IN SEARCH OF LEAN SUPPLIERS – REPORTING ON FIRST STEPS IN SUPPLIER DEVELOPMENT

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ABSTRACT

This paper reports some early findings related to supplier development: the result of prequalification, performance evaluation and supplier development from 5 pilot regions in 3 countries. It is a follow-up to an IGLC paper presented in 2011. Supplier development can be seen as a third option when make or buy options do not lead to desired results. It seems to be a little used option in the construction industry. This paper reveals that, at least in the pilot regions, supplier development needs to start from very basic things such as helping to fulfil legal and company requirements, and setting standards for measuring quality and delivery reliability. Over half of the supplier base does not fulfil the basic requirements. When suppliers do measure quality and delivery, measurements often do not capture issues important to their customers, the projects. The findings have resulted in re-defining supplier segments, presented in this paper along with next steps in supplier development.

KEYWORDS

Lean, supplier, supply chain management, preferred supplier program.

INTRODUCTION

Confronted with inadequate supply of goods or services, a buyer has three choices: 1) change to a more capable supplier, 2) provide the goods or services internally, or 3) develop the supplier's capability (Handfield, et al., 2000). This third option lies between hierarchies and markets, between make and buy. This third option has rarely been chosen in the construction industry, and, when chosen, incompletely implemented. Examples to date have not gone beyond pricing agreements or supplier evaluation.

There has not yet been a satisfactory answer to the question 'Why should the construction industry embrace supplier development?' We explore this question, principally through sharing details of an approach to supplier development currently being implemented by Skanska, led by its Nordic Procurement Unit. The case illustrates how a construction company has adapted supplier development to industry peculiarities.

This paper is a follow-up to Elfving & Ballard (2011), which presented the concept of the preferred supplier program, now tested in real life and refined. We have been testing both prequalification and performance evaluation. In supplier development proper, the focus has been on quality and delivery reliability. We

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actually started already 2005 with standardizing production management then moved to logistics (Elfving et. al 2010), and this is the third phase, the suppliers. The paper starts with a short literature review, then presents the structure of the preferred supplier program, followed by results and finally conclusions and next steps.

WHAT IS SUPPLIER DEVELOPMENT?

According to Handfield, et al. (2000) supplier development is "…any activity that a buyer undertakes to improve a supplier's performance and/or capabilities to meet the buyer's short-term or long-term supply needs." Evaluation, incentives, competition, and consulting are among the means used to develop suppliers.

Supplier development belongs to supply chain management, which also includes procurement, the design and operation of supply chains, and logistics. With a few exceptions (O'Brien, et al., 2008; Gil & Beckman, 2010; Basu, 2011; Elfving & Ballard, 2011), the literature on supply chain management in general and supplier development in particular has neglected the construction industry (Johnsen, 2011). The construction industry has returned the favor by virtually ignoring supply chain management.

Speaking about industry as a whole, Ketchen & Giunipero said nine years ago: "The intersection of strategic management and supply chains offers implications for managers. To the extent that competition is 'supply chain versus supply chain,' a new way of thinking is necessary. This thinking seems to be at an embryonic stage today." (p.55, Ketchen & Giunipero, 2004). Is it true in the construction industry that competition is 'supply chain versus supply chain'? Consider large international companies such as Skanska and others among the largest 500 construction contractors in the world (ENR, 2013). You can be sure that every one of them has ambitious goals—for increased profitability, for growth, for zero accidents, zero defects, zero environmental damage. Is it even conceivable that such goals could be achieved without improving the suppliers to those companies?

STRUCTURE OF THE PREFERRED SUPPLIER PROGRAM

3 years ago the company began developing a preferred supplier program in order to systematically improve the supplier base. The program includes both goods and services suppliers. The preferred supplier program has four goals:

- Reduce risk
- Consolidate the supplier base
- Incentivize suppliers to work better
- Improve performance

The starting point and foundation of the program is to ensure that the company is working only with legal and financially sound suppliers. The general conception about the construction industry in the Nordic countries is that there is a very large grey market, which our pre-study confirmed. We want to rate suppliers based on their performance (not only price) and treat suppliers differently depending on their performance. We want to expand work with well functioning suppliers and reduce or cancel work with non-functioning suppliers. Finally, we want to help suppliers to

develop further, where baselines are defined based on actual project performance, and where long-term relationships with selected suppliers are developed not only with high strategic importance but also with based on performance.

There are four pieces in the program, pre-qualification, on-site performance evaluation, performance measurement, and supplier development. The aim of pre-qualification is mainly risk management, to secure that suppliers fulfil legal and company specific requirements before request for quotation documents are sent. We use a self-evaluation with around 80 questions about basic company information, safety, environment, quality, ethics and risks (www.skanska.se/leverantorer).

The aim of the on-site performance evaluation is to reduce cost by assessing supplier and Skanska project performance. The evaluation is conducted by project personnel and consists of eight parts; time, quality, cost, safety, environment, complaints handling, co-operation, and development (Figure 1).

The aim of supplier development is to improve performance. We have three types of supplier development. The first one is to make wanted suppliers fulfil legal and company requirements. The second level is to improve framework suppliers' quality and delivery precision. The third level is to work with innovations. For framework material suppliers, monthly performance measurement on quality and delivery precision is requested. At this time, nearly all effort is on the two first types of supplier development.

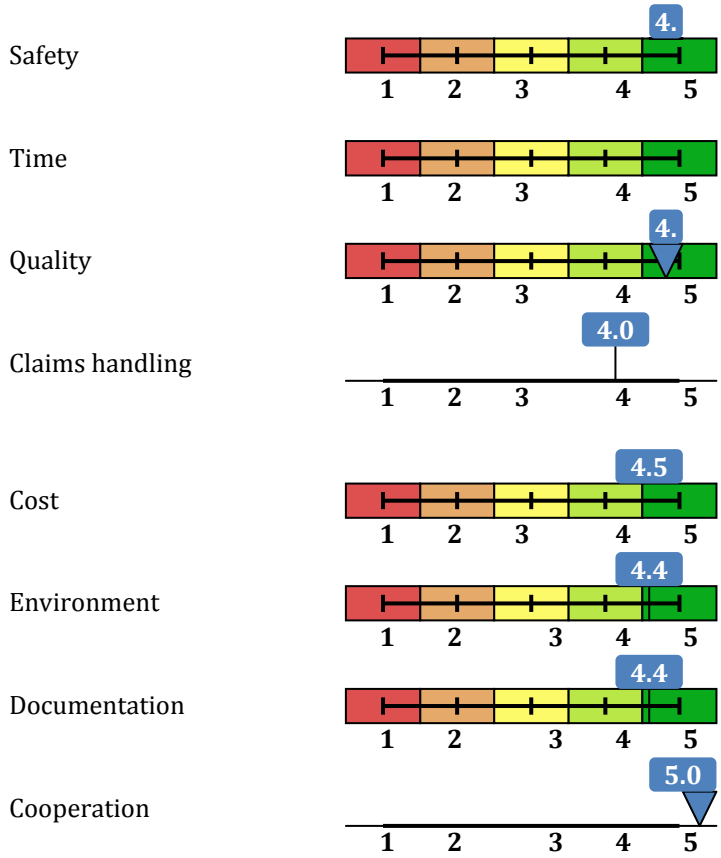

Figure 1: Example of supplier evaluation

Suppliers are classified on four levels, potential, registered, approved, and preferred (Figure 2). If a supplier has completed the prequalification questionnaire, regardless if it does not meet legal (red supplier) or company requirements (yellow supplier), it is classified as registered. If a supplier meets both legal and Skanska requirements it is a green supplier. But in order to be an approved supplier, it needs to be both green and have an average performance score of 3 or more (scale 1-5). Framework suppliers need, in addition, to provide performance measurement data. In order to be preferred, supplier performance evaluation data needs to be among top 30% of all suppliers and framework suppliers have to show a trend in improved performance.

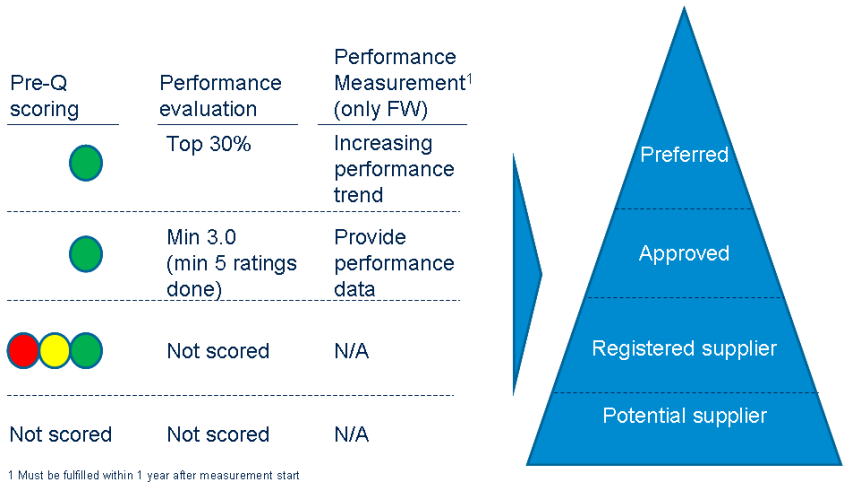

Figure 2: Supplier segmentation

FINDINGS

THE CASE COMPANY AND SCOPE

Skanska is an international development and construction company headquartered in Stockholm, and active in a variety of sectors, including residential and commercial buildings, civil infrastructure, and the processing industries. Skanska has operations in Europe, South America, and North America. In the latest ENR ranking of construction companies, Skanska was the 7th largest in the US by revenue. This paper focuses on the Nordic countries, where Skanska is the largest measured by revenue. In the Nordics, there are 50 operating regions with around 4000 construction projects ranging from less than 100,000€ to up to several billion €. The annual purchasing spend is about 5,4 billion € with 50,000 active suppliers of goods and services.

PREQUALIFICATION

In the first phase of development, we prequalified around 1500 material and service suppliers in 5 regions; 1 in Norway, 2 in Finland and 2 in Sweden. The legal requirements are quite the same in all three countries, with some slight differences in certificates and employment terms and conditions. We knew based on ad hoc audits that the compliance to legal and company requirements is low but were surprised to find that over half of suppliers who completed prequalification forms did not fulfill these requirements (Figure 3).

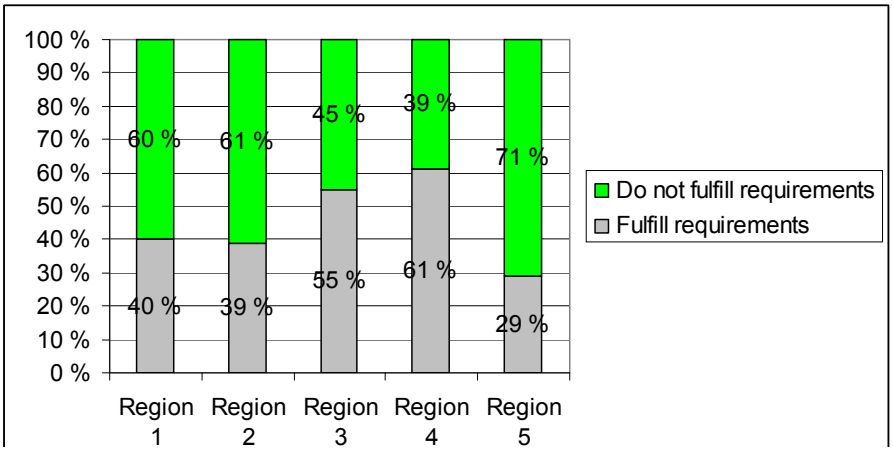

Figure 3: Results from prequalification.

The main reason, nearly 70%, for not fulfilling legal requirements was missing safety documents, but the range was very large; some even lacked a business license. Safety and electronic invoicing were the primary non-compliance issues for company requirements. We could not identify any major difference between material and service suppliers, but did find a large difference between framework (long-term contract) and spot (short term contract) suppliers. With few exceptions, the framework supplier met all legal requirements. About 10% of framework suppliers did not meet Skanska requirements, significantly better than non-framework suppliers of goods.

With a 'quick fix', contacting the suppliers and explaining the situation and how to fix it, we were able to reduce the number of suppliers that do not fulfill requirements by 10-50% depending on the region. Those remaining require more support or in worst case the suppliers become blacklisted.

The main support provided suppliers is explanations of requirements and forms they need to complete. In fact, it is fairly complicated to keep track about all the requirements and the updates in them. 55% of our suppliers have less than 50 employees, which means that it is rare that there are fulltime dedicated support people for safety, environment, quality, and legal issues. In Finland, we also open our in-house online safety training for selected suppliers. The training will include more than 25 modules by the end of 2013.

PERFORMANCE EVALUATION

Evaluation of performance occurs after completion of work on a project, and involves both the project evaluating suppliers and the suppliers evaluating the project and Skanska. Projects' average rating of supplier performance was quite high, even when there had been a lot of problems with those suppliers during project execution. For example, in one case, a supplier had to change all window fittings, causing major disturbance for the project and still the supplier got a 3.76 rating (1 to 5 scale, with 5 highest). This shows that the projects are accustomed to poor performance and find it acceptable that problems are solved through rework rather than avoided.

On average suppliers scored best on timeliness (4.01) and worst on safety (3.49). One reason for the low safety scoring and high timeliness scoring may be Skanska's

strong focus on safety. Safety demands are much higher than for the other criteria. In timeliness, the accuracy is rarely by hour, rather by day or by week.

Framework suppliers appear to score lower in project evaluations than spot suppliers. It may be because they have little incentive to do otherwise, with contract in hand. Perhaps also framework suppliers get more muted feedback from project customers. Framework suppliers' feedback depends mostly on the purchaser in central procurement, who again has to rely on the project crew for the feedback. In many cases one of the parties forgets or neglects to relay the feedback, or it comes far too late. Also, it may happen that the project purchaser does not participate in the selection of framework suppliers, and thus may not favor them.

PERFORMANCE MEASUREMENT

In this report, we focus on the data from 25 material suppliers in the interior portfolio. The interior portfolio means all the suppliers that deliver and service the interior phase of a building excluding mechanical, electrical and plumbing suppliers. The focus is on delivery precision and quality. Of the 25 suppliers, which are large national or multinational companies, only three had good data available for both delivery precision and quality. About half (12/25) of the suppliers did not have data about delivery precision or quality when we made the initial request (Table).

In general, the suppliers reacted positively to the request. No general contractor had previously requested systematic performance measurement data, which also explains why many of the suppliers did not measure it. On the other hand, it also shows the immaturity of the industry. It is difficult to demand reliability and quality, not to say improvement, if the supplier does not even measure it for themselves.

Table 1: Performance measurement capability from the sample suppliers

Supplier	Can report delivery performance	Can report quality deviations
Supplier 1	No system in place	No data/info available
Supplier 2	No system in place	No system in place
Supplier 3	Good data quality	No data/info available
Supplier 4	Good data quality	No data/info available
Supplier 5	Poor data qulity	No system in place
Supplier 6	Acceptable data quality	Acceptable data quality
Supplier 7	No system in place	Acceptable data quality
Supplier 8	Good data quality	Acceptable data quality
Supplier 9	Good data quality	Acceptable data quality
Supplier 10	Acceptable data quality	No system in place
Supplier 11	No data/info available	No data/info available
Supplier 12	No data/info available	No data/info available
Supplier 13	Good data quality	Acceptable data quality
Supplier 14	Good data quality	No data/info available
Supplier 15	Good data quality	Good data quality
Supplier 16	No data/info available	No data/info available
Supplier 17	Good data quality	Good data quality
Supplier 18	No system in place	Poor data qulity
Supplier 19	Good data quality	No data/info available
Supplier 20	No data/info available	No data/info available
Supplier 21	No data/info available	No data/info available
Supplier 22	No data/info available	No data/info available
Supplier 23	Good data quality	Good data quality
Supplier 24	Good data quality	Poor data qulity
Supplier 25	No data/info available	No data/info available

The good news: once we requested delivery precision and quality reports be sent in monthly by the supplier, and followed-up to see if they complied, we saw improvement.

Figure 4 shows that delivery precision has increased in the last six months from around 80% to nearly 95%. There is a large variation among suppliers and many low performing suppliers are submitting data only sporadically.

Interestingly both of these variations have significantly reduced over time. It seems that when there is competition between the suppliers, just measuring performance improves performance. The challenge is when there is no competition and the supplier has a monopoly, then there is little incentive for the suppliers to measure, send in the data, and improve. In Nordic countries, many of the large material suppliers have a monopoly or near monopoly. Locally many service suppliers have a near monopoly, particularly in certain special trades such as ceiling and balcony glazing. Unfortunately, some of these suppliers have stopped sending in performance measurement reports when they have seen a negative trend in their performance.

Next, we will try to put performance measurement demands in the contract language. One needs to be careful when it comes to a legal and binding document. Some suppliers may become shortsighted and report 'too good numbers'. This requires very close follow-up and dialog with projects to triangulate the supplier performance data. The majority of the suppliers still think it is very good to demand the performance data, it gives them a clear signal what to do and they believe they can improve and be better than their competitors.

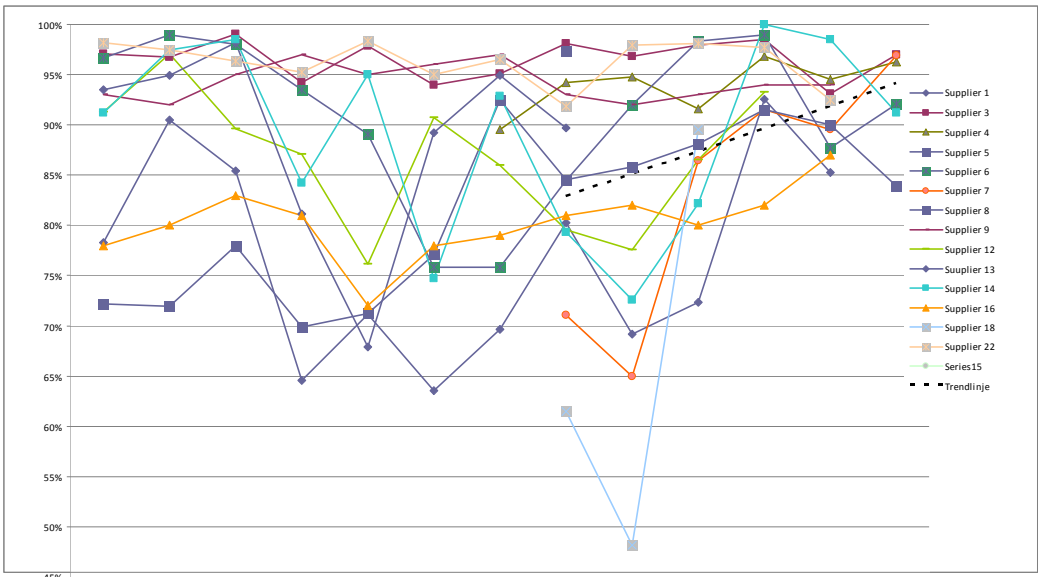

Figure 4: Supplier performance measurement data form 6 month period

Another interesting thing is that in most cases high performance measurement scores tend to correlate with high project evaluation scores. There are some exceptions, which indicates that supplier and project expectations are not aligned. This alignment

is one of the basic lean principles that needs to be in place in order to generate value for customers (Womack & Jones 1996).

CONCLUSION AND NEXT STEPS

Supplier development can be seen as a third option when make or buy options do not lead to desired results. In the Nordic construction industry, it seems that supplier development is a very little-used option. The construction industry seems to be quite far from many other industries that work with supplier development, where the focus is on capability development and joint innovation. The suppliers struggle with fulfilling legal and very basic company requirements, such as e-invoicing and measuring safety, quality and delivery precision performance. Also on the buyer side, there is a gap in competence in using other criteria than price as selection criteria. The more variables there are to compare and choose from, the more complex the selection becomes. However, there is a huge opportunity to get rapid improvement with fairly small effort. In one of the regions, after a phone call and an email, 80% of suppliers who initially did not meet the legal requirement did so within 2 months. Just measuring supplier performance, delivery reliability went up in 6 months from 80% to 95%. Our experience suggests that the place to start is making sure that basic things are fulfilled, that suppliers know projects' expectations, that buyers and suppliers track and act on performance measurements such as safety, quality and delivery precision. Once that foundation is in place, then more proactive supplier development can be launched. When there is a good routine and steady progress in the basics, then capability development and joint innovation have the proper prerequisites.

The next steps in development and deployment of the Preferred Supplier Program are:

- Rolling out the program to all remaining regions and business lines
- Control
- Improvement

This paper reported the rollout of prequalification and performance evaluation in 5 regions. Since the paper has been written, the number of roll-out regions has almost doubled and a systematic rollout for the remaining regions will take place in the next 18 months. We will also extend the performance measurement and supplier development to more suppliers. By control we mean that in those regions where roll-out has taken place, we make sure that the practice gets permanently rooted. By improvement we mean that for both framework suppliers that are managed centrally and for spot suppliers that are managed regionally, we develop methods and capabilities for continuous improvement of the supplier base; e.g., supplier associations. The authors will report in future papers about the findings from these further actions.

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