

Strategic Redeployment: Optimizing Asset Utilization in Global Warehouses

In the highly competitive global logistics industry, maximizing asset utilization is a critical operational challenge. While some facilities invest heavily in new Material Handling Equipment (MHE) to meet operational demands, other warehouses within the same network often house identical MHEs that remains largely underutilized.

This research addresses this inefficiency by developing a systematic, continuous process to identify underutilized MHE and strategically redeploy it to warehouses with high demand. Through rigorous data analysis, the project established a standardized metric: if a MHE operates below 40% of its capacity for 13 consecutive weeks, it is officially classified as underutilized and becomes a candidate for redeployment.

Operational and Behavioural Challenges

Redeploying MHEs involves navigating a complex matrix of physical constraints and behavioural tendencies. A MHE cannot be transferred without first assessing strict operational limits: aisle widths must be compatible, mast heights must clear ceiling limits, and the forks must accommodate local pallet dimensions. This transforms the centralized sharing of MHE into a complex management issue, navigating the technical hurdles.

The Strategic Impact of Resource Optimization

The implementation of a strategic redeployment process offers substantial benefits for third-party logistics (3PL) networks. By shifting from an exclusive focus on purchasing to a reality where a redeployment model is also considered, companies can respond to sudden market shifts with greater agility and increase their efficiency across the network. This process functions as a support for the strategic resource redeployment, by identifying underutilized MHEs and generating data-driven recommendations for where it can provide the most operational value.

Methodology and Implementation

To construct this solution, researchers analysed extensive operational data from hundreds of MHEs across six warehouses within the European network of a 3PL. The research developed a hybrid model that evaluates potential redeployments. This model first filters out strict operational "dealbreakers" (such as lifting capacity and turning radius) and subsequently scores "nice-to-have" variables (like operational flexibility and spare part availability) to identify the optimal operational match between an underutilized MHEs and a warehouse with demand.