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Development of Logistics and Supply Chain Management in the Digital World

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Abstract: *This article reveals the role of logistics and the importance of supply chain management in the era of globalization. Just as the digital economy has affected all sectors, so has its role in logistics.*

Keywords: Logistics, supply chain management, digital world, globalization, business models, consumption, food sector, customer, logistics service, digitization, partners, intralogistics, warehouse, warehouse operations.

The processes of globalization, such as accelerating the pace of life, the high level of information exchange, the development of world civilization, the tremendous reforms and creative work being carried out in our country, the continuous work of our members, modern, creative, initiative and entrepreneurial requires constant study and information on the formation and development of the digital economy, the formation of knowledge and skills, and the development of experience.

Digitization is one of the biggest challenges logisticians face today. It gives rise to the creation of new business models and puts existing structures to the test. Yet many companies still lack the necessary knowledge to explore all the advantages these new possibilities have to offer.

The changes are apparent at different levels of the logistics areas. In retail, digitization projects are often aimed at the so-called "last mile". The consumption and food sector focuses on making data available and integrating vendors and customers into the planning processes. Logistics service providers emphasize document digitization as well as comprehensive planning with partners. Intralogistics also benefit from an increasing automation of warehouse operations.

According to the findings of the "Trends and Strategies in Logistics and Supply Chain Management – Opportunities of Digital Transformation" study published by the German Logistics Association (Bundesvereinigung Logistik), BVL (March 2017), predictive analytics will become increasingly important. Here, historical data is linked with the latest information to predict developments. The recording of data flows and real-time analysis is just as prominent as the exchange of transport, inventory and demand data. In doing so, predictive analytics is able to improve the efficiency of transportation operations. This plays a key role in avoiding deadhead trips, especially in the B2B sector. Vehicle movement data, which is increasingly collected in real time provides the basis for forecasts.

When it comes to warehousing, the primary objective is to utilize the available storage capacities as best as possible. Based on historical data, predictive analytics can detect patterns pertaining to when and where merchandise is most efficiently stored and subsequently picked and delivered. Next to the "smart factory", today there is also the "smart warehouse", where all receiving, storage, order picking and delivery processes are completely automated by accessing predictive analytics forecasting to optimize these processes and workflows.

In this context, "artificial intelligence" (AI) and self-learning systems will also play a decisive role in the future. Whether it is drones for order picking or an autonomous supply chain – there are countless applications of AI in logistics. Last-mile delivery services could especially benefit from it. Vehicles would then be able to autonomously learn to respond to road traffic in real time and calculate efficient routes by structuring their environment. Even though there are currently still some complications due to numerous legal and safety aspects, AI could nevertheless revolutionize the logistics sector, provided that the human factor continues to be incorporated into the processes.

After all, human beings are still needed for control, decision-making or in the event of a breakdown.

The study also revealed that the exchange of information – even across several supply chain participants – is increasingly vital to meet individual customer needs and requirements. In addition to the general need for data and interface standards, the study noted development potential, especially as it pertains to data about material flow disturbances, inventory, and production planning as well as demand forecasting.

In this case, cloud-based systems can help to present processes of longer supply chains to different partners in a transparent way as well as autonomously realize them. This is made possible by the implementation of interfaces in all participating companies. The data can then be accessed at any time along the supply chain. This way, retailers are able to retrieve data in real time about the delivery status, obtain data about material flow disruptions, identify needs in time and respond accordingly. This subsequently permits an adjustment of production to the effective demand ("on demand") and thereby increases supply chain efficiency.

Order picking is also in the process of change. Collecting article data, monitoring the merchandise status, locating the articles and a more efficient route optimization with solutions like RFID, barcodes or NFIC is nothing new. The potential of these processes can be expanded thanks to enhancements like smart glasses or lenses, smart gloves as well as apps.

According to the Bitcom study titled "Digitization of Logistics", smart glasses sound particularly promising. The chance to display additional information or details renders this technology especially useful for modification and maintenance operations. In the area of order picking, users note significant increases in efficiency. Smart gloves that read barcodes and RFID tags without having to manually turn on a scanner also offer support.

The system also becomes more efficient by connecting smart glasses and pick by voice systems. Order pickers are thus able to complete more picks per hour. What's more, the use of this technology verifiably results in a reduction of errors.

The advancing digitization helps logistics to make an innovation breakthrough. The higher availability and quality of data form the basis for new services and a better network of transportation services. Higher delivery reliability, better utilization of cargo spaces and more agile disposition of shipments: new infrastructures provide better and more efficient collaboration among all participants along the value chain.

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