

ADAPTATION OF A LOGISTICS COMPANY'S BUSINESS MODEL IN THE CONTEXT OF DIGITALIZATION

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Abstract. *The rapid development of digital technology has fundamentally changed the competitive dynamics of the logistics industry and has forced existing logistics operators to go digital. New business models and value networks are based on adaptive intelligent manufacturing systems that are interconnected with digital models for continuous planning and reconfiguration. New types of organizations enable synergistic collaboration between humans and machines.*

The last decade, or the “digital age,” has fundamentally changed the competitive dynamics of the logistics services industry. The accelerated pace of digitization within Industry 4.0 has changed the content of business and contributed to the creation of an increasingly dynamic environment and market structure. During this digitization process, manufacturing processes have experienced rapid and increasing development, new technologies have been introduced, and the size and scope of industrial production have expanded significantly. Digitalization is an important tool in creating a reliable and sustainable future transport system and the supply of goods. The core idea of Industry 4.0 is to use the latest information technologies to implement the Internet of Things (IoT) and services so that business and engineering processes are deeply integrated, allowing production to operate flexibly, efficiently and environmentally with consistently high quality and productivity. Digitalization is a major process that is affecting many logistics processes. Thus, it is necessary to adapt to any changes, especially when it comes to the business model. Changes in the business model lead directly to changes in logistics processes. Consequently, digitalization requires a process of rapid and effective adaptation of the business model.

The digitalization process has a strong impact on logistics, that is, logistics services, and changes existing business models. Logistics services can be defined as an activity that involves the service provider performing one or more logistics functions (transport services, warehousing, customs, information services, etc.) in relation to the customer on the basis of contractual provisions. The global logistics market will increase from \$8 trillion in 2015 to \$15 trillion by 2023.

Logistics operators offer a wide range of logistics services to demanding customers who expect logistics services to be fast, transparent, reliable, flexible, and delivered at minimal cost. In addition, customers are aware of the possibilities of various digital technologies [1].

The main goals of the digital transformation, according to 100 IT managers of large companies in the financial, telecommunications, oil and gas, and other sectors of the economy, are to increase customer satisfaction (58% of respondents); cost reduction (54%); entering new markets, expanding the range of products and services (33%) [2].

Digitalization in a broader sense means the development of digital business models based on digitized data and business processes. The digital transformation describes the change of value chains based on the improvement of existing or implementation of new digital technologies, adaption of enterprise strategies based on digital business models as well as the acquisition of relevant competencies and qualifications [3].

Traditional business models that make minimal use of digital technologies are rapidly transforming into digital business models. Digital business models are based on digitalization, that is, the use of digital technologies to provide logistics services. Large logistics operators are now adapting existing business models to remain competitive among new digital logistics operators. Digital logistics operators, new market participants, were the first to take advantage of digital technologies (Cloud, Internet of Things - IoT, Big Data, etc.) to implement digital business models. Competition between traditional and digital logistics operators is leading to greater specialization and, as a result, the introduction of various new digital business models [1, 4].

There are some specific benefits of digitalization in the field of freight transportation and logistics:

1. Increased efficiency. Digital technologies allow the automation of many manual processes typical of freight forwarding, such as booking shipments, tracking deliveries and managing documentation. This can lead to significant savings in time and money.

2. Increased transparency. Digital platforms can provide real-time visibility into shipment status, which can help shippers identify and resolve issues more quickly. It can also help customers track their shipments and get additional shipping information.

3. Expanding decision-making capabilities. Digital technologies can be used to analyze large volumes of data to identify trends and patterns. This information can be used to make more efficient pricing, routing and risk management decisions.

4. Enhanced collaboration. Digital platforms can make it easier for freight forwarders to collaborate with each other and with other stakeholders in the supply chain. This can lead to increased efficiency and lower costs.

5. New opportunities. Digitization opens up new opportunities for freight forwarders to deliver value to their customers. For example, digital freight forwarders can offer customers access to a wider range of carriers and services, as well as provide customers with more personalized and individualized services [3].

Innovation in business models is described as digital transformation with high transformation complexity and correspondingly high transformation effect. Thus, it is classified as a revolutionary form of transformation. The process of developing and improving business models is perhaps the core part of the dynamic capability framework [5].

The process of adaptation of business model is considered in major changes throughout the whole logistics system [1, 6, 7].

1. Digitalization is changing the delivery of logistics services and makes it possible to redesign existing and develop new services, redesign existing and introduce new business models, new types of transactions, new markets and new sources of income. Digitalization has enabled online ordering, online tracking and online payments, which enhances the customer experience. Such adaptation will allow real-time monitoring and optimization of the entire logistics supply chain - from suppliers, procurement, manufacturers, warehousing, commissioning, distribution, logistics and trade to the end consumer.

2. Software-driven process changes automation through the development of artificial intelligence (AI) and robotic process automation (RPA) solutions will replace human labor and speed up tracking or managing calculations. In addition, predictive maintenance will stabilize delivery times and ensure constant fleet availability. This way, logistics services will be smoother, safer, more reliable and more convenient for customers. Logistics operators can avoid unnecessary maintenance costs and errors in simple, repetitive processes by improving control in the overall logistics service process.

3. Digital warehouse automation technologies include self-driving cars, drones, image recognition technologies, the Internet of Things (IoT), and machine learning. In addition, the automation of basic operations will replace human labor and make logistics services more reliable, fast and efficient. For example, the use of robots in the process of loading and unloading (assembly and placement, palletizing, packaging). By 2026, the

global market for loading and unloading robots is expected to exceed \$13.8 billion.

Moreover, there are digital business models that are expected to transform logistics services:

Matching supply and demand. Logistics operators provide services through online digital platforms, allowing shippers to search for cargo space and capacity providers such as carriers, providing automated routing and pricing.

Cross-platform communication. Consolidation and integration of information across the entire supply chain. The goal is to provide end-to-end transparency through an online digital platform.

Digital Freight Forwarding. Digital freight forwarders (DFFs) use an online digital platform to offer more logistics services than previous digital models. The goal of DFF is to provide convenient delivery of goods and collection of information on a single platform. This digital business model consists of two sub-models:

1. Digital forwarders with external operations: logistics operators with extensive in-house operational capabilities, that is, a group of experts who can offer know-how and physical assets to local agencies and forwarding services providers.

2. Digital freight forwarders with their own activities: enterprises offering comprehensive services. These companies are actually incumbent logistics operators that are digitizing their business models. They operate over a larger geographic area and offer more modes of transportation as well as local customer service.

Clients as competitors. Clients of logistics operators enter the market of logistics services. These new logistics operators see an opportunity to gain control of the complete online customer experience through the adoption of digital technologies.

Niche logistics operators. Digitalization opens up space for various logistics operators who provide specific services, replacing standard logistics services. For example, 3D printing can replace supplies by printing the required product on demand and directly on site. Further technical developments in 3D printing could potentially lead to an increase in the number of printed products and a decrease in the need for traditional logistics [1, 7, 8].

So, adaptive management of business processes of a logistics company in the context of digitalization represents the order of interconnection of individual subsystems and elements, the central chain of which is the process adaptive development supported by subsystems of information, instrumental and methodological, software, hardware, and personnel

support and is characterized by the ability to install organizational connections between factors and goal setting of adaptive business process management; allows to effectively use digital and software tools to achieve established goals of a logistics company.

The effectiveness of any activity is determined by the final results, therefore the effectiveness of adaptive management of business processes in the context of digitalization is advisable to consider through the prism of the following areas of assessment:

- degree of achievement of set goals;
- degree of efficiency of use of economic resources;
- degree of improvement in the quality of logistics services;
- degree to which the logistics company has achieved financial sustainability;
- degree of sustainable development of the logistics company;
- degree of innovation implementation.

Of course, other indicators can be used, however, they create a holistic picture of the effectiveness of adaptive business model management of a logistics company in the context of digitalization.

Conclusions

Digital business models are changing business operations, enabling logistics operators to be more informed and improve forecasting. In addition, logistics operators can automate the process of booking shipments, reduce the number of manual orders to carriers and provide instant updates on schedules and changes. In addition to changes for logistics operators, digital business models are also changing customers. Customers can, for example, receive instant price quotes.

In addition, digital business models enable seamless end-to-end documentation processing for customers, as well as simple delivery tracking and automatic invoicing. Digitalization has already changed the delivery of logistics services, adapting existing and implementing new business models, developing new services, new types of transactions, new markets and new sources of revenue. logistics operators were forced to respond by adapting existing business models.

The digital business model of matching supply and demand allows logistics operators providing services through online digital platforms to connect shippers looking for cargo space with capacity providers such as carriers. Cross-platform communication is a digital business model for logistics operators that specialize in consolidating and integrating information throughout the supply chain. The aim is to provide end-to-end transparency through a digital online platform. Safety and hygiene issues

could be improved by digitizing logistics, while digitization was seen as a potential threat to work patterns, so the adoption of full digitization was also less likely. The environmental effects of digitization have had the greatest impact on reducing waste, pollution and greenhouse gas emissions. Digitalization is expected to create much more value for society than for the economy. In this case, businesses, regulators and policymakers will have to work together to maximize the benefits for business and society at large. To achieve a successful market, offer in the future, logistics service providers will have to rethink their business and adapt to new market changes.

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