Aalto University
School of Science

TU-A1300
Introduction to Industrial Engineering and Management

Week 5 Pre-lecture Reading

What should I produce myself, and what should I buy from others?

These are important questions, and lead to decisions that have a significant impact on a company's competitiveness. Focusing on the right things and effectively leveraging outside resources has the potential to maximize revenue, minimize costs, improve the flexibility and agility of the company, while reducing the amount of capital employed and accelerating innovation. If you are currently manufacturing something, and you are considering switching to buying it from someone else instead, you are considering outsourcing of production. Conversely, if you are developing a new product, and you are considering whether you should buy or manufacture a certain part, you are making a make-orbuy decision. In both cases, decisions on what to manufacture yourself, and what to have manufactured for you, should be systematic and deliberate.

A firm gains a competitive advantage, and performs well if it has valuable resources that are difficult to copy, transfer, and replace. Here resources denote tangible and intangible factors which the company controls, such as knowledge and skills or physical and human capital. The ability to generate these valuable resources is the core capability of the firm, and something that the firm should focus on.

Identifying the core capabilities of a firm is challenging, but extremely important. Core capabilities have two distinct characteristics: (1) they are important to the firm's customers, and (2) they are something that the firm is better at than its competitors are. There number of core capabilities a firm has should be a relatively small, so that the firm can focus its resources on maintaining and develop them, maintaining and improving its competitive position. However, core capabilities should not be defined too narrowly, for example as “know-how of a technology X” – as this may cause the company to lose its competitive advantage as technology advances. Instead, core capabilities should be flexible, adapting to long term change in the business-environment. Also note that in essence, core capabilities are a unique composition of skill and knowledge – not products or functions (in which they are reflected). This makes core capabilities deeply embedded in an organization – rather than it being the product of the knowledge of a few individuals within the organization.

A firm should never outsource their core capabilities, nor anything that protects them. For example, if the core capability of a firm is manufacturing process know-how, it may be unwise to outsource factory maintenance, as it might lead to the know-how being transferred to competitors through the maintenance service provider. Conversely, outsourcing everything non-core, non-protective is likely to be the economic alternative. However, a number of issues still need to be considered before making the decision.

First, you need to evaluate the available offerings and the supply market characteristics. Is supply dependable, and is there sufficient competition between suppliers? Is the product or service you seek to buy strategically important to its suppliers, so they are ready to invest in developing and improving it? Are suppliers likely to be able to achieve high quality and low cost? You also need to evaluate your position relative to the suppliers – too much dependence on a few suppliers can make a firm vulnerable to changes in the market situation. You should also evaluate suppliers' capabilities, and compare them to your capabilities. Which suppliers are able to provide the product or service you want, cheaply and reliably? Which suppliers have the best resources and the best know-how? If the supplier is better than us, we should try to capitalize on their capabilities. Furthermore, we need to assess whether we are attractive enough for our suppliers to get all the support we need.

Economic calculations are naturally also part of the decision-making. One has to consider all costs associated with outsourcing in the long-run, and compare them with the costs the firm would no longer need to bear whence the product or function is outsourced. The most obvious cost savings of outsourcing come from variable costs, i.e. direct materials costs and salaries that the company saves when purchasing from outside. The impact on fixed costs, such as facilities and equipment and support services, are harder to evaluate. In these cases, the effect tends to materialize with a delay. When estimating the cost of outsourcing, you should also try to anticipate the long-term price development of what you are planning to outsource, as well as the costs associated with procurement itself. Finding suppliers, contracting, and managing a supplier network does require its own (costly) resources in the firm. In addition, you also need to consider costs associated with logistics and quality management, such as transportation, warehousing, and quality inspections.

Before making the final decision to outsource a product or service, you still have to make sure that the organization is capable of managing procurement and external suppliers, as well as managing interorganizational processes.

The final decision on whether to produce something in-house, or outsource it, is a synthesis of the above considerations: understanding your core competences, understanding the supplier markets, and a comparison between the two. That which is within your core competence as well as that which involves high supply-risks, should be controlled and done by you. Respectively, that which is outside of your core competence, and where supply-risks are low, you should outsource. Between these extremes there tends to be a gray zone which is strategically important to the company but is not a core competence, and where there are able suppliers in the market, but there are at least moderate supply-risks. In these cases, one should seek arrangement whereby the company utilizes external suppliers but retains some control. This can be done through partnership agreements or joint venture arrangements.

There is a long-term trend of specialization, where businesses focus on doing fewer things better, while increasingly leveraging external suppliers and partners. Procurement already represents on average 70-90% of the turnover in Finnish companies. As a result, procurement and external resource management have become one of the most important activities of the firm. Firms typically outsource tens of thousands of very different products and services from thousands of different suppliers. Because the procured products are very different, they need to be procured and managed in different ways. For the firm to be able to procure a broad and heterogeneous range of products, the products must first be grouped into procurement categories. A procurement category consists of a set of products and services that have similar characteristics, and are procured from the same supplier market. Procurement categories form a hierarchical structure, with the top category typically being direct and indirect procurement. Direct procurement includes products (and services) which become part of the firm's product (or service), such as raw materials and components. Indirect procurement include other products and services that support business activities, such as information systems, marketing services and travel services. These categories are then further divided into sub-categories –for example, information system procurement can be further divided into software, hardware and services.

With reasonable procurement categories, one can then move on to selecting the appropriate procurement method for each. Here the Kraljic-matrix provides guidance, by classifying procurement categories according to two criteria: (1) the importance of the procurement category for the business, and (2) the degree of supply risk. The supply risk is high if there are only a few suppliers on the market and they have relative power over the buyers. For categories that are important to the business of the firm, while having a low supply risk, the key principle is to leverage your power by active competitive tendering. Conversely, in business-critical categories where supply risk is high, you should seek close co-operation with suppliers. In categories less important to the business, where the supply-risk is low, you should focus on improving the efficiency of the procurement processes rather than the purchase price, as the costs of procuring may be higher than that which is bought. Finally, categories that are less important to business, but where there is significant supply-risks, are bottlenecks for which you should seek to ensure availability, for example through warehousing and long-term contracts. You could also consider in-sourcing bottleneck products, i.e. start manufacturing them yourself