

# Benchmarking Danish Industries Supply Chain Management

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**Benchmarking Danish Industries,  
Supply Chain Management**

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# **Benchmarking Danish Industries, Supply Chain Management<sup>1</sup>.**

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Copenhagen Business School  
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## **Introduction**

This report is based on the survey "Industrial Companies in Denmark – Today and Tomorrow", section IV: Supply Chain Management - Practices and Performance, question number 4.9 on performance assessment. To our knowledge, this survey is unique, as we have not been able to find results from any compatible survey. The International Manufacturing Strategy Survey (IMSS) does bring up the question of supply chain management, but unfortunately, we did not have access to the database. Data from the members of the SCOR-model, in the form of benchmarked performance data, may exist, but are nonetheless not public. The survey is a cooperative project "Benchmarking Danish Industries" with CIP/Aalborg University, the Danish Technological University, the Danish Technological Institute and Copenhagen Business School as consortia partners. The project has been funded by the Danish Agency for Trade and Industry. The present survey was developed and conducted in the period of 2001-2003.

## **The overall picture**

The general idea of this particular part of the survey is to capture information about supply chains; not "just" relationships between two partners in the supply chain, the so-called dyads. According to Mentzer et al. (2001) a supply chain consists of at least three entities that are directly involved in the upstream and downstream flows of products, services etc. from a source to a customer. All three (or more) entities must be oriented towards and actively participating in the processes in the supply chain in order to be talking about supply chain management. This is of course a strict requirement, which not many companies can fulfill even though they are striving for it.

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<sup>1</sup> Report according to Minutes from May 27, 2003.

The questions in the present survey were designed to capture the whole supply chain, thus including both the focal companies' upstream and downstream supply chain partners. This has resulted in knowledge about more than the usual dyadic relationships that is often reported in the literature.

In question 4.9 in the survey, the respondents were asked to answer a number of questions regarding their assessments of the performance of their supply chain partners, i.e. 2<sup>nd</sup> and 1<sup>st</sup> tier suppliers, and 1<sup>st</sup> tier customers. The questions should be answered on a 5-point Likert scale, from poor to excellent performance. The respondents also had the opportunity to check the "don't know" box.

Table 1, below, shows the means of the results in the Likert scale, and the number of responses for each question.

*Table 1: Supply Chain Performance Assessment. Means and number of responses*

	Customer	No. of responses	Supplier 1.	No. of responses	Supplier 2.	No. of responses
Product price	3,24	17	3,58	31	3,64	11
Product functionality	4,25	20	3,86	29	3,7	10
Conformance quality	4,24	17	3,72	29	3,6	10
Delivery reliability	3,89	18	3,55	31	3,22	9
Delivery speed	3,89	18	3,29	31	3,22	9
T2M, new products	3,21	19	3,24	25	3	8
Product design	3,65	19	3,21	24	2,89	9
Product customisation	3,7	20	3,41	27	2,5	10
After sales service	3,47	19	3,22	27	2,3	10
Product range	3,95	19	3,62	29	3,6	10
Order size flexibility	4,06	16	3,74	27	3,33	9
Company reputation	3,95	19	3,73	26	3,22	9
Environmental sound products	3,27	15	3,25	24	3,25	8
Others		0	5,00	1		0

First of all, the table shows that there are significantly more answers regarding the assessment of the 1<sup>st</sup> tier suppliers than of both 1<sup>st</sup> tier customers and 2<sup>nd</sup> tier suppliers. When looking at the 2<sup>nd</sup> tier suppliers, not more than 11 out of the 56 responding companies found it possible to answer the questions regarding the 2<sup>nd</sup> tier suppliers. A maximum of 20 companies responded on the questions relating to customers.

The picture differs remarkably when 1<sup>st</sup> tier suppliers are in question. 31 respondents answered three of the questions, i.e. product price, delivery reliability, and delivery speed. 29 responded on three questions, namely product range, conformance quality, and product functionality. None of the questions have been answered by less than 24 respondents except the category “Others”.

The results indicate that the idea of supplier evaluation is already happening at 1<sup>st</sup> tier level, but is almost none-existing at the 2<sup>nd</sup> tier level. When considering the upstream supply chain, less than half of the respondents actually assess their customers, not even to themselves.

What these observations suggest is that supply chain management is still barely implemented among the responding companies. The positive conclusion is that there is still a large potential for improvement among the companies.

*Figure 1: Supply Chain Performance Assessment. Means: Customers, 1<sup>st</sup> tier suppliers and 2<sup>nd</sup> tier suppliers.*

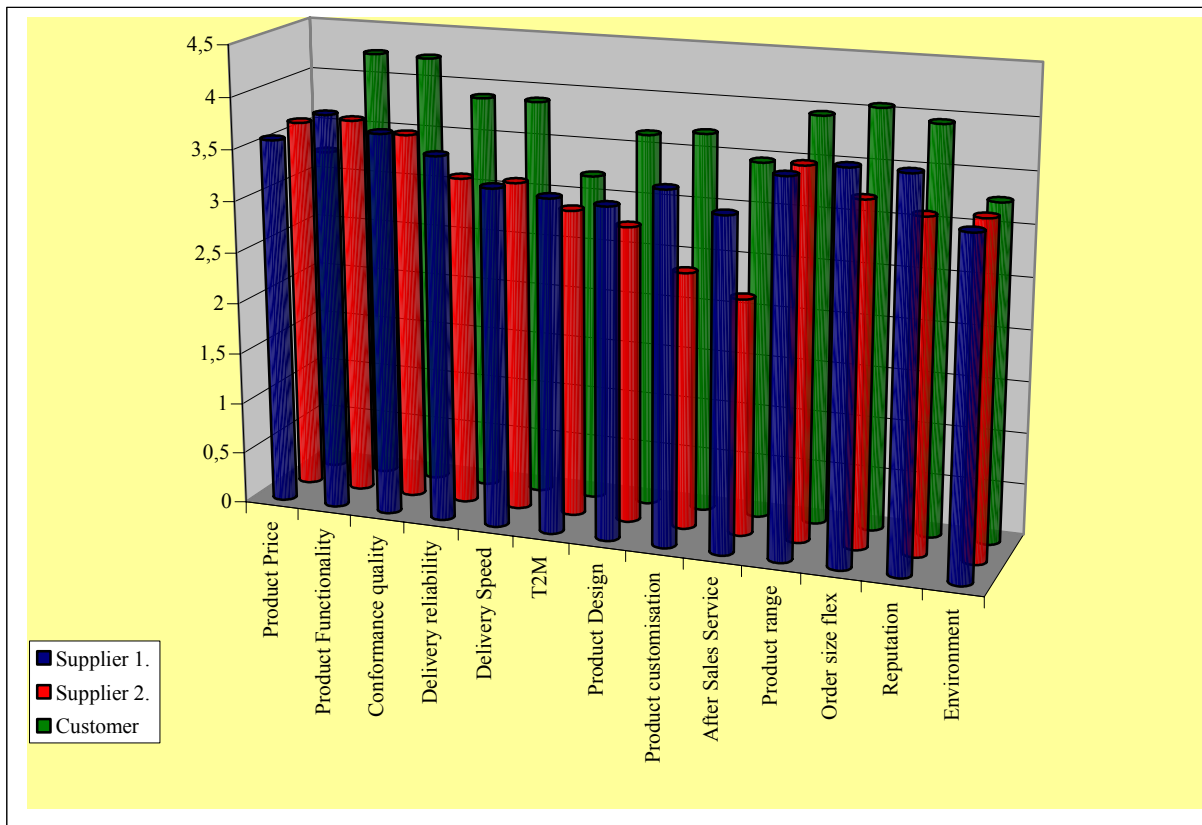


Figure 1 illustrates that the respondents are quite satisfied with their supply chain. However, it is interesting that customers are ranked remarkably higher than the suppliers and especially the 2<sup>nd</sup> tier suppliers on almost all variables. This indicates that the customer really has become “the king”, who should be served and not really assessed. On the other hand, the suppliers must serve the focal company. Furthermore it is interesting to note that 2<sup>nd</sup> tier suppliers in general are assessed worse than 1<sup>st</sup> tier suppliers, which is illustrated in figure 3.

The result brings forward the idea that the assessments are based on perception rather than actual evaluation. Unfortunately, this particular survey does not reveal any information about the way the 2<sup>nd</sup> tier suppliers are managed: is it by the focal company or by 1<sup>st</sup> tier suppliers?

According to the theory on supply chain management, a good supply chain is essential, as companies are no longer competing against each other on the company level, but rather on the supply chain level (Christopher, 1998; Lambert & Cooper, 2000, Christopher & Towill 2000).

Figure 2: Supply Chain Performance Assessment: Customers vis-à-vis 1<sup>st</sup> tier suppliers

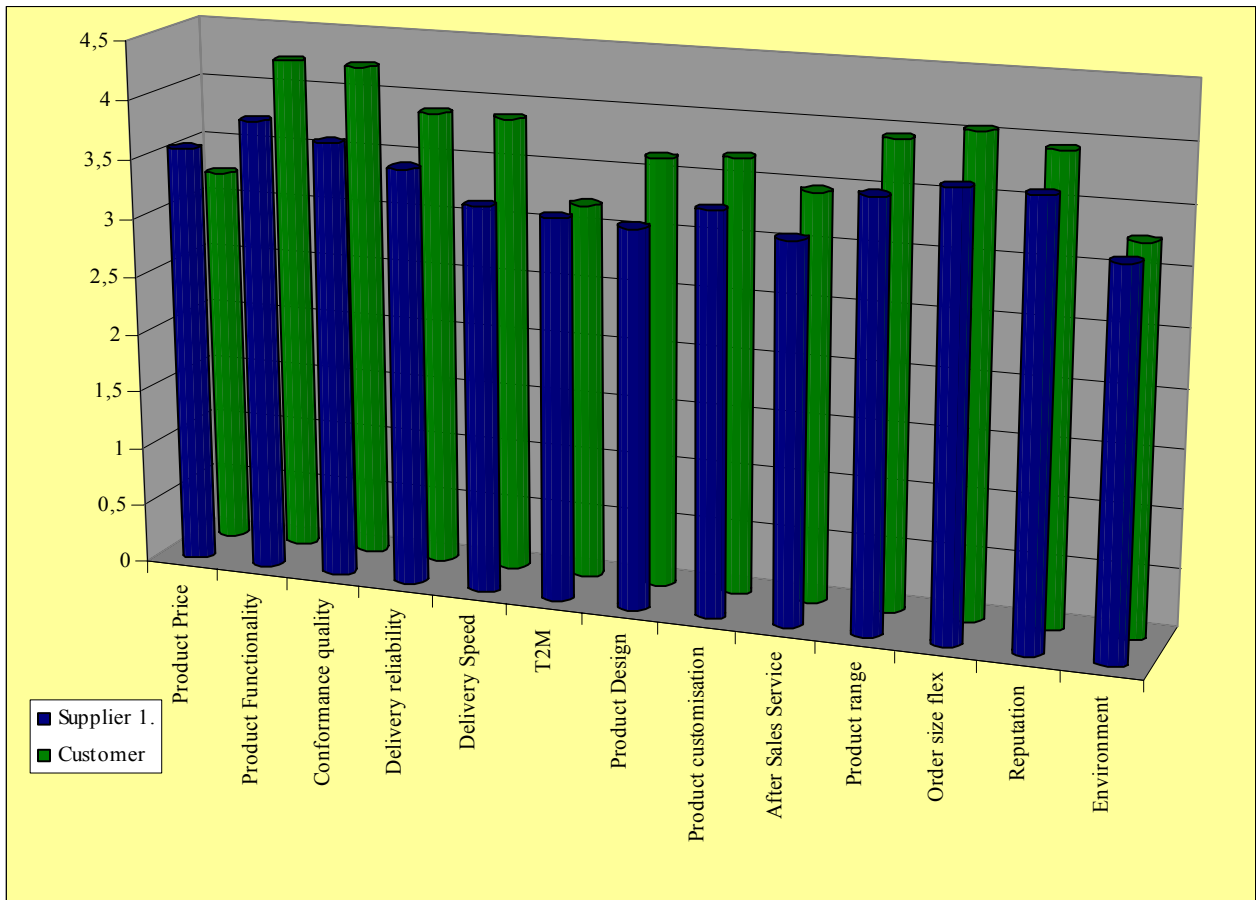


Figure 3: Supply Chain Performance Assessment: 1<sup>st</sup> tier suppliers vis-à-vis 2<sup>nd</sup> tier suppliers.

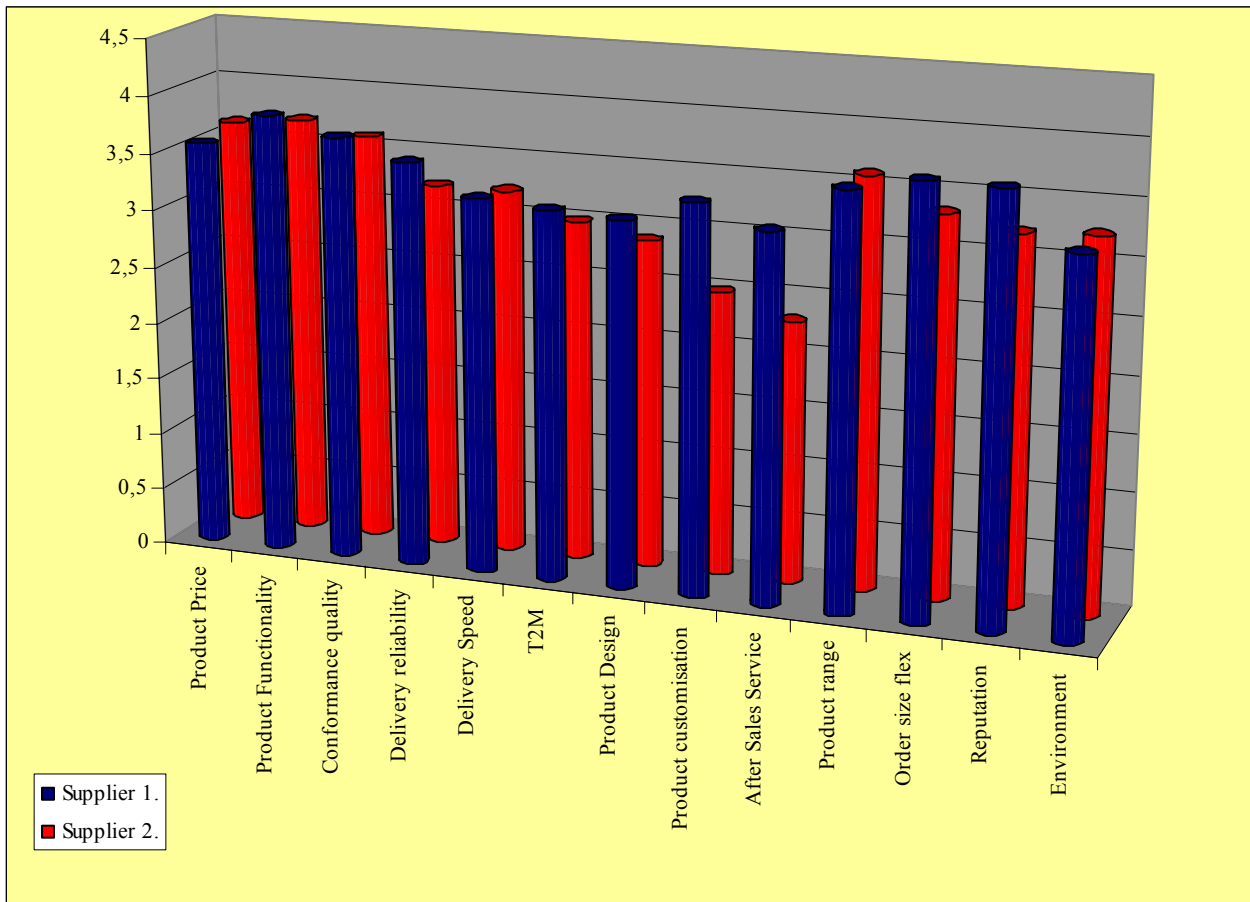


Figure 4 below shows the distribution of responses, customers and 2<sup>nd</sup> tier suppliers versus 1st tier suppliers. Once again, this figure shows that customers are ranked higher than both 1<sup>st</sup> and 2<sup>nd</sup> tier suppliers. In addition, the 2<sup>nd</sup> tier suppliers are ranked surprisingly low on the variables product customization and after sales service/support, when compared to the ranking of all the other variables.

A possible reason is that the respondents feel like they are let down on these variables. Another explanation may be the fact that these 2<sup>nd</sup> tier suppliers are raw material producers, who mass-produce, and sell commodity products that by definition are not customized. The respondents may not want to buy customized products by these suppliers or they cannot because of the relative low degree of market power many producing companies will have vis-à-vis these very big producers of raw material.

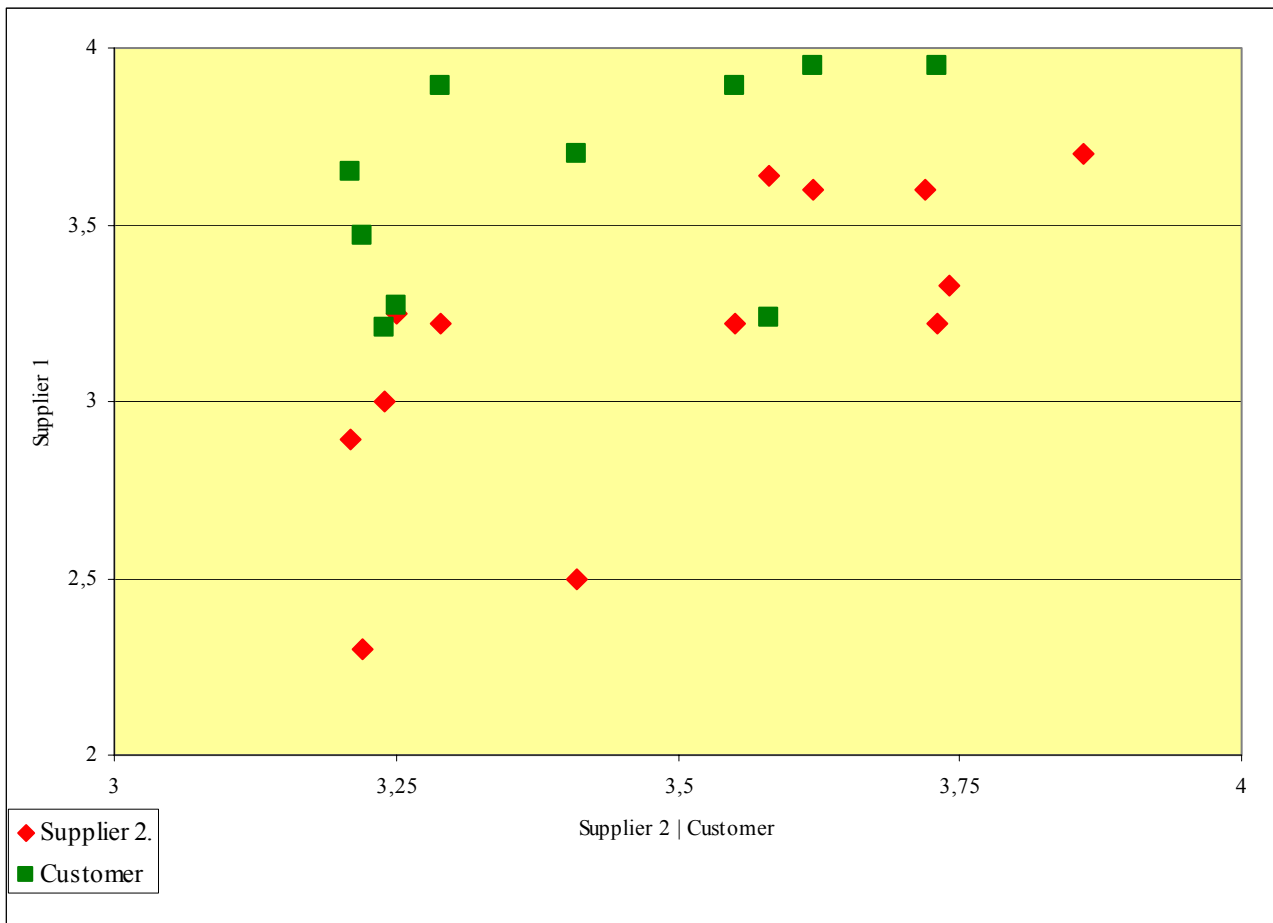
Another reason might be that especially those two parameters are difficult to assess for the focal company, as the 1st tier supplier would typically assess both after sales service and product customization. In addition, it might indicate that the focal company has difficulties managing the 2<sup>nd</sup>



tier suppliers, as a result having a limited amount of information on the performance of these suppliers, and thus just answering the question to the best of their knowledge.

One of the other parameters that fall out from the "crowd" is the customer in product price (seen in the middle of the diagram). This might indicate that there is a power gap between the players in the supply chain.

Figure 4: Distribution of responses.



**Benchmarking: Minimum and maximum values**

The results we hitherto have shown are based on means, which to a certain degree shows the performance level on the various parameters. However, it is furthermore very interesting to assess the level of especially "best-in-class", but certainly also "worst-in-class".

Figures 5, 6 and 7 below illustrate "best and worst in class" respectively for the customers, 1<sup>st</sup> and 2<sup>nd</sup> tier suppliers of the respondents, i.e. the focal company. Once more, the respondents are satisfied with their customers and 1<sup>st</sup> tier suppliers, where the scores are the highest possible on the "best in class"-illustration. This is not quite the situation for the 2<sup>nd</sup> tier suppliers (figure 7); even so the situation here is not totally unacceptable.

Regarding the "worst in class" examples, it seems like all parties are "less worse" in the categories that has to do with the traditional logistics parameters; conformance quality, delivery reliability and delivery speed. This is an indication of the areas where companies have concentrated their efforts on for some time, whereas the situation is different for the parameters after sales service, product customization, product design, and time to market (T2M). Should this be a general tendency among companies, these parameters could very well be the next area of effort in their supply chain management.

*Figure 5: "Best and worst in class": Customers*

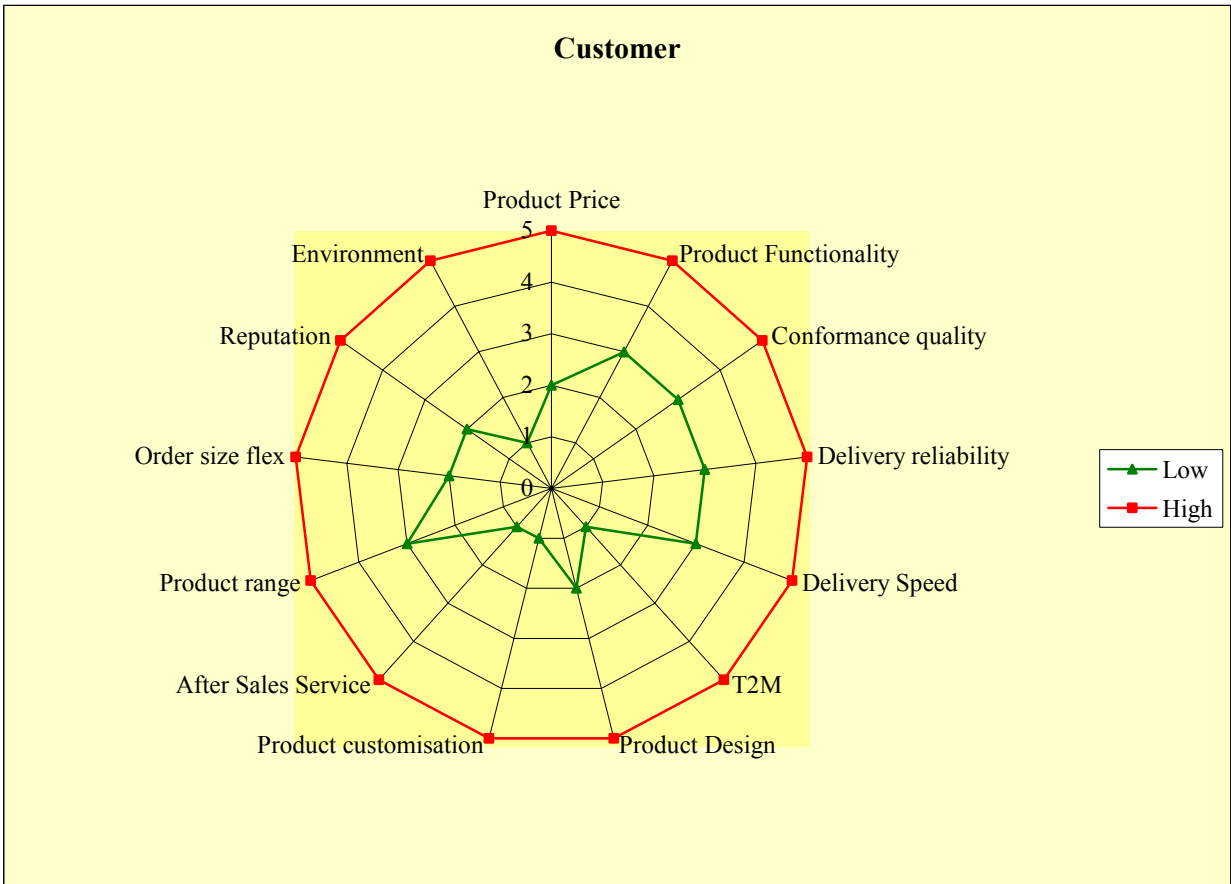


Figure 6: “Best and worst in class”: 1<sup>st</sup> tier suppliers

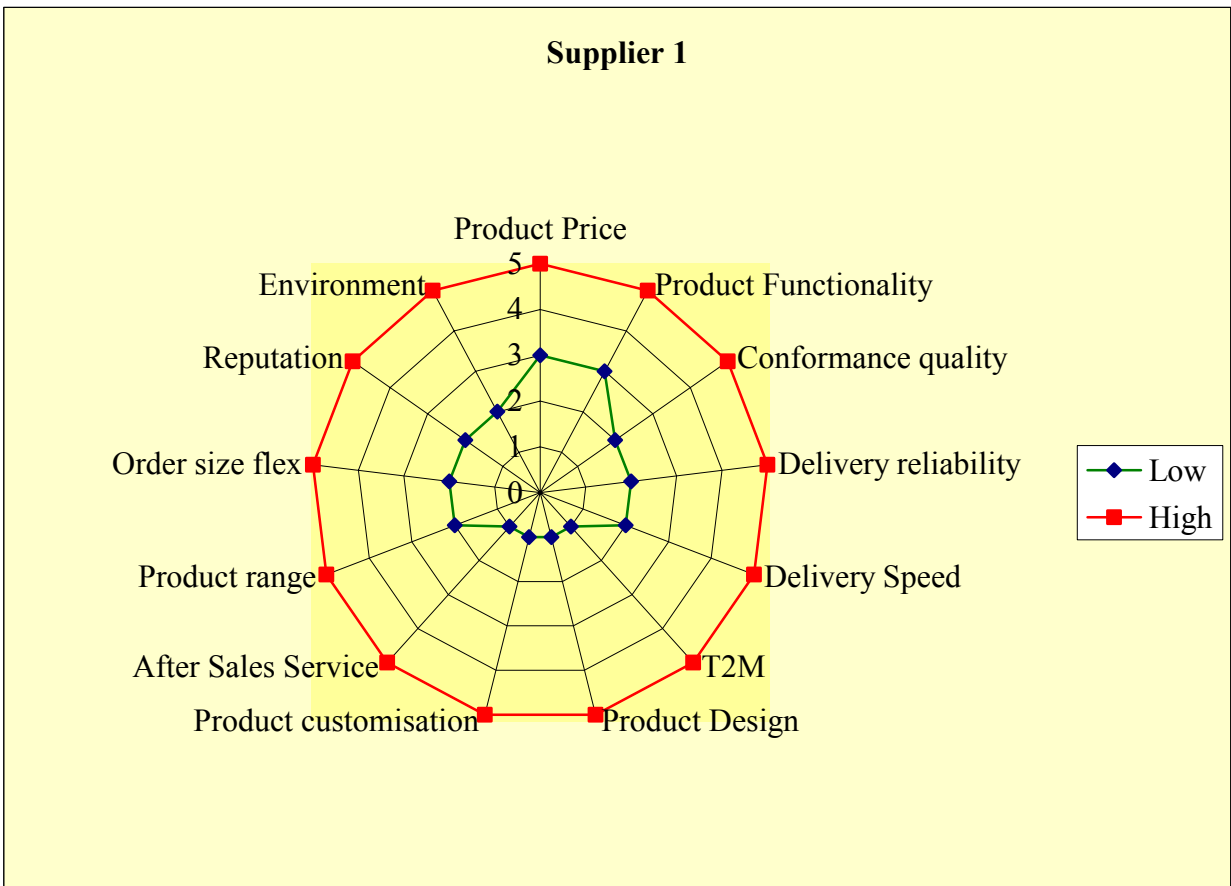
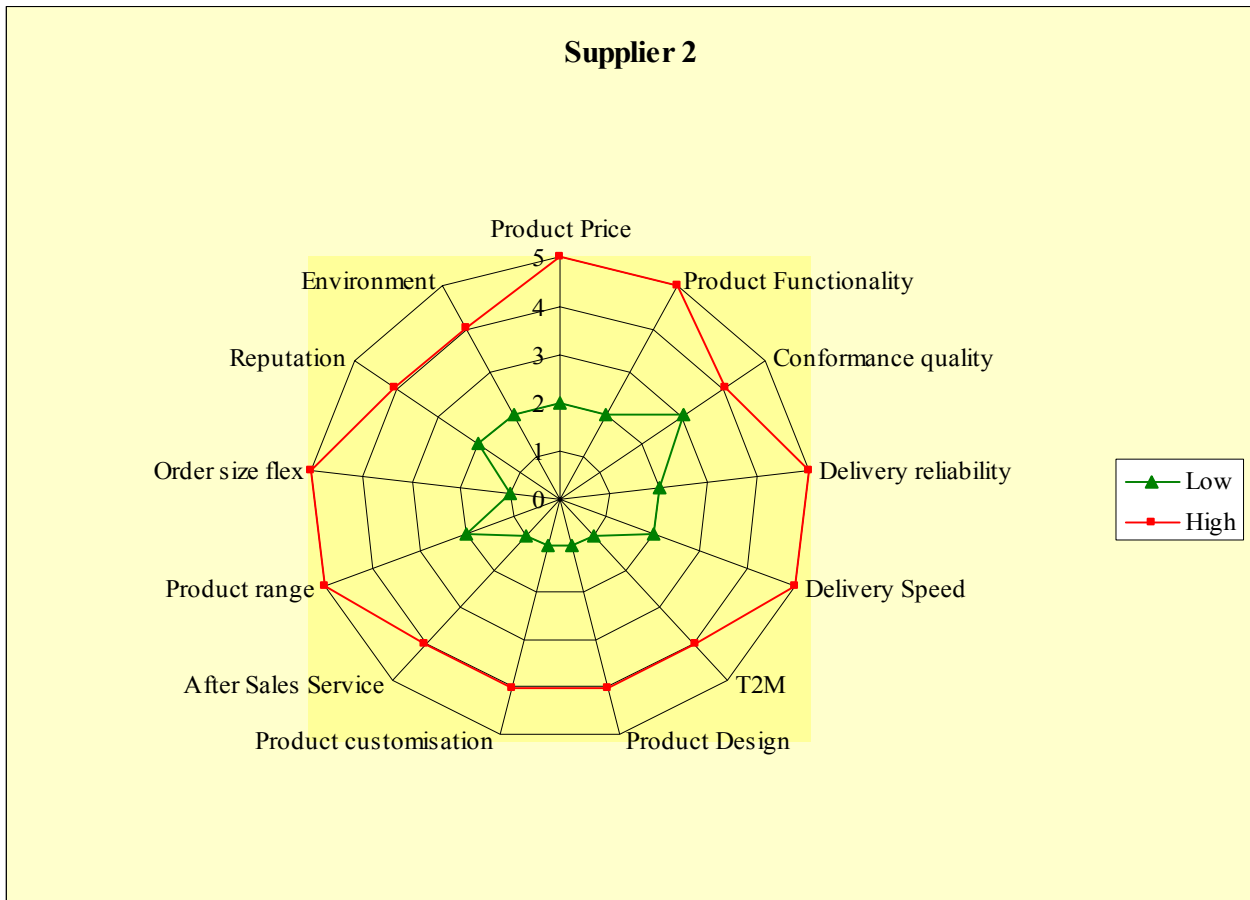


Figure 7: “Best and worst in class”: 2<sup>nd</sup> tier suppliers



**Conclusion**

The conclusion to be drawn here is that in general, the companies are quite satisfied with their supply chains, especially when it comes to the close co-operation partners. The customers are ranked significantly higher than the 1<sup>st</sup> tier suppliers, but these suppliers are on the other hand also assessed well. A possible explanation of the good performance of 1<sup>st</sup> tier suppliers could be that the respondents, i.e. the focal companies, have already worked for a long period of time with these partners in order to improve supply chain performance.

Turning to the 2<sup>nd</sup> tier suppliers, the picture is somewhat blurred. Not many respondents answered that part of the question, which means that either they do not know about this link, or do not find it relevant, the reason behind being the absence of 2<sup>nd</sup> tier suppliers in their supply chain or they let 1<sup>st</sup> tier suppliers manage that part of the supply chain. In the few cases where the question was answered on this issue, it seems to show quite some frustration about 2<sup>nd</sup> tier suppliers. The possible explanation to this may be that these suppliers are large raw material suppliers against whom the respondent companies do not have any market power.

On last remark shall be that, in general, there have not been many answers to the supply chain questions, which indicates that there is still quite a bit of confusion about what supply chain management really is, and who should be responsible for it in the companies. After all, supply chain management is more than logistics (Cooper, Lambert and Pagh, 1997) as it has to do with the creation of the strategic, external relations with companies in the supply chain.

## ***References***

Christopher, M.(1998): *Logistics and Supply Chain Management. Strategies for Reducing Cost and Improving Service*. 2nd ed., Pearson Education Limited, Harlow.

Christopher, M. & Towill, D. (2000): Supply Chain Migration From Lean and Functional to Agile and Customized. In: *Supply Chain Management: An International Journal*, Vol. 5, No. 4, pp. 206-213.

Cooper, M. C. et al. (1997): Supply Chain Management: More Than a New Name for Logistics. In: *International Journal of Logistics Management*, Vol. 8, No. 1, pp. 1-14.

Lambert, D. & Cooper, M. (2000): Issues in Supply Chain Management. In: *Industrial Marketing Management*, Vol. 29, No. 1, pp. 65-83.

Mentzer, J. T. et al. (2001): Defining Supply Chain Management. In: *Journal of Business Logistics*, Vol. 22, No. 2, pp. 1-25.

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