

How to Achieve Successful Supply Chain Digitalization?

Fredrik Greftén & Anton Gunneberg, June 2021

Department of Industrial Management and Logistics, Lund University

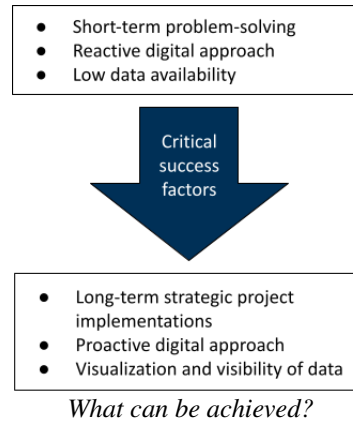
Transferring into the fourth age of industrialization, many large manufacturing companies struggle to keep up. To manage implementations of Industry 4.0 technologies, companies have to be prepared. IoT, big data, AI, and additive manufacturing all require a functional and adaptable environment to successfully be integrated into the daily operations of an organization. To understand the reality of digitalization in the industry, the International Manufacturing (IM) division at Volvo Group was the subject of a case study with the objective of identifying critical success factors for digitalization in a supply chain.

The International Manufacturing division manages Volvo's international operations where knock-down (KD) manufacturing is applied. KD manufacturing is a strategy where the assembly of a product is postponed to the country or region of the final customer. This means kits containing whole trucks are sent to these KD assembly sites for local assembly. This is often used either for beneficial tax/customs reasons or to establish a presence in a region the organization is not familiar with. In the case of Volvo, there are KD nine locations in Asia, Africa, and Oceania, where this strategy currently is in use.

The KD assembly plants all use Volvo's main plant in Gothenburg as their sole supplier. This means IM manages a supply chain unique within Volvo. Instead of putting the most effort into the inbound supply chain, IM uses the same inbound supply chain as the Gothenburg plant but also has an outbound supply chain from Gothenburg to the assembly sites.

Through the case study performed at IM, through interviews, workshops, and a survey, it became clear that there is a perceived lack of focus on developing this smaller supply chain and the operations supporting it. The interviewees all claimed that it was hard for them to get resources for further digitalization due to their small size. The developments in this area coming from the central Volvo organization are customized for the supply chain of the much larger flows of the Gothenburg plant. IM is then expected to use these systems but adjust them to handle their supply chain. This is, of course, sub-optimal.

IM's lack of digitalization can be seen in the light of lack of resources due to being much smaller than Volvo's main flows. However, when assessing the digitalization level of IM, using the *Industrie 4.0 Maturity*



What can be achieved?

*Index*¹ and by evaluating the data collected in the case study, it became apparent IM's lack of digitalization is not only due to limited resources stemming from being a small division within a large organization. Rather, the low level of digitalization within IM can be derived from several factors. Lack of management commitment and action, lack of specific employee skills, and no clear digital strategy are the main factors.

Through this case study, three critical success factors for the successful digitalization of supply chains were identified. These are *digital change management*, *effective use of existing data*, and *clear digital organizational structure*. The main enablers to achieve these critical success factors are to summon management commitment and encourage action, work with digital change management, increase visibility in information systems by automation and connectivity, develop employee competencies, have an ambitious digital strategy, and effectively use resources. The challenges identified are a siloed organization, having limited resources, a complex IT infrastructure, insufficient employee competencies, low quality and availability of data, and low organizational readiness.

To get a successfully digitalized supply chain these critical success factors must be taken into consideration. By taking advantage of the enablers and mitigating the challenges, it should be possible to transform into a sufficiently digitalized organization ready to face the upcoming challenges of Industry 4.0.

For further reading, please see *Digitalization of Volvo Group's International Manufacturing supply chain* by Greftén & Gunneberg (2021).

¹Schuh et al. *Industrie 4.0 maturity index*. Munich: Acatech study, 2020.