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**THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN E-COMMERCE**

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**ABSTRACT**

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*This thesis analyzes the concept of artificial intelligence, development trends and its importance in the field of digital commerce. The author also summarizes the advantages and disadvantages of artificial intelligence in e-commerce and supplements it with statistical data.*

**KEYWORDS:**

*E-commerce, artificial intelligence, Amazon, chatbots, virtual assistants, John McCarthy.*

**Introduction**

In today's digital age, artificial intelligence (AI) technologies are revolutionizing all industries. The electronic commerce (e-commerce) industry is also not left out of these changes. Artificial intelligence serves as a powerful tool to increase the efficiency of e-commerce platforms, improve customer service and optimize business processes. The adoption of artificial intelligence technologies in e-commerce not only opens up new opportunities for merchants, but also provides a more convenient and personalized shopping experience for customers.

**Main part**

Before defining AI, we need to understand what we understand by intelligence in general? According to points of L. Gottfredson, intelligence is a very general human mental

ability that includes the ability to draw conclusions, plan, solve problems, think abstractly, understand complex ideas, learn quickly, and learn from experience [1; p 34].

Artificial intelligence is the intelligence of machines or software, as opposed to the intelligence of humans or animals. It is also a field of study in computer science that develops and studies intelligent machines. AI can also refer to the machines themselves. In general, artificial intelligence is an independent field of scientific research, which was formed as a result of advances in mathematics and logic and is based on humanity's accumulated knowledge of animate and inanimate nature.

The term “Artificial Intelligence” was first uttered by John McCarthy, who authored it. He organized the first conference in 1956, which was about machines capable of thinking like a human, learning, collecting more data and processing information [2].

AI technologies are now defining the development of the global economy. Investments in them constitute the main investments of venture capital in the USA. A similar boom is taking place in Europe, Japan, China [3]. According to the estimates of international experts, investments in artificial intelligence technologies have tripled from 2014 to 2017 and amounted to about 40 billion dollars. In 2018, the global market of technological solutions developed on basis of artificial intelligence amounted to \$21.5 billion and according to experts' forecasts it will reach almost 140 billion by the end of 2025 [4; p. 22].

The goal of artificial intelligence is to simplify the solution of complex tasks, the processing of which is difficult to do manually. AI affects the following industries:

- Medicine - ultrasound machines, X-ray equipment and other medical equipments;
- Politics - collecting information and analyzing data;
- Industry - AI is able to collect data from production sites and analyze it, thereby distributing the workload correctly;
- Education - advancing AI in the education sector to improve learning and the most impacting industry is e-commerce.

At the end of 2019, 14.1% of all global retail sales are e-commerce sales. At there are about 1.92 billion digital shoppers in the world today. The largest e-commerce market of \$740 billion is in China. The world's largest online retailer Alibaba has goods with a gross value of \$768 billion. According to the latest statistics from Shopify, a Canadian Internet company for online and retail software development for online and retail stores, China is the dominant force in the e-commerce market with nearly 40 percent of the world's online commerce revenue. In second place is the United States with \$561 billion, followed by the United Kingdom with \$93 billion. The UK's e-commerce statistics for 2019 make it the

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leader in online commerce in Europe, followed by Germany with \$77 billion and France with \$55 billion. Japan also has a significant market of \$87 billion, and South Korea with \$69 billion. Russia and Brazil rack up disproportionately small numbers given their population size - 19 and 16 billion respectively.

Nowadays, the most important application of AI in e-commerce is the personalized recommendation system. This system analyzes purchase history, search data, and customer behavior to suggest appropriate products. For example, large platforms such as Amazon, Netflix and Spotify use sophisticated algorithms to provide their users with personalized recommendations. These systems use machine learning techniques to predict each customer's needs and suggest products which liked by them before. Besides that, artificial intelligence based chatbots are widely used to communicate with customers on e-commerce sites. These virtual assistants work 24/7 and answer customer questions instantly. Modern chatbots use natural language understanding (NLP) technologies to communicate with customers as if they were human beings. They provide product information, track order status, manage return processes and perform many other tasks.

With the help of artificial intelligence, e-commerce platforms are implementing dynamic pricing strategies. AI systems determine optimal prices taking into account factors such as market analysis, competitor prices, supply and demand ratio, and seasonal changes. This method is important not only to maximize profits but also to ensure competitiveness in the market. For example, airlines and the hotel sector widely support this technology.

But despite the advantages of artificial intelligence in the development of digital commerce, it also has a number of disadvantages. Firstly, AI systems handle a lot of personal data, which creates data security and privacy issues. Secondly, automated processes may destroy some jobs, creating social and economic problems. In addition, artificial intelligence does not always provide accurate and unbiased information. For this reason, cases of deception may also be observed.

### **Conclusion**

In short, artificial intelligence is revolutionizing e-commerce, and this process will continue into the future. By properly and strategically applying these technologies, businesses can improve competitiveness, increase customer satisfaction, and create new market opportunities.

The successful implementation of artificial intelligence technologies in e-commerce has an important impact not only technologically, but also socially and economically. Therefore,

a responsible approach and consideration of the needs of all stakeholders is necessary when implementing these technologies.

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