E-Supplement to Chapter 5 Sourcing Strategy

Case Automotive Sourcing Strategy in a Three-Stage Supply Chain

An automotive company sources seats as complete modules from a Tier 1 supplier. The Tier 1 supplier needs about 30 components to assemble the seats. These components come from more than 20 different Tier 2 suppliers. The process is organized as follows (see Fig. E-5.1).

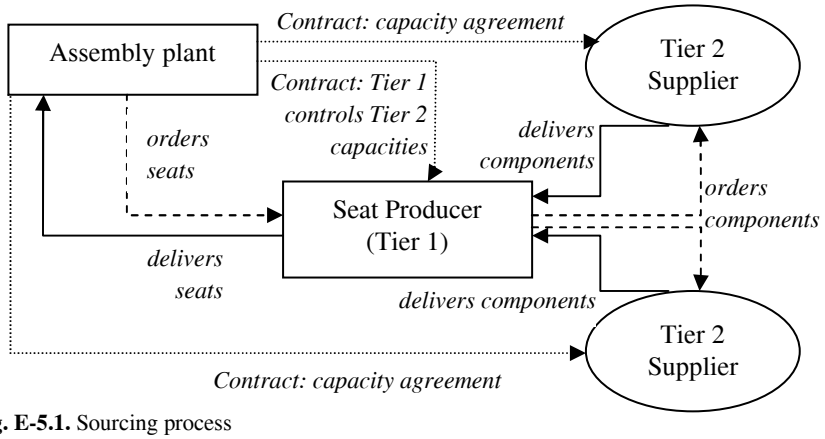

Fig. E-5.1. Sourcing process

The assembly plant orders and gets the seats from the seat producer. The seat producer orders and gets the components to assemble the seats from Tier 2. The Tier 2 component suppliers are selected by the assembly plant. The assembly plant and Tier 2 suppliers have an agreement that sets up the capacities of the Tier 2 suppliers. The seat producer is in charge of operative capacity control (i.e., placing orders to utilize the Tier 2 capacities) at Tier 2 suppliers.

In practice, in the cases of demand increase, a lot of material shortages have been encountered.

Identify problems in this process!

1) It can be observed from Fig. E-5.1 that the seat producer orders the components from Tier 2 suppliers but has no power to influence the deliveries. Why? (Hint: consider the existing contracts)
2) What happens if the assembly plant will need more seats? (Hints: Does the assembly plant control the capacities at Tier1? Can the Tier 1 increase the seat production quickly if the capacities at Tier 2 are set up in the agreement with the assembly plant?)
3) What can be improved in this process? (Hint: think about the alignment of contracting, capacity design and capacity control decisions)

Example Spend Analysis Task

As an example, Table E-5.1 represents an example for a potential spend analysis.

Table E-5.1. Initial data for spend analysis

Nr.	Company Name of Supplier	Sourcing Object	Total Spend Volume [k€] in Year	Total Spend Volume [%] in Year
1	A	interior box	2658	5,51%
2	B	metal subassembly	452	0,94%
3	C	metal brackets	256	0,53%
4	D	engine	17456	36,17%
5	E	metal plates	235	0,49%
6	F	screws	24	0,05%
7	G	electric subassembly	569	1,18%
8	H	metal frame	365	0,76%
9	I	metal bars	357	0,74%
10	J	wooden box	1259	2,61%
11	K	metal housing	3569	7,39%
12	L	chassis	7541	15,62%
13	M	paint	236	0,49%
14	N	electric items	25	0,05%
15	O	large screws	48	0,10%
16	P	nuts	12	0,02%
17	Q	big bolts	36	0,07%
18	R	exterior box	2652	5,49%
19	S	metal brackets	142	0,29%
20	T	glue	2	0,00%
21	U	big bolts	36	0,07%
22	V	metal plates	266	0,55%
23	W	metal plates	87	0,18%
24	X	metal brackets	95	0,20%
25	Y	bolts	14	0,03%
26	Z	gearbox	9871	20,45%
			Total Spend [k€] in Year	
			48263	**100,00%**

In Table E-5.1, 26 suppliers are shown (supplier A, B, … Z) with their corresponding order volume for the recent year. That means it shows what we have ordered from (respectively spent with) each supplier the previous year. The data for each supplier is given but the values are not structured or sorted. For the analysis it needs to be sorted as the initial list is not very user-friendly, thus it needs to be adjusted for the purpose of the analysis, evaluation and interpretation of the unstructured data.

In step one, the sum of the spend volume needs to be created (the total spend volume is 48,263 k€). This is already useful information, because this total spend sum can be compared to previous years in order to identify overall trends (increasing, decreasing or stable spend volumes and to map this against revenues for example). Then the data should be sorted by the company representing the largest spend volume down the company with the smallest amount spent with. Subsequently, it is useful to determine what the spend volume means in terms of percen-

tage related to the total spend volume. For example with supplier Z we were spending 9,871 k€ in the respective year which equals 20.45% of the total spend volume. This needs to be done for all the data sets.

In Table E-5.2, it is indicated that only the Top 3 suppliers (which are 12% of all our 26 suppliers) the spend volume sums up to 72,25%. This sounds amazing, but also in reality such correlations are repeatedly found. When we then look at the next six suppliers, we can see that these represent 23% of all our 26 suppliers and the spend volume equals 23.12%. Finally, with the remaining 17 suppliers (= 65% of the supplier base) we only spend in total 4.63% of our purchasing budget.

Table E-5.2. Results of the spend analysis

Cluster	Number of Suppliers	Percentage of Suppliers	Company Name of Supplier	Sourcing Object	Total Spend Volume [k€] in Year	Total Spend Volume [%] in Year	Percentage Spend Volume per Cluster
Cluster # 1	3	12%	D	engine	17456	36,17%	
			Z	gearbox	9871	20,45%	**72,25%**
			L	chassis	7541	15,62%	
Cluster # 2	6	23%	K	metal housing	3569	7,39%	
			A	interior box	2658	5,51%	
			R	exterior box	2652	5,49%	
			J	wooden box	1259	2,61%	**23,12%**
			G	electric subassembly	569	1,18%	
			B	metal subassembly	452	0,94%	
Cluster # 3	17	65%	H	metal frame	365	0,76%	
			I	metal bars	357	0,74%	
			V	metal plates	266	0,55%	
			C	metal brackets	256	0,53%	
			M	paint	236	0,49%	
			E	metal plates	235	0,49%	
			S	metal brackets	142	0,29%	
			X	metal brackets	95	0,20%	
			W	metal plates	87	0,18%	**4,63%**
			O	large screws	48	0,10%	
			Q	big bolts	36	0,07%	
			U	big bolts	36	0,07%	
			N	electric items	25	0,05%	
			F	screws	24	0,05%	
			Y	bolts	14	0,03%	
			P	nuts	12	0,02%	
			T	glue	2	0,00%	
	Total Suppliers				**Total Spend [k€] in Year**		
	26				**48263**	**100,00%**	**100%**

Managing a large number of suppliers is quite time and labor consuming. That is the reason, why such a spend analysis should provide some indication for a better management of the supplier base. What might be an approach would be to evaluate the sourcing objects of the suppliers in cluster #3. The idea might be to assess, if it would be possible to reduce the number of suppliers by ordering more of a similar sourcing object from just one supplier (e. g. why is it necessary to have three suppliers for metal plates and three for metal brackets?).

The positive effect of such volume bundling (besides reducing the number of suppliers) is also that one expects to get better conditions, i. e. lower prices from the vendor who will provide us with metal plates in future. For the partners in cluster #2 a similar approach as stated before might be taken to reduce the number of

suppliers. Another option might be, that there could be a vendor who has maybe demonstrated great improvements in the past, who might be willing to do more and who maybe also has the capability to increase the scope of work. In such a case it could be an option to develop a partner from cluster #2 to become a module or system supplier in future. That means that company would then organize the sourcing of small items or products in order to create pre-tested subassemblies or modules.

This would be an approach to reduce the total supplier base and it would also contribute to a reduction of the sourcing complexity on the side of the ordering company. In the case of the vendors in cluster #1 the emphasis will be placed on keeping a good relationship and to develop systems together. So here the strategic aspects of strong supply chain collaboration need to be managed. These are just few examples of potential actions that might be the result of a conducted spend analysis. A similar approach might be taken, if you would identify that multiple suppliers for similar articles are based in different geographical locations but that they will ship their goods to just one destination. Also here one might evaluate these findings in order to develop a suitable sourcing strategy.

Referring back to Table E-5.1, it is obvious that there are certain groups of supplies. The table below only focuses on these commodities, i. e. the spend data etc. have been excluded for simplification reasons. In Table E-5.2, the initial data sets have been grouped according to reasonable commodities. There are for example ten sourcing objects related to metal supplies, e. g. metal brackets or metal plates. The sourcing team should evaluate, if it would make sense to create a commodity for “metal and subassemblies”. Then they should assess, if one or only few suppliers would be capable of providing the required components. In our example, the team should target the substitution of the ten original vendors by just three. This would significantly contribute to a simplification of the sourcing process. The same should also be done with the bolts or electrical subassemblies.