

PERSPECTIVES OF WAREHOUSE MANAGEMENT INFORMATION SYSTEMS IN MODERN CONDITIONS

Kovshik V.I.

National technical university "Kharkiv polytechnic institute", Kharkiv

Today, in the context of the challenging situation of the global COVID-19 pandemic, the development of more advanced automated and computerized systems of various kinds is essential for successful business growth. Automation nowadays can serve not only the purpose of cost reduction and increased productivity and performance but also can provide a safer environment for people working in various fields. The warehouse management is not an exception. Warehouses usually have a large area and are relatively favorable for the social distancing of workers but, in cases of order picking and processing, packaging and problem solving, it is possible to improve the interaction between employees by the implementation of additional features to the warehouse management systems (WMS) where they function. The most progressive way for improvement here is robotics integration into the warehouse management processes. This approach is the most expensive and is not suitable for many businesses in today's challenging crisis situation.

Modern WMS includes tools for general inventory management (inventory control, order picking, scheduling of replenishment, order routing), optimization of placement of stock-keeping units, automated storage and retrieval system control, document management, etc. The proposed concept of improvement for WMS includes using an automatic dispatching system that can optimize trajectories of workers' movement in the picking and packing processes. The goal here is to avoid close contacts and interactions simultaneously with optimization of paths to minimize the general time for the picking process. These measures will allow utilizing fewer employees. Systems that create instructions for the warehouse staff with the shortest path through the warehouse already exist (basically, it is a common feature in modern WMS). The idea is to add a new constraint to the model to maintain a higher distance between associates and prevent unnecessary direct communication. The initial data can be collected using a radio frequency identification (RFID) tracking of employees. Alternatively, it is possible to use computer vision if the warehouse is already equipped with surveillance cameras.

As a result, optimized dispatching can provide safer working conditions for people and minimize business risks working in pandemic conditions. Of course, this system should be the most effective for larger warehouses with a wide variety of inventory (thousands of stock-keeping units). In smaller storage places, simple zoning can be used to allocate specific zones for specific staff members. For this, WMS should provide managers with data like heat maps and other visualizations for a better decision-making process.

Further research regarding this perspective may include using artificial intelligence for warehouse management and using various optimization techniques for particular use cases.