

# Purchase of additional services – supplier collaboration in the construction industry

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This paper is aiming to point out advantages of using additional services from material suppliers of doors and timber. By using services from the supplier, non-value adding activities may be eliminated and contractors can reduce costs on site. To be able to take full advantage of additional services collaboration between parties is required collaboration is especially important in the purchasing activities. Instead of focusing on prices, contractors should see to total cost of ownership by sharing risk and profit. The empiric study is performed with NCC Construction which is a major construction actor in the Swedish market. By finding differences and similarities between the purchasing function in theory and reality appropriate recommendations can be made.

Services are often included in product's purchasing price but contractors should try to separate these. It will make it possible to place demands on services as well as see them as a competitive advantage. The main objective of this paper is to identify the purchase of additional services between the contractor and supplier to reduce overhead costs on a construction site. On this basis, improvement potentials for the procurement of additional services will be shown.

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## Introduction

The production cost in the Swedish construction industry has largely increased during the last decades compared to the consumer price index. This leads to higher prices for the end consumer and lower margins for the contractors. The contractor can either focus on increasing revenues or lowering costs in order to keep their margins. Purchasing of materials constitute approximately 30 % of the production cost in a construction project [1].

There is a debate going on in the Swedish industry concerning the amount of waste related to construction projects. Waste is in this case an activity that is non-value adding. There is no general definition of which activities are included in waste, and consequently different actors interpret the research in different ways. Numbers up to 30-40 % are mentioned as possible amounts of waste in the construction

industry. Examples of activities which are non-value adding are the transportation of materials, waiting for deliveries and movement.

Earlier studies have shown that purchasing of material to a lower price than average market price often leads to higher total costs of logistics [2]. Materials bought for lower price often come in larger packages. Cost of logistics also depends on different type of materials and the conditions of the construction site. Doors and timber are commonly used materials in housing projects and studies have shown that they have relative high cost of logistics [3].

During the last couple of years companies in different industries have concentrated more on their core-business which has led to growth in the service sector. By outsourcing non core-activities the head

company has to rely more on their partners and it is important to focus more on supplier relations and not just the price of purchasing [4].

Building material suppliers have developed alternative ways to distribute their deliveries to construction sites. Offering additional services with the products is one such example which tends to lower the production costs for the contractor. There are problems to show the economical advantages with additional services and to adapt these services to the construction site conditions [5]. It is important to separate the product and the service from each other. If the provided service is included in the price of the product it is hard to place demands and know what to expect from the service. Many building material suppliers do not separate the service from the product e.g. the transportation of the material.

### **Problem definition**

Reaching a more cost effective way of construction can be made by moving activities earlier in the supply chain. This can be accomplished by using value-adding services from suppliers who have both knowledge and skills to manage their own materials. Purchasing materials accompanied with additional services from suppliers eliminates activities on construction sites and hence reduce waste. In order to decrease costs and achieve a more even material flow there are several defined additional services which may be used.

Furthermore, working in a closer relationship with suppliers gives the ability to increase quality and decrease production costs. This requires trust and exchange of information between contractor and supplier.

### **Question Formulation**

How can additional services be used to reduce the total cost in a construction

project and can these services increase the value-adding time for construction workers?

How can collaboration between the contractor and supplier develop in order to jointly reduce the construction cost?

### **Purpose**

This article will show how contractors purchase additional services for the procurement of materials. It will also show which additional services are being offered and demanded in order to find synergies in the purchasing process.

### **Methodology**

Deductive reasoning has been used in the survey to define hypotheses which have their starting point in existing theories and models. Once the survey was conducted conclusions were drawn from the studied object in relation to the theory.

Primary collections of data were carried out with structured interviews with prepared questionnaires. Interview objects were purchasers at NCC and salesman at supplying companies of doors and timber. These were supplemented by interviews with specific site managers which resulted in cases from construction sites. Secondary data is composed of scientific journals and relevant literature.

The authors have chosen a qualitative method for collection of primary data due to the small amount of research in the objective area. This gave interviewees the opportunity to highlight valuable information which was new, vital or in other ways important for the results of the survey.

### **Purchasing analysis**

NCC Construction works with three different levels when selecting suppliers of building materials. Suppliers with a Level 1 agreement are the only supplier for that kind of material while Level 2 and 3

agreements can be given to many suppliers of the same material. The purchasing strategy at NCC differs depending on which type of material is being purchased. For timber NCC has a Level 1 agreement with Beijer Byggmaterial making them a single source supplier and leading to longer term collaboration. An example of this longer term collaboration is the project Beijer XL where NCC and Beijer have worked together to decrease cost of logistics. For doors NCC has a number of suppliers which means that the material is exposed for competition. Doors are mainly procured with focus on lowest purchasing price which in earlier studies has shown to often lead to increased cost of logistics.

The additional services purchased for a specific project depend on how the construction manager prefers to work and earlier experiences. The purchase of doors is conducted approximately 8-10 weeks before they are needed at the construction site by the purchasers. Any additional service required by the construction manager are decided a couple of weeks before the delivery is made.

### **Case at construction site**

At a NCC refurbishment project in Kristianstad approximately 90 apartment doors were replaced. The doors could not be stored at the construction site and were hence stored in a warehouse. Due to the large amount of doors the transport was divided into three deliveries to the warehouse, each comprising 30 doors. Each day the construction workers brought four doors from the warehouse on a trailer to the construction site. The doors came sorted on pallets and each pallet contained doors for one staircase. This was a requirement from the construction manager. The construction manager also requested that the doors would be sorted in the order that the doors were going to be mounted. This could not be arranged by the supplier which led to indirect costs in

the form of transportation, disruption in work, and material handling.

The doors were packaged to prevent damage from transportation. This was a service that the construction manager requested and also paid for. However, the construction manager of the project was not satisfied with how the packaging had been conducted and there was no agreement describing what could be expected from the service.

### **Conclusions**

Handling of material generates indirect costs at construction sites. However, the extent of these costs has been hard to ascertain. NCC is aware that a certain amount of time for construction workers is spent on handling materials. This waste can be reduced by using additional services.

Purchaser's awareness of the total cost of ownership should lead to less focus on the product price. Nevertheless doors are procured at the lowest possible price which investigations show leads to increased total cost.

To what extent additional services are to be used is for each workplace to determine independently according to company guidelines. Purchasers can suggest services to avoid handling of materials but this is rather due to individual experience. Services are today purchased after the supplier has been selected; consequently, they are not seen as a competitive advantage.

Additional services occur by demand from contractors which are almost always met by the supplier. Personal relations between purchasers and door salesmen are a parameter in supplier selection but price is most important in the procurement process. NCC underlines the importance of supplier collaboration to reduce costs over time. That is an advantage of a relationship-

oriented purchasing philosophy where there are large indirect costs associated with the product. Even though longer contracts are negotiated between partners, price is still the focus during negotiation. When a certain product is demanded it affects the whole supply chain why there are more areas to influence than price.

When additional services are used from door manufacturers two out of three offer these without extra cost. This makes it difficult to perceive services as a competitive advantage as well as a parameter in supplier selection. It also makes it difficult to implement demands on services. Finally, as services are not always applied it means that costs related to services are distributed across all products. Over a long period of time suppliers would therefore be able to lower the product price if services are only being paid for when they are used.

Specifications of what is expected or what should be performed from an additional service are seldom provided. Both parties express that they are aware of the requirements from an additional service and regard specifications as being unnecessary. In spite of that site managers believe that e.g. packaging is inconsistently performed and is sometimes not satisfactory. Suppliers of timber and door manufacturers should endeavour to work to specifications as it facilitates standardisation in the future.

Additional services could be specified in a service level agreement (SLA) as: a functional specification, a detailed technical specification, performance-based or based on specialist competence [6]. Through a SLA the expected quality could be detailed, facilitating the placement of demands and control of the suppliers' performance [7].

If additional services are priced both contractor and supplier could gain profits.

To initially implement a value-based pricing from door manufacturers, benefits can be illustrated with usage of services for the contractor. If the competition between manufacturers continues it may lead to market-based pricing which also is an advantage for the contractor. From the timber-supplier, cost-based pricing is taken out for additional services.

There is an opportunity for purchasers and site managers to evaluate services and pass the information on electronically. Despite this, it is today performed to a small extent. Closer collaboration between contractor and supplier enables a mutual evaluation of the benefits with services. This undermines dependence of a single purchaser's experience and the supplier might be able to use it for future offering and development of services.

In the early 90s a project in Malmö had a focus on logistics and many additional services such as product adaptation were used. No evaluations were carried out and experiences from involved personnel have not been passed on. To avoid this in future, additional services should be evaluated and the information disseminated in both the contractor's and supplier's organisations.

## Examples of additional services

In the study several additional services have been identified from interviews, field studies and literature. The additional services have been categorised in the master thesis depending on when in the distribution chain they occur.

Additional service	Description	Advantages
Delivery flexibility	The suppliers' ability to adapt to the contractors changed needs and requirements in an on-going order. For example changed time of delivery or the amount of products. Delivery flexibility requires that the supplier can quickly adapt to the customers changed needs.	With delivery flexibility the contractor can lower his stock level which otherwise can lead to indirect costs. Delivery flexibility can also reduce the amount of work disruption as the material deliveries can only arrive when the material is required.
Packaging	Packaging enables co-distribution of similar goods. The packaging can also include information about the delivery.	Packaging protects the material from being damaged in transport or at the construction site.
Product adaption	For example special lengths of beams or adapted products.	Minimises production waste in the construction site. It also minimises material transportation as it reduces waste transportation.
In-transport	The supplier is responsible for the material being transported to the place where it is going to be mounted at an agreed time and point.	Reduces work disruption and material handling for the construction workers. This will lead to the value-adding time increasing for the construction workers.
Education	The construction workers are educated by the supplier in how to mount the product.	With sufficient education in how the product should be mounted, the construction workers value-adding time can increase.

## Recommendations

The contractor should use additional services to avoid material handling on construction sites and hence lower indirect costs. Additional services should be purchased from suppliers as they are accustomed to handling their own products and have physical skills leading to lower costs.

The contractor should endeavour to get lists of additional services specified from suppliers to undermine the requirement of experience at individual purchasers and site managers.

The contractor should separate the additional service pricing from the product pricing in order to gain advantage. It gives the opportunity to place demands for the service as well as decrease the product price over time.

Contractor and supplier should work closer when designing additional services both in the short and long term. This will lead to a jointly developed process to produce services to fulfil requirements from contractors. Suppliers could also visit working sites to exchange experience between parties.

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