Cost drivers for internal and external warehouses

Companies continuously strive to reduce costs in their supply chain. For larger companies parts of the supply chain can easily be forgotten because of their diminishing impact on the total cost. At the AAK plant in Karlshamn, Sweden, a line-haulage operation between internal warehouses and external warehouses is in place together with a Logistic Service Provider (LSP).

AAK is a global producer of plant-based fats and oils. The local supply chain steering group at the Karlshamn site has identified that costs are unreasonably high in the line-haulage operation between the internal warehouse and the external warehouses. The internal warehouse is situated at the AAK Karlshman site and the external warehouses are situated within a five km range from the internal warehouse.

This study includes an investigation of the key cost drivers in the line-haulage operation and how these might be mitigated. It also includes scrutinizing the supplier agreement with the LSP, searching for levers of improvement in the pursuit of operational excellence and cost reductions. Lastly, AAK are compared to companies in comparable industries and the research within the academic field.

Throughout this project several findings have been made. Firstly, it was found that there exists misalignment between the supply chain steering group and operational warehouse staff where the steering group thinks that operational staff uses the external warehouses too much. The operational warehouse staff wants to have a margin of safety to make sure the warehouse is not full since this could result in a production stop. The supply chain steering group on the other hand think that an unnecessary margin of safety is applied and that the operational staff do not want to have a too full warehouse since an emptier warehouse is easier to operate. The main cause for this problem was found to be inadequate handling of data where data is not easily available which causes decisions to be based on gut feeling rather than on data.

When analyzing movement data at the internal warehouse the fill degree at the internal warehouse was found to be on average 48,7%. Hence, the warehouse is on average less than half full and the fill degree easily could be higher. If the warehouse fill degree would be higher the LSP could be used less, and costs would be decreased. Transport and handling are largest costs associated with the LSP. They are both direct costs associated and together they amount to 64,9% of the total cost. Hence, large savings can be made by simply dispatching less pallets.

Furthermore, it was found that communication between AAK and the LSP should be improved. It was discovered that AAK has the possibility to reduce costs in the line-haulage operation without lowering dispatched volumes by negotiating the agreement with the LSP. This includes minimum utilization space at external warehouse, late order penalties, weekend dispatchments and irregular working hours. Lastly, it was concluded that, when benchmarked, AAK is well aligned with the industry in terms of their partnership with the LSP. However, AAK lacks behind in data capabilities.

All research findings can be found in the published report “Cost drivers in a warehouse line-haulage operation and how to affect them” by Gustav Karlbom and Axel Andersson at The Faculty of Engineering, LTH Lund University.

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