

MSc assignment Industrial Engineering and Management

Redesigning the after-sales service supply chain of Vanderlande Industries in China

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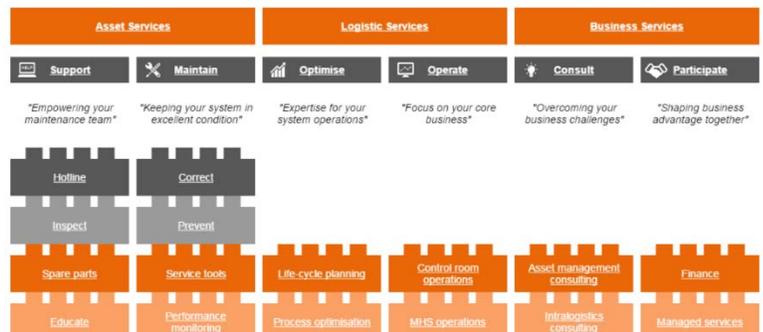
The company

Vanderlande (<https://www.vanderlande.com/>) is the global market leader in baggage handling systems for airports, and sorting systems for parcel and postal services. The company is also a leading supplier of warehouse automation solutions. Vanderlande’s baggage handling systems move 3.2 billion pieces of luggage around the world per year, in other words 8.8 million per day. Its systems are active in 600 airports including 17 of the world’s top 25. More than 20 million parcels (300 packages per second) are sorted by its systems every day. These have been installed for a variety of customers including the four largest parcel and postal companies in the world. In addition, 12 of Europe’s top 20 e-commerce companies and many distribution firms have confidence in Vanderlande’s efficient and reliable solutions.



Established in 1949, Vanderlande has more than 3,800 employees, all committed to moving its customers’ businesses forward at diverse locations on every continent. With a consistently increasing turnover of more than one billion euros, it has established a global reputation over the past six decades as a highly reliable partner for value-added automated material handling solutions.

Next to the initial supply of systems, Vanderlande also facilitates the maintenance of systems by a.o. supplying spare part packages, and offering site based services by own personnel at airports. The service proposition Vanderlande uses for sale of its services comprises three types of partnerships, depending on the company’s level of responsibility and customer’s requirements for the system: asset services, logistic services and business services. *Asset services* refers to the cases in which Vanderlande supports and maintains the complete system including software, and IT and controls. The supporting solution consists of a 24/7 hotline, periodic inspections, access to spare parts, and education of the customer’s own maintenance technicians. Optionally, Vanderlande also executes the maintenance activities. Access to specific service tools and performance monitoring can be included as well. In *logistic services*, Vanderlande operates and optimises the customer’s logistical process. Furthermore, *business services* is chosen when the customer wants Vanderlande to consult on, and thereby also participate in, its success.



Background of the project and motivation for research

The availability of spare parts is important, since system downtime may have serious consequences. For example, downtime of a baggage handling system at an airport may lead to baggage that misses its flight, which leads to significant costs. Therefore, spare parts needed for quick system recovery are typically stored at the customer sites. These spare part inventories are replenished from time to time upon request of the customer.

Vanderlande is currently facing a strong growth, amongst others in China. This raises the question whether it makes sense to open a national warehouse for spare parts in China to serve the Asia-Pacific (APAC) -region and combine it with supplying parts produced in China to customers in other regions and/or the central warehouse in the Netherlands. And if it makes sense, where should this warehouse be located (China or somewhere else in the region)? And if it would appear to be too early to open a warehouse in that location: what is the break-even point in spare part volume for which such a warehouse would be profitable? Potential advantages of having a -regional warehouse in the APAC region include:

- Resupply of spare part inventories at customer sites as well as emergency supply in case of system downtime and lack of spare parts can be performed faster. Supply from the central warehouse in Veghel takes time, in particular because for example customs handling at the Chinese border requires about two weeks
- Increasingly, spare parts are sourced in China by Vanderlande. In the current situation this means, that a part of the spare part flow is first moved from Chinese suppliers to the warehouse in Veghel, and next back to the customers in APAC. A regional warehouse could therefore lead to a reduction in transportation costs.
- A certain fraction of spare part inventories can be centralized (i.e., moved from the customer sites to the regional warehouse), which may lead to an inventory reduction by profiting from the risk pooling effect.

Of course, there are also drawbacks, such as the costs of establishing and running a warehouse in APAC, and extra handling for parts.

The assignmentYour task is to analyze the current supply chain for APAC customers, and to build a model to quantify the benefits and costs of a regional warehouse in APAC, to optimize location of the warehouse, and to optimize the inventory allocation over regional warehouse and customer sites, insofar feasible. Using the model, show whether a regional warehouse in APAC is profitable at this point in time. In case the answer is negative, show when a regional warehouse could become profitable, taking into account a growth path for the installed base in APAC.

Requirements

You are an enthusiastic MSc student Industrial Engineering and Management / Econometrics with good communication skills. You are able to work independently and to organize and run your own project smoothly. You are able to write a good report in English.

Starting date: As soon as a qualified candidate is available

Location: Vanderlandeweg 2, Veghel

Contact persons: If you are interested, please send a CV and motivation letter to:

- University of Twente: Matthieu van der Heijden, Ravelijn 3357; email: m.c.vanderheijden@utwente.nl
- Erasmus University Rotterdam: Prof. dr. Rommert Dekker, email: rdekker@ese.eur.nl
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