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In the past few years, there have been moves to collect data about incorrect estimates of the potential when setting up networks with China (and similarly, also with India and Eastern Europe). Figure 1 shows the dynamics of the problem as revealed by a survey of medium-sized companies of the mechanical or electrical industry (M&E) in Germany from 1999 to 2012. The survey investigated the companies’ reasons for both offshoring and backshoring production activities, mostly from Eastern Europe or Asia.

Figure 1  Reasons for backshoring activities (data according to [1] and previous publications of Fraunhofer ISI, Karlsruhe)

The reasons for backshoring activities are constantly changing, due to changes in the global environment. It is becoming increasingly difficult to manage a global network that adds value. The key problem areas are coordination and communication, and these are easier to solve locally than from halfway around the world. Other key problems are quality, supply availability and flexibility.

One company in the fastenings sector estimates that the additional costs they incurred in maintaining comparable supply availability and quality, compared to using a local supplier, amounted to over 25% of the purchase price when buying in components from local suppliers in China. And that the cost is increasing.
The costs for production factors and infrastructure can also easily become higher than planned. A Swiss company in the capital goods market that has produced part of their range in China for many years has been trying for some time now to increase the extent of their offshoring. However, when they looked into it more closely, it repeatedly became clear that substantial parts of the production infrastructure in the Swiss plant could not be significantly reduced. Under those circumstances, moving some of the value creation to China (for example) would lead to higher fixed costs, which all too often would not outweigh the savings on variable costs.

Due to observations like this, the "Total Cost of Ownership" (TCO) is increasingly being used as a reference basis for procurement. This covers not just the actual costs of the goods being procured, but also the costs for any non-compliance on the quality and availability side, including the costs of keeping safety stocks to cover increasing and uncertain transport times.

In addition to the purchase price of a good, the TCO is made up of a number of different cost elements, as shown in Figure 2. For clarity, the costs are shown subdivided in four categories. See also [2], Section 2.1.3.

**Figure 2** Elements that make up the total cost of ownership.

Transport and logistics costs (category I) include the cost elements packaging, transport, temporary storage, duties and taxes, and insurance. Landed costs generally denotes the sum of the purchase price and the transport and logistics costs.

Transaction costs (category II) comprise company-internal expenditures for organization of the buyer-supplier relationship. They include costs for the processes of searching, initiation, negotiation, drawing up contracts, adaptation, and control.

Depreciation, amortization, and capital costs (category III) comprise, for one, the cost elements investments and obsolescence and, for another, the costs for tied-up capital owing to transport times, payment arrangements, and safety stocks. Total monetary costs is the sum of the landed costs, the transaction costs, and the depreciation and capital costs.

Risk costs (category IV) comprise risks concerning the company’s objectives in the target areas quality, costs, delivery, flexibility, and reputation.
The structure of the supply chain is then treated as a complexity dimension in its own right when assessing value creation. In the context of reducing complexity costs, it is increasingly attractive to use local networks (or "local sourcing") wherever possible. For this to work well, local companies have to be trained to become "World class local suppliers". Physical proximity has a positive effect on the logistics (speed, transport costs, storage costs). The people who are involved all speak the same language, and may even have social contact outside of their work relationship (clubs, social activities). This informal contact can often contribute significantly to an effective and efficient supply chain (see also [2], section 2.3). Local networks also have the advantage in the case of quickly changing product ranges, and the associated shorter customer tolerance time.

Some companies have already changed or are already changing to centralizing their production on a differentiated basis (for strategic design of centralized and decentralized production networks, see [3]). For older (and usually not high cost) products, this involves offshoring the whole value creation to, for example, China – including for products that continue to be produced for the European market. This also means the components that form the actual product expertise and production expertise. The products are also shipped directly from China. The thinking behind this is that only a small proportion of the finished products are sent to Europe. The overall transport costs under this strategy should not work out any higher than before, and the complexity of the value creation network is reduced.

For new, innovative (and usually high value) products, the whole value creation is kept in Western Europe, using a network of companies that work closely together. That is similar to the strategy used by Toyota, for example. For many years, they manufactured all their hybrid engines in Japan. That enabled them to keep their innovative advantage for as long as possible, including the latest production expertise.

One consequence of this sort of strategy is investment in the whole value creation chain for such products, and especially in the most modern production facilities. This approach also works better in terms of intellectual property problems. It also avoids losing production expertise and experience, which can then also be applied to other products if they are backshored.

(Remark: For a German version of this article see [4].)

References


