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AUTOMAKER-SUPPLIER RELATIONSHIPS AND PRODUCTION ORGANISATION FORMS: A CASE STUDY IN A BRAZILIAN ENGINE SUPPLY CHAIN

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Brazil's automotive industry has been the subject of studies covering a variety of current themes relevant to production management and organisation and to supply chain management.

The article presented by these authors at GERPISA 2000 discussed how, in the 1990's, the automakers gained in bargaining power over their suppliers, with a simultaneous concentration of capital and an expansion of multinational participation in the autoparts sector. This paper explores some of the similarities and differences of Production Organisation Forms (POFs) implemented at an engine assembler and at ten of its suppliers, discussing some of the main conditioning factors that contribute to these types of organisations in this context. The work reported on here is part of a research project on the Brazilian automotive industry developed by the Department of Industrial Engineering, Federal University of São Carlos and backed by financial support from FAPESP.

The forms of production organisation adopted by these companies tend to be similar according to the type of supplier and are influenced by many variables, such as the type of supply chain configuration, the level of partnership among automakers and local suppliers, the degree of assembler outsourcing, the importance assigned to the local technological capacity accumulated by the engine assembly plant or by the Brazilian subsidiary, the technological capacity of local suppliers, the influence of workers' unions in the areas where suppliers are located, etc.

Although each POF can be considered unique, companies adopt similar forms of organization according to their size and technological capacities. Multinationals and large companies are autonomous in the definition of their organisational characteristics, while national and small companies are strongly influenced by the engine assembler.

The main elements of production organisation analysed herein are manufacturing strategies, technology strategies, work organisation forms, quality systems, logistics and supply chain management. The discussion in this paper is based on case studies carried out in those eleven companies (the engine assembler and ten of its suppliers). Most of the information was compiled from interviews with manufacturing, quality, logistics and human resources managers.

Some of the characteristics of these functional elements are described below.

The automaker's production strategies are relatively changeable, conditioned by market fluctuations and by product launch strategies, but cost and quality tend to be priority dimensions. In the chain investigated for this study, we identified a certain degree of pressure for greater flexibility owing to the automaker's need to broaden its product mix.

As for the technological strategy, the product and process development capacities were found to vary greatly, with only the multinationals having design capacities. In the case of components manufactured by domestically owned companies, the design is done by the automaker.

The workstations at most of these companies are organized into production cells, but even where job rotation is a routine practice, the tasks are repetitive and have a relatively short cycle. Although there are initiatives aimed at worker involvement, worker autonomy remains limited. With regard to this functional element, the work market and the local labour unions appear to exert a stronger influence than the automaker.

Quality standards have becoming an increasingly necessary requirement for the participation of companies in the autoparts sector, but the engine assembler supports the development of small size suppliers, and the techniques used by the latter are very similar to those of the buyer.

New logistics systems have been implemented under the assembler's control and the suppliers have adapted to the new demands in several ways, which have not necessarily involved an expansion of their production flexibility. The tendency for growing levels of integration (computerized) among the companies has been confirmed.

At each company, for different reasons, these functional elements are combined in a given manner. The production organization forms involving more flexible production elements are usually found at the multinationals, without any major influence from the engine assembler. However, the domestically owned suppliers have fewer flexible elements, although they are being pressured to “emulate” some of the systems and techniques adopted by the buyer.

This indicates that, in principle, there is ample space for the definition of each functional element and for compatibility to be achieved among the various elements that make up each Form of Production Organization at each company. However, both the multinationals and the domestic companies adopt fairly traditional forms of organization (with the use of some modern techniques), which are centred on the competencies of the executives and technical staff of these organizations’ top hierarchical levels, minimizing the need for internal (administration-shop floor) and external (assembler-supplier) cooperation. The assembler’s support of smaller domestic companies is based on its interest for the component’s nationalization or its outsourcing rather than on a supplier development policy.