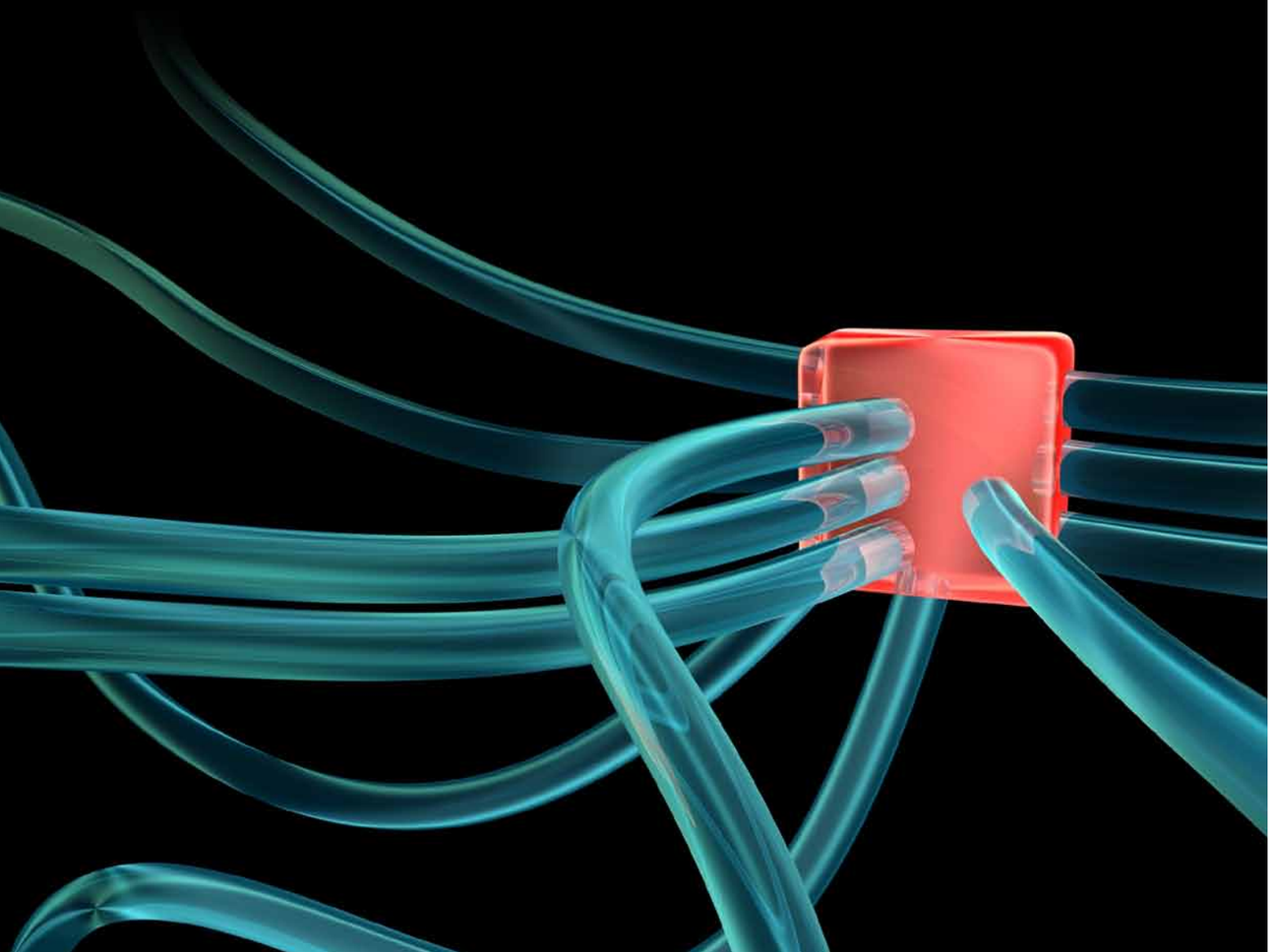
Sourcing Hub



By Anupam Agrawal, Luk N. Van Wassenhove and Arnoud De Meyer

Managing the suppliers of your suppliers may be a lot of work, but there is plenty of value in unlocking the supply chain

Active management of upstream sourcing is often said to add great value to a firm's supply chain. When a firm brings its suppliers and suppliers' suppliers together, value is created by pooling knowledge: information about demand, process improvements, raw material sourcing, and design complexity reduction is exchanged.

In most firms, there is a tendency to focus only on the immediate suppliers, as reducing the number of suppliers with whom they conduct business would result in less coordination with fewer companies, and hence reduce costs and improve profitability. Moreover, an increased focus on core business activities and the outsourcing of non-core activities has also resulted in firms slowly distancing themselves from some of the value in their supply network. However that may not be the best approach as TDV[i], a South Korean commercial vehicle manufacturer discovered.

Known in the industry as an automotive original equipment manufacturer (OEM), TDV manufactures products or components that are purchased by another company and retailed under that purchasing company's brand name. Because of the nature of its business, TDV has to coordinate with a large number of direct suppliers for items such as spark plugs, tyres, chassis, and hundreds of other parts that make up a motor vehicle. These direct suppliers in turn deal with their own raw material suppliers, giving rise to a fairly complex upstream supply network.

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In a four-year empirical investigation into the raw material supply chain practices of TDV conducted by Arnoud De Meyer of Singapore Management University, Luk Van Wassenhove of INSEAD, and Anupam Agrawal of the University of Illinois[ii], it was found that TDV had developed relationships with its suppliers and suppliers' suppliers, and was actively managing its raw material supply chain.

But is such management of the raw material supply chain necessarily beneficial for firms? And if there are two options available to a firm for upstream sourcing–either to supply raw material directly to their suppliers, or else to build a systematic collaborative process that brought the direct suppliers and the raw material suppliers together–which one would be most beneficial for all, the OEM, the component suppliers and the raw material supplier?

Benefits of direct raw material procurement

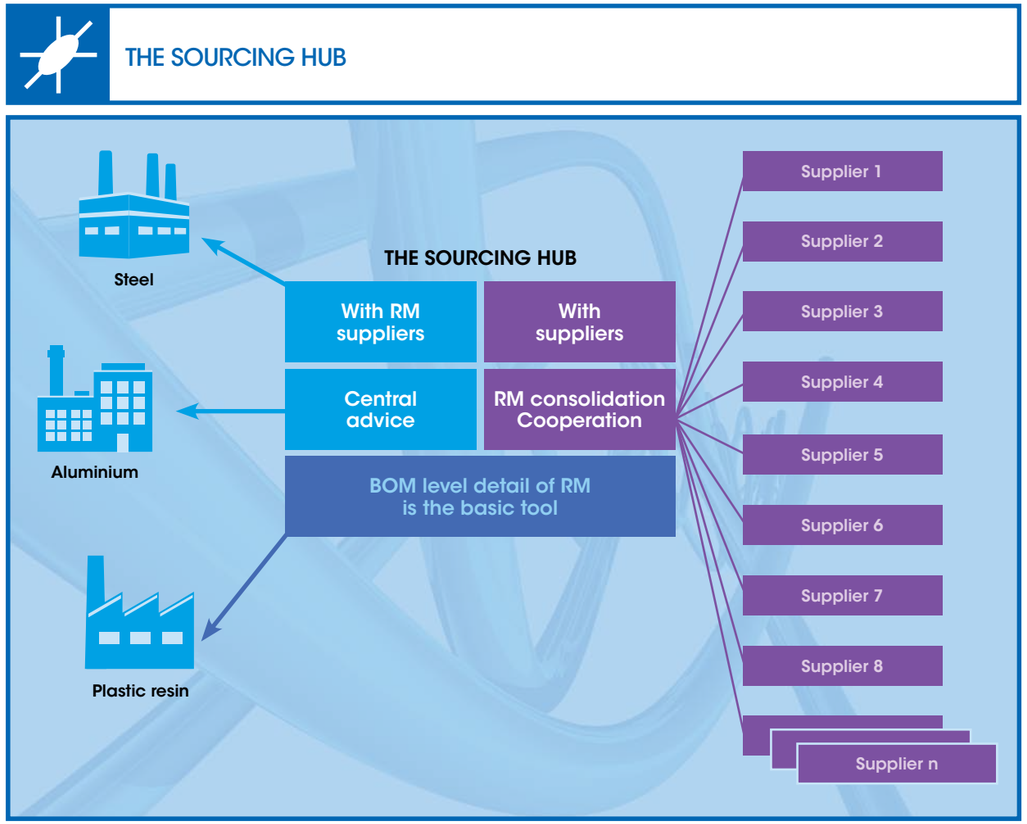
TDV has 23 suppliers supplying components for which steel is the major raw material. Instead of letting these 23 suppliers source for steel individually through the typical traditional decentralised raw material procurement and sourcing set-up, TDV purchased steel as a single buyer from the steel mill and supplies the metal to all 23. It also managed the logistics, physical supply, inventories of

raw materials, and disposal of scrap/offcuts of steel generated in the manufacturing process at these component suppliers.

TDV's contracts with its component suppliers stipulate that suppliers do not make any profit from raw materials, even if they buy the materials themselves and do not use the steel provided by TDV. Therefore, there is no financial incentive for component suppliers to manage raw material transactions via the addition of a profit margin; and given the additional benefit of not having their capital locked up in raw material procurement, it makes more sense for them to let TDV deal with such issues.

On the other hand, there is a seven percent difference between the supply prices of steel to OEMs and to other buyers. Interestingly, it was expected that the difference would be due to the standard volume purchasing benefit, where the OEM buys more and gets a lower price – however, this was not the case. The authors compared the price of steel provided to TDV, and another firm Hyundai, which produced cars in much higher volumes; and found that there was in reality very little difference in the price both firms paid for steel. It appeared that lower volumes did not matter–what appeared to be important was the fact that TDV was an OEM. When asked to explain the seven percent price difference, steel supplier executives emphasised the importance of long-term relationships and managing a stable production schedule over a price premium. One executive said, "Costs are not dependent on individual customer volumes after a base level. As long as firms procure standard products from us, our costs are really the same for TDV as for Hyundai... Costs are reduced by having a detailed plan and levelled production–that only comes from our OEM customers, because their plans do not vary too much for the next few months."

Moreover, by having a relationship with the OEM, or rather the direct customer's customer, the steel company is able to reduce many of the complications that routinely occur due to derived demand and its effect on the supply chain. That is, for the raw material supplier, steel in this case, having greater visibility of demand further down the supply chain reduces the opportunity for bullwhip demand problems.



The Sourcing Hub

In the initial years TDV managed its supply chain set-up through the direct raw material procurement system mentioned above–which helped the firm run its supply chain at lower costs, but it was very much a transactional relationship. However, over time, the firm developed a far more collaborative process, focused on developing relationships with its suppliers and raw material supplier. TDV now manages raw material prices, logistics, and other related transactions via a Web-based system in a department the authors refer to as the "sourcing hub". Physically, the sourcing hub is deployed as a separate department within TDV, and focuses on raw material sourcing and management. This helps in developing upstream relationships with both raw material suppliers and direct component suppliers. It also enables building cooperation between suppliers by increasing the understanding of raw materials sourcing, and further appreciating the complexity of the entire supply chain. This Web-based information is used by component suppliers as well as raw material suppliers, and is continually updated.

On an annual basis, TDV and its suppliers come together and develop the annual production plan. From this meeting, a detailed raw material plan is produced, from which quarterly and monthly plans are drawn on a rolling basis.

On a day-to-day operating level, plenty of information is shared between the firm, the suppliers, and the suppliers' suppliers. TDV manages all the information on the sourcing hub, which has the kinds of information necessary to help keep its suppliers up to speed about the production schedule: a production plan for the coming months, new models, changes in drawings, quantity of components required, and the quantity and grades of raw materials required. This information is used by component suppliers as well as raw material suppliers, and is continually updated. Moreover, as a result of managing all this information, the sourcing hub has details of raw materials required for each component as well as details of current pricing between TDV and its raw materials suppliers. Information at the bill of material (BOM) level includes complete information about the raw materials, components, and assemblies, as well as their respective quantities to manufacture an end product. This enables the company to have a clear picture of what raw materials are needed, the quantity and grade of raw materials required, as well as changes to the production schedule.

There are, of course, costs involved in setting up and running a system such as the sourcing hub: both start-up and on-going. Start-up costs relate to the detailing of raw material at the component level and establishing a material database so that the raw material supply is streamlined. To do so, the OEM has to collate accurate raw material information for each component. Most OEMs do not have such information since it takes time and money to build the necessary database–but once in place, the database is an invaluable source of raw material-related knowledge. On-going costs consist of managing the sourcing hub–linking supply with the payment cycle to the raw material and component suppliers, auditing the inventory etc. At TDV, the sourcing hub requires only two full-time employees and part-time support from one person in the finance department for a single raw material, for a single country.

> Managing raw material sourcing is more beneficial for firms that have higher raw material content in their costs, as well as a large number of suppliers.

When does the Sourcing Hub work?

Using these empirical observations of TDV as assumptions for modelling a setup with a single buyer (in this case TDV), many component suppliers, and a single raw material supplier–the authors' explored two options: first, the buyer procures the raw material and supplies it to the component suppliers; and second, the buyer creates a sourcing hub.

It was found that managing raw material sourcing through the latter option of a sourcing hub setup is more beneficial for firms that have higher raw material content in their costs, as well as a large number of component suppliers – just like TDV does.

Moreover, as raw materials become more and more important in sourcing, building cooperative relationships with component suppliers and the raw material supplier via a sourcing hub also becomes increasingly beneficial for all the agents. Furthermore, the agents would benefit more from a sourcing hub as information asymmetry increases in the supply chain.

The authors' empirical research suggests that firms can achieve between three to six percent savings in their cost of goods by deploying initiatives such as the sourcing hub. This can be a source of great competitive advantage, considering that raw material costs amount to over 50 percent of the cost of goods sold for automotive OEMs, and the margins on the auto products are very low–the industry-level net profit estimate for auto industry is 3.5 percent (Damodaran 2013[iii]). While the automobile industry is an obvious potential beneficiary, other industries such as footwear, furniture, aerospace

and appliances could also extract value by lending themselves to the sourcing models described earlier. On the other hand, sourcing hubs may not be very useful for industries such as electronics, information technology, chemicals, or entertainment.

Overall, it is those scenarios where raw material supplies are monopolistic (or oligopolistic) and relatively stable, and where buyers have a larger dependency on raw materials in their cost of goods sold, that the deployment of a sourcing hub can help firms create value from upstream sourcing and recapture some of the value that has been lost in the race to become a lean manufacturer. By building a relationship with raw materials suppliers, the OEM encourages sharing of demand, production, and design information. This leads to improved sourcing processes thereby lowering costs and boosting profitability.

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So why then are these models not more widely practiced? One answer could be that when an OEM procures raw materials directly for its suppliers, such an arrangement benefits the component suppliers. However the OEM will only benefit if it keeps the transaction costs of procuring the raw material supplies lower than the potential benefit arising from such a direct purchase. Otherwise, the OEM loses. Additionally, when there are many possible raw material suppliers or the choice of suppliers is subject to significant change over time, the return to the OEM of developing the infrastructure and relationships required to deploy a sourcing hub might not be sufficient to justify the investment. But perhaps most of all, an OEM needs to invest time and money to create a material database at the component level. This entails revisiting the bill of material for all components–a gruelling task for any organisation.

"If a new material grade has to be established for a new component", TDV sourcing engineers told the authors, "the process is longer, since TDV and the steel supplier need to agree on the new requirement and its price, as well as supplies. Additional IT work is also involved. Since this additional work is cumbersome, there is therefore an inherent pushback to any frivolous increase in the number of basic raw material grades being used."

However, revisiting the bill of material is the only way to find out answers to questions such as: (a) which current products of an OEM require a particular raw material? (b) what quantities of this raw material are needed at the firm level? (c) what is the grade of the most important raw materials needed at the firm level? While this is an exhaustive and time-consuming exercise, it is one that better enables management to holistically plan the needs of the sourcing hub and understand potential opportunities as well as vulnerabilities.

Moreover, while other firms may not follow the approach taken by TDV saying that this is not their core competency or core process–which is to build/assemble products – the reality is that such a sourcing model would enable the firm to insulate its core competency by extending beyond the immediate suppliers and ensuring that there are no disruptions to their core process.

How do managers go about this?

To begin with, managers need to focus on the key raw materials only. It would not be wise to manage the above process for *all* raw materials. Instead, they should perform some kind of a 20/80 analysis, and decide where it would be the most cost-efficient to do so.

The OEM firms should also analyse its bill of materials in detail, to see who are the main first-line suppliers. These are the ones that then need to be convinced about the value that is added by being supplied to by the sourcing hub. The OEM managers would need to get some alignment from these first-line suppliers on the concept.

They would need to engage in a negotiation with the supplier of the raw materials, in order to show them the non-financial benefits of stability in demand. It is only at this stage that the process will culminate in creating a sourcing hub.

In the case of TDV, its management of relationships with direct suppliers and upstream raw materials suppliers resulted in a far more efficient supply chain. Bringing their suppliers together at the sourcing hub, and the resulting cooperation between them, was clearly beneficial for not only TDV, but also its suppliers and the raw material suppliers.

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References

[i] The name of the firm has been altered to reflect a confidentiality agreement with the firm. Raw material supply chains and the variables of study, such as input component prices, are considered extremely confidential by firms.

[ii] Agrawal A., L. Van Wassenhove and A. De Meyer, 2014, "Managing value in supply chain – Case studies on the Sourcing Hub Concept", California Management Review 56 (2) *and* Agrawal A., L. Van Wassenhove and A. De Meyer, 2014, "The Sourcing Hub and upstream supplier networks", accepted for publication in Manufacturing and Services Operations Management.

[iii] Damodaran A., 2013, "Margins by sector", http://pages.stern.nyu.edu/_adamodar/New_Home_Page/datafile/margin.html.