

ARTIFICIAL INTELLIGENCE IN ECONOMICS

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Annotation. The world is continually changing and one of the fundamental drivers is digital transformation. The global economy is undergoing a digital transformation. The influence of artificial intelligence on economics is described in the paper.

Keywords. Artificial intelligence, digital economy, world economy, information technology, economic effect

The digital economy is a term that captures the impact of digital technology on patterns of production and consumption. This includes how goods and services are marketed, traded, and paid for. The digital economy is now recognized to include all parts of the economy that exploit technological change that leads to markets, business models, and day-to-day operations being transformed. It covers everything from traditional technology, media and telecoms sectors through to new digital sectors. It includes e-commerce, digital banking, and even “traditional” sectors like agriculture, mining or manufacturing that are being affected by the application of emerging technologies.

Artificial intelligence (AI) is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry [1].

AI is transforming the entire business value chain by automating existing business processes, uncovering new value from data, and augmenting human decisions and actions. The ability to analyze levels of data that are beyond human comprehension allows businesses to personalize experiences, customize products and services and identify growth opportunities with a speed and precision that has never been possible before.

The economic impact of AI in businesses will be based on three main priorities:

1. Productivity gains from automation. AI enables massive productivity gains for businesses automating their processes. Robotic and cognitive process automation, multi-agent collaborative systems, machine learning, and natural languages processing are helping companies maximize value by improving input (labour, capital, and assets) productivity. Capital-intensive sectors such as manufacturing and transport will benefit the most from productivity gains.

2. Increased consumer demand is likely to be driven by the availability of personalized and/or higher-quality AI-enhanced products and services in the coming years. It has been forecasted that the gains derived from consumer demand will overtake the gains originating from productivity.

3. Innovation dissemination. AI has a strong ability to propel innovation as it can quickly analyse data that would have otherwise taken a lifetime to process, lower R&D costs, and create new possibilities for experimentation [2].

One of the main directions of the development and implementation of AI is the re-engineering of business processes and business transformations.

Let say some words about the re-engineering of business processes.

Analyzing the potential of artificial intelligence, researchers began to look for new areas of its application, primarily in conjunction with improving business processes. The use of AI in this area makes it possible to make business processes flexible and adaptive, abandon traditional pipelines and move on to the idea of integrating advanced AI systems and people. This approach allows radically to change the interaction of a machine and a person, to form integrated teams of robots and people. Such teams are able to quickly process large amounts of data during production operations, assimilate new information and adapt to continuously changing conditions. These AI capabilities allow companies to reengineer their business processes, significantly increase their productivity and reduce costs.

Another area of development and implementation of AI is to supplement and expand human capabilities when machines do what they can best (performing repetitive, monotonous tasks with processing enormous amounts of data), and people do what they do best (working with ambiguous information, inference in difficult cases, decision-making in conditions with a high level of uncertainty, creativity, etc.). It is called business transformations.

Combined with key technologies such as the Internet, Big Data Analytics, or block-chain, AI has the potential to create a new basis for economic growth and to be the main driver for competitiveness and job creation. AI creates a new way of thinking about technology, business development, and strategic execution, which affects the entire business, rather than just the technology and innovation divisions. AI has the potential to fundamentally change core businesses and provides opportunities to innovate with entirely new business models. Many industries are already using AI for prediction in order to improve decisions. AI enables companies to better understand customer behavior, anticipate their needs, enhance customer's experience to raise perceived value leading to increased loyalty and brand equity. By combining external social data and internal structured data to monitor and respond to real-time customer sentiments, AI creates new opportunities to co-develop with customers and to increase customer-driven innovation.

Machine learning, industrial IT, big data, and robotics are fundamentally transforming product development and operations across all sectors. They enable the development of robust pricing strategies under different scenarios to find the best price for new product introduction. Combined with the industrial internet of things, machine learning can predict anomalies with sensor data, images, videos, and audio data and therefore reduce losses. Manufacturers for instance are using machine learning and other AI techniques to better predict failure and breakdowns and thus to reduce maintenance costs.

The awareness and ability to make fact-based decisions that AI makes possible is completely revolutionizing supply chain management. It means that everything can be connected and capable of collecting data on all activities performed by a company. So all data related to an inventory (e.g. origins and transit routes) can be collected and analyzed through the use of advanced analytics tools such as machine learning. In-depth simulation can be run, allowing for example the implications and effects of missed deadlines to be assessed before they even occur and remedial actions to be taken ahead of inconveniences being caused to customers

There are some examples of AI usage in business

French data company Dreamquark developed Brain, a platform for businesses to build predictive models with their data. Businesses just need to upload their data and select their variables, and then Dreamquark's AI learns from the data and makes it possible to visualize and review the results. Thanks to those data generation abilities, companies can explore different scenarios and build new, innovative and successful strategies. Brain's cognitive resources are especially used by insurance, financial services, and healthcare professionals to take advantage of the massive amount of data they have stored [3].

German tech company DeepL (creator of translation search engine Linguee) launched DeepL in 2017. The translator leverages AI to deliver the world's most accurate and natural-sounding machine translation tool. According to the tests, which compared DeepL with competitors, translator preferred DeepL's results by a factor of 3:1. The reason for this success is that DeepL uses a supercomputer in Iceland, capable of 5 trillion floating-point operations per second, enough power to translate a million words in under a second [4].

Maintenel (stands for maintenance electronics) is a Latvian start-up in predictive maintenance. The solution enables companies to reduce the operating and maintenance costs of their equipment. The solution for predictive maintenance is based on rapid deployment of hardware, software, and cloud components. Maintenel measures the workload of equipment by counting the period of time spent in

different operation modes. On receiving this data, Maintenel's cloud-based software allows detailed labour analysis and enforces timely preventive maintenance using predictive maintenance features [5].

Talkwalker is a Luxembourg-based social media monitoring tool for marketers trying to review and identify tactics to improve their social media and content marketing. The platform analyses in real time online social, print and TV/radio content and uses advanced AI to find the most relevant and impactful information. It also offers a wide range of social media analytics and monitoring tools by centralising metrics from companies' customers, campaigns, competitors, and industry and by enabling them to track their campaign performance in real time [6].

I am sure AI has a large potential to contribute to economic activity in Belarus. AI is not a single technology but a family of technologies. They are computer vision, natural language, virtual Associates, robotic process automation, and advanced machine learning. Companies will likely to use these tools to varying degrees. Some will take an opportunistic approach, testing only one technology and piloting it in a specific function. Others may be bolder, adopting all five and then absorbing them across their entire organization. Between these two poles, there will be many companies at different stages of adoption; the model captures partial impact, too.

AI will change the world and be ubiquitous in tomorrow's economy. AI major gains are likely to focus on productivity, efficiency, automation, and costs, enabling consumers and businesses to capitalize on the digital economy. However, companies that fail to recognize the advantages of AI and respond to them by disrupting themselves, innovating, and re-engineering their business models will, at best, lose their competitive advantage, and at worst, disappear.

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