DEVELOPMENT OF LOGISTICS TECHNOLOGIES

Xoshimov Oʻtkirjon Xakimjon o'g'li
Student of Andijan machine-building institut
Toshboyev Alisher Jahongir oʻgʻli
Student of Andijan Machine-Building Institute

Annotation: *The article provides information and solutions about the evolution of logistics into logistics technology, the latest global logistics, the main components of logistics technology, the role of logistics technology in modern business, and the intersection of technologies.*

Key words: *logistics technologies, artificial intelligence, business, evolution, development prospects.*

Modern business is closely connected with a complex mix of systems, and logistics technology is the key to fast and accurate transportation of goods. Basically, logistics technology includes all the digital tools and platforms that support the seamless operation of the supply chain – the process of getting products from where they are made to where they are needed. These technologies enable efficient, reliable and fully visible movement of goods, covering everything from how goods are transported and warehouses are managed to how goods are tracked. The impact of logistics technology on how supply chains operate today is enormous. With the right technology, companies can see huge improvements in the way they operate, such as getting products to customers faster, reducing costs and making better use of existing assets. But it's not just to make things smoother. It's also about being able to quickly adapt to what the market wants and, more importantly, what customers expect. As businesses use more ways to sell their products, especially online, the need for efficient logistics technology is increasing. Also, since companies often operate globally, logistics It is important to understand and use technology. In a world where online shopping is common and customers expect fast delivery, superior service and reliability, it's what separates companies that excel from those that simply get by. Learning logistics technology is the first step for any business that wants to succeed in this environment. The journey from traditional logistics to high-tech operations is the story of the transformation we see today. It's a story that captures the broad spectrum of technological progress and how innovation continues to change industry norms.Recently, logistics management was mostly done manually. Keeping track of inventory includes notebook books full of handwritten notes. The primary method of tracking goods relied on physical records and the memories of skilled workers. This old-school, paper-based method was slow, often error-prone, and made growth difficult, but it could support worldwide trade for decades, if not centuries. As computers have become commonplace, software has revolutionized how logistics

works.Early software replaced notebooks that began automating simpler tasks. These first systems weren't as advanced as what we have now, but they started the movement to digitize the supply chain. Thanks to this, logistics became more accurate, faster and did not require as much practical work. Technology has improved, logistics solutions are more advanced. The use of radio frequency identification (RFID) technology has made it possible to identify and track objects with incredible accuracy. Meanwhile, GPS tracking has added a new layer of visibility to transportation, allowing us to see where shipments are in real time. The huge explosion in online shopping has also brought about many changes in the logistics sector. The huge demand for online shopping has forced logistics to improve faster, customers need faster, reliable and flexible ways to meet their expectations. This push has continued to improve logistics technology, making it smarter, more connected, and more adaptable. Today's logistics is a world away from its humble beginnings. It is now technology-driven, data-driven, and always striving to improve efficiency and customer service. Looking ahead, it's clear that logistics technology will continue to change, reshaping the way we think about supply chains.

The main components of logistics technology

In the supply chain, going digital has provided many advanced tools aimed at increasing efficiency and accuracy. At the heart of these changes are the software solutions required for modern logistics. We look at the main components that make up logistics technology, many of which are part of GoGoX solutions. The Transport Management System (TMS) occupies a leading position in logistics software. This platform makes managing the complex world of transportation logistics easier and more efficient. It covers everything from planning the best routes and making sure loads are optimized to checking freight charges and making payments. TMS manages the entire shipping process from start to finish. GoGoX is particularly proud of its TMS, which works with other parts of the supply chain to provide quick updates and control over transport operations.

Warehouse Management Systems (WMS)

Warehouse management systems (WMS) are key to managing how goods are stored and moved in a warehouse. This type of software makes the process of receiving, picking and shipping goods much smoother. By making these steps more efficient, a WMS can increase the accuracy and speed of orders, helping to make customers happier.

Automation tools and AI initiatives

Bringing automation tools and artificial intelligence into logistics has completely changed the game, allowing for levels of efficiency that were not possible before. GoGoX is at the forefront of innovation and offers the following tools:

Resource Allocation Optimization (RAO): This tool automates the allocation of resources throughout the supply chain, ensuring optimal use of assets and labor.

Order Assignment (OA): OA intelligently matches orders to the most suitable vehicle and route, reducing delivery times and costs.

Robotics: GoGoX is proud to partner with Rice Robotics to test advanced delivery robots. The near-term goal is to automate repetitive tasks, freeing up workers for more complex tasks.AI Virtual Assistant (AVA): AVA uses artificial intelligence to provide real-time customer and employee support, simplify communication and improve service delivery.

All of these tools, whether they are already available or in development, demonstrate GoGoX's commitment to leadership in logistics technology. With these new ideas, our goal is to make logistics operations easier and help businesses become smarter and more resilient.

The role of logistics technology in modern business

Logistics technology has become a key factor in powering various industries, improving processes, reducing costs and increasing overall efficiency. We look at how this technological innovation is changing the game in e-commerce and manufacturing, and how it's benefiting these industries.

E-Commerce: Simplifying Order Fulfillment and Delivery

As mentioned above, logistics technology is not just a convenient tool for e-commerce; it is a critical component that determines the success or failure of a business. According to the World Bank, in 2019, e-commerce accounted for 30 percent of the world's gross domestic product. The key to achieving good results in e-commerce is the ability to fill orders quickly and accurately, and this is where logistics technology comes in.

Efficient order fulfillment: Logistics technology tools work seamlessly with e-commerce systems and automate the order fulfillment process. This means that the moment a customer clicks "buy," their order is processed, picked, packed, and set up for shipment with virtually no delay.

Expedited Delivery: Logistics technology allows you to instantly compare carrier rates, select the best carrier, and plan the most efficient route. This consistency not only reduces delivery times, but improves the entire shopping experience by ensuring customers receive their orders on time.

Manufacturing: Optimizing supply chain and inventory management. In the manufacturing world, logistics technology supports the foundation of supply chain and inventory management. Its implementation can lead to a significant increase in production flow and service level.

Supply chain management: A strong logistics system gives manufacturers a clear view of their supply chain, allowing them to anticipate problems, reduce risks and streamline operations from procurement to production.

Inventory Optimization: With logistics technologies, manufacturers can maintain a delicate balance of inventory—enough to meet demand, but not overstocked. This accuracy reduces holding costs and prevents capital from being tied up in excess stock.

Cost reduction and efficiency: By automating and optimizing logistics processes, manufacturers can reduce operational costs. Logistics technology helps identify and eliminate bottlenecks, which leads to increased production efficiency. Customer satisfaction: An efficient supply chain means manufacturers can better serve their customers. Fast response times, reliable product availability, and the ability to fulfill orders of any size contribute to a positive customer experience.

Logistics technology does not work alone; it is increasingly connected to other new and emerging technologies. This combination is driving a new era of supply chain innovation that is smarter, faster and better prepared for what customers expect. Next, we look at how logistics technology will connect with artificial intelligence (AI), the Internet of Things (IoT) and big data to transform the industry.

Artificial intelligence and machine learning

The introduction of AI and machine learning (ML) into logistics technology has completely changed the game. Here's a look at their impact:

Predictive analytics: AI algorithms look at past data to predict future demand trends and help businesses prepare their supply chains in advance

Demand forecasting: ML models can predict demand accurately, down to the details. This reduces having too much or too little stock and ensures that inventory levels are more in line with what customers actually need.

Real-time tracking of goods: IoT devices and sensors provide real-time updates on the whereabouts of goods and the status of their movement through the supply chain. This gives businesses and customers an incredibly detailed view

Inventory Management: Smart shelves and RFID tags are examples of IoT inventory management automation. They alert warehouses when stocks are low or products are about to expire

Data analytics at scale: Big data tools can handle the massive amounts of data generated by logistics operations, uncovering insights that are too complex for humans to discover on their own.

Improved decision-making: By looking at how forms and operations are performed, Big Data can help improve decision-making in logistics. This includes making routes more efficient and better planning warehouse layouts

As logistics technology continues to merge with artificial intelligence, IoT and Big Data, the capabilities of supply chains continue to grow. This combination not only improves current operations, but also creates new business models that are more efficient, customer-centric, and adaptable to change.

CONCLUSION

We believe that a deep dive into logistics technology has highlighted its critical role in transforming supply chains and improving business performance. Moving from manual inventory methods to sophisticated digital solutions, logistics technology has demonstrated remarkable flexibility. Key elements such as Transportation Management Systems (TMS), Warehouse Management Systems (WMS) and the

advanced integration of AI and IoT have completely changed how efficient logistics operations can be. These changes emphasize seamless integration with emerging technologies, paving the way for predictive analytics, live observations, and accurate data-driven decisions.

Blending these advanced technologies comes with its own challenges, such as high installation costs, the need for skilled workers, and the complexity of integrating old systems with new systems. Yet these obstacles also present opportunities for strategic growth, highlighting the need for adaptation and continuous learning in a rapidly changing industry. As companies address these issues, the evolution of logistics technology continues to drive greater efficiency. Looking to the future, it is clear that logistics technologies will remain a key part of building supply chains that can adapt and withstand change.

REFERENCES:

• 2.KF Yuen va boshqalar. Mijozlarning oxirgi milga yetkazib berish uchun o'z-o'zini yig'ish xizmatlaridan foydalanish niyatini tekshirish Transport Pol. (2018)

• 2.SH Kim Tanlov modeli asosida iste'molchilarning uchuvchisiz yetkazib berish xizmatiga bo'lgan afzalliklarini tahlil qilishJ. Havo transporti. Boshqarmoq. (2020)

• 3.S. Kapser va boshqalar. Germaniyada so'nggi milga yetkazib berish uchun avtonom etkazib berish vositalarini qabul qilish - UTAUT2 ni xavf tushunchalari bilan kengaytirish Transport. Res. C Emerg. Technol. (2020)

• 4.Y.-T. Tsai va boshqalar. Mijozlarning so'nggi milga yetkazib berish xizmatida aqlli shkaflarni qabul qilish niyati: ko'p nazariya nuqtai nazari J. Chakana savdo iste'moli. Serv. (2021)

• 5.S. Ivan va boshqalar. Posilka shkaflarining samaradorligini oxirgi milni yetkazib berish yechimi sifatida tahlil qilish – Polshadagi tadqiqot natijalari Transport tadqiqotlari tartibi (2016)

• 6. X. Zhu va boshqalar. Dronlarni etkazib berish bo'yicha xavfga ishonish tizimlarining tuzilishini tushunish: tarmoq tahlili Technol. Soc.(2020)

• 7. M. Chjou va boshqalar. Oxirgi milga yetkazib berish uchun o'z-o'ziga xizmat ko'rsatish posilka xizmatlarini qabul qilish uchun iste'molchilarning xatti-harakatlarini tushunish J. Chakana savdo iste'moli. Serv. (2020)

• 8. X. Vang va boshqalar. Bu men emas! Iste'molchilarning avtonom avtomobil texnologiyasini qabul qilishidagi texnologiya-identifikatsiya tashvishlari Transport. Res. F Traffic Psychol. Xulq-atvor. (2020)

9.J. Hwang va boshqalar. Oziq-ovqatlarni uchuvchisiz yetkazib berish xizmatlari kontekstida iste'molchining motivatsiyalangan innovatsionligini o'rganishJ. Hospit. Turizm menejeri.(2019)

10.E. Kim va boshqalar. Buy-Online, Pickup In-Store (BOPS) dan foydalanish niyatini belgilovchi omillar: vaziyat omillari va mahsulot turining mo'tadil ta'siri Telematika Inf. (2017).