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The impact of artificial intelligence on the logistics of Ukraine

Artificial intelligence (AI) is a promising technology that can help improve logistics processes by reducing personnel costs and shortening delivery times. Artificial intelligence can be used to optimize delivery routes, inventory planning and forecast demand for goods and transportation. However, it is also important to consider certain advantages and disadvantages of the impact of AI on the logistics of Ukraine.

In recent years, the implementation of artificial intelligence technologies in various fields of activity has become a real mainstream. This did not escape the logistics industry. Many companies use artificial intelligence to solve problems, simplify and improve management and transportation. Analysts predict that the market for artificial intelligence in logistics will be worth \$36 billion by 2030.[1] Thanks to the rapid pace of development of the latest technologies, the use of AI in Ukraine has not only become possible, but is also gaining wider application. It is important to understand the impact of these technologies on the country's logistics, and to consider the advantages and disadvantages of their implementation.

The impact of AI on the logistics of Ukraine: advantages

Nowadays, logistics is an extremely important part of any business. Trying to keep up with the world's leading countries, Ukraine is increasingly using artificial intelligence technologies to improve route planning, optimize warehouse management, etc.

1. One of the key advantages is the ability of artificial intelligence to forecast demand for products. Forecasting is based on the analysis of all data, for example, for previous sales, it is able to adjust the forecast to seasonal trends, economic changes in the country, weather conditions or other external influencing factors. This significantly facilitates the planning of product stocks to avoid or reduce company losses and helps to prepare in advance for the possible number of orders. This ability to notify demand helps to use resources wisely and efficiently, to optimize inventory and supply of products.

Understanding what to expect makes it easier to develop strategies to shift stocks and direct them to places of increased demand, analyze traffic flows, which is also extremely important to avoid traffic jams. Data analysis, such as GPS, can provide accurate forecasting of goods arrivals and therefore help in planning the arrival times of goods. Therefore, demand forecasting capabilities can have a positive impact on logistics processes in Ukraine.

2. Transport routing also becomes an important element of logistics process optimization. The main idea is to choose the best route from point A to point B. Some methods and technologies can be used to maximize the efficiency of transportation in Ukraine. The use of GPS geolocation technologies will help to track transport in real time, predict the time of arrival of goods, analyze the

condition of the roads and avoid traffic jams, which in turn makes it possible to reduce costs. Analysis of traffic flow data may also be a possible option.

3. AI provides an opportunity to maintain the transparency of logistics processes, which in turn increases trust in the company and guarantees improved cooperation by other participants in the logistics chain.

4. The introduction of innovative technologies has a noticeable impact on the quality of customer service. Analysis and accurate information about the condition of goods and their availability in the warehouse, delays, etc. are provided. Monitoring of goods, in turn, will help control the required amount of goods and their distribution. [2; 3]

The use of AI in the logistics of Ukraine

The leading logistics company, the leader in expert deliveries in Ukraine, Nova Poshta, is actively implementing artificial intelligence technologies to automate processes and improve service. Delivery speed is based on the automation of parcel sorting. In a large automated system, artificial intelligence helps to optimize the location of goods in warehouses, which in turn reduces the mileage of mechanized systems. The ability of customers to track their parcel using the online service in real time is based on AI. [4]



Fig. 1. Automative sorting system. [5]



Fig. 2. “Nova Poshta” warehouse (Kyiv). [5]

Logivations, a German company developing software for the optimization of logistics processes and supply chain management, with an office in Ukraine (Lviv), is very actively implementing artificial intelligence for machine learning,

inventory planning, transport routing, etc., and involves Ukrainian companies in cooperation. [6]

The impact of AI on the logistics of Ukraine: shortcomings

Despite the above-mentioned advantages of AI, it is worth paying attention to certain disadvantages:

1. The implementation of artificial intelligence technologies requires large costs for both equipment and training of specialists who will monitor the work of AI. Due to high costs, these technologies are becoming inaccessible to small businesses;

2. There is an impact on employment. Automation of processes leads to fewer jobs as artificial intelligence replaces and facilitates large amounts of work.

3. Digitization of information can increase the risks of attacks, crimes, viruses and system security. To avoid such consequences, it is necessary to develop a reliable protection system. [2; 3]

Conclusion

The influence of AI can have many advantages for the logistics industry of Ukraine. It can provide forecasting of demand for products, optimization of stocks, selection of the optimal route option and analysis of road conditions.

Despite this, it is worth considering that it requires large costs, and therefore it is necessary to find a balance between costs and profit; leads to a reduction in jobs, which in turn will increase the percentage of the unemployed; and there is a risk of breaching the security system. Therefore, companies must carefully weigh such decisions, with the possible advantages and disadvantages for their business.

References

1. Перспективи застосування штучного інтелекту в логістиці.
URL: <https://logist.fm/news/perspektivi-zastosuvannya-shtuchnogo-intelektu-v-logistici>;
2. Колісніченко А. В. «Управління логістичними бізнес-процесами в умовах діджиталізації». Київ, 2021. 112 с.
URL: https://er.nau.edu.ua/bitstream/NAU/53577/1/ФТМЛІ_2021_КолісніченкоА_В_208M.pdf;
3. Shevchuk A. The role of artificial intelligence in the logistics industry. Dektry | full-cycle web & mobile development services.
URL: <https://www.dektry.com/blog/impact-of-ai-on-logistics-industry#rec304155378> (date of access: 08.04.2023);
4. Новицький В. В. «Створення інформаційної системи для логістичної компанії «Нова пошта» з використанням штучного інтелекту в складській логістиці». Київ, 2021. 72 с.
URL: <https://dspace.nuft.edu.ua/jspui/bitstream/123456789/36226/1/Novytskyi%20Vladyslav%20Vitaliiiovych.pdf>;

5. Vanderlande. The world of vanderlande: nova poshta, 2019. *YouTube*. URL: <https://www.youtube.com/watch?v=dWCHGPrwr1I> (date of access: 10.04.2023);

6. Logivations | consulting & technology for supply chain, warehouse & production logistics and e-commerce. Logivations | consulting & technology for supply chain, warehouse & production logistics and e-commerce. URL: <https://www.logivations.com/en/> (date of access: 08.04.2023).