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## **DEVELOPMENT OF APPLICATIONS AND SOFTWARE BASED ON ARTIFICIAL INTELLIGENCE AS PART OF THE DIGITALISATION OF THE ECONOMY**

Digitalisation of the economy is the process of using digital technologies to transform and improve economic processes and structures. The term covers the introduction of various information and communication technologies (ICTs), such as artificial intelligence, data analytics, cloud services, the Internet of Things (IoT), blockchain, and others, to improve the productivity, efficiency, and competitiveness of economic actors.

The main aspects of economic digitalisation include automation of business processes, introduction of digital platforms for information exchange and transactions, increased access to data and its analysis for more informed decision-making, and increased digital readiness of society and business.

Digitalisation can have a significant impact on economic development, increasing competitiveness, creating new business models and jobs, and facilitating interaction between different economic actors. However, it also requires careful consideration of security, privacy, and other ethical issues related to the collection and processing of large amounts of data.

AI systems are used to automate routine and labour-intensive tasks, allowing businesses to use resources more efficiently and increase productivity. AI technologies are also used to analyse large amounts of data and provide valuable information for decision-making. Data analytics helps to identify trends, forecast market conditions and optimise business strategies. Artificial intelligence helps to create personalised products and services, as well as improve the quality of customer service, which contributes to increased customer satisfaction and loyalty. Artificial intelligence enables real-time data processing, which helps businesses respond quickly to changes in the environment and market conditions.

The development of AI-powered applications and software will lead to the creation of innovative products and services that meet modern market needs. In addition to the benefits listed above, AI can be used to optimise the supply chain, track goods and resources in real time, reduce costs and increase efficiency. In other words, it is a key tool for development and innovation, which can help create new markets and increase competitiveness.

Research launched by consulting company Accenture covering 12 developed economies, which together generate more than 0.5 % of the world's economic output, forecasts that by 2035, AI could double annual global economic growth rates. AI will drive this growth in three important ways. First, it will lead to a strong increase in labour productivity (by up to 40 %) due to innovative technologies enabling more efficient workforce-related time management. Secondly, AI will create a new virtual workforce – described as 'intelligent automation' in the report – capable of solving problems and self-learning. Third, the economy will also benefit from the diffusion of innovation, which will affect different sectors and create new revenue streams[1].

AI's impact on productivity could add trillions of dollars in value to the global economy. Latest research estimates that generative AI could add the equivalent of \$2.6 trillion to \$4.4 trillion annually across the 63 use cases we analyzed—by comparison, the United Kingdom's entire GDP in 2021 was \$3.1 trillion. This would increase the impact of all artificial intelligence

by 15 to 40 percent. This estimate would roughly double if we include the impact of embedding generative AI into software that is currently used for other tasks beyond those use cases[2].

The next important issue to highlight is the impact of Artificial Intelligence on Industry 4.0 from an economic perspective, influencing various facets of industrial production and contributing to economic growth and efficiency. Industry 4.0, often referred to as the fourth industrial revolution, represents a new era of smart manufacturing characterized by the integration of digital technologies, automation, and data exchange. AI plays a pivotal role in shaping the economic landscape of Industry 4.0 by driving efficiencies, fostering innovation, and contributing to overall economic growth in the industrial sector. However, it is essential for policymakers, businesses, and the workforce to collaboratively address challenges related to job displacement, ethical considerations, and the responsible deployment of AI technologies.

One of the key objectives of Industry 4.0 is to operate the computers in a decentralized and autonomous manner in cases of exceptions, interferences or overlapping objectives requiring external feedback. The application of AI has led to positive changes in their intelligent factories that reduce maintenance costs. Furthermore, advances in industrial cybersecurity technologies often allow corporate network surveillance to tackle hacker attacks in good time. Industry 4.0 provides the latest development in industrial technology automation and data sharing. AI can be easily determining their future manufacturing with the effective storage of data. The more the machines data sets are fed, the more patterns are evolved, learned and decided with the interest of the production company. This automation helps correctly forecast errors, predict working loads, track problems and expect them. Industry 4.0 needs to prepare for networked factories that are highly embedded in the supply chain, design team, production line and quality control into a smart engine that provides practical insights with the help of AI.

To exploit Industry 4.0's many opportunities, manufacturers need to develop a system that considers the whole production process as it needs cooperation across the whole supply chain cycle. Today, the main fields of AI, ML and IoT adoption are asset control, supply chain management and resource management. Combining these new tools, asset tracking precision, the visibility of the supply chain and stock utilization can be improved. Predictive maintenance can be improved using ML strategies like algorithms, processes powered by machine intelligence and quality optimization. Effective time monitoring of operating loads at the factory floor contributing to production planning efficiency can be quickly undertaken using AI. By combining ML with overall equipment effectiveness, producers can increase production, preventive maintenance and asset workloads[3].

IBM has published a study "The global race for AI" on the implementation of AI technologies in company processes. Currently, this implementation is focused on 42% of security, 31% on process automation, and the remaining 29% on customer service. The study, prepared by Morning Consult for IBM, involved more than 500 executives in a global sample of more than 4,500 managers from the United States, China, Germany, France, Italy, the United Kingdom, and Spain. "Over the next 18 to 24 months, the use of artificial intelligence in companies will grow tremendously, with adoption rates likely to exceed 80%," said Rob Thomas, general manager of Artificial Intelligence at IBM[4].

In conclusion, the research provides comprehensive insights into key aspects of the digitalization process, its economic implications, and the transformative role of Artificial Intelligence in the context of Industry 4.0. The study delves into the multifaceted process of digitalization within the economy, emphasizing the adoption of advanced technologies across various sectors. Digitalization is portrayed as a fundamental driver of economic growth, enhancing efficiency, innovation, and global competitiveness.

The research underscores the widespread integration of digital technologies, such as AI, as a cornerstone for the ongoing evolution of the modern economy. The research scrutinizes the

impact of digitalization on the Gross Domestic Product (GDP), revealing a positive correlation between the degree of digitalization and economic growth. Digital technologies contribute to increased productivity, optimized processes, and the creation of new business models, fostering a conducive environment for economic expansion. The findings underscore the importance of strategic investments in digital infrastructure for nations aspiring to bolster their economic performance. A significant portion of the research is dedicated to elucidating the role of AI in the context of Industry 4.0, the fourth industrial revolution characterized by smart manufacturing and interconnected systems. AI emerges as a transformative force, driving automation, predictive analytics, and data-driven decision-making.

The economic implications of AI in Industry 4.0 are profound, with enhanced productivity, optimized supply chains, and innovative business models contributing to increased competitiveness and economic resilience. The research underscores how AI applications lead to substantial productivity and efficiency gains within industrial processes. Automation of routine tasks, predictive maintenance, and real-time data analytics contribute to streamlined operations, reduced downtime, and overall cost savings. These improvements are identified as key contributors to economic growth and competitiveness.

While acknowledging the positive economic impacts, the research highlights the evolving nature of employment in the era of AI-driven digitalization. It emphasizes the need for proactive measures to address job displacement through targeted upskilling and reskilling initiatives, ensuring that the workforce remains adaptable and aligned with the changing demands of the digital economy.

### References

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