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KNOWLEDGE TRANSFER THROUGH THE SUPPLY SYSTEM: DOES MODULARITY MAKE IT EASIER?

Thaise GRAZIADIO and Mauro ZILBOVICIUS
Departamento de Engenharia de Produção[1]
Escola Politécnica – Universidade de São Paulo/Brasil

The relevance of knowledge and technology may explain why companies avoid sharing information with their competitors and sometimes even with partners. In the auto industry, a very competitive environment, some of these assets may be acquired in the market, but others are intangible and unavailable. However, since modularity and outsourcing became strategic issues for assemblers, and as outsourcing means basically to transfer activities and responsibility to suppliers (upstream), the hierarchical structure of the supply chain tends to be more interdependent. The question raised in this paper is whether modularity makes the information flow easier.

To explore this argument, we present a comparative study between two plants of a single assembler - one is conventional and the other one is modular. First we describe the supply system of both plants in order to identify their similarities and differences among them. Then, we try to verify if the modular system offers more opportunities of knowledge transfer than the conventional plant. If the argument is true, it is important to understand the impact on the tiered suppliers. Besides the assembler, the research focused on suppliers positioned in two different levels of the supply chain: the sistemists and the components producers.

More than modularity, the level of outsourcing in the modular plant is a major factor for distinguishing between the two of them. The modular plant presents a higher level of

[1]For contact: thaise@usp.br and mzilbovi@usp.br

outsourcing, either during the development of the car or in its production. Some activities are: pre-assembly of several complete modules, pre-processed raw material, delivery of small components in a special package and in the exact point of use on final line. All deliveries are planned to operate in JIT or JIS basis. In respect of the modules, even though some suppliers do not assume all design and commercial activities, they will have a particular role - assembler buys the components and suppliers just assemble them into modules – keeping the storage in their own plant.

The choices made by the assembler concerning structure and organization of the plant influence the components production. The modular plant operates within an industrial park together with some suppliers located close to the final assembly. Proximity allows reducing transport time as well as inventories, since the suppliers deliver the pre-assembled modules to the final line. The logistical system is planned so that the modules are delivered just in time and some of them sequenced. Assembler has few or no warehouse. The configuration also allows the suppliers to provide better services, e.g. faster problem solutions directly in the assembly line.

Differently from the modular plant, the supply system designed for the conventional plant is not directly linked to the project of product or the assembly operation. In the modular plant, product design was simultaneous to production process design (capacity, arrangements etc) and supply (including contracts with suppliers), as a complete package or system. The objective is to make the production as lean and efficient as possible, aiming major cost reduction. As an integrated system, the modular logic demands ability to manage each of the three parts and the interface among them. Due to this, the role of each player in the productive chain is not easily changeable, and the risk of building a ‘closed package’ – with reduced flexibility to establish alternative solutions for problems – is significantly higher.

The research findings indicate that the modular supply demands a very efficient flow of information in the first tier of the supply chain (near the assembler), whenever the logic of outsourcing is implemented. One should mention that the first tier of the supply chain is the one with higher levels of outsourcing, and that we found no example of that in the lower tiers. Due to this and in respect to the lower tiers observed, we could say that their chances of accessing extra information are very few. It was clear that knowledge transfer is more intense if more activities and responsibilities are shared, otherwise information keeps concentrated indoors (first tier suppliers were not interested on outsource from tier two). However, it was also noted that sharing knowledge is not a general rule for all suppliers in the first tiers of a modular productive chain. It also depends on the kind of relationship established between the assembler and the supplier, which are based on commercial and technological terms. For instance, while some suppliers assume design and manufacturing tasks and share their engineering expertise with the assembler, others just make the pre-assembly work.