be performed equally by employees, but it can perform certain tasks significantly faster and more accurately (Stojanović J 2024). The Government of the Republic of Serbia is financing 35 projects in this area for a total of less than 2.5 million euros in the function of the development of the artificial intelligence project. Also, as far as education in this field is concerned, 7 master study programs in the field of artificial intelligence are accredited at 6 faculties. In parallel with the intensive development of ICT technology and advanced technological solutions, as well as the digital transformation of organizations and the economy, AI is also developing intensively. In the world framework, there is currently a current initiative by SAD, which announced that three leading companies will invest significant funds in the infrastructure for artificial intelligence. OpenAI, SoftBank and Oracle will form a joint venture called Stargate, with an investment plan of 500 billion dollars. In all cases, AI technologies are unrelated to other emerging technologies. As with any new introduction, there were many challenges in implementing artificial intelligence technologies. The most common are: technical problems, confirmation of the

## CONCLUSION

The intensive development of information and communication technology has also brought with it the development of artificial intelligence. As part of the Industry 4.0 initiative, artificial intelligence is embedded in production systems to support planning, management, and execution processes and take initiative and responsibility for real-time decision-making. Although a generally accepted definition of artificial intelligence (hereafter AI) does not (exist) yet, artificial intelligence could be defined as the ability of a non-human factor (e.g. machine, robot, etc.) to exhibit characteristics that are otherwise characteristic only of humans (such as thinking, learning, planning, creativity, innovation, etc.). By introducing advanced technologies such as Internet of Things (IoT), artificial intelligence (AI), Big Data, cloud computing and blockchain, banks are able to radically transform their business model, improve their operational processes and create new features for your users. With the help of artificial intelligence, technical systems and other devices become capable of sensing events in the environment, analyzing them and solving problems that arise. The idea is that artificial intelligence can solve more demanding tasks, using machine learning to analyze and monitor changes in the environment and at the same time adapt to new circumstances and environments. Based on the research, it can be concluded that companies have not implemented artificial intelligence due to a lack of experts and do not see a clear benefit from implementation. Systems supported by AI integration are able to analyze their previous actions and their effects and adjust their future behavior based on the analysis. However, it is important to be aware that artificial intelligence lacks creativity and innovation and will have

effectiveness of the artificial intelligence system, data security and others.

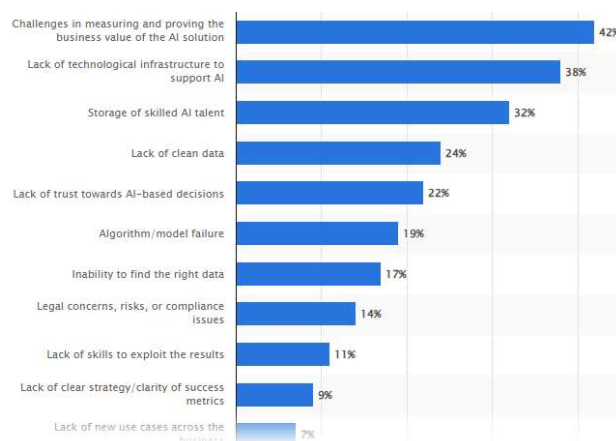


Figure 3 Leading challenges in implementing artificial intelligence (AI) initiatives in businesses in 2023 Artificial intelligences  
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difficulty in generating new ideas and concepts that bring competitive advantage to the company.

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