Optimization of the logistics processes through cross docking operations

Klymovych Roman
Student masterat the faculty of logistics management,
University «KROK»,
e-mail: KlymovychRV@krok.edu.ua

The relevance of the research topic is explained by the critical necessity for the business to find the ways to optimize their supply chain organization by reducing the cost of renting warehouses, maintaining storage space with minimal staff involvement, and reducing the delivery time of products that is supported by implementing cross docking process at the warehouses. Traditionally, Supply chain management begins from the production, then transportation to the warehouse for the storage, assembly and shipment to the retailers or final consumer. But this standard approach requires quite significant investments in the transportation to each single shop and consumer and as well, it increases the delivery time that decreases the Service Level. That's why more and more businesses return to the logistics providers for the services of cross docking.

Object of the study is the logistics process of goods delivery from the supplier to the consumer through transportation and warehousing, with the focus on the logistics costs and delivery time. Subject of the study is the optimization of the logistics process by applying cross docking processes at the warehouses.Aim of the study is the analysis of the main forms and streams of cross docking operations, distribution center organizations and best practices research of the leading companies.In order to achieve the defined aim this study has been focused on solving the following tasks:

• to conduce the analysis of the warehousing organization through cross docking distribution centers;

• to compare the different forms of cross docking operations;

• to investigate the best practices of cross docking implementation using the experiences of the leading companies;

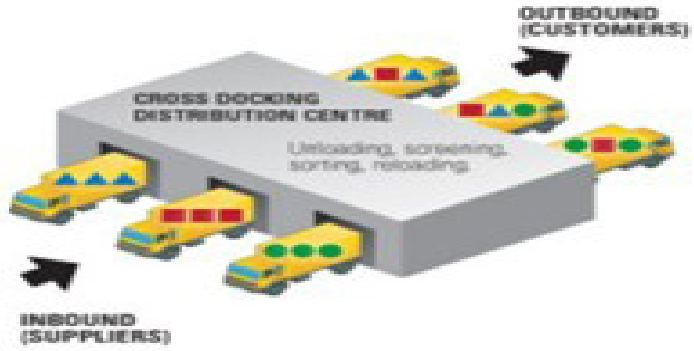
• to conclude the benefits and attention points for implementing cross docking process.

The research of cross docking in the way of Supply Chain management optimization were reflected in the many works of foreign scientists such as Bowersox D. [2], Christopher M. [3], but as well in our native scientists, among them Sumets A. M. [1], Krykavskyi E. V. [4] that helped to adapt the foreign experience closer to our domes tic requirements in order to support the effectiveness of the local business.At the same time, despite the sufficient developments in this area, the issue of cross-docking remains insufficiently researched, because due to the growth of the new technologies and businesses it requires more advanced metrics to support the business.Informational base of the study contains text and electronic materials and experience of the companies that have already implemented cross dock operations.The research methodology includes systematic approach, which implements the application of logistics methods in the form of logistics systems, complexitywhich allows the use of logistics methods primarily in the complexway, modularity, the implementation of which implies the formation of functional modules for the processes of flows, substances, information base.

In logistics, processes are constantly being developed to improve the efficiency of the supply chain. Cross-docking became one of the main drivers of supply chain optimization. Overall, we can define cross docking as the process of receiving and shipping goods without

long-term storage. The cargo is placed in the warehouse as a kind of transshipment point. There, it is collected from various suppliers, assembled as necessary and shipped to the machines. The shipment of the product and its delivery are coordinated in time, so there is no need for storage.

It helps to improve the efficiency of the logistics of the enterprise, also it allows to avoid significant costs for product storage. The warehouse for cross-docking is built in such a way as to organize the processing inbound and outbound flows as efficiently as possible, with a large number of gates for IN and OUT deliveries[5]. Example is shown on the picture 1. Cross docking distribution center



Picture 1. Example of cross docking distribution centre [6]

It's important to highlight that the usage of cross-docking is effective if the product is delivered not only in the small batches, but as well in the wide ranges. Also it's possible to organize a repacking at the cross-docking terminal: small batches are consolidated into one large batch and sent to one recipient. This method is also used when cargo from several suppliers needs to be sent to different recipients. This allows you to save time when processing a large number of orders, which is especially relevant during the peak sales season.

The following differentmodifications of cross docking formsare defined based on the requirements from the business [5]:

Forms	Area	Condition	Specifics
Cross docking	B2B	Mono or mix pallets	Inbound is equal to outbound with the same pallets size and condition
Break Bulk Cross docking (BBXD)	B2B	Mono or mix boxes, mono or mix pallets	Inbound is different from outbound, as pallets and boxes from different suppliers are mixed into one shipment per retailer
Flow Through	B2C, eCommerce	Mono or mix boxes, mono or mix pallets	This types is dedicated for end consumers, goods are picked up individually from different suppliers and sent as single orders to end consumers (Internet shop customers)

To fulfill the theoretical basis of the analysis let's analyze the best practice of the companies that have implemented cross-docking:

Wal-Mart has been one of the first that has implemented a cross-docking system in the early 1980s to keep the focus on their strategy EDLP (Everyday Low Prices). Using a Radio Frequency Network, the Wal-Mart workers make a track of the stock movements in the stores, within transportation and backup inventory in the distribution centers. All systems are synchronized in real-time that helps them in their cross-docking strategy [8].

Amazon, its retail model lends to using a cross docking system that ensures delays are minimized and customers are delivered goods within a short time frame after they're ordered. The centre receives products directly from suppliers and distributes them across Europe within a day. Inside the facility, huge robotic operators work alongside humans to maximize the facility's efficiency [9].

And one example from the local business: Ukrainian retailer by implementing cross-docking and Break Bulk cross dockinghas received the following gains: optimizationof logistics staff engaged in reception for 50% toactivities which brings more add value, effectiveness increaseof logistics surface in the stores for 40% for other activities, higher availability of products + 2ptc.

To conclude we can summarize the significance of the study in the way of the following advantages of cross-docking operations: easy material handling, reduction of the warehouse rental or property costs, reduction of the staff costs, products get on the road faster, reduces transport and fuel costs. But also we have to take into consideration that on the first step of the implementation this process will require more capital investments and careful choice of trustful logistics provider.Overall, cross-docking will be a great investment into effective simplification of the steps in the distribution chain. It will help significantly save on labour and costs, since goods are transferred in a rapid inward-outward system, with minimal time at the distribution hub.

Список використаних джерел

1. Sumets A. M. Cross-docking is an effective technology in warehousing logistics. Logistics: problems and solutions. 2018. No. 1(74). 30–33 p

2. Bowersox D., Closs D., Cooper B. (2013) Supply Chain Logistics Management: 4-th edition. London: Mcgraw Hill

3. Christopher M. Logistics & Supply Chain management. Financial Times/ Prentice Hall; 5th edition (26th Feb 2016)

4. Krykavskyi E., Pokhylchenko O., Fertch M. Logistics and management of supply chains: teaching. manual. Lviv: Publishing House of Lviv Polytechnic, 2017. 844 p.

5. Cross docking: what's the service and why it's important. URL: https://wareteka.com.ua/uk/blog/shcho-take-kros-doking/

6. Cross-docking is not as complicated as you think. URL: https://www.chainalytics.com/cross-docking-advantages/

7. Embracing cross-docking: 3 success stories. URL: https://www.interlakemecalux.com/blog/cross-docking-examples-companies

8. What is cross docking? Advantages, disadvantages and example. URL: https://magenest.com/en/cross-docking/

9. Cross Docking Explained: Meaning, Pros & Cons [w case studies]. URL: https://www.unleashedsoftware.com/blog/cross-docking-101-what-why-and-how-with-case-studies