

Digitalization of transport & logistics sector and transit cargo transport

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Abstract: The Fourth Industrial Revolution offers unique potential with technologies such as artificial intelligence, cloud computing, "Big Data," and the Internet of Things (IoT). This article discusses IoT as a new technology with significant potential to cause important results. IoT allows businesses to use innovative services with less risk. In the next decade, IoT promises a big revolution in logistics by minimizing the cost of device components, increasing the speed of seamless networks, expanding the possibilities of receiving information in networks, and creating new business benefits. The article focuses on the application of IoT in logistics, real-world examples of its use among transportation companies, and the development prospects of this new technology.

Keywords: *digital economy; logistics; Internet of Things; agricultural innovations*

1. INTRODUCTION.

The digitalization process is a large-scale project aimed at creating a new network-information society managed by information and communication technologies that capture, collect, process, and share information. Looking at the digital economy from the production prism, we can note the main development trends, such as the application of new materials, transition to new technologies for manufacturing goods, automation of production processes, and the application of innovations in logistics. The main difference between the modern economy and the digital economy is the degree of use of forecasting in economic processes.

The trend of planned and sequential production to reduce costs and distribute existing resources in the most efficient way possible is increasing. In addition to traditional logistics such as postal offices and courier deliveries, the delivery of drones, robots, and unmanned vehicles is developing. All of this has become possible with the creation of the "Internet of Things" (IoT) technology, which is taking the world to a new level [1]. Its impact affects all aspects of human life, from the process of driving a car to shopping and even the reception and billing of electricity at home. Smart sensors and chips integrated into everyday physical objects constantly exchange massive amounts of data among themselves.

2.METHODS

One of the main challenges in the development of the Internet of Things is the lack of unified standards, which complicates the integration of disparate networks and devices. The ideal technology that combines three key features - energy efficiency, stability, and security - is still in the development stage. Additionally, there is a risk of cyberattacks on the IoT system, which reduces confidence in this innovation. Therefore, improving the security system for all devices participating in the network is one of the main tasks

of the IoT market. The Internet of Things technology is not only applicable in household conditions, such as smart home appliances and personal digital devices, but also in commercial sectors, agriculture, healthcare, real estate, and security fields. It is rapidly gaining popularity in logistics and other industrial sectors as well [1].

Newly applied technologies are shared along the value chain in logistics, i.e., warehouse operations, transportation of goods, and final deliveries. In addition, innovations improve manufacturing efficiency, customer service, and safety. The Internet of Things helps solve operational problems by utilizing the best possible option. [2]

The "physical" internet can be used in the form of directly connected devices (sensors, robots) and internet transceivers between devices. In this connection, wireless technologies such as Bluetooth, RFID, and Wi-Fi, as well as mobile 3G (4G) and LTE networks that combine all multiple devices into a single network, are provided for transmitting data. The application of IoT in logistics yields fast and efficient results. Using this technology, it is possible to track the status of assets, packages, indicators inside transportation vehicles (temperature, humidity, etc.) in real-time throughout the entire value chain. Automation of business processes is possible to eliminate manual labor, increase quality and predictability, as well as reduce transportation costs. This innovative technology ensures improvements in the following areas: [2]

- optimization of deployed assets;
- reduction of security issues such as fraud and theft;
- accurate monitoring of resources and business flow;
- real-time tracking and timely response to events;
- analysis of real data flow for adequate and prompt decision making;
- reduction of manual data processing for increased accuracy and time savings;
- identification of new opportunities based on analysis of consumer behavior patterns;
- improvement of business quality with customers.

Inventory management and storage are one of the most important parts of the logistics ecosystem. The placement of small, inexpensive sensors will allow companies to easily track inventory, monitor their condition and location, and create an intelligent warehouse system. Therefore, the implementation of IoT technology will successfully prevent any losses, ensure the safe storage of goods, and quickly locate the necessary products. This will minimize human errors [3].

Taking into account the current logistics conditions and opportunities, it is crucial to create an innovative system based on modern solutions. IoT technology can be used to partially solve the problem of transporting agricultural products, mainly by observing the real problems that arise during transportation. During monitoring, if we list the damages that the transported goods (especially sensitive goods) have suffered inside the truck or container, and also analyze how it affects the budget, we can note the following sequence.

- Temperature fluctuations
- Terrain relief
- Uncertainty in transit time

- Air and container humidity
- Additional costs during transportation
- Supply chain management

There are also additional reasons for the decline in product quality. Primarily, when searching for a solution in this direction, we can come up with a new innovative product. Delivering the product in a high-quality form is the customer's greatest desire, and allowing the customer to participate in this transportation is control. Control is managed. Creating a mobile application based on artificial intelligence that can be controlled and controlled as a solution to all these problems is possible.

RESULT:

Influential international organizations, analytical and consulting agencies, and IT companies provide optimistic forecasts for the development of the Internet of Things (IoT) worldwide. The potential of IoT is great and particularly evident in logistics, but it must be understood that this is not just a technology requiring significant investment, but also a change in mindset. IoT promises a massive revolution in logistics in the next decade, as it creates new business benefits by minimizing the cost of device components (sensors, actuators, and transmitters) and increasing the speed of wireless networks. In particular, it paves the way for new innovative solutions for the transportation of agricultural products. The development of these technologies is crucial, both in terms of cost and affordability.

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